



United Nations Environment Programme

## Terminal Evaluation: UNEP/GEF Project- Technology Needs Assessment Phase 1



Author: Amitav Rath

With contributions from:

Mario Bazan

Jérôme Gardin

Walaitat Worakul

UNEP Evaluation Office

4 September 2016



## **ACKNOWLEDGEMENTS**

I wish to acknowledge the contributions of Mario Bazan, Jérôme Gandin and Walaitat Worakul, who contributed to this evaluation and the final assessments are a result of the team work.

The team is grateful to many people for their cooperation and assistance during the conduct of this evaluation and wishes to thank them for providing time for meetings, interviews and for answering many questions in person and by email and phone. Special thanks are due to all the persons listed who provided information and contributed to this evaluation, and to the many other participants in the national Technical Need Assessment (TNA) processes who are not listed but who have made invaluable contributions allowing the evaluation to gain from a wide participation. Special thanks are due to UDP, the four Regional Centres and the stakeholders in the ten countries visited who provided many documents, shared their insights and assisted us during the country visits.

The team also acknowledges with gratitude the many suggestions and contributions made by Genta Konchi, Harriet Matsaert and Pauline Marima at the UNEP Evaluation Office during the design and analysis of the TE and the peer review by Janet Wildish, also at the UNEP EO.

Finally, all responsibility for the statements in the main report rest on me. My colleagues and team members in this evaluation shared their findings and reviewed several versions of the report. Their direct inputs to the assessments at the regional level are provided in the form of three regional reports, in Annex VII. The report does not necessarily reflect the views of UNEP, or project stakeholders, including beneficiaries, who were consulted in the preparation of this report, except as directly quoted or referenced. This report, or portions thereof, may not be reproduced without explicit written reference to the source.

Amitav Rath

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b> .....	1
<b>INTRODUCTION</b> .....	1
1.1 Subject and scope of the evaluation .....	1
1.2 Evaluation objectives .....	4
1.3 Key evaluation questions.....	5
1.4 The evaluation method .....	6
1.5 Inception Phase.....	7
1.6 Limitations of the evaluation.....	11
<b>THE PROJECT</b> .....	13
A. Context.....	13
B. Project Objectives and Components.....	15
B1. Objectives .....	15
B2. Components.....	15
C. Target groups.....	17
D. Milestones in Project Design and Implementation .....	17
E. Implementation Arrangements.....	18
F. Project Financing .....	18
G. Project partners .....	19
H. Implementation and changes in design .....	20
H1 Stakeholder analysis.....	20
I THEORY OF CHANGE.....	24
I1. The Theory of Change Diagram.....	26
<b>EVALUATION FINDINGS</b> .....	30
A Strategic relevance .....	30
B Achievement of outputs.....	35
C Effectiveness: Attainment of Objectives and Results .....	38
C1 Direct Outcomes: .....	38

C2	Medium Term Outcomes:.....	40
D	Sustainability and replication .....	44
E	Efficiency .....	49
F	Factors and processes affecting performance .....	53
F1	Preparation and Readiness:.....	53
F2	Project implementation and management .....	54
F3	Stakeholder Participation, cooperation and partnerships .....	55
F4	Country ownership and driveness .....	56
F5	Communication and public awareness .....	56
F6	Financial Planning and Management.....	57
F7	UNEP supervision, guidance and technical backstopping.....	57
F8	Monitoring and Evaluation .....	57
	Limitations Affecting Performance.....	58
	<b>CONCLUSIONS, LESSONS AND RECOMMENDATIONS.....</b>	<b>59</b>
A	CONCLUSIONS .....	59
B	LESSONS LEARNT .....	66
C	RECOMMENDATIONS.....	68
	<b>LIST OF ANNEXES</b>	
ANNEX I.	TERMS OF REFERENCE FOR THE EVALUATION .....	71
ANNEX II.	TNA PHASE I PROJECT COST AND CO-FINANCING .....	84
ANNEX III.	BACKGROUND INFORMATION ON CLIMATE CHANGE AND INTERNATIONAL CONTEXT..	89
ANNEX IV.	INDIVIDUALS INTERVIEWED.....	94
ANNEX V.	LIST OF DOCUMENTS CONSULTED .....	98
ANNEX VI.	INTERVIEW PROTOCOL.....	104
ANNEX VII.	TNA PROJECT PHASE I: REGIONAL REPORTS.....	107
ANNEX VIII.	BIO OF THE EVALUATION TEAM.....	201

## LIST OF TABLES

Table 1: List of TNA countries by region and their responses .....	viii
Table 2: Project identification details .....	ix
Table 3: Summary of project components/objectives, outcome and outputs .....	3
Table 4: Countries selected for field visits .....	11
Table 5: Project logical framework .....	16
Table 6: Milestones and key dates in project design and implementation .....	18
Table 7: Project budget summary .....	19
Table 8: Budget by component and source .....	19
Table 9: Changes in implementation .....	20
Table 10: Stakeholders at different stages .....	21
Table 11: Stakeholder responsibilities and contributions .....	22
Table 12: Achievement of the outputs .....	35
Table 13: Outcome ratings: review of outcomes to impact- the ROTI approach as in the ToR .....	59
Table 14: Overall evaluation ratings .....	59

## LIST OF FIGURES

Figure 1: Map of countries completing Technical Needs Assessment (TNA) .....	viii
Figure 2: Number of respondents by stakeholder type and by region (N=85) .....	9
Figure 3: Number of respondents by gender (N=85) .....	10
Figure 4: TNA structure for countries .....	20
Figure 5: Reconstructed Theory of Change diagram .....	29
Figure 6: Participant view of project relevance to national needs (N=85) .....	32
Figure 7: Participant view of project execution given national needs (N=85) .....	33
Figure 8: Participant view of project activities to the results (N=85) .....	34
Figure 9: Participant view of attainment of objectives and planned results .....	40
Figure 10: Participant view of achievement of overall objectives (N=85) .....	42

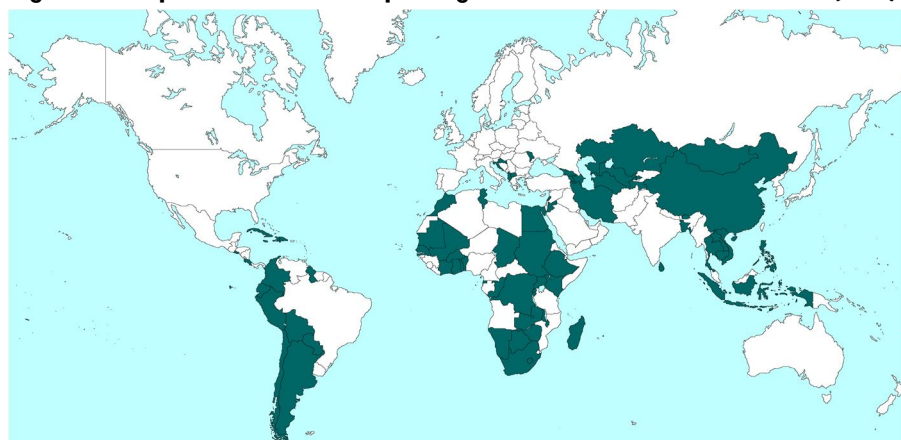
Figure 11: Efforts at the national level by the teams.....	43
Figure 12: Project contribution to mitigation technologies.....	43
Figure 13: Project contribution to adaptation technologies.....	44
Figure 14: Outcomes after the project outputs and reports.....	48
Figure 16: Efficiency of the use of resources.....	50
Figure 17: Adequacy of financial resources .....	51
Figure 18: Participant view of additional support required if any and on networks.....	51

## LIST OF ACRONYMS

<b>Acronym</b>	<b>Full Version</b>
ACIAR	Australian Centre for International Agricultural Research
AIT	Asia Institute of Technology
CCAFS	Climate Change, Agriculture and Food Security Platform, Ghana
CC-M	Climate Change Mitigation
CDM	Clean Development Mechanisms
CIS	Commonwealth of Independent States
CONCYTEC	Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (Peru)
COP	Conference of Parties
CSIR	Council for Scientific and Industrial Research
CSOs	Civil Society Organizations
CTCN	Climate Technology Center and Network
CTI-PFAN	Climate Technology Initiative - Private Finance Advisory Network
DANIDA	Danish International Development Agency
DGEF	Division for GEF Coordination
DTIE	Division of Technology, Industry and Economics of UNEP
DTU	Technical University of Denmark
ENDA	Environment Development Action in the third world
EOU	Evaluation and Oversight Unit
EST	Environmentally Sound Technology
EU	European Union
FB	Fundacion Bariloche or Bariloche Foundation
FSP	Full Size Project (GEF)
GEF	Global Environment Facility
GHG	Greenhouse gases
GIZ	Gesellschaft für Internationale Zusammenarbeit , German agency
INDC	Intended Nationally Determined Contribution
KPI	Key performance indicators
LAC	Latin America and the Caribbean
MCDA	Multi-Criteria Decision Analysis
NAMAs	National Appropriate Mitigation Actions
NAP	National Action Plans
NAPAs	National Action Plan on Adaptation
NDE	National Designated Entities
NGO	Non-Governmental Organization
PoW	Programme of Work
PRA	Participatory Rural Appraisal
ROtI	Review of Outcomes to Impacts
SBSTA	Subsidiary Body for Scientific and Technological Advice

TAP	Technology Action Plans
TE	Terminal Evaluation
TNA	Technology Needs Assessment
ToC	Theory of Change
ToR	Terms of Reference
UDP	UNEP Partnership with Technical University of Denmark (formerly URC)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
URC	UNEP RISOE Centre on Energy, Climate and Sustainable Development



**Figure 1: Map of countries completing Technical Needs Assessment (TNA)**

Source: UN Climate Change Newsroom. Available online at:  
[http://unfccc.int/tclear/templates/fender cms\\_page?s=TNR\\_cre](http://unfccc.int/tclear/templates/fender cms_page?s=TNR_cre)

**Table 1: List of TNA countries by region and their responses**

Number	Africa & Middle East	Asia & CIS	Latin America
1	Cote d'Ivoire	Azerbaijan	Argentina
2	Ethiopia	Bangladesh	Bolivia
3	Ghana	Bhutan	Colombia
4	Kenya	Cambodia	Costa Rica
5	Lebanon	Georgia	Cuba
6	Mali	Indonesia	Dominican Republic
7	Mauritius	Kazakhstan	Ecuador
8	Morocco	Lao PDR	El Salvador
9	Rwanda	Moldova	Guatemala
10	Senegal	Mongolia	Peru
11	Sudan	Nepal	
12	Zambia	Sri Lanka	
13		Thailand	
14		Vietnam	
	Four countries did not continue in TNA and no funds disbursed.	Bolivia, Ethiopia, Guatemala, Nepal	
	Ten countries were visited to meet with stakeholders.	Argentina, Colombia, Mali, Moldova, Morocco, Peru, Senegal, Sri Lanka, Thailand, Vietnam	
	Four Countries with Regional Centres visited	Argentina - Bariloche Foundation , Peru - Libélula , Senegal - Environment Development Action in the third world, Thailand - Asia Institute of Technology	
	Seven countries that provided no feedback to the evaluation	Costa Rica, Cuba, Ecuador, Indonesia, Mauritius, Mongolia, Sudan <sup>1</sup>	

<sup>1</sup> It is noted here that while the lack of response from the countries above did not allow for their feedback to be considered in this evaluation exercise, the project team has reported good performance in these countries.

**Table 2: Project identification details**

UNEP PIMS ID:	PMS: CL/4010-09-04	IMIS number:	CCL-2328-2724-4A98 Rev.3
Sub-programme:	Climate Change	Expected Accomplishment(s):	b) Low carbon and clean energy sources and technology alternatives are increasingly adopted, inefficient technologies are phased out and economic growth, pollution and greenhouse gas emissions are decoupled by countries based on technical and economic assessments, cooperation, policy advice, legislative support and catalytic financing mechanisms
UNEP approval date:	November 2009	PoW Output(s):	b.1. Economic and technical (macroeconomic, technology and resource) assessments of climate change mitigation options that include macroeconomic and broad environmental considerations are undertaken and used by countries and by major groups in developing broad national mitigation plans.
GEF project ID:	3907	Project Type:	FSP
GEF OP #:	13	Focal Area(s):	CC-M
GEF approval date:	17 October 2009	GEF Strategic Priority/Objective:	GEF4 Special Climate Change Fund – Technology Transfer CCM-6 supporting enabling activities and capacity building for Convention obligations.
Expected Start Date:	November 2009	Actual start date:	November 2009
Planned completion date:	April 2012	Actual completion date:	30 April 2013
Planned project budget at approval:	US\$ 11,036,818	Total expenditures reported as of [date]:	n.d.
Planned Environment Fund (EF) allocation:	n.d.	Actual EF expenditures reported as of [date]:	n.d.
Planned Extra-budgetary financing (XBF):	Not available	Actual XBF expenditures reported as of [date]:	US\$7,319,925.86
XBF secured:	n.d.	Leveraged financing:	n.d.
GEF Allocation:	US\$ 8,181,818	GEF grant expenditures reported as of July 2015:	US\$ 6,476,071

PDF GEF cost:	N/A	PDF co-financing:	N/A
Expected MSP/FSP co-financing:	US\$ 2,855,000	Secured MSP/FSP co-financing:	US\$ 2,855,000
First Disbursement:	US\$ 3,370,070	Date of financial closure:	Dec 2015
No. of revisions:	1	Date of last revision:	31 December 2012
Date of last Steering Committee meeting:	6 December 2012		
Mid-term review/evaluation (planned date):	August 2011	Mid-term review/evaluation (actual date):	August 2011
Terminal Evaluation (actual date):	August 2015		

*Sources:* From PRODOC; supplemented by Jonathan Duwyn and Patricia Mwenya at UNEP DTIE; Martin Okun, UNEP DGEF; Peter Skotner and Jorge Rogat, UDP.

## EXECUTIVE SUMMARY

# Terminal Evaluation of the UNEP/GEF Project: Technology Needs Assessment Phase I

### Background

This Terminal Evaluation (TE) is of the “Technology Needs Assessment Project (TNA)- Phase I” supported by the Global Environment Fund (GEF), implemented by the United Nations Environment Programme (UNEP) and executed through the UNEP DTU Partnership. The evaluation has been undertaken in accordance with the UNEP Evaluation Policy, where a TE is undertaken after completion to assess project performance in terms of its relevance, effectiveness and efficiency, and to determine the outcomes, impacts, and their sustainability.

The purpose of the TNA project was to assist participating “developing country parties to identify and analyse priority technology needs, which can form the basis for a portfolio of environmentally sound technology (EST) projects and programmes to facilitate the transfer of, and access to, the technologies and related know-how”. This is an obligation under Article 4.5 of the United Nations Framework Convention on Climate Change (UNFCCC) and the TNAs are one central element to the work of the “Parties to the Convention on Climate Change”. Technology transfer has been a focus of international negotiations since 1992, and one earlier round of TNAs had been undertaken with GEF funds between 1999 and 2004. The present TNA project was designed and implemented by UNEP to assist 36 developing countries who expressed their interest in participating (the list of countries is provided in Table 1) to identify and analyse their priority needs, taking into account new concerns about, and new technologies available, to address climate change. The priorities so determined define a portfolio of EST needs of the country, and the action plans provide guides for further support by the international community, in partnership with the assisted country.

### The evaluation

This TE of the Project was undertaken primarily during the fourth quarter of 2015. It focused on the two principal purposes specified by UNEP - meeting accountability requirements; and the promotion of learning and knowledge sharing within UNEP and among partners. UNEP also specified that the evaluation should identify lessons of operational relevance for future projects. The evaluation was managed by the UNEP Evaluation Office in Nairobi. This report provides the findings of an independent evaluation undertaken with a participatory approach involving relevant stakeholders, together with Expert/Peer Review processes and (limited) feedback from potential users, within the time frame and resource constraints.

### Methodology

The overall methods were based on the specifications in the terms of reference (ToR, Annex .1). It included an intensive review of project documents; a reconstructed Theory of Change (ToC) used to assess how the project performed and whether the conditions needed to achieve higher level outcomes

were valid. The TE placed emphasis on questions about the validity of the assumed input-output-outcome results chain, the satisfaction of key stakeholders with the project, appropriateness of governance and management structures and processes, the outcomes achieved, and any unintended (positive/negative) outcomes.

The methods included a desk review of project documents; semi-structured interviews (individual and groups) undertaken with primary stakeholders (Annex 6); country visits for in-depth interviews in 10 selected case study countries and electronic surveys distributed to all country coordinators, and with their assistance, a selection of national stakeholders. The survey results were synthesized and aggregated by issue, country, region, and, at the global level, to provide an overview of the national partners' views on the project performance. The country visits, interviews and the survey, combined to provide evidence of later outcomes and impacts, subsequent to the project termination. Triangulation from the several streams of evidence was used, the evaluation team cross-referenced its findings and areas of recommendation, keeping in mind areas of convergence and divergence. The findings are fact-based and informed by the evidence, and they integrate the views and perspectives of key stakeholders.

### Limitations

Several limitations of this evaluation must be noted. The issues covered in this project are highly multi-dimensional and wide ranging, with differences of opinion among experts and between countries on the best way to address many challenges of climate change. The project also covered a large number of countries, with significant differences between them in their conditions and priorities. This has been mitigated to a large extent through an extensive review of the literature, and consultations with a wide range of stakeholders. The participant survey used was an important tool to gauge users' views of the project outputs and to determine subsequent outcomes by country. But despite considerable effort, seven of the 32 countries (see Table 1) completing the TNA process did not provide any feedback to the evaluation. On the seven non-responding countries beyond the fact that their outputs as targeted were completed and they are publicly available, the evaluation has no additional information. A final limitation is that as the TNA project was completed in 2013, by 2015 some of the key actors were no longer available for interview. On the other hand, the gap between project completion and this evaluation has allowed for a more useful review of medium term outcomes in 25 countries that would not have been possible otherwise, and thereby can provide robust lessons and recommendations.

### FINDINGS AND CONCLUSIONS

1. The TNA project aimed to deliver multiple outputs and results at the country level, which are listed in Table 12 of the report. A summary version is reproduced below. Those who wish to may also refer to the short Regional Reports for detailed information on achievement of outputs in each region, in Annex 9.

#### Achievement of outputs

Component	Outputs	Achievement
<b>Component 1:</b> Support for the development or strengthening of TNAs in 35-45 countries	1. A national technical and network structure formed - of participating individuals and institutions at national level, having the potential for national consultations, to reach a national consensus on adequate technologies Identification and creation of stakeholders' groups will be based on	Yes

<p><i>TOC Expression:</i> National TNA network formed and supported; Methodological issues solved; Disseminate to all local or national stakeholders.</p>	recommendations contained in the draft TNA handbook.	
	2. A synthesis of methodological applications and hurdles carried out at national level and serving as input for TNA elaboration	Yes
	3. Between 35 and 45 TNAs including TAPs produced, identifying barriers to technology transfer at national level and means and actions to overcome them.	Yes, mostly.
	4. Feedback for TNA handbook update based on national experiences and processes.	Yes
<p><b>Component 2:</b> Development of tools and provision of methodology information to support TNA and TAP Processes</p> <p><i>TOC Expression:</i> Develop/provide tools and methods for TNA and TAP.</p>	1. A tool to prioritize mitigation options based on cost effectiveness, existing potential, resource availability and relevance for national situations developed and presented.	Yes
	2. A tool to prioritize adaptation technological options based on climate change impacts as well as human, economic, social and costs related aspects developed and presented.	Yes
	3. A simple and efficient market assessment tool made available	Yes
	4. A process to apply the tools at national level agreed upon.	Yes
	5. Access and links to information database elaborated and serving as a base for technology specification in terms of performance, cost and availability.	Yes, mostly.
	6. Reporting template for TNA elaborated.	Yes
<p><b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination</p> <p><i>TOC Expression:</i> Establish coordination mechanisms; Information availability; Promote synergies for North-South and South-South technology transfer; TNAs and TAPs synthesised.</p>	1. A network involving both national and supra national institutions recognized for their success in technology transfer activities established and operational	No
	2. Proven approaches to elaborate good quality TNAs developed. Institutional responsibilities set up. Capacities built to elaborate, implement and revise TNAs and associated TAPs.	Yes
	3. Replication approach available to all GEF beneficiary countries together with a proposed mechanism for interactive support.	Mostly
	4. A "Best Practices and Lessons Learnt report" from the project produced and disseminated.	Yes
	5. Synthesis report from the project produced and disseminated.	Yes

The evaluation summarises the overall evaluation findings in Table 14, under each criteria as specified by UNEP EO, and a shorter summary is provided below.

### Overall evaluation summary findings and ratings

Criterion	Reference	Evaluation Rating	EOU Rating
<b>A. Strategic relevance</b>	See paragraphs 70-80	HS	S
<b>B. Achievement of outputs</b>	See paragraphs 82-85	S	S
<b>C. Effectiveness: Attainment of project objectives and results</b>	See paragraphs 87-114	S	S
1. Achievement of direct outcomes	See paragraph 87-91	S	S
2. Likelihood of medium term outcomes/impact	See paragraph -92-96	HL	ML

Criterion	Reference	Evaluation Rating	EOU Rating
3. Achievement of project goal and planned objectives	See paragraph 94-99	S	S
<b>D. Sustainability and replication</b>	See paragraphs 100-114-	HL	L (lowest of the sustainability sub-category ratings)
1. Financial	See paragraphs 107,108	HL	L
2. Socio-political	See paragraphs 103-106	L	L
3. Institutional framework	See paragraph 109	L	L
4. Environmental	See paragraph 111	L	L
5. Catalytic role and replication	See paragraph 113, 114	HL	L
<b>E. Efficiency</b>	See paragraph 115- 123	S	S
<b>F. Factors affecting project performance</b>	See paragraphs 124-144	A rating not applicable.	S(based on the range of ratings below)
1. Preparation and readiness	See paragraph 124	S	S
2. Project implementation and management	See paragraph 128	S	S
3. Stakeholders participation and public awareness	See paragraph 129, 130-132, 134	HS	HS
4. Country ownership and driven-ness	See paragraph 133	HS	HS
5. Communication and outreach	See paragraph 133, 134-136	S	
6. Financial planning and management	See paragraphs 128, 137	HS	
7. UNEP supervision and backstopping	See paragraph 136	S	S
8. Monitoring and evaluation	See paragraph 139	S	S
a. M&E Design	Review of project design in Inception Report	S	
b. Budgeting and funding for M&E activities	Review of project design in Inception Report	S	
c. M&E Plan Implementation	See paragraph 137	S	
<b>Overall project rating</b>		S	S

The overall project rating is Satisfactory, less than the higher rating due to some shortfalls in outputs. The positive assessments are driven by the delivery of multiple outputs and results at the country level, with shortfalls, as shown in the Outputs table above, an effective catalytic effect, high levels of stakeholder participation and awareness, strong country ownership and good financial planning and management. The evaluation identified the main strengths of the project to be its high strategic relevance and high likelihood of impact and sustainability. The overall sustainability derives also from the finding that impact drivers and assumptions for outcomes from national and global contexts have been in the positive direction. The project is judged to have been **very efficient** in its use of funds and in the achievement of outputs and outcomes within the given resources and constraints outside the project.

The most positive achievements of the project include the fact that it successfully completed a process of providing assistance and support as required under the UNFCCC in 32 countries. The project contributed substantially to the preparation of the documents and plans. It expanded the process and priorities to include adaptation, overcoming the earlier gap and reached out to new knowledge partners for adaptation. The processes ensured considerable national consensus, and linked to national development priorities. The evaluation found multiple examples of utilization of the outputs and an important measure of learning was observed among all stakeholders.

The project made useful and appropriate contributions to the capacities of key national actors. Many tensions within the project had to be resolved by the TNA team for successful results - tensions between quality of outputs and time, between the need to share experiences between countries and tight budgets. **The evaluation concludes, among the reasons behind the successes of the project, have been a good design without major shortcomings**, good planning and execution, excellent arrangements for the execution with good support from four regional centres. To this the enthusiasm, support and interest in most countries for the work was also an important contributing factor, stemming from the countries' perception of the importance of the work. The reviews of documents and stakeholder views show high performance on most factors above, with good standards leading to high levels of satisfaction.

### **Limitations Affecting Performance**

Some limitations were noted in the evaluation and by the respondents from the countries. The variations within countries were largely due to internal factors, which also included delays in official procedures in some countries thereby reducing their time for participation and slowing down the implementation. Second, many countries reported their lack of experience, lack of capacity for the analysis that was required and the lack of domestic resources. Additional domestic supplements to the resources available were often utilised by the higher performing teams to enhance the national outputs and outcomes. Within the broader factors, it was seen in many countries that the leadership of the national coordinator was often a highly critical factor in the level of success within the countries reviewed.

Some regional variations are suggested from the responses to the survey. In Africa, many national stakeholders reported that they lacked institutionalized national mechanisms to carry on TNA/TAP implementation and were not sufficiently equipped to prepare funding requests to the international sources (this is also reported by some countries in the other regions but was reported less often). Also it was noted that this did not apply to all, as a number of countries from Africa have indeed followed up with actions and funding requests to bilateral and multilateral channels but reports of use of results is less robust than other regions. There was greater apprehension in the region on its ability to acquire licenses to use/implement many technologies. In the Asian region, despite the high satisfaction with the usefulness of the technical support, more than half of the respondents indicated they could have used additional support, especially on economic and cost-benefit analysis of selected technologies, for the multi-criteria prioritization process. Also some countries in the region had greater difficulty with English, and so had difficulty understanding some of the guides and books provided. Subsequently, most of the guidebooks were translated into French and Spanish. Finally, in Asia, there was a strong comment that international funding agencies too often only focused on "building capacity" and not on the future



requirements of implementation. The smaller number of respondents in Latin America and the Caribbean suggested their constraints included the limited availability of national experts/consultants; frequent changes in political authorities, and limited statistical data that was locally available, which affected their results. Some of these national and regional variations appear to reflect national conditions given country level emissions and development indicators such as HDI (Annex 3). Almost all countries would have preferred some continuation of the project towards undertaking priority activities with support after the project completion and greater attention to learning from each other.

Among the negative factors that reduced performance were weaknesses observed in the steering committee guidance which was largely due to the time constraints of members and was reflected in the few meetings and low inputs provided. A tightly prescribed budget by the GEF and the inability to re-direct resources to reflect changing needs as the project progressed reduced the scope for adaptive management by the project team at UDP. Another weakness was the lack of linkages within the TNA project to other key work on technology and its financing, transfer, diffusion which have been funded by UNEP and GEF during the same period, which could provide concrete examples of technology issues the project grappled with.

There are always multiple factors that jointly determine the final results. A well designed project is almost self-evidently a critical factor but what is often not noted, are the needs for the right inputs of capacity, skills and efforts made by the people executing the project, which in this case includes the staff at UNEP UDP, the four Regional Centres and many of the national coordinators and experts involved. The capacity, skills and efforts in many of the supporting teams and countries has been notably high, but not uniformly and not across all issues. They all together contributed to the successes noted. One additional factor relevant is the larger framework and constraints under which any project is executed. The uniform allocation of funds per country and the rigidity within which the project was implemented, based on GEF rules for compliance, did not often allow for the required adaptation to the realities on the ground. Among factors responsible for project success is the ability to manage the portfolio of resources in the most effective manner as the project progresses, keeping in mind actual challenges and opportunities during execution. Such losses in adapting to emerging conditions within complex processes can easily create upper bounds on effectiveness, while providing comfort from high "efficiency" in working within arbitrarily set targets for fund allocation in the design and pre-approval stage.

A key issue that almost always exist for multi-country global projects such as the TNA, is the fact that the context, the key issues and capacities of participating countries would invariably differ, which then requires a degree of adaptation of the support services provided by the implementing agencies. In all regions a lesson that emerges for such global projects, is that a minimum level of the national contexts and capacity assessments should be conducted early, and where and if necessary and feasible, additional support must be provided for in order to mitigate specific limitations found. Multi-stakeholder processes also need special attention and resources for their management in order to provide the positive feedback and governance required. Each of the above steps to increase effectiveness - workshops and countries helping each other, inclusion of financial entities in the PSC and workshops, would have cost more money, but these steps would have made the project more effective.

## RECOMMENDATIONS

The recommendations are largely directed at the Project team, UDP and UNEP for TNA I and II<sup>2</sup>. The implementation team should reach out more to ongoing/completed projects on technology for climate change funded by UNEP, GEF and now CTCN, the multilateral financial institutions, and others; explore options to enhance and improve dissemination of key issues, public policy and coverage about technology issues related to climate change in more and different forums; explore additional options to find ways of influencing and engaging with civil society and academics on the issues. The organizations should commit to a minimum brief and periodic follow up on the core outputs, resulting outcomes and examples of successful programs emerging out of the TNA efforts, within budgetary limitations. Review with GEF on possible reallocations for the current budget for TNA Phase II, to ascertain the degree to which the GEF rules do allow for flexibility during execution of approved projects to take into account real experience and facts on the ground. Make efforts towards a revitalized steering committee to improve strategic decision making in this highly complex project, with multiple partners, and increase the participation of global stakeholder agencies at events so they are encouraged to follow up on implementation. In the content of the work supported the team is encouraged to consider a greater coherence for framing the issues, adding perspectives from economics and politics, apply systems thinking, and pay greater attention to the broader economic and financial barriers as well as to “unintended consequences”. Finally, the team is encouraged to increase opportunities for learning between countries, and linking to regional and global networks for knowledge, information, technology and finance.

The evaluation recommends the participating countries in the TNA process to note that a number of factors for better results and for greater national value are in their control. The countries can ensure greater usefulness of the results by close integration of such work within national decision making and climate change structures, providing energetic leadership at the appropriate national level with access to senior officials and a reasonable provision for national resources to complement the external finance. Also the follow-up at the national level after the project ends is critical for the use of the outputs in national planning, financing and programming. Most of the countries involved in the project rely on multi-lateral and bilateral donor partners for critical financing support to complement their national resources. Hence ensuring their involvement at the national level with information on the findings of priorities determined and the resulting action plans can assist jointly funded activities to move forward. Many countries have undertaken all the above steps and provide useful examples for others to follow.

---

<sup>2</sup> The project team has added that it notes with appreciation the participatory process used in the evaluation. This has allowed to team to incorporate a number of the recommendations made in the TNA Phase II project which had started implementation prior to this evaluation, in November 2014. An early summary of the evaluation findings were presented in the first TNA Phase II PSC meeting in May 2016. In addition, the GEF Secretariat approved the project concept submitted by UNEP for a third phase of the TNA project, which is anticipated to start in 2017. For this third phase, the project outcome statement has been changed to “Technology Needs Assessment (TNA) process conducted by national stakeholders, and TNA/TAP results are available to be integrated into national planning processes and to be funded and implemented by interested stakeholders”, which is an improved and more realistic goal. The project team reports that a number of the improvements in Phase III have been learned from the evaluation and the experiences of the current phase; and also, the team finds that at the country level there is a deeper appreciation of the benefits of TNAs.

# Terminal Evaluation of the UNEP/GEF Project: Technology Needs Assessment Phase I

## INTRODUCTION

2. This Terminal Evaluation (TE) is of the “Technology Needs Assessment Project - Phase I” supported by the Global Environment Fund (GEF), implemented by the United Nations Environment Programme (UNEP) and executed through the UNEP DTU Partnership. The evaluation has been carried out in accordance with the UNEP Evaluation Policy and Programme Manual. A TE is undertaken after completion of a project to assess project performance in terms of its relevance, effectiveness and efficiency, and to determine the outcomes, impacts, and their sustainability.

### 1.1 SUBJECT AND SCOPE OF THE EVALUATION

3. Technology transfer has been a focus of international negotiations since the Rio Summit in 1992, where issues related to technology transfer were included in Agenda 21. They are key elements of Articles 4.3, 4.5 and 4.7 of the United Nations Framework Convention on Climate Change (UNFCCC). Starting with the first Conference of Parties (COP1), issues related to technology transfer were discussed in various COPs. A first round of funds was made available from the GEF for “Technology Needs Assessment” for developing countries, and a series of assessments were undertaken between 1999 and 2004. The results were, however, not satisfactory for many reasons.<sup>3</sup>

4. Technology transfer issues were dealt with further at COP14 in 2008,<sup>4</sup> where additional specific actions were agreed to under the “Poznan Strategic Programme on Technology Transfer”. As a part of the above programme, the GEF was requested, and agreed, to provide a new round of funding, with UNEP as the implementing agency, to carry out an improved and updated technology needs assessment project for a group of developing countries within the framework of the UNFCCC.

5. The purpose of the Technology Needs Assessments (TNA) project was to “assist participant developing country parties to identify and analyse priority technology needs, which can form the basis for a portfolio of environmentally sound technology (EST) projects and programmes to facilitate the transfer of, and access to, the ESTs and know-how in the implementation of Article 4.5 of the UNFCCC

---

<sup>3</sup> Report Technology Needs Assessments, First Regional Capacity Building Workshop – Asia (A GEF funded project), Bangkok, Thailand, 15-17 September 2010, Asian Institute of Technology, Bangkok, September 2010; page 4. In December 2007, COP 13 requested the GEF, in consultation with interested Parties, international financial institutions, other relevant multilateral institutions and representatives of the private financial community, to elaborate a strategic programme to scale up the level of investment for technology transfer to help developing countries address their needs for environmentally sound technologies. In response to this guidance, the LDC/SCCF Council approved in November 2008 its strategy presented in the document: “Elaboration of a Strategic program to scale up the level of Investment in the Transfer of Environmentally Sound Technologies”. This strategy paper which was submitted to COP 14 in December 2008, was overwhelmingly endorsed by Parties and renamed the “Poznan Strategic Programme to scale up the level of Investment in the Transfer of Environmentally Sound Technologies” – in short the “Strategic Programme on Technology Transfer”.

<sup>4</sup> A short description of key global issues and context behind the TNA project, together with a discussion of technology and the time line of important UNFCCC meetings and resolutions that provide the context and background for the TNA project are provided in Annex 3 to the report.

Convention. Hence TNAs are central to the work of Parties to the Convention on technology transfer and present an opportunity to track an evolving need for new equipment, techniques, practical knowledge and skills, which are necessary to mitigate greenhouse gas (GHG) emissions and/or reduce the vulnerability of sectors and livelihoods to the adverse impacts of climate change (CC).<sup>5</sup>

6. The UNFCCC process defines “technology needs assessment” as a set of country-driven activities that “identify and determine the mitigation and adaptation technology priorities” of a country<sup>6</sup>, and they in turn emerge from the national priorities for mitigation and adaptation, and the development plans, of the country. The goal of the TNA process was to assist the self-selected developing countries to identify and analyse priority technology needs, which could then form a portfolio of environmentally sound technology (EST) projects. These ESTs chosen would reduce emissions, and/or, measures to adapt to the adverse effects of climate change currently underway and anticipated in the future. The hypothesis was that subsequent to such prioritization, international and national efforts could work together, and implement programmes to facilitate the access and transfer of these identified and prioritized technologies.<sup>7</sup> As part of the GEF Strategic Programme on Technology Transfer, the TNA project was to provide targeted financial and technical support that assisted developing countries in carrying out improved technology needs assessments within the framework of Article 4.5 of the UNFCCC. As mentioned in the project purpose (above), it was expected that assisted countries would go beyond the identification of technology needs, to develop national technology action plans (TAP) for prioritized technologies that would reduce greenhouse gas emissions, support adaptation to climate change, and were also consistent with national sustainable development objectives<sup>8</sup>

7. This project was supported from the GEF window of the Strategic Program on Technology Transfer, and was designed to support between 35 and 45 countries<sup>9</sup> with three main components per country (see table 3 below). All of the participating countries have ratified the UNFCCC, are a Non-Annex I Party to the UNFCCC, and so are eligible for GEF funding. They have had no emissions reduction obligations in accordance with the UNFCCC and many have participated in the Clean Development Mechanism (CDM) under the protocol.

8. This background is relevant to understand the overall framework within which the project being evaluated was approved and executed. At the same time the subject and scope of this evaluation is limited to the specific UNEP DTU project, supported by the GEF. It is critical to delineate the boundaries carefully as this project is linked to multiple global and national organizations, and is working within frameworks and rules established outside the project boundaries, both preceding its approval and during implementation. The scope of the evaluation will be bounded as in all UNEP/GEF Terminal Evaluations, to examine the extent and magnitude of the direct project outputs and outcomes, and any

---

<sup>5</sup> See the UNFCCC and UNDP, 2010, Handbook for conducting Technology Needs Assessment for Climate Change November; available at - [http://unfccc.int/ttclear/misc\\_/StaticFiles/gnwoerk\\_static/TNR\\_HAB/b87e917d96e94034bd7ec936e9c6a97a/1529e639caec4b53a4945ce009921053.pdf](http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_HAB/b87e917d96e94034bd7ec936e9c6a97a/1529e639caec4b53a4945ce009921053.pdf)

<sup>6</sup> Quote taken from above.

<sup>7</sup> Such assessments are seen to be central to the work of Parties to the Convention on technology transfer and know-how in the implementation of Article 4.5 of the Convention. They provide the countries with the ability to track evolving needs for new technology - equipment, techniques, knowledge, skills, and organizational and other capacity, necessary to reduce GHG emissions and/or reduce the adverse impacts of CC (see ToR para. 1)

<sup>8</sup> Project Document, p.8

<sup>9</sup> Ibid, page 5.

medium term outcomes up to the date of the evaluation, and to assess the likelihood of future impacts from this project only. The evaluation will also assess project performance and the implementation of planned project activities and planned outputs against actual results.

9. The project objectives were stated in three components below in Table 3. The project grouped its activities towards these three components along nine outputs as below and four outcomes (the actual complete logical framework for the project together with the indicators for outputs and outcomes is provided in Table 5 and a reconstructed Theory of Change (ToC) is provided in section I). This leads to the primary question whether the project did indeed help the numbers of countries targeted to produce their national assessments, the TNAs; and then, did the national assessment processes lead to a consensus among the national stakeholders and governments to developing actions plans for mitigation and adaptation. The project aimed to achieve this by providing a number of tools and technical support services, which were expected to lead to the direct outcomes (some of whom are linked in time as intermediate stages) – first, to increase capacity in the country to undertake such assessments, and then to use such capacity, tools and structures, to make the assessments, achieve consensus and develop plans for their implementation. All of this was to be done in the context of an ongoing process of changing global and national scientific knowledge on climate change, ongoing changes in the technologies, and also ongoing evolutions within the UNFCCC negotiations on areas of agreement between all countries, some of whom are the TNA countries. The evaluation will be bounded by the project and its time period and while maintaining an awareness of the larger context within which the project was designed and implemented, and will refrain from discussions of the larger issues, except as they directly impinged on the project design and delivery.

**Table 3. Summary of project components/objectives, outcome and outputs**

Component/ Objectives	Outcomes	Outputs
1. Support the development of technology needs assessments in 36 developing countries or, where these have already been prepared; <sup>10</sup> strengthen them to make them more operationally strategic and useful.	1.1 Supported countries have developed a national consensus on priority technologies, agreed on a technology action plan compatible with Nationally Appropriate Mitigation Actions or similar exercises, established an institutional structure for overseeing implementation, and developed capabilities to revise or adapt the plan as needed.	1.1.1 New, or in some cases updated /strengthened, assessments in 35 to 45 countries (subsequently adjusted to 36 countries) that: <ul style="list-style-type: none"> <li>1. prioritized technologies on the basis of cost effectiveness, fit with national development priorities, and other criteria;</li> <li>2. Identified barriers and means to overcome them;</li> <li>3. Provided a Technology Action Plan (TAP) comprising targeted actions for creating an enabling framework and;</li> <li>4. Input suggestions for future revisions to the TNA Handbook, based on practical experience gained in undertaking TNAs.</li> </ul>

<sup>10</sup> An earlier exercise for TNA had been undertaken by the UNDP during the late 1990s and early 2000. See Annex 9 for details by country.

2. Development of tools and provision of technology information that supported preparation of TNAs.	2.1 Methodology for identifying mitigation technologies and technologies for adaptation most appropriate for national circumstances available for use by developing countries. 2.2 Participating countries able to access technology databases.	2.1.1 Mechanism for providing technology information critical to undertaking TNAs established. 1. Information on policies, measures and barrier removal approaches provided. 2. Methodologies for conducting market assessments provided. 3. Capacity building workshops on various tools provided.
3. Establishment of a cooperation mechanism that aids preparation and refinement of TNAs through sharing of experiences and that fosters implementation of identified measures.	3.1 Increased national and inter-regional cooperation on technology transfer as a means of facilitating the preparation of TNAs.	3.1.1 Networking mechanisms established. 1. Proven approaches disseminated globally. 2. Replication approach available.

Source: PRODOC

## 1.2 EVALUATION OBJECTIVES

10. In line with the UNEP Evaluation Policy<sup>11</sup> and the UNEP Evaluation Manual,<sup>12</sup> the TE was undertaken after completion of the project in 2013 to assess project performance and to determine outcomes and impacts (actual and potential) stemming from the project, and their sustainability. The evaluation had two primary purposes:

- To provide evidence of results to meet accountability requirements; and,
- To promote operational improvement, learning and knowledge sharing through results and lessons learned.

Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation, especially for the second phase of the TNA project<sup>13</sup>.

<sup>11</sup> <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx>

<sup>12</sup> UNEP, 2008, Evaluation Manual, Evaluation and Oversight Unit, March.

<sup>13</sup> The second phase of TNA had approved by the GEF CEO in August 2014.

11. The primary audience for the report includes the UNEP and its units, the UDP and DTU, the GEF, and the project partners<sup>14</sup> for the TNA such as the National Teams and Designated Entities (NDEs) that undertook the TNA. In addition, national government agencies and key stakeholders such as UNFCCC, the Climate Technology Centre and Network (CTCN) and others more fully listed in the stakeholder list should find the report of value.

### 1.3 KEY EVALUATION QUESTIONS

12. The evaluation has focused on the following key questions:

- To what extent has the project contributed to the preparation or enhancement of TNAs including TAPs that came as a result of a national consensus, are compatible with national development priorities, and were endorsed and will be utilized by the government of supported countries?
- To what extent did the project effectively support countries to identify the best<sup>15</sup> available and most appropriate technologies for transfer to developing countries, and create the framework conditions for more cost effective transfer of both greenhouse gas (GHG) mitigation and adaptation technologies to the supported countries?
- To what extent were the capabilities (including institutional structures) of key national actors/players in TNAs and TAPs built and strengthened, and how did these strengthened capabilities contribute to the development of TNAs and TAPs processes, and can these be applied to similar processes in the future?
- To what extent have the Project activities in support of TNAs and TAPs processes in target countries been able to:
  - Improve national and inter-regional coordination and cooperation among institutions related to technology transfer and adoption;
  - Increase awareness of opportunities and associated benefits of environmentally sound technology adoption by decision makers buttressed by increased local capacity to assess adequate priority technologies according to country needs; and
  - Identify barriers to the adoption of new environmentally sound technologies and recommend actions that are directly related to project activities?
- To what extent have outreach, dissemination and networking activities been successful to promote the funding of TNAs and TAPs priorities? Are there specific examples of TNAs/TAPs funded activities and funding prospects?

---

<sup>14</sup> Project partners include National Teams, which may comprise of National Designated Entities (NDEs), Ministries such as Environment, Water, Transport, Energy, National Planning, Technologies, Finance; Legal/Law/Policy formulation, Municipal/County Councils, and Community groups, Academia, Researchers, Private firms, financiers and others.

<sup>15</sup> The word “best” is likely to be revised as there is unlikely to be one or more technologies that could be the best along each criteria of a multiple set of attributes.

## 1.4 THE EVALUATION METHOD

13. The overall design of this evaluation was based on the specifications in the terms of reference (ToR, Annex I) and under overall responsibility and management of the UNEP Evaluation Office (Nairobi), in consultation with the UNEP/DTIE Project Manager in Paris. There was an intensive review of project documents and it was used to develop a reconstructed Theory of Change (ToC), which was missing in the project design and assumed to have guided the project. This was used to assess how the project performed, whether or not the proposed logic of results held, if the assumptions made in terms of external factors, and the conditions needed to achieve higher level outcomes were valid, and how such factors could have affected performance. The evaluation was adaptive and participatory with the evaluation team clarifying linkages between assumptions and results, the causal relationships between factors within the control of the project and those outside, on the achievement of outcomes, and the critical enabling factors that did or did not support change at higher levels, with the project team at frequent intervals. The TE paid a great deal of attention to questions on the validity of the assumed input-output-outcome results chain, the satisfaction of key stakeholders with the project, appropriateness of governance and management structures and processes, the outcomes achieved, and any unintended (positive/negative) outcomes.

14. Triangulation from several streams of evidence was used and the evaluation team cross-referenced its findings and areas of recommendation, keeping in mind areas of convergence and divergence. If there were strong differences of opinion and/or data, these were probed deeper to better understand the differences. The findings integrated the views and perspectives of key stakeholders, each being fact-based and informed by the evidence.

15. The evaluation team maintained close communication with the different components of the UNEP partnership with the Technical University of Denmark (UDP) and the UNEP Evaluation Office (EO), the primary users of this evaluation, to ensure that the assessment critically supported the management's information needs. Consultative and participatory processes were implemented within the constraints of time and availability of partners and resources. This was to create a sense of ownership, and foster shared-understandings of the study results. The evaluation team maintained open communications with project partners during the evaluation. As in the inception phase, programme staff were consulted for their views on the project and given opportunities to comment on the draft prior to finalization in order to avoid factual errors and, where appropriate, provide additional background and contextual information.

16. The findings of the evaluation have been based on the following processes: first, a desk review of project documents, which included project planning and design, annual work plans and budgets, logical frameworks, project reports such as progress and financial reports, project outputs, and other relevant materials produced as outputs of the project. Then, other documents including Steering Committee meeting minutes, minutes from other related meetings, workshop proceedings, annual reviews, relevant correspondence, and monitoring reports were reviewed. The project website (<http://www.tech-action.org/>), UNFCCC website on technology, and GEF and UNEP websites were also reviewed for relevant online publications such as newsletters, papers, articles, and others.

17. The above reviews were subsequently expanded to include key additional documents, findings, reviews and outputs together with reviews of relevant background documents related to the project,



reports from UNFCCC, UNEP and GEF, financing agencies and expert groups related to policies, strategies and programmes pertaining to the many different issues relevant to the project outcomes, intended and realized. All documents reviewed are listed in Annex V.

18. Subsequent to the document reviews, semi-structured interviews (individual and/or in groups) were undertaken with primary stakeholders such as the UNEP Task Manager, Paris; the project team at UNEP-DTU in Denmark; project partners, including the four Regional Centres (see table 1), which provided additional technical support; members of the country TNA teams, selected local and international partners, and the UNFCCC Secretariat. An evaluation matrix<sup>16</sup> guided the evaluation criteria and questions, the means of verification, and the indicators used to answer each question.

## 1.5 INCEPTION PHASE

19. The evaluation commenced with an Inception phase, which was used to ensure that the UNEP Task and Project Managers, the EO and the consultants had a shared understanding of the evaluation (purpose, scope, approach, deliverables and timeline) and that the assessment would address key stakeholders' needs. The primary deliverable for this phase lies in the Inception Report. The process was initiated with electronic exchanges with project staff (email and video) in lieu of an early inception mission. This was followed by similar exchanges with the experts in the four Regional Centres. The team relied on semi-structured interviews for these exchanges, which provided the team with a large number of project documents to review. This allowed for the evaluation team members to have a broad overview of the project activities, timelines, reported outputs and outcomes. Other similar information was used to develop a better understanding of the project - purpose, scope, approach, deliverables and timeline and how the assessment would address key stakeholders' needs. The inception report was shared in draft form to secure feedback from the above stakeholders.

20. As a part of the inception phase, a ToC was hypothesized, as discussed above. This informed the team's understanding of how the project was designed to function, its assumptions, and the validity of the causal relationships to achieve the intended chain of results. Finally, the inception period was used to work on the methods, timeline, deliverables, to discuss and validate the proposed country visits, and obtain additional relevant documents. As part of the Inception phase, the consultants:

- Conducted a preliminary review of available documents to help sharpen the focus of the inquiry and probe deeper on emerging issues, trends and ideas;
- Developed a draft Inception Report and evaluation matrix;
- Constructed a Theory of Change and validated the assumptions, focus and boundaries with key stakeholders during inception mission to Rome / Geneva; and
- Finalised the proposed methodological approach.

21. The list of all individuals interviewed (99 persons) is provided in Annex IV. The set of country visits for in-depth interviews were supplemented with electronic surveys of all 32 country coordinators

---

<sup>16</sup> The evaluation matrix was submitted with the Inception Report, shared with the UNEP EO and the DTU.

and with their assistance key national stakeholders, which provided additional insights and validations to the country cases. The survey results were then synthesized and aggregated by issue, country, region, and, at the global level, to provide an overview of the national partners' views on the project performance. The country visits, interviews and the survey were critical to understanding what happened at the national and local levels during the project execution. Most importantly this provided an opportunity to examine the later outcomes and impacts subsequent to the project termination. Approaches were adjusted in response to issues, opportunities, and constraints that arose during fieldwork and document analysis.

22. **Semi-Structured Interviews** (individual or in group) with:<sup>17</sup>

- UNEP Task Manager Paris and UDP, Denmark
- Project management team
- UNEP Fund Management Officer Nairobi
- Project partners, including: Regional Centre focal points, members of the TNA teams, Project Management and Steering Committee members, local and international funders of the project. The National TNA Teams were most often led by Ministries of Environment or Science and Technology, and included relevant ministries and agencies such as Water, Transport, Energy, National Planning, Finance, Legal, Municipal/County Councils, grassroots/community groups, academia, representatives of civil society, research centres and other relevant national-level partners.

23. The semi-structured interviews were undertaken in 10 selected case study countries by evaluation team members with national project team members and with key experts; similarly, interviews were undertaken at the four Regional Centres, which provided technical support to countries in the region and were done by the consultant visits to countries.

### **Electronic Survey**

24. A web-based survey was also undertaken using "SurveyMonkey.com", which was distributed to national coordinators, members of national TNA committees, and members of the sectorial/technology working groups. The survey for national teams and national stakeholders was designed to take around 20-30 minutes to complete. There were open-ended questions to capture comments, explanations, examples and suggestions for the assessment. It was sent to the national coordinator, with the request to share with three or more persons per country. The initial estimate was to obtain responses from a minimum of 60 out of the total estimate of 128 persons<sup>18</sup>, with respondents in at least two thirds of the 32 countries. To improve the response rate an email was sent a few days before its launch, and reminders were sent during the survey period.

---

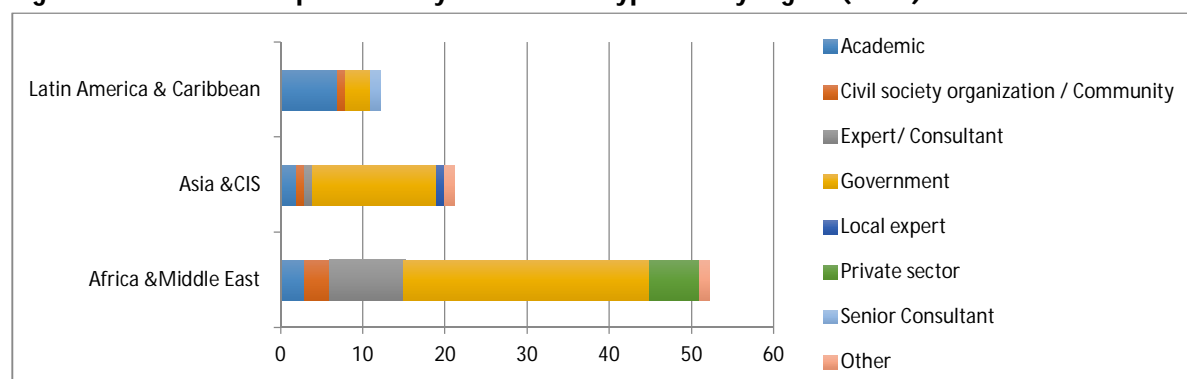
<sup>17</sup> As the interviews will be undertaken by all team members, in order to have a common framework, everyone will use the same guides.

<sup>18</sup> The anticipated maximum was 4 per country, with 2 each per mitigation and adaptation, which for 32 countries is 128.

25. The survey was opened on 22 November and kept available until 25 December 2015, to allow for many respondents to participate after they returned from the COP in Paris. A total of 85 valid responses (out of a total of 90 respondents) were received from 25 of the 32 countries (see Table 1 for country list), which had successfully delivered on the national TNA outputs, giving a completion rate of 78% of participating countries. In all responding countries the national coordinator or the person with current responsibilities answered the survey. The country responses were distributed as: 9 from Africa & Middle East, 11 from Asia & CIS and 5 from Latin America & Caribbean. (See table 1 for country lists and Annex VII for response by regions). The survey was an additional source of information on the project and was conducted after the field visits, allowing the evaluation to cross check the survey with the field interviews.<sup>19</sup>

26. In the main report some of the highlights from the survey are presented. The complete survey results, with over 50 questions, the numerical data, figures and accompanying qualitative comments run for 70 pages and are not provided here. Some of the responses to questions are grouped together again to highlight the main issues<sup>20</sup>. The findings of the survey, broken down by the regions, are provided, in Annex VII where they illustrate some of the differences between the regions, and between the regional and the global findings. The respondents were assured full privacy of their individual names and so for that reason, no names of survey respondents are provided in any document<sup>21</sup>.

**Figure 2: Number of respondents by stakeholder type and by region (N=85)**



27. As the TNA project had as its main objective developing and improving national policies and working with national governments who are the parties to the UNFCCC, the majority of respondents were government officials (48 out of 85). The distribution of the 85 respondents by region showed that 52 were from Africa and Middle East, 21 from Asia and CIS and 12 from Latin America. On average, between 3 to 4 persons responded from each of the 25 countries however, there were wide variations

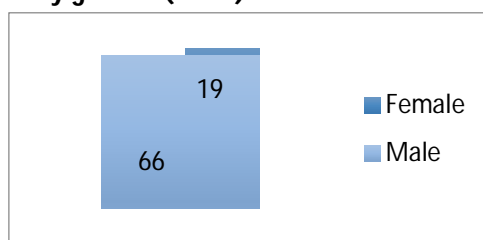
<sup>19</sup> The design review, methods used, the questions in the semi-structured interviews and the electronic survey were shared with the UNEP EO, UNEP DTIE, and UDP and their inputs are acknowledged.

<sup>20</sup> For many questions such as the quality of a report, management of budgets or on actions taken by the government, respondents who were consultants or experts on a technical or sectoral area, responded appropriately that they did not know the answer to the question and were provided the opportunity to add "do not know". Thus while 85 persons provided feedback through the survey, each question did not have 85 ratings. The relevant information on the numbers who provided answers to specific questions is provided subsequently as footnotes.

<sup>21</sup> The exceptions are where a person interviewed also completed the survey, where the names are provided of the interviewee.

with some of the countries visited by the team members: Morocco, Senegal, Mali, Republic of Moldova – providing larger responses per country, between 6-14. All ten sample countries with field visits provided higher rates of response compared to the others in the region, with Ghana and Kenya being outliers in terms of high response rates. From among 32 countries who completed their work in TNA Phase 1, responses were received from 25 (see table 1, above for summary information on the countries). Positively, it was found that the survey results for the countries visited supported the findings from the field visits in the same countries and the qualitative comments in the survey were in agreement with the results from semi-structured interviews in the same countries. Thus the survey proved findings are considered to be reliable and it proved highly useful, validating the method and extending the coverage of the evaluation beyond what was otherwise possible. The analysis reported here from the national respondents has been condensed with many questions clubbed together in the diagrams in order to save space and focus on the key findings. The findings from the desk review, country visits and stakeholder interviews, as well as the online survey are all found consistent and have provided a strong set of evidences relating to the project’s relevance, effectiveness, efficiency, sustainability and impacts, discussed later.

**Figure 3: Number of respondents by gender (N=85)**



28. Although the TNA project did not focus specifically on gender issues (as there were many issues to be tackled simultaneously), the survey responses were disaggregated by gender (almost 25% from women) to see if any striking differences appeared by gender. Almost one quarter of the respondents was female, similar to the numbers of participants in the project. As no such differences stood out, results along gender dimensions are not presented further in the report.

### Country visits

29. The purpose of the country visits was to meet in-country partners and their staff. Information collected at the country level acted as the key entry point from which to assess the operational performance of the project with the survey results supplementing the information collected. The country sample was ten countries, including the host countries for the four Regional Centres who provided critical support to the project. The supporting consultants were each assigned to visit one Regional Centre (except in the Latin American and Caribbean (LAC) region with two Regional Centres) and two additional countries in each region. The Lead Consultant visited all regional centres except one in Senegal due to budget constraints – in Bangkok, Buenos Aires and Lima, together with the supporting consultants. And he also visited the UDP office in Denmark, and one TNA country in Central Eastern Europe (CEE), Moldova. Country selection criteria included: adequate regional diversity, progress of the country in completing its TNA process, good representation of project’s successes and failures, availability, and access to a large number of stakeholders, prioritized within budget constraints.

30. Each field mission was for two to three days. The evaluation team worked with the UDP team and the country focal points and/or coordinators to prepare for the visits and develop a proposed schedule of interviews in order to engage with a broad range of stakeholders. Each country visit was preceded by a review of relevant programme documents and other sources of data on activities in the country, the context, and other related issues as appropriate.

**Table 4: Countries selected for field visits**

Criteria	Africa	Asia	Latin America	Europe & CIS
Countries with a Regional Centre	Senegal	Thailand	Peru, Argentina	
Regional criteria	Mali, Morocco	Sri Lanka, Vietnam	Colombia	Moldova

31. The budget limitations required minimizing the travel costs and hence Argentina, Peru, Senegal and Thailand were selected, as they were also the locations of the Regional Centres. Moldova was the only country in the Europe and CIS region that was involved in the project and so was included. The remaining countries were chosen to provide some heterogeneity to the sample, while in Africa, the emphasis on keeping costs down did not allow for Anglophone or Eastern African countries to be visited.

## 1.6 LIMITATIONS OF THE EVALUATION

32. The evaluated project presented several dimensions of complexity. Its outputs were designed to support activities to address climate change globally, a highly complex set of issues, where there are multiple conflicts and differences of opinion between countries and experts on the most effective paths for addressing the issues. The project was operational in dynamic environments under the guidance of the UNFCCC process, a process which has been moving and changing each year. The project dealt with a large number of countries (32), with many differences in their contexts and circumstances. It often produced from 2 to 6 reports per country, identified 3 priority technologies each for mitigation and adaptation actions, or over 180 (30 countries times 6) technologies, for which individual assessments of quality by country and technology are clearly beyond the scope of this evaluation. The evaluation has been organized on the overall goal of the project to deliver results that could be used further by the countries, and multiple national and international organizations.

33. The highly multi-dimensional nature of the issues covered in the TNA project and the many different countries and sectors involved, meant that no single individual was fully cognizant on all aspects of the work undertaken. Thus, strong evaluative judgement with respect to each project report produced has been avoided. This has been mitigated to a large extent through the consultations with persons with special expertise on the issues covered, an extensive review of the literature, and the considerable time devoted to discussions with the participants in the TNA project team.

34. Despite considerable effort to elicit responses, seven of the 32 countries were neither visited nor did the participants from those countries provide any feedback. Thus the evaluation findings, especially on perceptions of national participants and further outcomes, must be treated with some caution as the evaluation has no additional information from the seven non-responding countries - beyond the fact that their reports as targeted were completed and the reports are publicly available.

35. User surveys have been an important tool to gauge their views of the project, the support provided to them, and the potential of the tools and outputs for further development. In all such surveys there are potentials for bias. This was mitigated by several measures. The survey was returned directly to the evaluator and anonymity was assured. A wide range of stakeholders were surveyed. And the views and data from the survey were triangulated with data from other sources such as reports and the field visits. In the results obtained the participants tended to be highly positive, but they did not avoid lower rankings for some questions, which provides some confidence in the findings. For these and other reasons, heavy use of statistical analysis and numbers has not been undertaken. The responses to individual questions were analyzed and descriptive statistics are provided, but the size of the sub-groups of respondents is too small to support further statistical analysis.

36. A final limitation is that as the TNA project was completed in 2013, some of the key actors were no longer available for interview to explain past actions. On the other hand, the gap between project completion and this evaluation has allowed for a more useful review of possible short and medium term outcomes that would not have been possible otherwise and thereby draw more useful lessons and recommendations.

## THE PROJECT

### A. CONTEXT

37. As mentioned in the introductory section, “technology transfer” has been a focus of international negotiations since the Rio Summit in 1992. Technology is a key element of Articles 4.3, 4.5 and 4.7 of the UNFCCC Convention. Starting with the first Conference of Parties (COP1), issues related to technology transfer were discussed in various COPs. A first round of funds was made available from the GEF for “Technology Needs Assessment” for developing countries, and a series of assessments were undertaken between 1999 and 2004. The results were, however, not satisfactory for reasons not explicitly stated.<sup>22</sup> Technology transfer issues were then dealt with by GEF, under “the “Poznan Strategic Programme” on Technology Transfer at COP14 in 2008.<sup>23</sup> As a part of the programme, the GEF provided a new round of funding, with UNEP as the implementing agency, to carry out improved and updated technology needs assessments within the framework of the UNFCCC. The purpose of this second round TNA project was to: “Assist participant developing country parties to identify and analyse priority technology needs, which can form the basis for a portfolio of environmentally sound technology (EST) projects and programmes to facilitate the transfer of, and access to, the ESTs and know-how in the implementation of Article 4.5 of the UNFCCC Convention. Hence TNAs are central to the work of Parties to the Convention on technology transfer and present an opportunity to track an evolving need for new equipment, techniques, practical knowledge and skills, which are necessary to mitigate GHG emissions and/or reduce the vulnerability of sectors and livelihoods to the adverse impacts of climate change.”<sup>24</sup>

38. The TNA process was meant to assist the selected developing countries to identify and analyse priority technology needs, and within the UNFCCC definition this is a set of country-driven activities. The findings of the countries can then form a portfolio of environmentally sound technology (EST) projects that are required by the country and where it would be further assisted by the international community. The determination of priorities by country can then lead to programming to facilitate the access and transfer of the same technologies.<sup>25</sup> It was expected that assisted countries would go beyond identifying

---

<sup>22</sup> The lack of satisfaction without the reasons were reported in several documents, such as, the Report Technology Needs Assessments, First Regional Capacity Building Workshop – Asia (A GEF funded project), Bangkok, Thailand, 15-17 September 2010, Asian Institute of Technology, Bangkok, September 2010; page 4.

It is likely in our view that exploring technology issues in that time period was too early in the COP and UNFCCC process, which had stated its importance but had not acted significantly on it. In December 2007, COP 13 requested the GEF, in consultation with Parties and others, to elaborate a strategic programme to scale up the level of investment for technology transfer to help developing countries address their needs for environmentally sound technologies. In response the LDC/SCCF Council approved its strategy in November 2008 - “Elaboration of a Strategic program to scale up the level of Investment in the Transfer of Environmentally Sound Technologies”, and was submitted to COP 14 in December 2008. It was overwhelmingly endorsed by the Parties and renamed the “Poznan Strategic Programme to scale up the level of Investment in the Transfer of Environmentally Sound Technologies”, which then led to the funding for TNA by GEF.

<sup>23</sup> A short time line of important UNFCCC meetings and resolutions that deal with TNA is provided in the annex 3 on additional information.

<sup>24</sup> Ibid, page 4.

<sup>25</sup> Such assessments are seen to be central to the work of Parties to the Convention on technology transfer and know-how in the implementation of Article 4.5 of the Convention. They provide the countries with the ability to track evolving needs for new

technology needs and develop national technology action plans for prioritized technologies that reduce greenhouse gas emissions, support adaptation to climate change, and are consistent with national development objectives.<sup>26</sup>

39. It is appropriate to mention here that the TNA project dealt with some very complex issues. Firstly, the word “technology” covers a very large set of concepts, which are not always totally clear to most users. “technology”<sup>27</sup> as used in the project correctly defines the term as a mix of knowledge, organizations, procedures, machinery, equipment, and human skills that are combined to produce socially desired products. Further, national economic and social structures and, with respect to climate change, the equivalent international structures, shape the perceptions and frameworks of the issues, and then the definitions of problems and needs, hence the direction of technological change. The technical change, in turn reshapes with it the social, economic and other structures. There is need for considerable scepticism about the role of technology, as a *single variable*, to overcome problems that are at their roots often social and political in nature - and about the ease with which technological solutions developed in one socioeconomic context can be “transferred to another”.

40. The Intergovernmental Panel on Climate Change (IPCC)<sup>28</sup> points out, correctly in our view, that achieving the ultimate objectives of slowing or stopping climate change due to greenhouse gas emissions requires technological innovations and their increased use; such innovations need to take place in both developed and developing countries. “The literature indicates that to achieve this developing countries require assistance with developing human capacity (knowledge, techniques and management skills), developing appropriate institutions and networks”, and also with “acquiring and adapting” technologies from developed countries<sup>29</sup>. The report also concluded “there is, however, no

technology - equipment, techniques, knowledge, skills, and organizational and other capacity, necessary to reduce GHG emissions and/or reduce the adverse impacts of climate change (see ToR para. 1)

<sup>26</sup> There are many complexities to the scientific knowledge and issues of Climate Change. Most relevant for the project and the evaluation is the fact that after several decades of efforts, the answers to the question on what are the most efficient and effective measures to reduce such emissions and to adapt to changes now deemed to be inevitable, remain highly contested. In addition, the discussion of the ways forward are further complicated by the questions of responsibility for mitigation and adaptation between countries and the time frame for such actions. All the countries participating in the TNA Phase I contribute very small amounts of greenhouse gases, so they make very low contributions to the challenges but on the other hand they are burdened with high impacts on their people and economy from the changes in climate. Some of this context is provided in annex 3 to provide background to the many challenges that faced the project, UNEP, and participating countries in undertaking this work.

<sup>27</sup> The project follows the meaning ascribed to the word in the IPCC report “Methodological and Technological Issues in Technology Transfer” of 2000 which is the only special report on technology related issues for climate change produced by it and follows the definition provided in 1993 UNCED conference in “Green technologies for development transfer, trade and cooperation”, page 4. The IPCC report (2000) defines technology similarly as “A piece of equipment, technique, practical knowledge or skills for performing a particular activity. “Technology Transfer”, which we emphasize here, does privilege equipment and technique, and “transfer”. The IPCC report explains that transfer includes the “broad set of processes covering the exchange of knowledge, money and goods amongst different stakeholders that lead to the spreading of technology” and the concept of transfer is used in the “broadest and most inclusive” sense, to encompass “diffusion of technologies and cooperation across and within countries”.

<sup>28</sup> The IPCC is an intergovernmental body under the auspices of the United Nations that provides scientific assessments and inputs on Climate Change. See IPCC, 2000.

<sup>29</sup> The IPCC report focused on “international transfers”, possibly as that has been a pre-occupation of the international negotiations (see the report IDRC, 1993, Green technologies for development : transfer, trade and cooperation) the IPCC did emphasize in the executive summary different government actions required in, and by, developing countries and developed



simple definition”; such technologies and needs can differ considerably, making assessments of local needs a priority. To ensure “an appropriate enabling environment” for such innovations to be applied, local capacities must be enhanced.

41. This report cannot provide more information on the issues related to climate change, technology and innovations, beyond concluding here that the challenges faced in the earlier reports on defining the specifics of technology issues in the context of lower income countries, and how they could benefit from their individual actions and from cooperation, involve a number of complicated issues, which would pose challenges to the TNA project. On the other hand, the goal to identify priority needs, among which some are technological, is certainly a necessary component for each country to mitigate GHG emissions and/or reduce the vulnerability of economic sectors and the livelihoods of people stemming from the negative impacts of climate change.

## B. PROJECT OBJECTIVES AND COMPONENTS

### B1. Objectives

42. The primary aim of the project was **to provide assistance to a group of developing countries to identify and analyse the priority technology needs for their country, which would provide a portfolio of EST projects and programmes to facilitate the transfer of, and access to, ESTs and related know-how.** This is defined as required for the implementation of Article 4.5 of the UNFCCC Convention. The assessment and plans provide the countries with an opportunity to track their needs for new equipment, techniques, practical knowledge and skills deemed necessary to mitigate GHG emissions and/or reduce the vulnerability of economic sectors and the livelihoods of people stemming from the negative impacts of climate change.

### B2. Components

43. The project’s detailed logical framework with the indicators for outputs and outcomes is presented in table 5 on the following page.

---

countries, and in cooperation between countries, use of the multilateral systems and referred to the literature on “National Systems of Innovation” which integrates the many different elements required for innovations and provides a more systemic framework over and beyond the concepts “technology” and “transfer”.

**Table 5: Project logical framework**

Components	Activities	Outputs	Output Indicators	Outcomes	Outcome Indicators
<p><u>Component 1:</u> Support for the development or strengthening of TNAs in 35-45 countries</p>	<p>Stakeholder meetings &amp; consultations. Workshops with key stakeholders Providing platform for technology providers and users Make materials available on UNEP website in English TNAs and TAPs made available in any of the six UN languages Reports available to participants during workshops</p>	<p>New (or updated /strengthened) TNAs in 36 countries (note adjustment from table 3) so that: Priority technologies on sustainable and national development priorities and criteria are identified; barriers and means to overcome them identified TAP comprising targeted actions for creating an enabling framework developed Suggestions for revisions to the global TNA Handbook based on experience gained are incorporated</p>	<p>Numbers of TNA and TAPs produced Suggestions for improvement of Global TNA Handbook available</p>	<p>Supported countries developed a national consensus on priority technologies, agreed on a TAP compatible with Nationally Appropriate Mitigation Actions or similar exercises, established an institutional structure for overseeing implementation, and developed capabilities to revise or adapt the plan as needed</p>	<p>For 35 to 45 countries, nationally accepted and technically grounded TNAs produced and then TAPs Institutions responsible for TNA and TAP implementation established National capacity developed for TNA and TAP implementation</p>
<p><u>Component 2:</u> Development of tools and provision of methodology information to support TNA and TAP processes</p>	<p>Methodology development, such as economic analysis, multi criteria tool for Mitigation and Adaption Technologies and Options Policy instruments and information Financial, legal, regulatory, and environmental structures in place tap - Template and support Training and support material</p>	<p>Mechanism established for providing technical information for TNAs Information available on supportive policies and measures, and barrier removal approaches Methodologies provided for market assessment Capacity building workshops on tools conducted Access and links to information database for performance, cost</p>	<p>A simplified common approach to TNA developed</p>	<p>Development of tools and methodologies that are used to carry out TNAs and TAPs Technology information available to countries Capacity developed through workshops, guidebooks, data, and regional networks</p>	<p>Methodological tools developed (mitigation and adaptation) and their applications Enhance access to information</p>

Components	Activities	Outputs	Output Indicators	Outcomes	Outcome Indicators
		and availability Common reporting template for TNA elaborated			
<b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination	Regional workshop Newsletters Synthesis reports	Networking mechanisms - national and supra national institutions established. Proven approaches to develop TNA and TAP disseminated globally and widely available to all GEF beneficiary countries. A "Best Practices and Lessons Learnt report" produced and disseminated	Synthesis report from the project produced and disseminated	Increased national and inter-regional cooperation to support technology transfer	Number of exchanges on technology transfer regarding TNAs

Source: PRODOC pages 18-23.

### C. TARGET GROUPS

44. The project aimed to provide support to a group of 35-45 developing countries (later reduced to 36 countries), in a set of country-driven activities, emerging from the request of the countries for assistance to identify and determine the technology priorities for mitigation and adaptation, which could form a portfolio of the country technology needs for climate change mitigation and adaptation. The countries would then use their own findings and the capacities developed to plan further and take necessary actions to use the technologies in order to respond to the possible changes.

### D. MILESTONES IN PROJECT DESIGN AND IMPLEMENTATION

45. Table 6 on the following page presents the milestones and key dates in project design and implementation:

**Table 6: Milestones and key dates in project design and implementation**

Milestones	Completion dates
Project endorsed by GEF CEO	18 September 2009
Internal Cooperation Agreement (IACE) UNEP DGEF with UNEP DTIE	21 October 2009
TNA processes for 14 countries were begun, Regional Centres signed with contracts with UNEP	Nov Dec 2009
Countries in a second group (who signed agreements later) started the TNA process	Feb October 2010
Mid-term indicator - number of countries submitting their TNAs	February, 2011
Internal midterm review (began in June, 2011)	August, 2011
Mid-term indicator - number of countries submitting their TAPs	October 2011
Project completion - planned	30 April 2012
Project completion - actual	30 April 2013
Final project closure	6 November 2013

Source: Compiled from different project documents.

## E. IMPLEMENTATION ARRANGEMENTS

46. As the implementing agency, UNEP was responsible for ensuring that GEF policies and criteria were adhered to and that the project met its objectives and achieved expected outcomes in an efficient and effective manner. The UNEP project task manager was responsible for project supervision on behalf of the Director of the GEF. UNEP was expected to ensure timelines, quality and fiduciary standards in project delivery. UNEP supported the project mid-term review as an adaptive management tool and developed a management response to the review (Project Document, p.21). Project supervision was entrusted to the Director of Division for GEF Coordination (DGEF).<sup>30</sup> The Director of DGEF discharged this responsibility through the assigned Task Manager, who represented the Director of DGEF on the project steering committee (ToR para. 19). The Executing Agency of the project was UNEP-DTIE and the UNEP RISOE Centre on Energy, Climate and Sustainable Development (earlier called URC, later DTU)<sup>31</sup> (Section G. below, discusses the different project partners and in H, the stakeholders involved are presented).

## F. PROJECT FINANCING

47. The total project cost was estimated at US\$ 11,036,818 of which the GEF component was US\$ 8,181,818 while co-financing from collaborating agencies (TMA Norway, UNEP DTU Partnership (UDP), former URC, and contribution from countries) was US\$ 2,855,000 (Project Document, p.4).

<sup>30</sup> Division for GEF Coordination (DGEF) was dissociated in 2011. DGEF staff was mostly moved to the relevant branches under the remaining UNEP divisions. A GEF Coordination Office was created under the Executive Office. In February 2014 this GEF Coordination Office was also disbanded and corporate oversight of the UNEP GEF portfolio was moved under the UNEP Office of Operations. The former DGEF staff working on climate change mitigation (including the TNA project) were formally moved into the Energy Branch of DTIE, and kept together as a Unit given their specialized knowledge of GEF requirements and the need to have some segregation of responsibilities. The Task Manager is the UNEP DGEF staff person assigned to oversee the project and reporting to the Director of DGEF. The Project Manager is from the Executing Division of UNEP DTIE, assigned with the responsibility to manage the project.

<sup>31</sup> The name UNEP RISOE Centre or URC was later changed to the "UNEP DTU Partnership" or UDP, which has two Centres, located in Denmark at the UN City in Copenhagen.

**Table 7: Project budget summary**

Particulars	Amount (USD)
Cost to Global Environment Fund	8,181,818
Counterpart Contribution: Cash: \$705,000, Norway. And, in Kind: 2,000,000, National Beneficiary Governments	2,705,000
UNEP CEP Co-financing	150,000
<i>Total Cost of the Project</i>	11,036,818

Source: ICA DGEF/2009/011, page 2.

**Table 8: Budget by component and source**

Component	GEF/UNEP	%	Government/Partner contribution	%	Total
1. Support the development of Technology Needs Assessments in 36 developing countries or, where these have already been prepared, their strengthening to make them more strategic and useful in an operational sense	7,063,017	77	2,090,000	23	9,153,017
2. Development of tools and provision of technology information that supports preparation of TNAs	776,807	52	705,000 <sup>32</sup>	47	1,481,807
3. Establishment of a cooperation mechanism that aids preparation and refinement of TNAs through sharing of experience and that fosters implementation of identified measures	341,994	85	60,000	15	401,994
<b>TOTAL</b>	8,181,818	74	2,855,000	26	11,036,818

Source: PRODOC.

## G. PROJECT PARTNERS

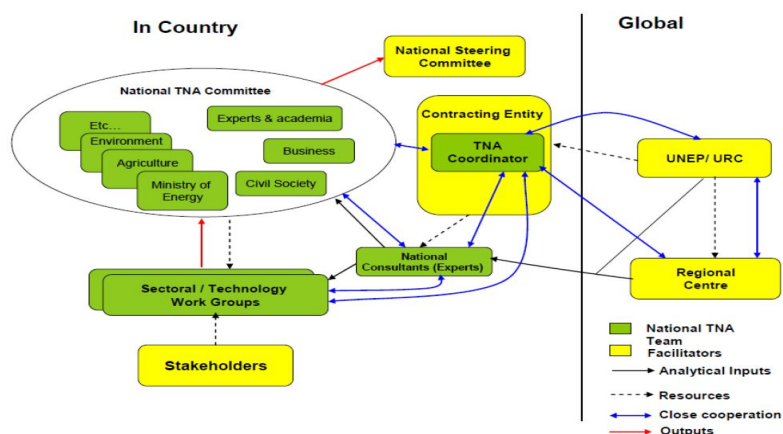
48. The project was submitted to the GEF for financing by UNEP as one of the GEF Implementing Agencies,<sup>33</sup> with executing partners as UNEP-DTIE and the UDP. Additional executing partners included a number of Regional Centres to provide additional technical support and National Partners responsible for the work at the national level. The diagram (Figure 4) below illustrates the project partnerships between the project management team UDP (here denoted by its earlier name UNEP/URC), the Regional Centres, the National Partners and their relationships for this project.<sup>34</sup> There were four Regional Centres who participated in the project: Asia Institute of Technology (AIT), for Asia; ENDA-Tiers Monde for Africa; and the Fundacion Bariloche (mitigation experts) together with Libélula (adaptation experts) for Latin America.

<sup>32</sup> This contribution was planned from UDP and the actual contribution made by UDP (see Table 3, Annex II) was above the amount anticipated.

<sup>33</sup> Funded under the GEF focal area Climate Change, within the Strategic program “Special Climate Change Fund (SCCF)”, source GEF CEO Endorsement, 14 August 2009.

<sup>34</sup> Note the figure does not highlight a number of additional links and stakeholders at the regional and global levels, which are discussed in Table 8 below, under stakeholder analysis.

Figure 4: TNA structure for countries



Source: UDP project documents and advice notes

## H. IMPLEMENTATION AND CHANGES IN DESIGN

49. The table below indicates some of the modifications to the original project design:

**Table 9: Changes in implementation**

1	The fund requirement in the first year was scaled down to USD 1.8 million from USD 6 million, given the late approval of the project and fewer months remaining in the year. <sup>35</sup>
2	The number of "Experience-sharing Workshops" originally envisaged was reduced from 2 to 1 in each round due to budget constraints. <sup>36</sup>
3	Delays were faced in entering into MoUs with partner countries. It was initially planned for completion by April 2010, but MoUs with 13 countries (round one) were only completed in September 2010, which delayed the capacity building workshop and impacted other activities. It was expected that the project completion would require six additional months from the original completion date (from end April 2012 to end October 2012).
4	In May 2012, it was seen that 21 TNAs and nine TAPs had been completed by countries. The balance was expected to be submitted by March 2013, so tentatively June 2013 was seen to be the expected project completion <sup>37</sup> (as table 2 shows the actual completion date was 30 April 2013.)

Sources: Review of project documents as noted.

### H1 Stakeholder analysis

50. A stakeholder analysis was used by the project to identify all the involved parties and prioritized by their relevance. A similar analysis was undertaken for the evaluation to identify key stakeholders<sup>38</sup>

<sup>35</sup> UNEP - Notes on discussions on TNA Project, 13th October 2009.

<sup>36</sup> 2nd Project steering committee meeting minutes, June 2010.

<sup>37</sup> TNA Steering Committee Meeting 12-May 2012. The Internal Mid-Term Review (IMTR) carried out in 2011 does not provide these details.

and collect evidence from stakeholder groups.<sup>39</sup> The role of the analysis could have changed in different stages of the project as it was not necessary that the actors were the same at the design phase of the project, during the intervention or at the end of the project. The aim was to take into account the support, resistance or influence that would have an influence on the project. This evaluation considered the following criteria for stakeholder analysis by stage of the evaluation:

**Table 10: Stakeholders at different stages**

Inception report	Review of project design	Review of project outputs and outcomes	Review of factors affecting performance
<p>Identification of which individuals or groups are likely to have been affected by, or to have affected the activities of the project.</p> <p>Methodology and mechanisms to ensure participation of key stakeholder groups in the process.</p> <p>Identified key channels of communication between the project and its stakeholders (and between the stakeholders themselves)</p>	<p>Were all stakeholders who were affected by or who could affect (positively or negatively) the project identified and explained in the stakeholder analysis?</p> <p>Did the main stakeholders participate in the design stages of the project and did their involvement influence the project design?</p> <p>Were the economic, social and environmental impacts to the key stakeholders identified, with particular reference to the most vulnerable groups?</p> <p>Were the specific roles and responsibilities of the key stakeholders documented in relation to project delivery and effectiveness?</p> <p>For projects operating at country level, were the stakeholder roles country specific? Was there a lead national or regional partner for each country/region involved in the project?</p>	<p>Were outputs accessible to all the relevant stakeholder groups?</p> <p>Did desired outcomes and impacts occur amongst all stakeholder groups (and if not, considered why this was)?</p> <p>Were there any unanticipated outcomes or impacts with particular reference to the most vulnerable groups?</p>	<p>Participation of key stakeholders</p> <p>What were the interests, roles and responsibilities of key stakeholders in the project?</p> <p>In what way did their performance affect the achievement of project outputs and outcomes?</p>

Source: PRODOC.

<sup>38</sup> As per the OECD DAC Glossary of Key Terms in Evaluation and Results Based Management: Stakeholders are the agencies, organisations, groups or individuals who have a direct or indirect interest in the development intervention (or its evaluation). In this evaluation we focus only on those stakeholders who have a direct interest in the project activities and its evaluation, as in a project such as the TNA, that aims to impact positively on global climate change all people have indirect interests in the project impacts, both positive and negative.

<sup>39</sup> UNEP EO guidelines require a stakeholder analysis identifying relevant actors, and, the relevance of each actor, in terms of their potential contributions (positive and negative) and, how they play a role in the project.

51. The project stakeholders were a very large group consisting of a mixture of implementing and executing agencies, collaborative partner countries, and multiple others within each of the participating countries, as well as global agencies. The PRODOC stated (pages 23-25) that the TNA project involved a wide range of stakeholders both at the national level in each of the 30 to 45 countries supported; the partners such as the four regional centres of excellence involved, and financing and global organizations. National teams in the various countries were expected to involve all relevant government agencies such as Ministries of Environment and Natural Resources, Energy, Planning, Technologies and many others; also researchers and centres linked to climate change mitigation and adaptation, private firms and financiers. Globally, the GEF and others were key stakeholders. The TNA PRODOC emphasized stakeholder analysis and participation in each country.<sup>40</sup> The variety of partners and stakeholders who had (or could have) collaborated in delivering the outputs and to move toward outcome-level objectives, through funding, knowledge sharing and technical expertise are summarized in table 11 below (similar to the list in the project design) and used later to examine the degree of their involvement, within the constraints of time and budget.

**Table 11: Stakeholder responsibilities and contributions**

Level	Stakeholder	Responsibilities and Contributions
Central Programme Management	UNEP	<ul style="list-style-type: none"> <li>- DGEF: Ensured programmatic and financial accountability and reporting to GEF.</li> <li>- DTIE: Ensured programmatic and financial accountability. Was responsible for technical components. Monitored and reported mechanisms within the framework of the Global and National Programmes.</li> </ul>
	UNEP- URC	<ul style="list-style-type: none"> <li>- Responsible for technical components and project execution.</li> </ul>
Global Level	UNDP	<ul style="list-style-type: none"> <li>- Ensured earlier work on TNA, lessons and best practices were shared programmatic and financial accountability.</li> <li>- Was responsible for coordinating national programmes, improving governance and encouraging the participation of Indigenous Peoples and civil society within the framework of the Global and National Programmes.</li> </ul>
	Global Steering Committee	<ul style="list-style-type: none"> <li>- Provided policy guidance.</li> <li>- Took outputs from project to develop outcome-level objectives.</li> <li>- Composed of representatives from the global stakeholder agencies.</li> </ul>
	UNFCCC	<ul style="list-style-type: none"> <li>- Provided support to convening expertise in the CC agenda, knowledge inputs, global policy and financing activities within the framework of the Global and National Programmes.</li> <li>- Linkages to and advice of the Technology Expert Group (TEG).</li> </ul>
	Technology Expert Group	<ul style="list-style-type: none"> <li>- Provided links to, advice and share findings on technology for CC and UNFCCC process.</li> </ul>
	GEF	<ul style="list-style-type: none"> <li>- Provided strategic guidance to staff in UNEP regarding the management and implementation of activities.</li> </ul>
	CTCN	<ul style="list-style-type: none"> <li>- Followed up on the results of the TNA and TPA to assist countries on their National Programmes.</li> </ul>
	World Bank	<ul style="list-style-type: none"> <li>- Provided links to technology funds and to other bank financing.</li> <li>- Linked to TNA work in World Bank supported projects.</li> </ul>

<sup>40</sup> Its importance was also highlighted in the 2015 synthesis report “The importance of stakeholder participation in the TNA process may not be fully understood by national TNA teams at the beginning of the process. However, evidence from TNA Phase I has shown their involvement is crucial to elevate the relevance and scale up the project” (p.8).



Level	Stakeholder	Responsibilities and Contributions
	Other Multi-lateral agencies	- Examples: UNIDO, Regional UN bodies.
	Donor countries	- Possible contributors to technologies and financing as in the case of Norway in TNA
Global Level	Other organisations and programmes	Examples: Think tanks and research organizations. Roles / Contributions - Improved/shared knowledge, best practices on effective technology identification, selection and transfer. - Collaborated to implement certain activities; - Provided technical support to implementation.
National Level	UN National Office and Coordinator	- Was responsible for Programme implementation, according to in-country needs and UN practices.
	National governments	- Worked to implement bi-lateral projects. - Helped with understanding country-specific needs. - Helped integrate into required UNFCCC mandated reports; developed national plans and tied into national policy and budgets.
	National experts and research organisations	- Identified, defined and helped with understanding country-specific needs. - Collaborated to improve/share knowledge, share practices. - Collaborated to implement activities. - Provided logistical, technical or administrative support to implementation.
	Members of civil society organisations	- Helped with understanding their own and country-specific needs. - Collaborated to improve/share knowledge, share practices. - Collaborated to implement activities.

Source: PRODOC and reports of the Steering Committee and Workshops

52. The TNA project design provided for financial and technical inputs, which fed into structures at the national level. These structures undertook most of the work at the national level, beginning with the institutional structure for the national TNA team, including its designated home, the coordinators for the exercise, and initial work with national stakeholders to develop the work plan for the project within the country. The Regional Centres and the international project team fed knowledge, experiences and best practices into the national exercise, and assisted to develop approaches and methodologies that were shared across all countries to develop common approaches.

53. The four Regional Centres were responsible for providing technical support to the national TNA teams in their region, ensuring quality in all the reports. They also had the role of generating greater awareness about technology needs of the countries at the regional level, and enhancing capacities within the region.

54. At the national level, stakeholders were grouped under categories as below:

- **National Steering Committee:** The role of this committee was to provide high-level guidance and endorsement to the national TNA team and help secure political acceptance for the TAP. Furthermore, it was expected to supervise the TNA work and provide advice to the National TNA team whenever requested. The correct formation of this committee was crucial for the relevance and legitimacy of the project.
- **National TNA Committee:** Core driving group in each country. It was comprised of representatives responsible for implementing policies from relevant ministries and other actors

related with issues such as climate change science, sector policies, national development objectives, etc. The composition of the National TNA committee was relatively flexible as it needed to induct members from the relevant stakeholder groups for specific tasks. It also varied from country to country depending on the prioritised sectors and technologies.

- **The TNA Coordinator:** Leader and focal point for the TNA project in each country and the manager of the overall TNA process. The TNA coordinator was also expected to act internationally, sharing lessons and championing the project during international workshops and other relevant meetings (UNFCCC negotiations, CTCN Workshops and other technology events outside of the climate arena).
- **National Consultants (Experts):** National experts on climate change adaptation and mitigation undertook the work and supported the entire TNA process. They were responsible for the research, analysis and synthesis of the entire process, development and climate change objectives, and on technical, environmental, social and economic factors.
- **Sectorial / Technical Workgroups:** Working groups integrated the stakeholders and identified key aspects of the prioritised sectors and technologies; they were involved in the decision-making process regarding the most appropriate technologies for each of the prioritised sectors and combined their knowledge on development needs with technologies.

## I THEORY OF CHANGE

55. The TNA Phase I project used the logical framework analysis (as opposed to the increasingly popular TOC approach) to define its intervention logic. The TOC gives a more global picture of the different pathways and feedback loops leading to change, unlike the more linear depiction found in log-frames, and has become a requirement for GEF projects. While both approaches can help “to guide and monitor progress towards results”, as per the requirements an explicit TOC was constructed by the team for the evaluation to discuss the progress towards results. The TOC incorporates the logic reflected in Tables 3 (Summary of project components/objectives, outcome and outputs) and 5 (Project logical framework) of this report and expands on them to articulate the causal pathway of the intended change process. The team reviewed key documents related to the TNA project Phase 1, identified explicit and/or implicit statements about the intended objectives of the project, and assumptions on how and why the project was expected to work<sup>41</sup>. The theoretical model for the project began with the fact that the countries had asked for UNFCCC support at many meetings and negotiations to undertake their own assessment of technology needs. A process of national assessments had been undertaken earlier, which were seen to be inadequate. The model for the project envisaged a stronger set of technical inputs for the countries in the new TNA Phase I. These were provided globally by the project team at UDP with the support of four Regional Centres. The core logic of the project was that the countries would define their technology needs, build on the findings using the national capacities created by the project to develop action plans, and finally, take these plans forward into national planning process and also for international donor and financial support as appropriate.

56. The contextual background with the nature and scope of the UNEP project contribution and its logical framework has been discussed in section 2, Table 5. A number of the assumptions that underpin the achievement of results are discussed below, similar to those presented in the PRODOC.

---

<sup>41</sup> The TNA Phase II, which was subsequently approved, provides a ToC in the PRODOC.

57. The project started with a first round of fifteen countries, who had written to the UNEP expressing their desire and readiness to begin the work. It was planned that it would be scaled up to include the additional countries by the second year<sup>42</sup>. The start with a smaller number of initial countries, who had expressed their interest in participation early, allowed for a degree of learning and improvement on the basis of lessons and feedback from this initial period of work, which was anticipated in the project design.

58. In order to reach the primary or direct outcomes, the project relied on high levels of technical inputs to support the formally stated goals of the countries. In addition, the design promoted joint collaboration and partnerships nationally, regionally and globally, in order to achieve the higher-level objectives. This was specifically addressed in the design with plans for fostering close working relationships among different UN Agencies, with a global steering committee, and specific responsibilities and work areas to improve the support to partner countries. To achieve the goals, the project combined a highly focused approach, with the global steering committee for strategic directions, and provisions for workshops to share information and develop joint action plans by representatives from countries, and also for selected participants from the multilateral agencies and financial institutions.

59. In defining the ToC, the diagram anticipates challenges to the achievement of project outputs and outcomes at several levels. The project at the design stage had to assume that: there was a degree of common national capacity and readiness; the best choices of institutions and individuals to lead the work nationally had been made; sufficient local resources were allocated by national governments, an appropriate group of national stakeholders were mobilized and there were national governance structures, and so on. Even though each national government participating had formally indicated their interest and approvals, it could be expected that some partners might differ in their abilities and not devote, or not be able to devote, appropriate resources to this collective enterprise. This would only become clear post approval and during execution.

---

<sup>42</sup> The original PRODOC had referred to a target of between 35 to 45 countries (page 5), this was subsequently reduced to 36 countries.

## 11. The Theory of Change Diagram

60. The project documents did not have a ToC and so a ToC was reconstructed based on the project documents during the inception period and shared with TNA project staff. The Theory of Change presented in the diagram below was prepared following the logic model outlined in the project documents. The diagram has been deliberately kept simple, with the words used largely as given in the LFA, with small modifications to increase clarity of intended outputs and outcomes. The direct outcomes are expected at the end of the project activities, while the medium term outcomes are expected to occur after the end of the project, within a period of 12-36 months. The ToC benefited from feedback from TNA team and staff who were familiar with the originally intended objectives and intervention logic of the project and its evolution over time, and they were engaged in a discussion of the assumed logical links underlying the ToC developed. The discussions identified the assumptions that were based on evidence at the time of designing the TNA project Phase I, and those that needed to be verified during the course of implementation or its evaluation. This was used to guide the evaluation questions and indicators set out in the evaluation matrix, and for eliciting relevant baseline information.

61. The first outcome required for subsequent progress, was to improve country-level capacity by the training provided, which leveraged the internationally provided support from the project to help define national technology needs. These were then analysed by the country teams with support from the project, to develop priority programmes and action plans, which are also outcomes, dependant on the first outcome being achieved. For simpler presentation, the time sequencing between different direct outcomes is not explicitly provided in the diagram. But the concept used in the evaluation has been that there were several sequential direct outcomes, which were all to be achieved during the project life, while the project team continued to deliver targeted support for their sequential and further uptake. The outcomes expected after the project ended are called medium term outcomes.

62. The activities supported by the project were designed to support multi-stakeholder meetings, using consultations and workshops, effectively supported by tools and information, to achieve the immediate and direct outcome of improving national capabilities. The improved capacities lead to countries using the new information and tools provided for further information exchange, analysis and consultations, which lead to local learning, and so on. A key first outcome, expected during 12 months of project duration was for agreements to be reached nationally leading to the production of priority technology needs documents by the countries. The subsequent outcome by country was the continued use of the TNA process and establishment of different needs to develop the Technology Action Plan (TAP) for the country. The support provided to achieve outcomes incorporated methodologies, tools and data that could help the national governments to develop the TNAs and TAPs.

63. The evaluation could not directly observe and measure “the capacity developed”, but it could be inferred by the subsequent outcome of the supported countries developing a TNA document, followed by the TAP<sup>43</sup>, as defined in the logical framework (and the ToC). Thus this chain of outcomes could be verified by keeping track of the reports produced. The evaluation also examined the quality of

---

<sup>43</sup> Prior to the TAP countries undertook a Barrier Analysis, and an Enabling Framework report. In total countries submitted 4 reports, the last one being the project ideas report.

the processes and subsequent national and international outcomes<sup>44</sup>, which were to implement the derived plans to reduce their greenhouse gas emissions and adapt to climate change.

64. Activities of the Regional Centres included: providing inputs to facilitate workshops and working with UDP on the use of the guidebooks developed to ensure that supported countries were integrating and using tools, methodologies and data to develop their TNAs; assisting national and interregional networks; and, assisting supported countries in sharing information and lessons learnt that were useful for the development of TNAs. The project staff at UDP helped make the materials available on UNEP and global websites, in further disseminating the TNAs and TAPs, and linking to UNFCCC and GEF.

65. Impact drivers (ID)<sup>45</sup> included on-going national and international demand for actions on climate change and that the technological information required was available and usable. In the TOC diagram, the impact drivers were that countries provided enhanced and adequate institutional and financial support to their national efforts based on the outputs of TNA. The assumptions were that the resources provided by the project and supplemented by national sources were sufficient for the outputs to be achieved, and on-going meetings at COP would build on the tentative agreements. Together with the activities, assumptions and drivers, the realization of the outputs (in the diagram) should contribute to building national readiness and capacity to define priority national technology needs for each country, then used by the TNA process and findings to develop the TAP. The guidelines and support provided by the project were expected to lead to the capacity development of supported countries in developing plans and their implementation for climate change, so leading to “effective, equitable and sustainable participation” in global efforts.

66. Referring to the project document, the key intention of the project was to provide the framework conditions of Article 4.5 of the UNFCCC, i.e. provide adequate support in order for beneficiary countries to conduct a well-grounded and useful TNA. The provision of the necessary assistance to enable the activity of the assessment of technology needs, the TNA, reflected as outputs of the project – tools developed, data and guidelines provided, ‘workshops held to develop capacity’, are all defined as a direct outputs (see output list in ToC diagram that follows). The associated Action Plan that is developed for implementation by the country is categorised as an outcome for the country. This direct outcome needs to be further used and implemented, with domestic and international support, by the country, which become next stage, or medium term outcomes. The country by country outputs and outcomes could then provide the basis for technology related actions nationally and globally, leading to the required transfer of technologies to the specific country as per the priorities identified by it for the adaptation to, and mitigation of climate change, the a medium-term outcomes – “National and international policy changes to address CC’ with enhanced financial flows for the actions chosen. At impact level, some years after the project end, the project outcomes could contribute to enhance the global effort to finance, transfer and diffuse technologies that reduce carbon emissions and allow all

---

<sup>44</sup> The findings provide a section on what happened after the project outputs were delivered and the project completed.

<sup>45</sup> Impact Drivers in the GEF terminology are “significant factors or conditions that are expected to contribute to the ultimate realisation of project impacts”. Existence of the Impact Driver (ID) in relation to the project suggests that there is a good likelihood that the intended project impact will be achieved, and an absence, reduces the likelihood. Although they are not within the control of the project, the project actions can positively influence them. Assumptions: external conditions necessary for project results to lead to next-level results, over which the project has no control (e.g. countries provide enhanced and adequate institutional and financial support).

countries to be better prepared to limit the negative impacts of climate change (global impact), while allowing countries to meet their development goals (project national impact)<sup>46</sup>.

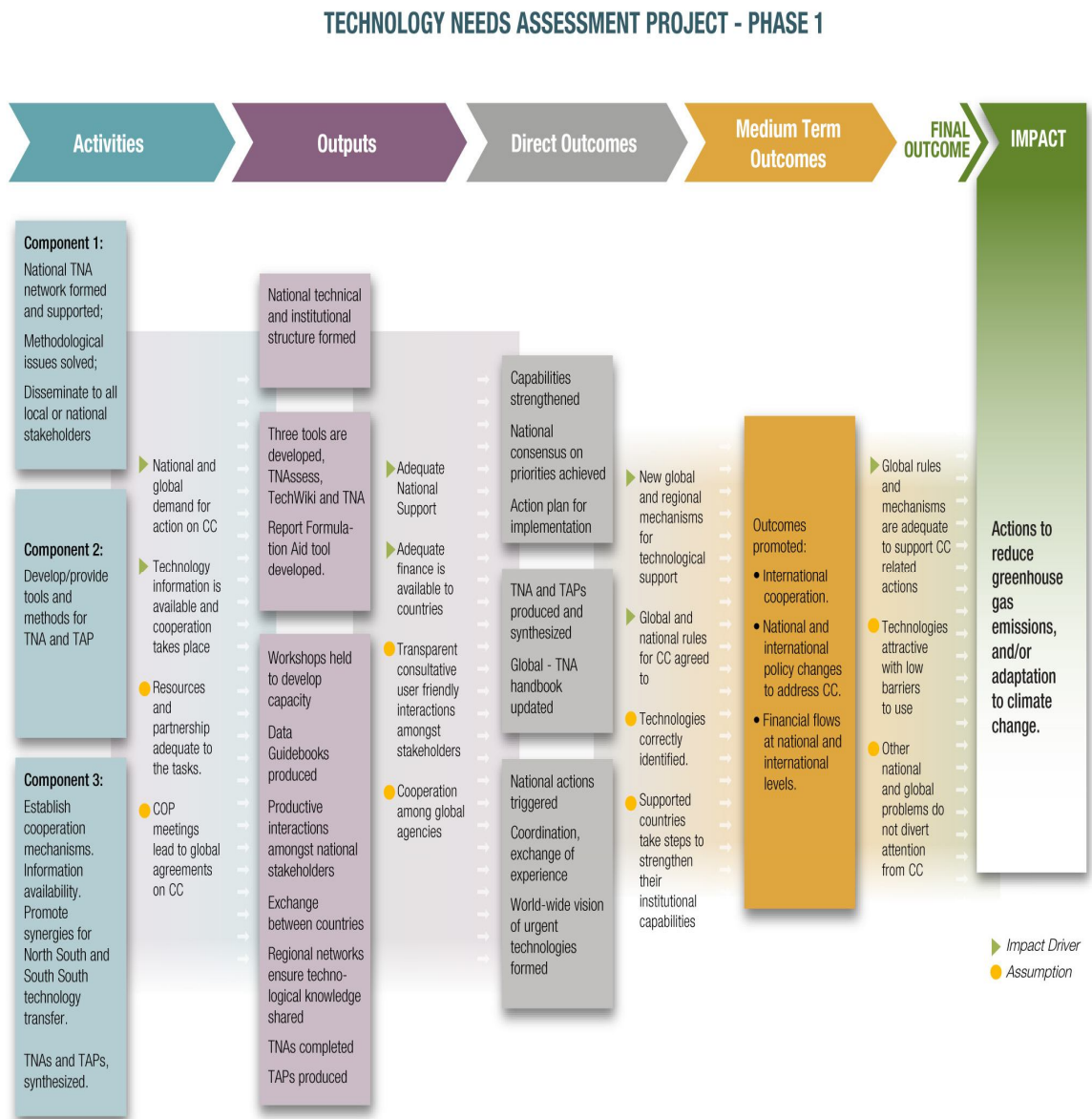
67. Between the project activities and the long-term impact, a set of outputs, direct outcomes and medium term outcomes have been shown in three stages, with the impact pathways and specification of the impact drivers and assumptions. Two early stage outcomes, labelled direct and medium term outcomes have been defined, before the longer term intended impacts.

68. It is assumed that: supported countries are attracted and have resources to develop TNAs, thanks to the project technical and financial support, leading to additional support for actions from international agencies; the methodologies and tools are tested and adopted by national teams; and national country teams are active within the national and interregional networks that are established to ensure the cooperation between participating countries. Then the progress achieved through the early (direct) outcomes – increased capacity and achievement of a national consensus by multiple stakeholders -, lead to an increased number of national TNAs and TAPs developed by the countries. It is assumed that the process of their development at a country level, can lead the countries to share information, experiences and findings in order to help others to develop and improve upon the TNAs and then TAPs – both in terms of the process used and final results. Among the assumptions are: “Technologies remain attractive and available with low barriers to their use for the supported countries”, so they (the technologies) meet the countries’ future needs, and further, resources are available for their development and use locally, with national governments mobilizing both domestic and international funds to sustain their own plans.

---

<sup>46</sup> In the above statement the complexities of the issues related to technology, the definitions, concepts and the challenges inherent in the global frameworks arrived at and discussed briefly in the concluding paragraph of the project context have not been directly addressed and for simplicity it is assumed that these national needs aggregate globally, and the global community of nations makes progress in the negotiations to increase and improve upon financial and technical resources available to developing countries.

Figure 5: Reconstructed Theory of Change diagram



## EVALUATION FINDINGS

69. The findings reported below answer the key evaluation questions in accordance with specifications in the ToR, and use the standard UNEP and OECD/DAC definitions for key terms. The findings use the methods and framework discussed in the methods, gather information to address the evaluation questions in the ToR, informed by the reconstructed Theory of Change and the ROTI approach, and consultations held with programme staff and UNEP EO. The findings responding to the questions posed have been organized as follows: Strategic Relevance (Section A); Achievement of Outputs (Section B); Effectiveness: Attainment of project objectives and results (Section C); Sustainability and replication (Section D); Efficiency (Section E); and, Factors affecting performance (Section F). We re-emphasize the fact that this was a large and complex project, with multiple planned inputs and outputs in a large number of countries, so while each and every activity, output and outcome has not been individually evaluated or reported upon, the findings as reported for the project as a whole are strongly supported by the evidence. The evidence includes the regional and country reports which followed the same processes and criteria and are provided in Annex VII.

70. The findings must be read within the stated scope and boundaries for this evaluation stated in section 1.1. The primary question is whether the Project did indeed help the stated numbers of countries to produce their national assessments, the TNAs; and if the assessments then led to a consensus among the national stakeholders and governments to developing actions plans for mitigation and adaptation. The project provided a number of tools and technical support services, which were expected to lead to a direct outcome of increased capacity in the country to undertake such assessments and develop plans. All of this was to be done in the context of an ongoing process of changing global and national scientific knowledge on climate change, ongoing changes in technologies, and ongoing evolutions within the UNFCCC negotiations on areas of agreement. The project design was constrained by the UNFCCC agreements and the GEF guidance and support. Within these bounds the project team and participants had some, but limited freedom to adapt the execution to meet the conditions and the individual requirements of the countries who signed up to participate. Thus while the global and national contexts are mentioned as relevant for the TNA project, the report refrains from substantive discussions of the larger issues, except as they directly impinged on the project design and delivery.

### A STRATEGIC RELEVANCE

71. The review found the project to form a coherent part of the programme framework of UNEP POW 2010, 2011 and 2012<sup>47</sup>. It is referred to in the UNEP SP and POW, Annual Reports for the period and in UNEP DTIE programme of work. The documents describe the relevance of the project to UNFCCC processes, to the GEF and to the countries and on UNEP's role. The evaluation found that the PRODOC did not provide clear linkages with other relevant projects by UNEP and GEF, which were mentioned and evident, but not fully described. The review found the intended results were likely to contribute to the

---

<sup>47</sup> Descriptions of the UNEP POW are found in UNEP, 2009, A Guide to the UNEP 2010-11 Draft Programme of Work; UNEP/LAC-IGWG(IS).XVII/Ref.2, 23 September 2009; UNEP, 2010, Proposed biennial programme of work and budget for 2012–2013, UNEP/GC.26/13, 18 October 2010, UNEP Annual Reports for 2010, 2011 and 2012 and in the UNEP Medium-term Strategy 2010–2013, UNEP/GCSS.X/8.



stated Expected Accomplishments (EA) and the outputs were closely correlated to the EA. The pathway from project outputs to EA contributions were not clearly delineated in the PRODOC but were stated in the PoW and DTIE EA contributions. The indicators were appropriate to measure contributions and the project milestones could track progress to PoW output and to the EA. It would have been possible for the PRODOC to link them more explicitly but it does not appear to have been important to have done so. Overall the review found the alignment of the project design with the PoW and its contribution highly satisfactory<sup>48</sup>.

72. The review found the likelihood of outputs contributing to the PoW and to the EA as highly likely. This was based on the fact that the countries requested the assistance for the outputs, and they designated the national entities to undertake the work, and the design of the support that was provided as described earlier to be relevant and appropriate, and so the achievement of the project outputs was highly likely. The project outputs directly contributed to the PoW and to the EA.

73. The evaluation confirmed that the participating developing countries had requested such a project to help them determine their needs, assess their national priorities for the UNFCCC, present the priority needs for actions to national and international partners, and thereby enable their consideration globally for mitigation and adaptation. The project's implementation strategies were found to be highly consistent with the global, regional and national environmental issues and the needs as defined by the countries at the UNFCCC.

74. The objectives of the TNA were highly consistent with the global priorities as exemplified by the discussions at the COP 21 in Paris, in 2015 (and earlier) and other evidence of efforts by countries to address the large and complex set of global and national issues that arise from human contributions to climate change and in turn the impacts of climate change on multiple areas. The degree of congruence of the TNA's strategic objectives and global agenda was high (see paragraphs below) as they stemmed directly from UNFCCC resolutions on technology needs for mitigation and adaptation.

75. The project was a part of the GEF's climate change priorities, both as mandated by UNFCCC and reflected in GEF priority statements and allocation of resources. It meets all conditions for GEF enabling activity and has supported capacity development measures; it focused on technology, and strengthening national capacities to report and fulfil commitments made under the Convention. The countries participating were self-selected and therefore it was a country driven process, where UNEP/UDP only provided strategic and technical support and assisted a process of national capacity building.

76. The evaluation also found a very high degree of congruence between the TNA's strategic objectives and the national priorities and needs of the participating countries, as mentioned within the constraints imposed by the global negotiations and agreements in place, during the project time period of 2009-2013. The original project design in 2008 had favoured mitigation options for TNA, even at a time when the global negotiations process did not require the project countries to mitigate their emissions. The 36 targeted TNA countries have low levels of total GHG emissions (see annex III), so their actions cannot contribute significantly towards global mitigation efforts. Hence, it can be argued that

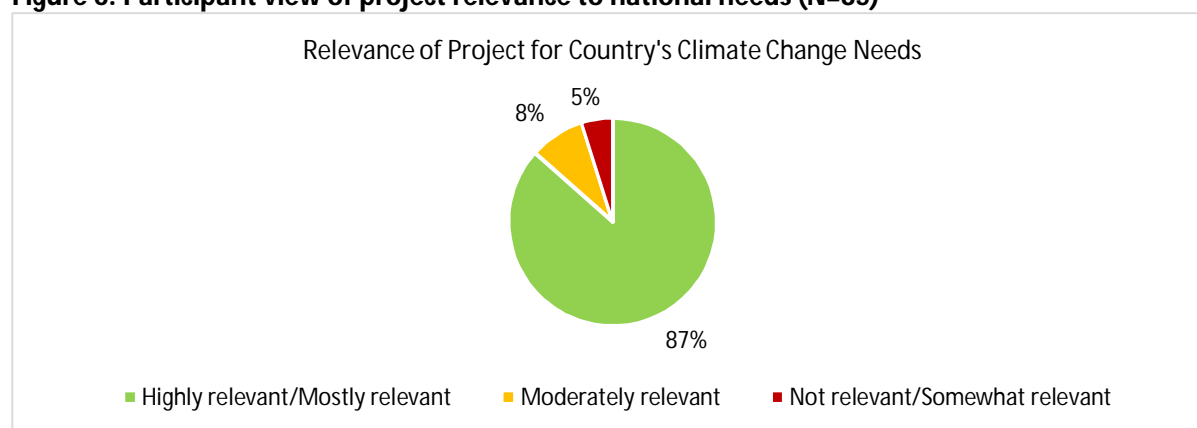
---

<sup>48</sup> The evaluation has noted that South-South and North-South Cooperation are included in Strategic Relevance by UNEP and the evaluation found the inter-country sharing of results and experience to be inadequate in the execution. This was found to have been the direct result of insufficiency of the budget allocated and an inability to repurpose the budget.

mitigation is not a high priority issue for them as they can only make small contributions to global emission reductions required (see Annex III, Table 1 on emissions). But they would have a higher demand for adaptation, and the project was late in highlighting adaptation<sup>49</sup>. The caveat is not with the TNA project but on the framework of the most appropriate global and national responses and the exact policies which would be most appropriate. The UNFCCC process and allocations of the GEF and other global players have hitherto focused more on mitigation than on adaptation. It is to the credit of the UDP, the Regional Centres, and the participating countries, that they allowed for a degree of flexibility in the project. The flexibility exhibited during execution allowed for national differences in needs and priorities to be taken into account. The process allowed the technologies chosen to fit the country needs for both climate change and national development. It is noted subsequently, (para 119) that the degree of flexibility available to the project was limited due to design and budget constraints, and so all examples where the project team was able to adapt its interventions to the actual circumstances during the implementation are especially noteworthy.

77. The perceptions of key national stakeholders in the interviews and in the survey largely reflect the finding that the project was highly or mostly relevant to the national priorities (see following diagram, where the top two ratings are grouped together and the bottom two ratings are grouped together). Also to be noted is that 2 persons of the 85 respondents rated all items highly negatively<sup>50</sup> in the figures 6 and 7. In addition five persons from Africa and the Middle East, said they did not know, and are not shown.

**Figure 6: Participant view of project relevance to national needs (N=85)**



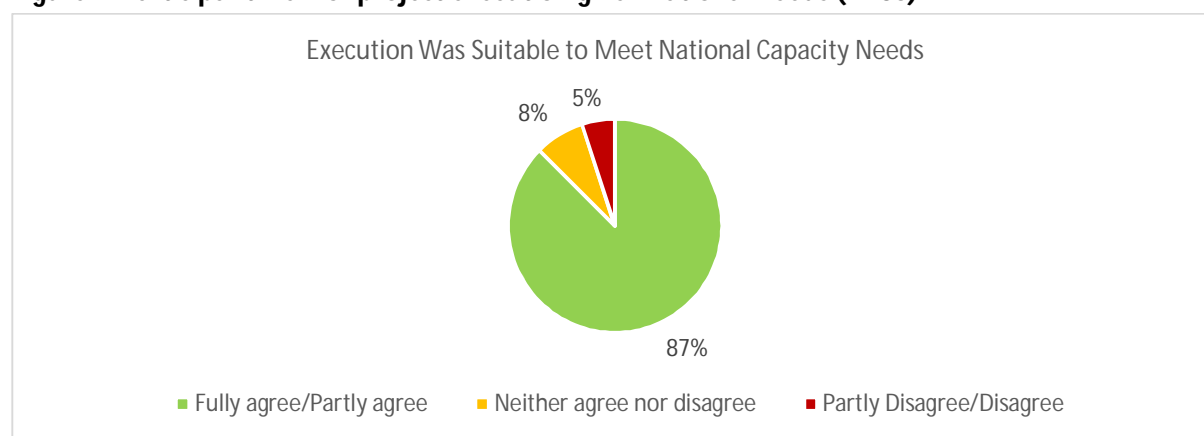
<sup>49</sup> Financing for adaptation has been severely underfunded within the UNFCCC process but a positive development in 2015 is the establishment of the Green Climate Fund (GCF) which has raised US\$ 10.2 billion in pledges towards a goal of US\$100 billion by 2020. Overall the issues around financing for the poorer countries remain to be fully resolved. The GCF has determined that it would seek a balance between mitigation and adaptation efforts, while promoting environmental, social, economic and development co-benefits.

<sup>50</sup> Deeper analysis showed the 2 persons with negative perceptions were from one country and both dealt with one issue of adaptation. All other respondents in the same country disagreed with the negative view. It is our view, given the details, while it is quite possible that the sector results for which they were responsible in the country were not so good, the two views were not representative of the overall assessment of relevance.

78. The TNA project was congruent with the national context of targeted countries<sup>51</sup> with the caveats mentioned above on their low responsibility for mitigation and higher demand for adaptation. The evaluation rates the strategic relevance of the TNA project as highly relevant and it is to the credit of UDP and the Regional Centres to be able to adapt and make this project of relevance to 87% of those who participated,<sup>52</sup> thereby marrying global issues to national ones, and successfully supporting a largely country driven process.

79. The evaluation determines from the evidence above that the design of the TNA project, its goals and objectives were highly relevant to the needs and priorities of participating countries, within the context and limitations of the UNFCCC process.

**Figure 7: Participant view of project execution given national needs (N=85)**

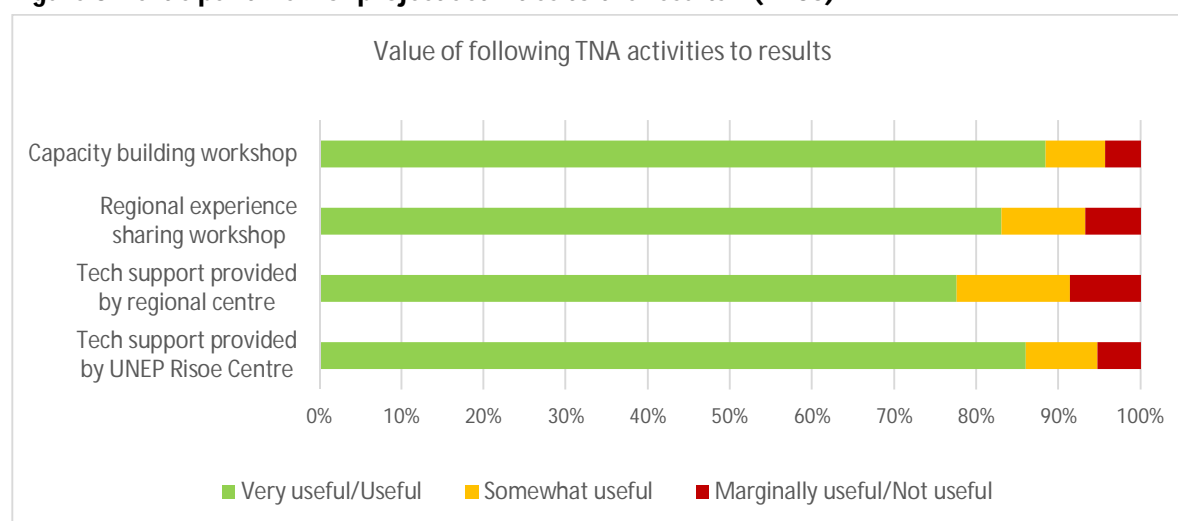


80. Figure 7 shows that overall the participants in the TNA responded with 87% agreement on the suitability of the execution for their capacity needs. Figure 8 below shows their views on the four key support activities provided by the project, where between 80-90% rated each of the four activities at the two highest levels. Within the high approvals, there is a small reduction in the rating for the technical support provided by the regional centres.

<sup>51</sup> Examples - El Salvador, the project to identify and prioritize actions and technologies on the issue of climate change provided a reference to the first National Climate Change Plan; Colombia - technological intervention strategies were defined, leading to further phases of work; Dominican Republic, - "The analysis of technologies in each of the prioritized sectors of the country took into account key national issues and problems"

<sup>52</sup> More detailed analysis of all respondents indicated that in the 5% (or 4 of the 85) who responded with scepticism on the relevance, 2 individual respondents rated almost all aspects of project performance negatively. They are from one country and there were multiple other respondents from the country. It was also a country that was visited for the evaluation. In our view the two responses that are often negative should be discounted here for the overall ratings as being non-representative of the total response from their country. The evaluation does not completely discard their views and takes into account that it is most likely that in their country, the quality of the inputs and outputs for the sectoral areas that they represented, which was agriculture and water, for adaptation, were below their technical expectations. This also provides a good example of why the evaluation has not made large effort to review each report on its scientific merits as that would require enormous amounts of time and expertise.

**Figure 8: Participant view of project activities to the results<sup>53</sup> (N=85)**



81. Technology was defined in the TNA project fairly closely to its usage in the UNFCCC, which is not unreasonable. It was defined to have three components – hardware, software and “orgware”, but it is not obvious that a policy or measure where there are no hardware components involved and only organizational change is required, is it still a “technology need”. For example, policies to add a carbon tax and remove existing subsidies for carbon, are critical enabling frameworks for most mitigation efforts and are completely outside the technology sphere<sup>54</sup>. Overall, in our view, the project would have benefited from a wider global framework, adding the degrees of uncertainty, questions of political economy, and highlighted solutions that are more “win-win” options for specific developing countries, and could have given these issues greater attention. At the same time, the project has made contributions to enhancing the “role of social capital in terms of the multi-stakeholder networks in innovation systems<sup>55</sup>” which needs to be recognised and fostered.

<sup>53</sup> There were a total of 50 questions with each generating one potential figure and a table. In order to reduce the number of pages used, for around 40 questions the answers are presented in 11 groupings. There were approximately 25 persons from the 85 respondents, who did not have a view on the four questions above in figure 8. There were a total of 50 questions with each generating one potential figure. In order to reduce the number of figures and pages used, around 40 answers are presented in 11 groupings. There were approximately 60 useful responses used here and 25 persons from the 85 respondents did not have a view on the four questions above in figure 8.

<sup>54</sup> It must be noted here that the work on barrier analysis undertaken after the priority identification of technology needs, was a process “where financial issues and policies to ameliorate financial barriers among others”, which did consider such issues. The process used for barrier analysis is provided by the team in a report, “Case study on Barrier Analysis and Measures to Overcome the Barriers for Market Goods” as one example. Figure two in this guide makes good use of systems diagrams to map out all the different links in a market map for one technology, and technologies are further categorized into market, public, consumer, capital and so on. The barrier analysis was a useful addition introduced by the project from the previous generation of work and many country teams appreciated this methodological tool.

<sup>55</sup> Karakosta Charikleia; Doukas Haris; Psarras John, 2010. Technology transfer through climate change: Setting a sustainable energy pattern, Renewable and Sustainable Energy Reviews, Volume 14, Issue 6, August 2010, pages 1546–1557.

## B ACHIEVEMENT OF OUTPUTS

82. The TNA project aimed to deliver multiple outputs and results at the country level, which are listed in Table 12 below, together with a summary of their status<sup>56</sup>.

**Table 12: Achievement of the outputs** (Activities and outputs are presented in shortened forms in the TOC diagram and the expression of the components in that diagram are included here for reference between the two representations)

Component	Outputs	Achievement	Evidence
<b>Component 1:</b> Support for the development or strengthening of TNAs in 35-45 countries  <i>TOC Expression:</i> National TNA network formed and supported; Methodological issues solved; Disseminate to all local or national stakeholders.	1. A national technical and network structure formed - of participating individuals and institutions at national level, having the potential for national consultations, to reach a national consensus on adequate technologies Identification and creation of stakeholders groups will be based on recommendations contained in the draft TNA handbook.	Yes	The process used was to work with the TNA national coordinators as designated by the country. Three participants from each country were nominated for the regional workshops.
	2. A synthesis of methodological applications and hurdles carried out at national level and serving as input for TNA elaboration	Yes	These methodological reports were completed by UDP and shared with regional centres and countries. Participating countries were able to carry out their TNA elaboration with these inputs.
	3. Between 35 and 45 TNAs including TAPs produced, identifying barriers to technology transfer at national level and means and actions to overcome them.	Yes	This was lowered to 36 countries. Finally, 30 of the 36 countries have produced all four TNA and TAP reports. Two countries produced only half the number and were paid partially.
	4. Feedback for TNA handbook update based on national experiences and processes.	Yes	An updated TNA handbook was produced.
<b>Component 2:</b> Development of tools and provision of methodology information to support TNA and TAP Processes  <i>TOC Expression:</i> Develop/provide tools and methods for TNA and TAP.	1. A tool to prioritize mitigation options based on cost effectiveness, existing potential, resource availability and relevance for national situations developed and presented.	Yes	All required tools and methods for this component were presented and discussed with participating countries at the regional training workshops The TNA Help Desk at RCs also provided support to the participating countries throughout the TNA and TAP processes on all tools.
	2. A tool to prioritize adaptation technological options based on climate change impacts as well as human, economic, social and costs related aspects developed and presented.	Yes	The Multi-Criteria Analysis was provided. Many found it difficult but in the end appreciated its use for the prioritization process, and arriving at a consensus among national stakeholders. For many national stakeholders the methodology for carrying out barriers analysis for technology options was new.
	3. A simple and efficient market assessment tool made available	Yes	As above. In general, guidebooks were first available in English and then later translated into French and Spanish creating some delays.

<sup>56</sup> Also refer to Regional Reports for detailed information on achievement of outputs in each region (Annex 9)

			Some countries which use other languages felt at some disadvantage.
	4. A process to apply the tools at national level agreed upon.	Yes	The project established mechanisms and structures for countries to work through the multi-stakeholder process of the TNA project nationally; assisted as required the processes and the use of the tools, the analysis and reporting of results at the national level.
	5. Access and links to information database elaborated and serving as a base for technology specification in terms of performance, cost and availability.	Yes, mostly.	It was too demanding to be able to provide complete information for all technologies considered and at all levels of detail and that could not be done fully.
	6. Reporting template for TNA elaborated.	Yes	Reporting templates for TNA and TAP reports developed, shared with the participating countries, was used by them and the reports were reviewed by the team
<b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination  <i>TOC Expression:</i> Establish coordination mechanisms; Information availability; Promote synergies for North-South and South-South technology transfer; TNAs and TAPs synthesised.	1. A network involving both national and supra national institutions recognized for their success in technology transfer activities established and operational	No	No new network as described was formed and also existing networks which could have been more involved were not.
	2. Proven approaches to elaborate good quality TNAs developed. Institutional responsibilities set up. Capacities built to elaborate, implement and revise TNAs and associated TAPs.	Yes	A thorough support has been provided to the TNA country teams using e-mails and also periodic follow up by project staff.  Some countries wished to have more hands on support but that was not possible within the budget.
	3. Replication approach available to all GEF beneficiary countries together with a proposed mechanism for interactive support.	Mostly	The project web site provides information on the tools and the final reports produced.
	4. A "Best Practices and Lessons Learnt report" from the project produced and disseminated.	Yes	The project has produced one Global and three Regional Synthesis Reports that contain lessons learnt.  Best practices and lessons learnt from participating countries were shared at the final experience sharing workshop organized in 2013 by AIT, as the Asian TNA regional Centre.
	5. Synthesis report from the project produced and disseminated.	Yes	See above.

83. The evaluation finds that the project delivered in 30 countries (of the 36 planned for) all the planned reports, which met the minimum goals of two reports, one on priority needs for Mitigation and the other for Adaptation and two more on action plans for each. Two countries produced only the first two and so did not get their full payment. In total there were over 124 final reports and the project achieved the delivery of almost all intermediate outputs specified. Many countries went further to produce additional reports as suggested by the TNA and RC teams, which included "Barriers" to the use of the priority technologies selected for mitigation and for adaptation; and most went further to define 3-5 Project Ideas, each for mitigation and adaptation. The tables in Annex VII list the outputs by country

and also note if they had participated in an earlier round of UNDP supported work in the 1990s on TNA. The evaluation did not find significant links between the earlier work done and the current outputs across countries. That can be expected within the context of the UNFCCC processes and policy making efforts at the country levels, which had evolved over the past decade or so, which differentiated the earlier work from the current work. A few countries noted (see the regional sections), that they had some difficulty with the task, due to low national capacity and as they were undertaking such analysis for the first time.

84. Several planned project outputs such as the methodological tools developed, disseminated and shared, providing technology information critical to undertaking TNAs and others, were inputs to the preparation of the reports (an output) and to building capacity another output and as intermediary outputs are not detailed here. Global dissemination has been achieved through the project website, and it was seen that the UNFCCC has almost all reports (though a few were missing from UNFCCC). Many of these reports are being used nationally and globally for the additional and further work on mitigation and adaptation, which has been found during the evaluation in a good number of specific initiatives examined.

85. The value of the outputs, especially the reports that identified the national priorities and selected three technologies for mitigation and adaptation, rests partly on their process value and also on their technical value. The quality of each and every report was not separately assessed in the evaluation as there are too many reports, covering many countries, and many issues, beyond the technical capacity of the team. A review of the methods, guides and sample reports, suggest one possible shortcoming, where the economic and financial issues could most likely require more attention for further action in many reports. This could have been improved with greater participation of the private sector, where appropriate and available, and similarly, with the participation of donors and financial institutions.

86. It is beyond the scope of the evaluation to judge the technical value of over 124 reports for 32 countries. In addition, such judgements are not truly possible, even with unlimited resources and time.<sup>57</sup> What all of them agree on are on a set of "guiding principles" for planning for climate change, which provides for an open ended process for on-going decisions, rather than a single, or a series of, one-off

---

<sup>57</sup> In 2008, the GEF organised an "International Conference on Evaluating Climate Change and Development (May 10th to 13<sup>th</sup>)" to clarify issues for the evaluation of such projects, especially adaptation interventions. Two useful documents are, GEF (EO), 2008. Lessons from GEF Climate Change Adaptation projects; and, ODI, 2008. Desk review: Evaluation of adaptation to climate change from a development perspective; see also on mitigation - Siv Tokle and Juha I. Uitto, 2010 in Rob D. van den Berg and Osvaldo N. Feinstein, Editors, 2010. Overview of Climate Change Mitigation Evaluations: What Do We Know? Volume 8, on a number of similar points, though there is a view that impacts on mitigation could be more simply measured as units of carbon dioxide reduced in emissions.

Subsequently the GEF supported another review, H. E. Sanahuja, August 2011. Tracking Progress for Effective Action (CCAI). Both Sanahuja and ODI report that the evaluation such interventions raise unique challenges. First, no single intervention will deliver climate change adaptation (in our view mitigation can also replace the word adaptation above and in what follows). The interventions are funded from the international level through national governments and the desired outcomes are required at multiple local levels. They build capacities for issues to be tackled over decades, during which local, national and international conditions are all expected to be different and cannot be fully anticipated. There is an *apparent agreed to scientific framing*, which is only what UNFCCC has *recognized at a particular time*, and so actions can only be tentative and incremental. Sanahuja (p. 9) shows how even the concept of adaptation is being defined in four different ways by UNFCCC, GEF, UNDP and IPCC. Similarly in mitigation, UNEP leads another effort "Climate and Clean Air Coalition" a global effort to reduce short-lived climate pollutants, which provide double dividends including mitigation, but are not yet recognized by the UNFCCC process.

actions. Thus the quality of the reports can only be judged by their use and whether the outputs are embedded in the national and international decision processes.

87. The outcome of increased national and interregional cooperation to support technology transfer and establishing cooperation mechanisms were very partially supported through a final workshop. The regional workshops, newsletters and web site, also provided some avenues for cooperation between countries. Some countries provided examples of using the experience of another TNA country, and stated that such cooperation across countries was valuable. A majority of survey respondents reported, and the evaluation concurs<sup>58</sup>, that the project was unable to nurture cooperation between the participating countries. The evaluation finds this was due to budget and time limitations, the activities supporting inter-country cooperation were lower than desirable. The evaluation finds this an unfortunate gap in the project outputs, thereby reducing the desired outcome of increased cooperation between countries, and so assesses the project as being less than “highly satisfactory”. It has been noted the project faced many challenges and the team has performed very well in most other outputs. The issue of linkages between countries, increasing opportunities for learning between countries, linking to regional and global networks for knowledge, information, technology and finance are areas for the subsequent TNA Phase II to pay greater attention to<sup>59</sup>.

## **C EFFECTIVENESS: ATTAINMENT OF OBJECTIVES AND RESULTS**

### **C1 Direct Outcomes:**

88. The direct outcomes from Theory of Change diagram (Figure 5) presented three sets of direct outcomes for the TNA project. The first was to contribute to the national capacity building and includes: capabilities strengthened; national consensus on priorities achieved and action plans for implementation. The second was to generate a national consensus on technology priorities for mitigation and adaptation and includes: TNA and TAPs produced and synthesized and an updated global TNA handbook. The third direct outcome was to generate national action plans for implementation and includes: national actions triggered; coordination and exchange of experience and world-wide vision of urgent technologies formed.

89. Capacity building was conducted within the TNA project for the national coordinators and 1-2 other key members of the team<sup>60</sup>, with the assistance of the Regional Centres. The TNA project did not have a budget for capacity building for other stakeholders though in some cases the monitoring and support visits of experts from the Regional Centres were able to support a degree of capacity building

---

<sup>58</sup> This was found in documents reviewed; the country visits and interviews, and was the view of a majority of the survey respondents.

<sup>59</sup> It is clarified further that some learning and cooperation between countries, which participated in the TNA project, has been observed. The evaluation reports on some countries reaching out to others who were at a more advanced stage in the project to learn from them. Similarly, the workshop presentations, an integral element of the project, allowed for a degree of sharing and learning between the countries. The project did make efforts towards supporting such cooperation, within the time and budget constraints. Increased cooperation of this nature could only have been achieved with higher financial allocations with increased duration at the workshops and/or with additional workshops. The options were discussed at the PSC where the GEF member rejected proposals for such expenditures.

<sup>60</sup> Most often expert national consultants hired by the national TNA project implementing agency.



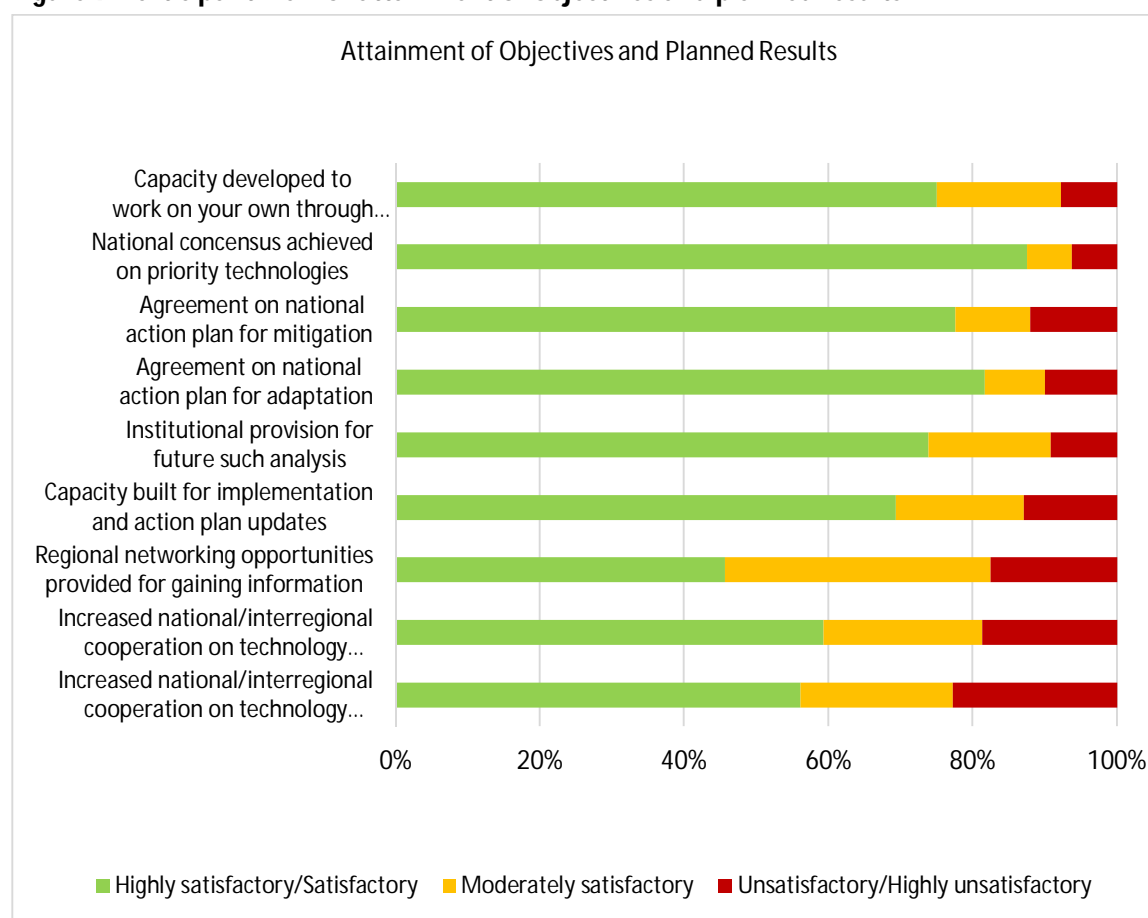
among wider stakeholder groups. Some stakeholders from some of the countries would have preferred greater TNA inputs at the national level and saw this lack as one deficiency.

90. The capacity developed was by the national teams, who gained methodological experience on technology assessment based on the tasks performed, gained capacity in working with current “best practices”, including the processes of stakeholder consultation, multi criteria decision tools, generating consensus and customizing the methodologies to their national circumstances. Given that the TNAs and the TAPs were produced by the national teams, they clearly developed the capacity to undertake the processes and analysis required for their production. The TNA process will not remain a one-time exercise, and many more similar, often more detailed technology assessments, will be required. The outcomes of capacity built, arriving at new consensus and developing new plans, will remain useful to the countries in the future.

91. The second and third group of direct outcomes depicted in Figure 5, built on the prioritization process and selection of three priorities each for mitigation and adaptation for more immediate follow up, triggering national actions, and improved global vision of technological priorities. These have been largely achieved. All 32 countries have either developed or strengthened their TNA, the project was helpful for them to 1) update the technologies in line with more recent national needs and priorities and 2) make them more strategic and useful in an operational sense. In addition, the participating countries were requested to produce Action Plans (TAP), to make the TNA operational, with targeted actions for creating an enabling framework, strategies and policies, with project ideas as well as an analysis of the barriers and means to overcome them.

92. In addition, the outputs which have been globally integrated and reported upon by UNFCCC, GEF, TEC and the CTCN, can be said to provide an improved global vision of technological priorities. A global TNA handbook, was updated and published in 2011 and had inputs from the UDP team. It relied on multiple other partners, over whom the project did not have direct control, and contributes towards the outcome of achieving “national consensus” and together, contributing to the “global vision” of technology needs. The evaluation has already discussed at several points (such as Section B on outputs, Table 12 and also in para 86) that the project had the least activities and resources directed towards regional and global networking that focused on learning and cooperation. While the evaluation found considerable evidence of the take up of the findings through the UNFCCC process, evidence of the outcome of increased global learning and experience sharing, outside those established UNFCCC process was not noticeable. A list of outputs and outcomes by country is provided in the regional reports in Annex VII and below is the overall view of the survey participants with regard to the achievement of outputs and outcomes.

**Figure 9: Participant view of attainment of objectives and planned results<sup>61</sup>**



## C2 Medium Term Outcomes:

93. The Theory of Change diagram (Figure 5) also presented likely medium term outcomes provided there were additional positive developments external to the project. Given that the evaluation was undertaken almost two years after project completion, an effort was made to determine if any anticipated medium term outcomes could be observed. The likelihood of impact using RoTI and based on reconstructed TOC lists anticipated medium term outcomes as national and international policy changes to address climate change; increased national and international flows of finance to the priorities identified; and finally, increased international cooperation. The achievement of such outcomes are discussed below, while additional details are provided by country and region in Annex VII.

<sup>61</sup> There were approximately 60 useful responses for each of the 9 questions used here in the figure 9.

## Medium Term Outcomes: Examples

*(This is based on feedback received from 25 countries. No feedback was received from 7 countries. See table 1 for country names.)*

### **Use of TNA and TAP reports to inform national and sectoral policies:**

20 (of the 25 above) countries have reported that TAP, TNA reports **have been used to inform national and sectoral** policies: 10 out of 11 countries in Asia; 7 out of 9 countries in Africa and 3 countries from Latin America. Examples include: in the form of INDCs and NAMAs (Vietnam), submissions to ministry of agriculture and sectoral agencies to inform sectoral policies and sectoral action plans (Moldova), national climate change policy (Ghana); for national seminars and workshops (Ivory Coast); National action plans (Mali) and planning for energy efficiency in public buildings (Dominican Republic)

### **Use of TNA and TAP reports in the planning process of national and sectoral policies:**

19 countries reported actual use of policies as opposed to policies being “informe”. Use was in the form of: INDCs and piloting of NAMAs (Lebanon), Low Emissions Development Strategy (Moldova), National Climate Change Action Plan (Thailand), National Action Plan (Mali), use within the energy sector (Rwanda), a National Research programme- (Colombia); National Adaptation and Sectoral Plans (Dominican Republic); National Plan on Climate change (El Salvador).

### **National mechanisms institutionalized/established to carry on the TNA/TAP implementation**

Only 10 (of the 25 reporting countries) countries have reported having established national mechanisms to carry on TNA/TAP implementation: 6 out of 11 Asian countries and 4 out of 9 African<sup>62</sup> countries. Examples of national mechanisms created for implementation were provided from Asia REDD+ office in Laos and MONRE in Vietnam. However, no country in the Latin American region reported the establishment of a national mechanism for implementation.

### **Application to international funding agencies for priority actions and use of financial resources from international sources to support the implementation of the priority projects identified in the TNA/TAP:**

16 countries reported that they have applied to international funding agencies for support for their priorities as determined in the TNA project. 13 reported that financial resources from international sources have been allocated to support implementation of priority projects that had been selected. From the 13 countries that reported that they had acquired financial resources from international sources only 9 countries provided full details of the source and activities supported, which were 3 from each region. Many others reported they were waiting for funding.

Examples of priority projects reported as financed from international sources include: GHG and Mitigation projects (Cambodia), US support to wind power related projects (Vietnam), Solar Fort project (Kenya), Resources from Sweden for the GEDEFOR II project (Mali), GIZ support to projects related to agroforestry and forest galleries (El Salvador).

In the African region, most interviewed national stakeholders recognized that they are not sufficiently equipped to prepare funding requests to these funding channels and TNA communication tools need to be improved.

In addition, it was noted from the requests registered with CTCN, that 8 countries had registered specific requests for follow up support for technology: Ghana (1), Ivory Coast (2), Kenya (3), Mali (4), Sénégal (3), Viet Nam (4), Colombia (3) and Dominican Republic (2). (The higher number of CTCN requests suggest that the survey respondents under-reported possibly due to insufficient information with them.)

<sup>62</sup> The 4 countries which confirmed that national mechanisms existed did not provide specific information to the follow up question requesting the names.

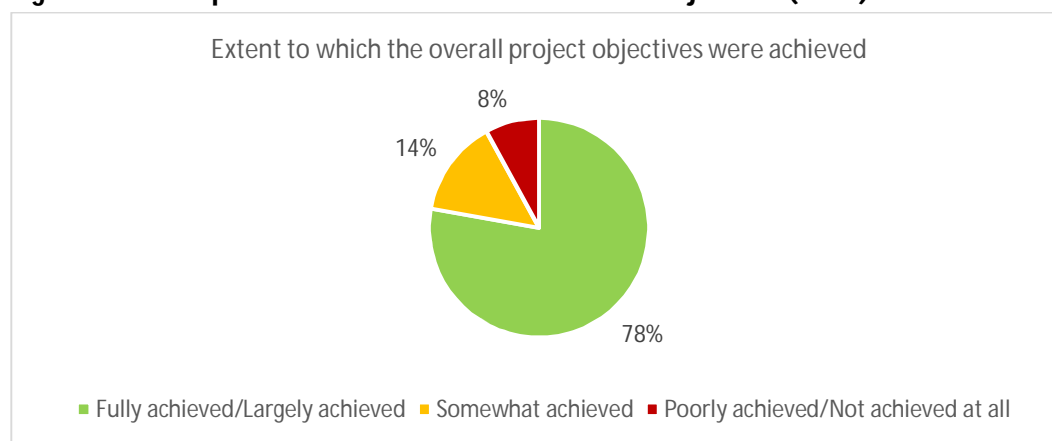
**Allocation of financial resources to support the implementation of priority projects identified from domestic sources:**

10 countries reported having allocated financial resources to support the implementation of priority projects identified from domestic sources: 3 countries out of 11 Asian countries, 4 out of 9 African countries and 3 out of 5 countries in the LAC region. Examples include: “No-TILL” implementation (Moldova); Domestic Investment Fund (Vietnam); Consolidated Investment Budget (Senegal); support of ministry of agriculture in PICC-PMV project (Morocco); Ministry of Environment support for agroforestry and forest restoration projects (El Salvador).

94. Most of the respondents (see Figures 9 and 10) found the project achieved its objectives and planned results. In El Salvador, the National Coordinator stated, “the project strengthened the capacity for analysis and prioritization of national actions necessary to implement adaptation actions.” Similarly, a civil society stakeholder from the Dominican Republic said, “the process was important, not just the outcome. The fact that different institutions articulated, discussed and arrived at jointly determined and common plans was beneficial and allowed capacity building around this process.” The participatory and consultative process that was used was hailed as an important achievement by many for on-going and future work in the country.

95. The TNAs and TAPs were all developed by the countries using the tools, information and support provided by the project. Those which had participated in an earlier round of TNAs stated that they were able to improve on their previous versions, to refine their TNAs further, add the adaptation dimension, and with the TAPs, could begin to implement some of the identified measures. The national policy changes made subsequent to the project are postulated as among the medium term outcomes towards final impact. In the ToC, an increase in international financial and technical cooperation achieved by many countries through global mechanisms of the UNFCCC such as CTCN, the Green Climate Fund, the GEF and increased bilateral cooperation, around the needs identified and action plans prepared is another indicator of a medium term outcome. Such increase in financial flows, both domestic and international, along the priorities identified, were also listed in the ToC as a medium term outcome. Both the logic of the ToC and the responses from the countries support the finding that the medium term outcomes can be attributed to the TNA project.

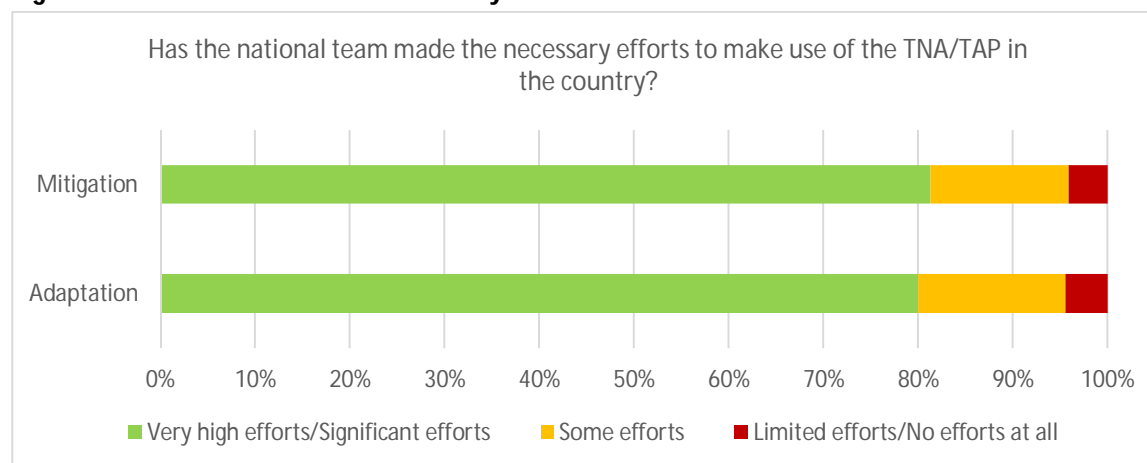
**Figure 10: Participant view of achievement of overall objectives (N=85)**



96. Overall almost 80% of the participants reported that the project has achieved the overall objectives (as discussed earlier with lower performance on some specific outcomes, among them

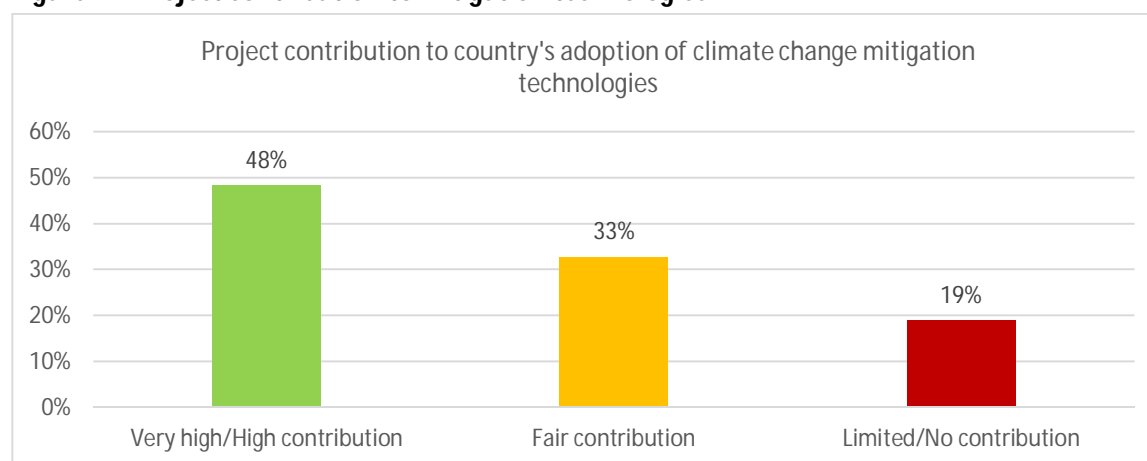
establishing and/or using regional and international networks and sharing knowledge and experience between countries). Over 90% stated that they had made efforts for the use of the results of the TNA in their country and 80% believed that the project had made a very high or high contribution to each issue: mitigation and adaptation. While participants' views of their own efforts could be biased, the view that most project teams made excellent national efforts was borne out in the field visits of the smaller sample of countries and in the survey (Figure 11); and is also supported by the responses on continued national efforts that have led to medium term outcomes as laid out in the ToC and discussed here, both earlier and subsequently.

**Figure 11: Efforts at the national level by the teams<sup>63</sup>**

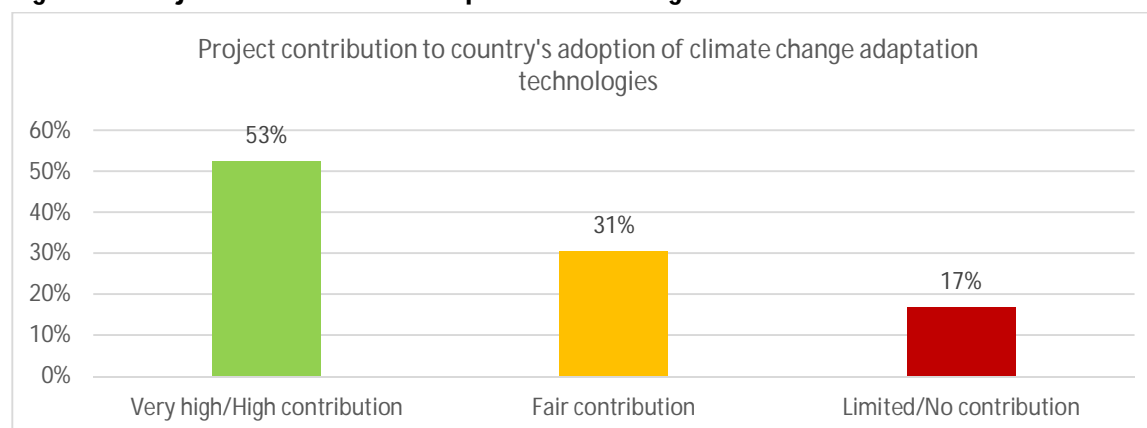


92. The views of the respondents from the participating countries on the contributions by the project to their country's adoption of selected mitigation and adaptation technologies is shown below in the two figures below.

**Figure 12: Project contribution to mitigation technologies**



<sup>63</sup> Here and in figures 12 and 13, the respondents answered the questions based on their roles in mitigation and/or in adaptation. Those who did not participate in both issue areas, indicated that they did not know.

**Figure 13: Project contribution to adaptation technologies**

93. The evaluation judges the effectiveness of the TNA project to have been “Satisfactory”. This is based on the assessments of the achievement of all direct outcomes as defined in the reconstructed ToC, discussed in the previous section. Beyond the achievement of some of the first-level or direct outcomes achieved as an immediate result of project outputs (see Figure 5, ToC) medium term outcomes have also been achieved in a number of countries.

94. An assessment of the likelihood of future impact, using the ToC, suggests a high likelihood that the observed direct outcomes, which have already triggered many medium term outcomes in Figure 5, would lead to reductions in emissions and adaptation actions. Beyond the fact there is a progression to medium term outcomes in many countries, the assumption made that countries take steps to enhance institutional capacities has taken place for many countries. The likelihood of future contributions from the project have increased further as the positive driver that new global and national rules would be established has come to pass in and after the Paris COP meeting; and, several new global mechanisms for technology support have also been established.

## D SUSTAINABILITY AND REPLICATION

100. This section is broken into four aspects of sustainability: socio-political, financial resources, institutional frame work and environmental sustainability, as required by the UNEP EO. But as certain issues cut across all the above aspects they are first presented at the overall level. The theory of change suggests that the sustainability of outcomes, replication and further progress to impacts will ultimately depend on larger processes both nationally and globally. These processes, beyond the scope of the TNA project to influence, beyond the impact drivers discussed. These factors include the perceptions - nationally and globally – on the negative impacts from climate change and on the global process of negotiations, the agreements reached, as in COP 21 in Paris in 2015, to help move the agenda of mitigation of, and adaptation to, climate change forward. Stronger agreements and commitments will depend upon, and also add to, the global and national socio-political support for the actions. Such agreements then attract new allocations of global and national financial resources, from levels that have been judged by international reviewers as being currently grossly inadequate. Together, the commitments and resources commensurate with global needs becoming available would also further strengthen national and global institutional frameworks. The Climate Technology Centre and Network

(CTCN) is one small example of a new technology support institution; the Green Climate Fund, is one of new funds; and the new UNEP partnerships with financial Institutions, with newly established regional climate technology centre/networks, is one example of new institutional arrangements. These factors, all outside the control of the TNA project, provide the additional required impetus to sustain and advance the direct outcomes of the TNA project. Hence the evaluation is of the view that many of the actions initiated outside the TNA project appear at present to sustain the outcomes achieved.

101. Thus the evaluation questions of the “potential for replication and if the project has played a catalytic role” need to be addressed at the highest level. The TNA project itself was not in the nature of an “innovation” that needs to be catalysed and replicated. But it drew together a set of interventions, producing as its outputs - priority actions by the selected countries, and plans for their implementation - many of these plans are playing a catalytic role, in being piloted within and across countries.

102. The evaluation rates the overall sustainability of the TNA Project outcomes to be highly likely. The overall sustainability derives both from factors intrinsic to the project and even more because the impact drivers and assumptions in the TOC, deriving from national and global contexts, are all in the positive direction.

103. **Socio-political:** Within the project elements, strong national teams were very often able to secure high-level stakeholder awareness and political buy-in – reporting to bodies chaired by the Head of State and/or key ministers, and national steering committee membership included high-level Ministry representatives. The more successful countries provided regular updates to senior policy makers and held meetings to review progress and findings. The project monitoring process also supported and encouraged the practice. In many countries the TNA process was closely linked to the UNFCCC meetings and negotiations, as for example reported in the case of Thailand. In the countries visited and the survey undertaken, there is considerable evidence of key stakeholder awareness, interests, and commitment, often demonstrated by financial and human resource allocation.

104. The socio-political support at the national level began with the fact that it was designed to meet country specific needs and emphasized country driven-ness and ownership. Thereafter it supported the country teams to achieve the national results with a degree of flexibility for national differences. These approaches met the critical assumption made in the ToC, “transparent, consultative, user friendly interactions among stakeholders” which allowed the national teams to carry the results forward. They are all positive factors identified in the theory of change, leading to positive socio-political support for the project. Among the future social and political factors that would positively influence the sustainability of project results and progress towards impacts include the future experiences of climate change in each country and the level of global support for common actions.

105. The level of ownership by the main stakeholders nationally is not uniform, but in almost all of the countries visited and a majority of the countries surveyed the level of ownership is sufficient to allow for the project results to be sustained. The level of awareness and interest by key stakeholders in government was seen to be high, a degree of commitment was noted from the financial and human resources allocated for the work and the related levels of uptake. The TNA project itself did not conduct ‘succession planning’ during the project and it is our view this was not relevant here as the national governments and multilateral processes are well established to continue related and future expansion of similar work.

106. The TNA project contributed directly to the capacity building of the key project partners, who then conducted similar workshops to build the capacity of key stakeholders, especially those in the working groups. The outcomes discussed earlier under section C2 show that the project contributed to positive and sustainable changes in some behaviours, as exemplified by follow up actions taken by governments.

107. **Financial:** The project did not directly provide for funds to secure the future financial sustainability of the prioritized actions. This has been criticized by some national stakeholders and their views have been noted in this report. The project plans had stated the importance of collaboration with UNFCCC for financing; linking to project developers was mentioned, and it had been stated that financial institutions would be more engaged in the process. The project has discussed and raised the issues of such engagements in reports and workshops, but it could not make sufficient efforts within the project activities, to do so. Limited resources (already discussed in led the project to only do one experience sharing workshop for all countries (and the other regional workshops which had focused on the training of national TNA teams (coordinator + consultants) and the evaluation recognizes that this may not have been the most appropriate event to engage multilateral donors/financiers).

108. Positively, the drivers – “” new global and regional mechanisms” have been established (see para 100 above) and new “global rules” for climate change and with it, national measures, have improved and so the assumption in the ToC – “supported countries take steps to strengthen institutional capacity” are evident and so support the financial support for the identified actions and the sustainability of the project results. The nature of the agreements reached in COP 21 Paris, support an increasingly bottom up, country led process, where many of the activities of the TNA will necessarily be sustained as they provide some of the building blocks for country strategies and for their submissions to UNFCCC. The processes prioritize “Intended Nationally Determined Contributions (INDC)”, followed by nationally appropriate mitigation and adaptation actions (NAMAs and NAPAs) to the UNFCCC, which in turn would meet their obligations under the convention and they are also triggers for the flow of international resources<sup>64</sup> and in fact are taking place, as shown in selected examples of medium term outcomes, in the earlier text box. (see section 5.7).

109. **Institutional frame work:** This project was not meant to directly modify governance structures, legal and accountability frameworks etc., as stated in the ToR, nor to lead to direct impacts on human behaviour, environmental resources, goods or services. They were also not designed or aimed at changes in attitudes, behaviours or power relations but were focused on providing technical skills and filling in information gaps, for a country led process. The assumption made was that the core missing elements were the skills and information available to national authorities. The support for the process of wide stakeholder engagement and consultations and some (limited) cooperation between countries were the additional elements for the outcomes, which included change in capacity and in “policy behaviour” nationally, which could be justified and supported by multiple stakeholders, with the required technical analysis. There are many social, economic and political factors involving local,

---

<sup>64</sup> UNFCCC, 2015, Synthesis report on the aggregate effect of the intended nationally determined contributions, FCCC/CP/2015/7, 30 October 2015. The above reported that 28 of the 32 countries that successfully completed the TNA project have also submitted their INDCs to the UNFCCC as of 1 October 2015, and 146 countries 146 countries have submitted their INDCs, though the ambitions remain low at this stage.



national and global dimensions that impede CC actions everywhere. It would have been inappropriate for this single TNA project to adequately engage with them all.

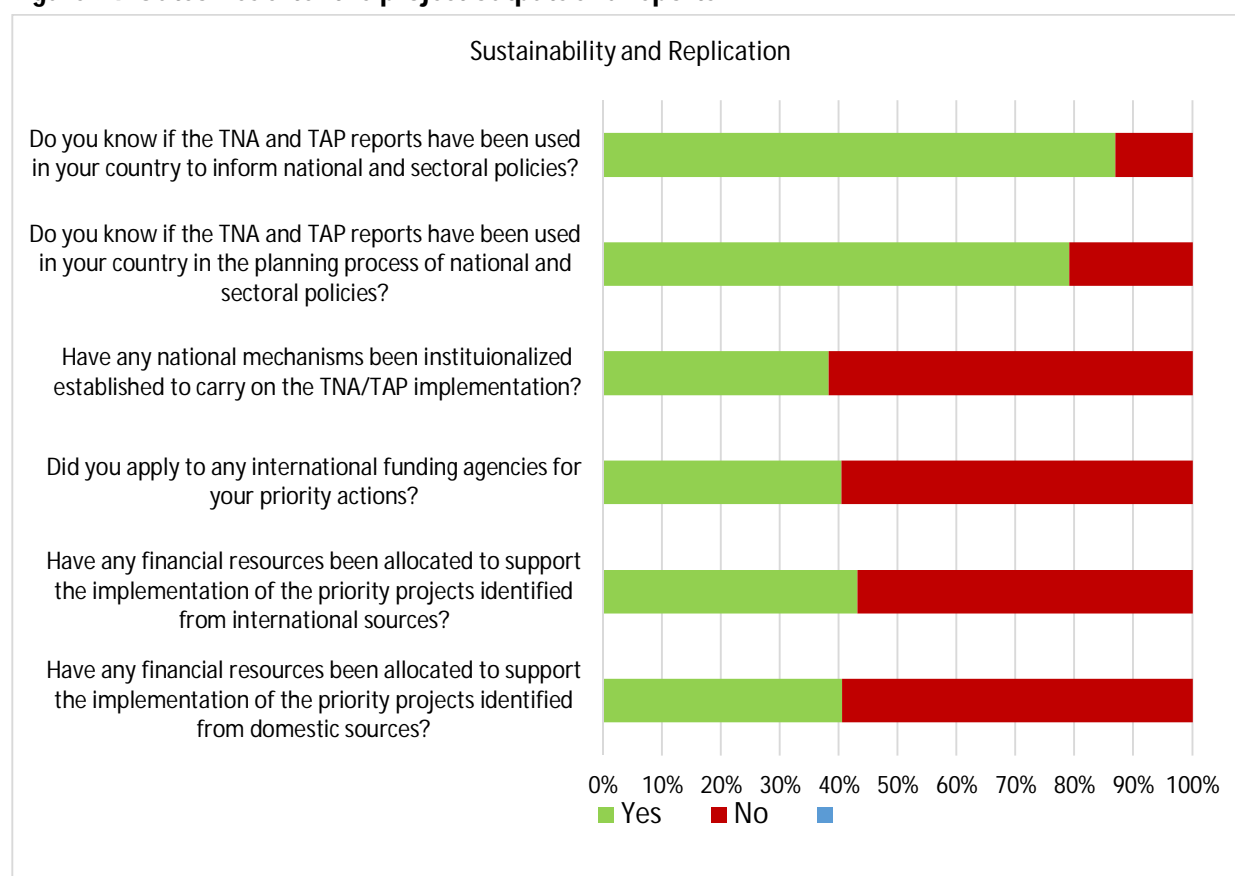
110. The interventions were aimed at increased awareness of options, better choices leading to political commitment, financial and human resource allocations by country and globally towards the choices. It has been stated (see the ToC) that the project goal was to provide the financial and technical resources as required under UNFCCC to allow participating countries to make better plans. Among the reported outcomes at the time of this evaluation, many participating countries have reported that they have already included the findings (and others could later become incorporated) into their nationally determined plans for mitigation<sup>65</sup> and adaptation and strengthened and/or increased links within national organizations. For example, at the national level, the TNA project concepts have been developed into full project proposals and submitted to donors for possible funding (Kenya). The results of TNA and TAP are part of several national policies and plans, including the Thailand Climate Change Master Plan (2015-2050). TNA was integrated into national plans and Thailand has been selected among 6 countries to implement the TNA results supported by the UNFCCC in 2016 (Thailand, Government). It is clear that the efficient and effective sustainability of the results within any country, such as the implementation of the priority action plans will always depend on institutional frameworks and governance in the country and its relationship to and support from the global UNFCCC process. The evaluation considers the issues listed in para 109 (from the ToR) to be outside the boundaries of this project and its evaluation.

111. **Environmental:** It is the view of this evaluation team that climate change is no longer an environmental problem to be dealt with through specific environmental policy measures and is a global economic problem to be dealt with through global economic policy measures, with a high degree of cooperation among multiple dimensions and nations, within which new technology and innovation will be critical. For the above reasons we consider the TNA Phase I to be one step forward, for the inclusion of technology and innovation in NAMAs and NAPA. Thus the project is *a necessary activity*, which we have noted has delivered most outputs to the satisfaction (within caveats in the report) of the countries. Many countries are already doing following on from the required step, to actions in support in the direction of improved environmental performance for climate change. It has been reported that a number of NAMAs proposals for funding and opportunities have been submitted to GEF through the CTCN.

---

<sup>65</sup> A number of countries used the TNA results to feed into their "Intended Nationally Determined Contributions (INDCs)" which form the basis of agreements reached in Paris in December 2015. The submitted INDCs show that many developing countries are also willing to offer domestic mitigation contributions.

**Figure 14: Outcomes after the project outputs and reports<sup>66</sup>**



112. **Catalytic role, replication and upscaling:** Several global level initiatives represent replications of aspects of this work: the new architecture to provide increased global support to technology issues, (with examples given earlier of CTCN); the regional networks for technology with the financial institutions; new funding via the GCF and a second phase of the TNA, which is currently being undertaken by UNEP with DTU and the same Regional Centres.

113. The project has also played a catalytic role in building the capacity of national stakeholders for actions involving institutional and policy changes. It contributed to institutional changes, with the uptake of project-identified priority technologies, as pilots, and to policy changes listed above and in greater detail by country and region in Annex VII. The project outputs have been supported through follow-on financing from national governments, donors and special agencies.

<sup>66</sup> Figure 14 is based on 71 valid responses. From the respondents between 24 and 37 persons responded that they did not know about the developments in their country subsequent to project completion. The respondents who did not know were most often subject specific consultants and experts. The respondents who provided the answers were almost all from implementing agencies and government ministries.

114. Replication is already underway with a second phase of the TNA for additional countries being implemented by the UNEP with additional GEF funds. This can be considered as a direct contribution of this project to secure new GEF funding for the replication in new countries. The project and also many countries involved in the project have taken multiple steps to increase awareness about the technology needs assessment processes, and also on the results, through publications, workshops, websites and similar mechanisms. A final note that needs to be made here is that the TNA project is not a one-time exercise, where countries identify priority technologies and can then move on to other tasks. Over the next decades, similar and more detailed technology needs assessments, monitoring of progress and analysis of new barriers encountered, will be required nationally, sectorally and also globally. Thus two observations are important. First the capacity built through the TNA project would be useful to the countries in the future for implementation and for new assessments. Second, the comment below on the limitations of technology prioritization results is not a *major* criticism of the project, but to highlight that over time, “best practice” will improve, and likely modify how technology was treated, and its sufficiency<sup>67</sup>. The UNFCCC negotiating process prioritizes the issue of “transfer of technology” from the better endowed to the poorer countries, even when the technologies that are needed to be more widely diffused can be either national or international. If it is the first, then “international transfer” is not relevant but the diffusion and widespread adoption nationally become more critical. Often even when international technologies are being “transferred” they require adaptation of the same to local conditions, for example many small developing countries can only use smaller wind turbines feeding renewable energy into their small systems compared to the most commonly available units for larger markets.

## E EFFICIENCY

115. The project is considered to have been very efficient in its use of funds and in the achievement of outputs and outcomes with the given resources<sup>68</sup>. This assessment is arrived at through several different measures – qualitative assessments of processes and monitoring systems used; views of the national partners; estimates of costs incurred per country and GEF targets and some comparable numbers; and also on the basis of the evaluators’ wider experiences of other similar projects.

116. The evaluation examined the preparation and readiness of the project team at UDP at the time of commencement, the tools used for financial planning and management, and contracts entered into between UDP and the four regional centres, and found them to be clearly articulated and well executed. The project undertook several measures to increase efficiency such as building upon pre-existing linkages with experts and institutions, such as the four regional centres and others, the agreements with

---

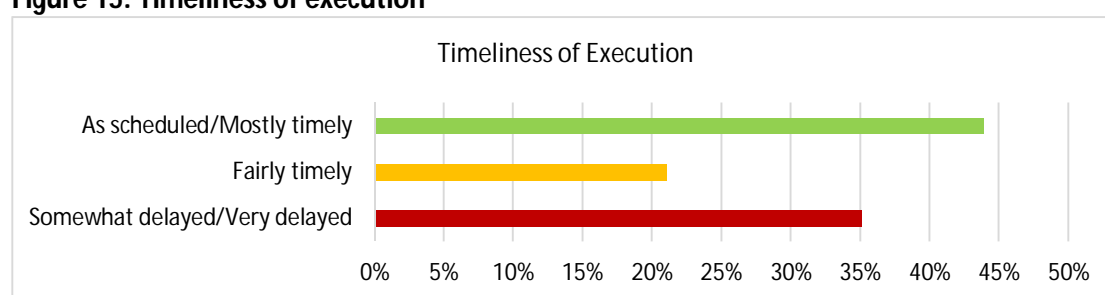
<sup>67</sup> See for example Schmidt, T. S., Huenteler, J. (2016). Anticipating Industry Localization Effects of Clean Technology Deployment Policies in Developing Countries. *Global Environmental Change*, v 38, p. 8-20. They provide an additional four typologies for technologies, and state “TNAs that are meaningful to green growth strategies should be extended so as to include a step in which the technology priorities are assessed against their potential to induce industry localization and domestic innovation”. The paper discusses how working with these additional characteristics can also help the priorities assessed gain the support of development and finance institutions, as they add dimensions additional to the environmental question.

<sup>68</sup> Here the word efficiency is used in the narrow sense. It will be seen in a larger sense, where relatively small additional resources, used as most appropriate, and determined during project execution, could have contributed relatively high value per incremental dollar spent.

the national entities, use of data sources and methods and lessons as available previously, such as the earlier work done on TNAs, several years before.

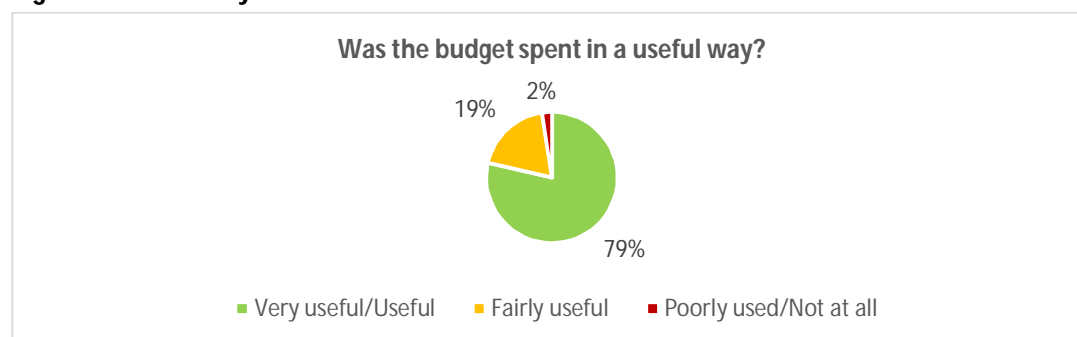
117. However, several challenges were faced during the execution and only 42% of the respondents agreed that the project was executed as scheduled or in a mostly timely manner, as shown in Figure 15 below. There were delays in many countries in signing the MOU with UDP, which slowed down the project sequence (see Table 5 in Annex II). This was mostly driven by the process within the country and not due to the project. It did create scheduling issues for the project, led to a delayed completion and increased the challenges in providing the support to the national teams. Project implementation and management plans were followed, with adaptations made to account for two streams of countries who were involved. Some of the lessons from working with the first group were applied in order to deliver with revised milestones.

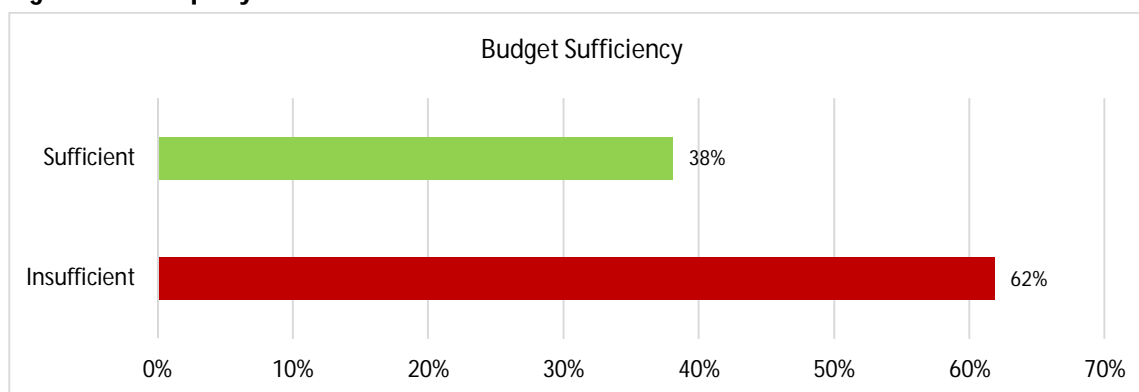
**Figure 15: Timeliness of execution**



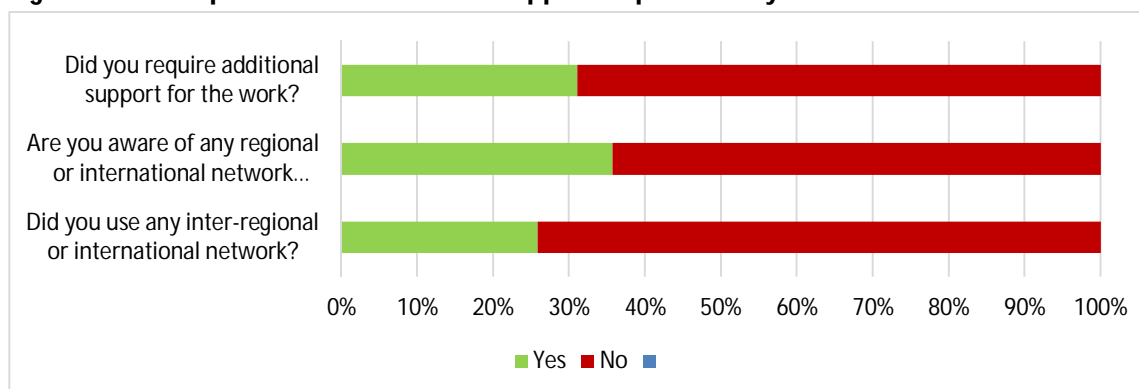
118. Especially important indicators are the views of the national partners. In Figure 16 below, only 2% of the national respondents believed the available resources were poorly used. On the other hand, Figure 17 shows that over 60% of them felt the resources available had been inadequate. On the budget for the project, a comment made by one of the national coordinators is instructive. They commented that the “diversity of the ecosystems and geography of country X, and the institutional fragmentation in the country” did not allow time or resources to fully address all issues, but within those limits it was an initiative that provided useful contributions. There are many other individual comments from the country coordinators that explain their view on how the budget impacted on their outputs and how additional resources could have improved outcomes.

**Figure 16: Efficiency of the use of resources**



**Figure 17: Adequacy of financial resources<sup>69</sup>**

119. Figure 18 indicates 25% would have preferred additional support for the work done in the country. The interviews and feedback from the survey suggest two areas where participants who wished for additional support would have found it most useful. First, a higher budget allocation for national work done and increased technical support and backstopping by the teams from DTU and the regional centre. It has been stated that the total project budget and the approximately equal national allocations had been unilaterally decided at a high level at the ProDoc stage. Thus, the project in its design and execution was unable to allocate lower or higher financial resources to allow for national differences. But the project team at the global and regional levels did have limited adaptive capacity to make adjustments in the allocation of support services provided, which was used within the degrees of freedom available.

**Figure 18: Participant view of additional support required if any and on networks**

120. It is noted that the actual amount spent from the GEF for the 32 countries, which ultimately produced results was \$6,476,071, or a contribution of around \$202,000 per country. The project as a whole had a pre-allocated budget ceiling per country of around US\$210,000 (see Annex II on project budget and expenditures). UDP will return the unspent balances to the GEF for four countries which in

<sup>69</sup> There were 70 valid responses and 28 persons stated they had no views on the adequacy of resources for figures 17 and 18.

the end failed to deliver any results<sup>70</sup>. Based on the experience of the evaluation team, this is a relatively tight budget per country (the GEF estimates made in 2008 appear to have been severely underestimated) and it provides another parameter confirming the project as having been very efficient in its use of funds.

121. The budget for only one other TNA project could be located by the evaluators<sup>71</sup>. This one for China was approved by the World Bank in 2012 for a total of US\$ 6.70 million. Clearly China is much larger, and to use GHG emissions as a criterion, its emissions are around three times the emissions of the total of all countries in this project. To arrive at some other comparable allocations, the GEF support provided for national communications and biennial update reports<sup>72</sup> to the UNFCCC is reported to have ranged from a low of US\$270,000 for one country, to a figure of US\$7.2 million for China.

122. Unfortunately, in our view, the managers at GEF and UNEP emphasized the efficiency metric – dollars allocated per country at around \$200,000<sup>73</sup>, most likely because it is easy, when marginal additions of ten to twenty percent of the total budget could have improved effectiveness and sustainability. The evaluation has noted that some countries wished for additional assistance (see Figure 18). Individual countries could have been assisted further, only if the overall design and execution had greater flexibility to adapt to circumstances during execution. The larger guidelines provided for similar financial resources allocated to each country and that was fixed. Within the components for technical support some additional support by the Regional Centres and other experts, have been added at the margin. If additional resources had been available, it could have been used for the workshops in duration and for lesson learning between countries. The regional workshops provided an excellent vehicle for experience and information sharing, learning between countries, and of course, for discussing progress and country-specific issues with regional experts. Many participants wished to have more time for these activities and specifically for inter-country experience sharing than the time and budget allowed.

123. The tight budget and desire for efficiency made the project choose the time and place of the steering committee meetings to coincide with other global events, in particular other COP events. The minutes reflect poor participation at the meetings as most non-UNEP participants prioritized their own work plans. This resulted in cursory discussions at the PSC on the TNA project and the PSC was less useful than it could have been<sup>74</sup>. Each of the additional steps to increase effectiveness of workshops and

---

<sup>70</sup> For the four countries which did not produce any results and whose allocations are returned to GEF, see Table 1.

<sup>71</sup> The searches made could locate many reports on TNA as a whole and by country but only one was found which had budget numbers.

<sup>72</sup> These reports cover for each country, their National Circumstances, GHG Inventories, Vulnerability and & Adaptation Analysis, Mitigation Analysis, other Information, and constraints & gaps analysis and are similar in processes to the TNA work.

<sup>73</sup> The GEF had reported in 2008 that it has already “funded TNAs for over 90 countries”, and “over 50 TNAs” had been posted on the UNFCCC website. Under a new funding window, the GEF proposed a new global program for TNAs both for countries who had not received GEF funding for a TNA, and those who had already, could “focus on updating the initial TNAs to reflect the evolving needs and circumstances of the country”. The GEF estimated a cost per country of \$50,000 to \$200,000, for about 130 countries arriving at an allocation for this window of \$9 million (page 15). Source: UNFCCC, 2008, Report of the Global Environment Facility on the elaboration of a strategic programme to scale up the level of investment in the transfer of environmentally sound technologies, FCCC/SBI/2008/16, 26 November 2008.

<sup>74</sup> The main negative impact from the lack of an effective PSC that was noted are on budget re-allocation and possible encouragement to the project team to create wider linkages with projects and organizations. But other than that, the teams, working with the Regional Centres and national stakeholders knew what they needed to do, within the specified project parameters.

countries helping each other, inclusion of financial entities in the workshops, would have cost more money (and tipped the project over the prescribed ceiling per country) but would have made the project more effective. The TNA project ended by returning money to the GEF, thereby staying within the presumed<sup>75</sup> ceiling of \$210,000 and actual expenditures were lower per country.

## F FACTORS AND PROCESSES AFFECTING PERFORMANCE

### F1 Preparation and Readiness:

124. The evaluation finds the “preparation and readiness” of the UDP team to be high when the project started. The project execution has followed the project design and the plans laid out in the PRODOC, where the project stakeholders had been adequately identified and so were the entities who were nationally nominated to undertake the work. As there was no project preparation grant used, the national stakeholders were not involved in the project development but their views on the priority for TNA had been expressed at UNFCCC and GEF meetings. The TNA project began working initially with 14 countries (in the first round of the 36 countries), who were self-selected as they had signed the MOU with UNEP in the first year after approval and were ready to begin (see Table 6). The four Regional Centres (RC) had earlier been identified to provide support to the countries - ENDA-Tiers Monde (Dakar, Senegal); Fundación Bariloche (Buenos Aires, Argentina); Libélula (Lima, Peru), and the Asian Institute of Technology (AIT), Bangkok, Thailand. The RCs were enlisted with detailed terms of reference to provide support to the countries in their region, which included hosting and arranging regional workshops, provision of other training and support materials (it is noted earlier that the main tools and guides were developed by the project team at UDP), assistance in the identification of national experts where required, support on the use of methodological tools and reviews of country reports, together with country visits, which were for support and follow up at the national levels, as required. The DTU team organized, in collaboration with the Regional Centres, two regional workshops for 1st round countries. The first regional workshop focused on TNA methodologies for technology prioritization, TNA and TAP reporting template, fact sheets, financial analysis model, multi-criteria decision analysis tool (MCDA) and stakeholder engagement training. The second regional capacity building workshop- focused on the analysis of barriers to new technologies, the enabling environment required and possible development of actions plans. This was followed up one year later with the addition of 22 countries for the second round of project activities, after some experience had been gained and capacities created at DTU and the Regional Centres.

125. The evaluation review of the quality of design of the project (reported in the Annex 4) found it to be satisfactory in most measures, and highly satisfactory for its relevance, with only one criterion with the lower rating of Moderately Satisfactory. That was for causality, rated lower, only because there was no Theory of Change (ToC). But a ToC was also not a requirement at the time of approval when the intervention logic was articulated, and the timeframe was realistic for anticipated project outputs and outcomes. Further, the evaluation noted that the “preparation and readiness” of the UDP team was high when the project started. The project stakeholders had been adequately identified and so were the entities who were nationally nominated to undertake the work. The four Regional Centres (RC) had

---

<sup>75</sup> This is presumed based on footnote 66;

earlier been identified to provide support to the countries - ENDA-Tiers Monde (Dakar, Senegal); Fundación Bariloche (Buenos Aires, Argentina); Libélula (Lima, Peru), and the Asian Institute of Technology (AIT), Bangkok, Thailand, and had been well selected and the UDP team built upon past experiences. The RCs were given detailed terms of reference to provide support to the countries in their region, including the hosting and arranging of regional workshops, provision of other training and support materials together with the main tools and guides developed by the project team at UDP. Thus among the main factors affecting the overall performance were: an appropriate project design; very good project execution; strong teams at UDP and all the RCs; and country teams who were motivated, well resourced, and took ownership of the work done. UDP was relatively well prepared, with a core team and identified regional centres at the time of approval.

126. **The approval process:** The review of the TNA Project approval process for the evaluation had the limitations that project documents and reviews were available only from the final months of project approval in 2009. This was when the design was at its final stages and its contents similar to what was approved as the PRODOC<sup>76</sup>. The records of earlier comments of project reviews and comments were not available as the staff who dealt with the design at the early stages were no longer working with UNEP. At this stage, no major issues were raised by Project review committee (PRC). We noted that as per UN guidelines, more attention could have been paid to gender analysis. At the same time, we concur with the project statement that the “impact of the present project on civil society, or gender is limited during project execution” while subsequent impacts could be substantial but certainly beyond the purview of the TNA project.

## F2 Project implementation and management

127. The projects objectives were noted by participants as being clear, practicable and feasible within its time frame and within constraints, the project document was clear and realistic to enable effective and efficient implementation, for 32 countries, and not for 45 countries as was initially proposed. Partnership arrangements were properly identified and a reasonable partnership and stakeholder template provided guidance to countries. Adequate project management arrangements were in place and lessons from previous TNAs, feedback from UNFCCC on required improvements were also incorporated into project plans. However, it has been noted that there were also wider lessons from a larger body of work on technology and innovation that could have been additionally incorporated. A weakness remained that no formal assurance or process existed to ensure counterpart resources, which varied by country. The factors which influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc. were indicated by the project team as being country demand, initial introductory activities and communication made by UNEP, including DTIE and DTU (which included choice of team and of regional partners).

128. The project implementation and management were very competent both by the DTU and by the RCs. This is observed in the very careful laid out contracts between the DTU and the RCs, the monitoring and processing of workflows, the financial planning and management during implementation,

---

<sup>76</sup> There was no project preparation grant (PPG) available for this project. It was stated earlier, that the response of the GEF to the request of the UNFCCC was relatively rapid and so was the subsequent response of UNEP to prepare and submit the project document that was approved.



adjustments to country demands and to changing circumstances. The original project plan and methodologies were relatively uniform across countries and not developed keeping the local context in mind, which was useful at the beginning and when combined with a degree of flexibility and freedom to adapt them to local conditions. At the training workshops UDP advised participants that while a common methodology was provided, there was some flexibility and they could modifications with suitable justification - has been stated by some of the LAC participants, as an important factor that contributed to the achievement of results.

### F3 Stakeholder Participation, cooperation and partnerships

129. In all cases, the national stakeholders' engagements were a sequential process. Initially the interactions were between UNEP and the designated entity by the country. Gradually, in each country additional national stakeholders were engaged in the project. Some of the national stakeholders commented that they were not sufficiently involved in project development, which they indicated as being top-down but this varied by country. The nationally driven process precluded assessments of the capacities of the executing agencies when the project was designed<sup>77</sup>.

130. The TNA project has contributed to the capacity building of national teams, who have gained methodological experience on technology assessment based on the tasks performed, and within the limits of this evaluation, it can be stated that the methods used were both reasonable and "best practice"<sup>78</sup> The national teams used the resources provided by the Regional Centres and the UDP, though many found a need to customize the methodologies to their national circumstances to ensure relevance and some required additional support beyond the available resources with UDP and the Regional Centres RC.

131. Private sector engagement was listed in the plans for the project and some countries, e.g. Senegal in Africa, indicated private sector persons were represented in committees and in national consultative meetings. But overall, private sector and the banking and investments sectors, and the in-country donor community were broadly absent/in most countries and in the regional workshops examined. The evaluators concede that some private sector engagement would only occur where their business interests and possible investments coincide with the priority projects, and so, could appear later in the project<sup>79</sup>. Also their interest would be higher for many mitigation priorities and lower for many adaptation priorities identified. Further development of the priorities (and work in TNA Phase II) should be accompanied by greater private sector involvement.

---

<sup>77</sup> The evaluation recognizes that this was not possible at the design stage as the project was designed relatively quickly to respond to the UNFCCC request based on the views of many countries that the technology issues had not received sufficient attention. It would also be difficult in this case, as there were no pre-project planning grants used. This was discussed by UNEP and UDP during the MoU stage and in the first inception mission.

<sup>78</sup> Here, best practice refers to the processes adopted by the TNA project team – working with multi-sector and a multi stakeholder task forces; drawing on existing information on the context and the issues; assessment of threats and opportunities and links to other development priorities; developing strategies for action, selecting key technologies required, their characteristics, the barrier to their use and so on; these are all mentioned under a slightly different number of steps, and sometimes changes in the names, in the references to footnote 45.

<sup>79</sup> It was suggested and the evaluators agree, in the early stage discussions and the in the actual content of the work done, the interest of most political leaders would also be low, and there would normally be greater interest and involvement with the results and ensuing plans.

132. Starting the project with the first sub group of countries allowed for a very useful learning period of one year, before the participation and engagement with all 32 countries. However, the identification of in country partners and stakeholders was a country task, outside of the project jurisdiction. The ProDoc had emphasized the project would promote “stakeholder analysis and participation in each country” (see section on objectives and project components; the conclusions) and the ToC, has determined this to be one key activity and output of the project, within a process led by the country teams.

#### **F4 Country ownership and driveness**

133. The project design included stakeholders’ participation and public awareness as core issues and while larger public awareness efforts varied considerably in between countries, all countries have reported and took considerable efforts to have relatively wide stakeholder participation, especially at the levels of experts, academics and government agencies, though there were often gaps in the participation of financial institutions and some relevant private sector firms or representatives. The positive emphasis in the project on stakeholder participation, public awareness and the need perceived by the countries for this work, enhanced country ownership and driven-ness, and in turn many of the successes.

#### **F5 Communication and public awareness**

134. The project and also many countries involved in the project have taken multiple steps to increase awareness about the technology need assessment processes, and also on the results, through publications, workshops, websites and similar mechanisms.

135. Many countries used their existing climate change national committees to coordinate/ implement the TNA project. Some others created a specific committee (or committees) with a wide range of representation from governments, academics, experts, non-governmental organizations and community based organizations and a few also had private sector representatives. In the majority of the countries the responsibility for the project was with the Ministry of Environment and in a few the responsibility was delegated to the Ministry of Science and Technology (for example in Thailand). All countries visited were seen to have established linkages between the TNA teams and other national agencies responsible for sectoral issues related to climate change. The national Steering Committee members often constituted high-level representatives and in some countries work was done for capacity building and awareness creation for members of this committee. Some countries, such as Thailand, linked the TNA process to their contributions to UNFCCC negotiations and reported the outcomes to the UNFCCC Conference, and participated in the development of one of the UNFCCC level responses, the creation of CTCN to follow up on the technology mandate of UNFCCC.

136. Regional workshops were held<sup>80</sup> which provided a very useful opportunity for experience and information sharing, learning, providing support by experts and to reference sources. These also provided a regular forum for discussing each country's progress and country-specific issues with regional and international experts.

---

<sup>80</sup> There was one set of workshops for the first 14 countries which began the work early, and similar workshops were repeated for the second group of 22 countries.

## F6 Financial Planning and Management

137. The project implementation and management as noted were competent both by the DTU and by the RCs and that includes the financial management. This is observed in the very careful laid out contracts between the DTU and the RCs, the monitoring and processing of workflows, the financial planning and management during implementation. The project documents reviewed (listed in the annex) suggest the timeliness of financial reporting was appropriate. No evidence was seen of any difficulties in financial reporting formats by the partners, and all reports were appropriate. The evaluation did not note any evidence of irregularities in the use of financial resources, but at the same time, this was not a financial audit and hence not an area of focus for the evaluation<sup>81</sup>.

## F7 UNEP supervision, guidance and technical backstopping

138. The evaluation finds that the achievements were possible through the high dedication and competence of the project staff at UDP, the regional centre partners, and the strong efforts made in most countries to meet the minimum deliverables. The participants' views also strongly support the above finding. Some national respondents would have appreciated more technical support by the technical support teams, and felt they needed the additional support to develop their capacity.<sup>82</sup> The areas where the respondents clearly wished for more support included: "establishment of regional or international networks"; "use of any of the inter-regional or international networks" and "regional/inter-regional networking opportunities provided for information, for cooperation and for technology transfer". (see Figure 18)

## F8 Monitoring and Evaluation

139. Monitoring of progress was built into the project design with on-going review of progress by national counterparts, the RCs and also by the DTU team. A design weakness would have been that in earlier versions the drafts had focused on mitigation, most likely as mitigation was more important within the UNFCCC process. But adaptation was added in the final PRODOC, for which resources had been inadequate earlier and technology had paid insufficient attention to adaptation issues in terms of concepts and technical resources. During execution the project sought additional technical resources in LAC with the partnership with Libelula, for support on adaptation. In Africa the experiences of the RC appeared to be sufficient on both mitigation and adaptation, but a number of Asian countries responded that the support available on adaptation issues from the regional centre had been less adequate to their requirements.

140. The project made necessary efforts during implementation to secure stakeholder participation, cooperation and partnerships, which enhanced country ownership. Monitoring of progress was satisfactory for the purposes of supervision, guidance and technical backstopping.

---

<sup>81</sup> The evaluation cannot comment on the adequacy of any leveraged finances as in the UNEP/GEF practice such details are not available.

<sup>82</sup> For example, a government representative from Lao PDR said "More capacity building and training, especially on cost and benefit analysis and proposal development' would have been useful; similarly from Kazakhstan more "support under economical issues" was needed; and the government representative from Georgia said "the needs Georgia has are knowledge in technologies including prices, feasibility conditions, etc. Such support was not provided" and main support was strong on overall unification of the report.

## LIMITATIONS AFFECTING PERFORMANCE

141. In Africa, many national stakeholders reported that they lacked institutionalized national mechanisms to carry on TNA/TAP implementation and were not sufficiently equipped to prepare funding requests to the international channels (this is also reported from other regions but less often, and it will be seen that a number of countries from Africa have indeed followed up with funding requests to bilateral and multilateral channels but reports of use of results is less robust). There was a higher apprehension in the ability to acquire licenses to use/implement many technologies.

142. In the Asian region, despite the satisfaction with the usefulness of technical support, more than half of the respondents indicated they needed additional support, especially on economic and cost-benefit analysis of selected technologies, improvement on the prioritization process, and support after the project completion. Also some countries in the region had greater difficulty with English, and so had difficulty understanding some of the guides and books provided. Finally, in Asia, there was a strong comment that international funding agencies too often only focused on “building capacity” and not on the future requirements of implementation.

143. The smaller number of respondents in the Latin American region suggested their limitations included the limited availability of national experts/consultants, changes in political authorities, and limitations on the statistical data that was locally available.

144. Some of these national and regional variations appear to reflect the national conditions given the country level emissions and development indicators such as HDI (provided in annex 3). The variations within countries were largely due to internal factors. First, the delays in official procedures in some countries reduced their time for participation and slowed down the implementation. Secondly, many countries reported their lack of experience, lack of capacity for the analysis that was required, the lack of domestic resources, which were often used by the higher performing teams to enhance the national outputs and outcomes. Within the broader factors, it was seen in many countries that the leadership of the national coordinator has often been a highly critical factor in the success or its lack within the countries reviewed.

145. Among the external negative factors that reduced performance were a weak steering committee (mentioned earlier on efficiency), which had been created to allow the project to have the feedback, inputs and guidance from key global actors such as UNFCCC, GEF, the World Bank and others, who could provide wider global perspectives to the project. There was a low priority accorded in the execution to seek their feedback and participation, which was largely due to the time constraints of members and the project team and is reflected in the few meetings and the low inputs provided during the meetings that were held<sup>83</sup>. A very tight budget and inability to repurpose budgets to reflect goals as the project progressed reduced the scope for adaptive management by the project team at UDP.

146. Another weakness was the lack of linkages within the TNA to other key work on technology and its financing, transfer and diffusion which have been funded by UNEP and GEF during the same period as the TNA project. Notable projects that would have useful linkages to the TNA project would be a series of UNEP projects on technology such as the UNEP/GEF “enlighten” initiative<sup>84</sup> to accelerate a market

---

<sup>83</sup> Review of steering committee minutes and discussions with project team.

<sup>84</sup> The project commenced in 2009.

transformation, where energy efficient lighting technologies replace inefficient lamps, in a partnership among international stakeholders of countries and multiple other parties, nationally and globally, to address the different barriers and share knowledge, implement policy and regulatory frameworks, which should provide one example of a priority being addressed.

## CONCLUSIONS, LESSONS AND RECOMMENDATIONS

### A CONCLUSIONS

147. The conclusions are first summarized in the two tables below as required by UNEP and they are discussed further keeping in mind some of the unique features of this project. The aggregated rating has been made keeping in mind the reconstructed Theory of Change of the project, the observed outcomes in the intermediate term, and the achievements of the defined project goal and objectives. This is an overall judgement of the project effectiveness, within the context and external limitations imposed on the project.

**Table 13: Outcome ratings: review of outcomes to impact- the ROTI approach as in the ToR**

Outcome Rating	Rating on progress toward Intermediate States
<p><b>Between A and B:</b> The project's intended direct outcomes were delivered. The direct outcomes are designed to feed into a continuing process of planning and actions at the national level, at UNFCCC, GEF and other international processes. The evaluation confirms the expected direct outcomes and provides evidence of such outcomes. But as the project as designed and approved made no prior allocation of responsibilities or resources, subsequent to the conclusion of the GEF project funding, and so the rating has been reduced to a slightly lower level than A.</p>	<p><b>A:</b> The measures designed to move towards intermediate states have been noted in the evaluation. Medium term outcomes have been observed in many countries. The combined processes have produced some of the desired results, which could be observed in the short time after the end of the project. The above clearly indicate that they can progress towards the intended long term impact. (details are provided in the effectiveness section III.C)</p>

**Table 14: Overall evaluation ratings**

Criterion	Summary Assessment	Evaluation Rating	EOU Rating
<b>A. Strategic relevance</b>	The evaluation noted that the participating countries had requested such a project to help them determine their needs. The project's implementation strategies were found to be highly consistent with the global, regional and national environmental issues and needs as defined by the countries at the UNFCCC. The objectives of the TNA were highly consistent with the global priorities of UNFCCC, UNEP and GEF. The project was a part of the GEF's climate change priorities, and, was mandated by UNFCCC. The original project design in 2008 had privileged mitigation options but the project incorporated adaptation issues as well. The project execution allowed for a degree of flexibility, within GEF mandated constraints, which allowed for national differences to be taken into account. The perceptions of key national stakeholders in the interviews and in the survey largely reflect the finding that the project was highly or mostly relevant to the national priorities. See paragraphs 70-80	HS	S <i>South-South cooperation; North-South cooperation and human rights/gender come under strategic relevance –</i>

Criterion	Summary Assessment	Evaluation Rating	EOU Rating
			<i>all three are noted as weak</i>
<b>B. Achievement of outputs</b>	<p>The achievements and limitations in execution and for delivering the outputs are detailed in Section III.B. The evaluation concludes that 12 (out of 15) outputs were very well delivered, two were mostly delivered while one – establishing regional and international networks/institutions to promote technology transfer was not attended to. The project delivered in 30 countries all the planned reports. In total there were over 124 final reports. Many countries went further to produce additional reports as suggested by the TNA and RC teams, which included “Barriers” to the use of the priority technologies; and most went further to define 3-5 priority project Ideas, each for mitigation and adaptation. The tables in Annex 9 list the outputs by country. A few countries noted (in the regional sections), that they had some difficulty with the tasks due to low national capacity. Global dissemination has been achieved and it was seen that the UNFCCC has almost all reports. Many of the reports are being used nationally and globally for additional and further actions. The regional workshops, newsletters and web site provided avenues for cooperation between countries. Some countries used the experience of another TNA country, and stated that such cooperation across countries was valuable. They said, and the evaluation concurs, that the project was unable to nurture this fully. The evaluation finds this was due to budget and time limitations, and an unfortunate gap. So it assesses the project as being “satisfactory”, less than “highly satisfactory”, while noting that the project faced many challenges and the team has performed very well in most outputs. The issue of linkages between countries, increasing opportunities for learning between countries, linking to regional and global networks for knowledge, information, technology and finance are areas for the subsequent TNA Phase II to pay greater attention to. See Table 12. See paragraphs 82-85.</p>	S	S
<b>C. Effectiveness: Attainment of project objectives and results</b>	<p>Overall around 80% of the survey respondents reported that the project has achieved the overall objectives and that the project had made a very high/high/fair contribution to the two issues of mitigation and of adaptation. See paragraphs 87-114</p> <p>The evaluation judges the overall effectiveness of the TNA project to have been “Satisfactory”</p>	S	S
1. Achievement of direct outcomes	<p>Section III C1 lists all direct outcomes from the project. 32 countries have either developed or strengthened their plans. The project was helpful for them to 1) update the technologies in line with more recent national needs and priorities and 2) make more strategic and useful plans. The work which has been globally integrated and reported upon by UNFCCC, GEF, TEC and the CTCN, can be said to provide an improved global vision of technological priorities. A global TNA handbook was updated and published in 2011 and had inputs from the UDP team. See paragraph 87-91</p>	S	S
2. Likelihood of medium term outcomes/impact	<p>The achievements of medium term outcomes are discussed in section III.C. with a text box, with examples of medium term outcomes. They include: 20 of the 25 reporting countries have reported that the outputs have been used in one or more ways, such as inclusion in the INDCs and NAMAs for UNFCCC, new sectoral plans, national allocations for implementation, and international support based on the priorities identified. See paragraphs -92-96</p>	HL	ML

Criterion	Summary Assessment	Evaluation Rating	EOU Rating
3. Achievement of project goal and planned objectives	The achievement of results along the ToC, and the views of almost 80% of the respondents that the project has achieved the overall objectives (as discussed earlier with lower performance on some specific outcomes, among them establishing and/or using regional and international networks and sharing knowledge and experience between countries), leads to a Satisfactory rating. See paragraphs 94-99	S	S
<b>D. Sustainability and replication</b>	The evaluation rates the overall sustainability of the TNA Project outcomes to be highly likely. The overall rating is derived partly from factors intrinsic to the project. The high rating is also influenced by the ToC, and the view that the impact drivers and assumptions in the TOC, deriving from multiple national and global contexts, have been in the positive direction, supporting sustainability. See paragraphs 100-114-	HL	L (lowest of the sustainability sub-category ratings)
1. Financial	The project did not directly provide funds to secure the future financial sustainability of the prioritized actions. This has been criticized by some national stakeholders and their views have been noted in this report. The project discussed and supported such engagements for further financing in reports and workshops, but it could not make sufficient efforts within the project activities, to do so. Limited resources constrained the project. Positively, the drivers – “ new global and regional mechanisms” have been established; and new “global rules” - have improved take up options; the assumption in the ToC – “supported countries take steps to strengthen institutional capacity” are evident in the outcomes. So the financial support for the identified actions and the sustainability of the project results, given the agreements reached in COP 21 Paris, to support an increasingly bottom up, country led process, where many of the activities of the TNA will necessarily be the building blocks for country strategies is rated highly likely. See paragraphs 107,108	HL	L
2. Socio-political	The socio-political support at the national level stemmed from the design to meet country specific needs, country driven-ness and ownership. The approaches met the critical assumption made in the ToC, “transparent, consultative, user friendly interactions among stakeholders” which allowed the national teams to carry the results forward. They led to positive socio-political support for the project. In the future social and political factors that would positively influence the sustainability of project results and progress towards impacts include the future experiences of climate change in each country and the level of global support for common actions. See paragraphs 103-106	L	L
3. Institutional framework	This project did not attempt to directly modify governance structures, legal and accountability frameworks etc. but focused on providing technical skills and filling in information gaps, for a country led process. The assumption was that the core missing elements were the skills and information available to national authorities. The support for the process of wide stakeholder engagement and consultations and some (limited) cooperation between countries were the additional elements for the outcomes, which included change in capacity and in “policy behaviour” nationally, which could be justified and supported by multiple stakeholders, with the required technical analysis. There are many social, economic and political factors involving local, national and global dimensions that impede CC actions everywhere. It would have been inappropriate for this single TNA project to adequately engage with them all. See paragraph 109	L	L
4. Environmental	The evaluation view is that climate change issues dealt with here, are not only an environmental problem to be dealt with through specific environmental policy measures. It is a global economic problem to be dealt with through global economic policy measures, with a high degree	L	L

Criterion	Summary Assessment	Evaluation Rating	EOU Rating
	of cooperation among multiple dimensions and nations, within which new technology and innovation will be critical. The evaluation considers the project elements to contain steps for the inclusion of technology and innovation in confronting the social and environmental challenges, thus a necessary activity, which delivered most outputs as required (within caveats in the report) of the countries. See paragraph 111		
5. Catalytic role and replication	<p>The project has played a catalytic role in building the capacity of national stakeholders for actions involving institutional and policy changes. It contributed to institutional changes, with the uptake of priority technologies, as pilots, and to policy changes.</p> <p>Replication is underway with a second phase of the TNA for additional countries. The project and also many countries involved in the project have taken multiple steps to increase awareness about the actions. Finally, the TNA project is not a one-time exercise, where countries can then move on to other tasks. Over the next decades, similar and more detailed technology needs assessments, monitoring of progress and analysis of new barriers encountered, will be required nationally, sectorally and globally. See paragraph 113, 114</p>	HL	L
<b>E. Efficiency</b>	<p>The project is considered to have been very efficient in its use of funds and in the achievement of outputs and outcomes with the given resources. This is arrived at through several different measures – qualitative assessments of processes and monitoring systems used; views of the national partners; estimates of costs incurred per country and GEF targets and some comparable numbers; and also on the basis of the evaluators' wider experiences of other similar projects.</p> <p>The evaluation concludes that some countries wished for additional assistance (see Figure 18) and that would only have been possible with larger discretionary resources within the project to adapt to circumstances during execution. Additional resources could have been used for workshops in duration and for lesson learning. Each of the additional steps - to increase effectiveness of workshops and countries helping each other, inclusion of financial entities in the workshops, would have cost more money but would have made the project more effective. The TNA project ended by returning money to the GEF, thereby staying within the presumed ceiling of \$210,000 per country. See paragraph 115-123</p>	S	S
<b>F. Factors affecting project performance</b>	<p>The evaluation summarises the factors and processes that affected the project performance in section III. D. The evaluation reviewed "Quality of Design" of the project (reported in the Annex 4) found it to be satisfactory in 9 out of 11 measures, as specified by the UNEP EO, and highly satisfactory for its relevance. It was rated lower "Moderately Satisfactory" only for one, because there was no Theory of Change (ToC). But a ToC was not a requirement at the time and the intervention logic was articulated and the timeframe was realistic. The evaluation noted that the "preparation and readiness" of the UDP team was high; with stakeholders identified, and the entities who were nationally nominated to undertake the work. The four Regional Centres (RC) had been well identified to provide support. Key factors affecting the overall performance was an appropriate project design, with very good project execution; strong teams at UDP and all the RC; and country teams who were motivated and well resourced (often, not always), and took ownership of the work done. In addition, the assumptions and drivers – externally imposed – also supported good performance. See paragraphs 124-144</p>	A rating is not applicable.	S (based on the range of ratings below)
1. Preparation	The evaluation determined that the preparation and readiness of the	S	S



Criterion	Summary Assessment	Evaluation Rating	EOU Rating
and readiness	UNEP UDP team to be high when the project started. See paragraph 124		
2. Project implementation and management	The project implementation and management were very competent both by the DTU and by the RCs. This was observed in the very careful laid out contracts, the monitoring and processing of workflows, the financial planning and management, and a degree of adjustment to different country needs and to changing circumstances. See paragraph 128	S	S
3. Stakeholders participation and public awareness	In all cases, the national stakeholders' engagements were a critical element of the project, where in each country additional national stakeholders were engaged over time. While some of the national stakeholders commented that they were not sufficiently involved in project development, this varied by country. Larger public awareness efforts varied considerably between countries, though all countries have reported and took considerable efforts to have relatively wide stakeholder participation, especially at the levels of experts, academics and government agencies, though there were often gaps. The emphasis in the project on stakeholder participation, public awareness and perceived national needs, enhanced country ownership and in turn many of the successes. See paragraphs 129-132, 134	HS	HS
4. Country ownership and driven-ness	Country ownership began with the request of the participating countries to help them determine their needs. The project's implementation strategies as discussed above enhanced country ownership and driven-ness. See paragraph 133	HS	HS
5. Communication and outreach	The project and many countries involved have taken multiple steps to increase awareness about the processes, and also the results, through publications, workshops, websites and similar mechanisms. See paragraphs 133-136	S	S
6. Financial planning and management	The project implementation and management, including financial, were noted to be competent both by UNEP DTU and by the RCs. See paragraphs 128, 137	HS	S
7. UNEP supervision and backstopping	The evaluation noted that the achievements were possible through the high dedication and competence of the project staff at all levels. The participants' views also strongly support the above finding. See paragraph 136	S	S
8. Monitoring and evaluation	Monitoring of progress was built into the project design with on-going review of progress by national counterparts, the RCs and also by the DTU team. A planned MTR was conducted. See paragraph 139	S	S
a. M&E Design	The LFA is clear and adequate. There is baseline information for indicators and indicators on Outcomes identified, with midterm and end-of-project targets identified at outcome level. A mid-term review provided for. Review of project design in Inception Report	S	S
b. Budgeting and funding for M&E activities	There is an evaluation plan, time frame and an explicit and adequate budget. Review of project design in Inception Report	S	S
c. M&E Plan Implementation	The monitoring and processing of workflows, outputs, financial and management issues during implementation were noted to be satisfactory. See paragraph 137	S	S
<b>Overall project rating</b>	Based on the above, and details provided in the evaluation, there were some small shortcomings. They include a degree of inflexibility to country situations in the budget, leading to insufficient attention to learning between countries; establishing linkages with related and on-going work on technology, and with financial institutions. Most were caused by the relatively tight budget and time line. These factors lower the rating from otherwise HS to the level below, Satisfactory.	S	S

148. It is useful to review briefly the context of the TNA project to provide a framework for the conclusions and recommendation. Several large issues frame all work related to climate change mitigation and adaptation and are worth noting here to round out the broader conclusions, lessons and recommendations. It is useful to begin with the fact that it has been over 25 years since the global community determined to act to reduce greenhouse gas emissions, and after a long period of slow and halting progress in climate negotiations, actually reducing total carbon dioxide emissions remains an aspiration. On the positive side there is an agreement that all countries must contribute their efforts, and the richer countries must help the poorer countries' efforts, especially through the provision of finance and technology as required. There remain strong disagreements between experts and countries on the most appropriate global and national responses and the exact policies most appropriate for each country, keeping its national context in mind and on both the nature and scale of financial and technological flows required. It will be some years before there is evidence that the global efforts on climate change are leading to a decisively downward shift in the curve of emissions. There will have to be many more steps along this path requiring more analysis, research, policy and investments before such evidence is possible. The TNA Phase I, is but a single step in this process and is a small step which needs to be further reinforced and supplemented by the countries, UNFCCC, GEF, UNEP and other agencies.

149. The recent 2015 COP meeting at Paris was one important step, and the TNA project comprises one step in the right direction to meet the challenges of climate change. Bending the emissions curve sufficiently downwards to make a significant difference to global warming is a task, whose success can only be judged 3-5 years from now in the shorter term and from 5-20 years in a more intermediate term. All 32 countries which worked successfully on the TNA process only contribute 8% of global carbon emissions from fossil fuels.

150. The TNA project began as a quick response by GEF in late 2007, to the request by COP 13 to elaborate a strategic programme to scale up the level of investment for "Technology Transfer". The GEF produced a programme to scale up the level of investment in the "Transfer of Environmentally Sound Technologies" which was endorsed in 2008 and the TNA project was approved and operational at the end of 2009. The issues covered in the TNA project design have to be seen in the context of global agreements and structures in place under the UNFCCC process as at 2009, which included a lower priority hitherto for adaptation. The evaluation makes some criticism of the project execution in its sticking to a narrow project based framework and not incorporating parallel developments globally especially in the technology issues between 2010 and 2014, while it also praises the project execution to have largely overcome the design gap on adaptation issues, by reaching out to new knowledge partners (see earlier sections on factors affecting performance and management and implementation).

151. Climate change itself has been labelled as a highly complex problem – it includes multiple scientific complexities; there are further complexities added to ascertain multiple impacts. In health, or agriculture for instance, there are difficulties of agreeing on the process to deal with the costs – how costs should be borne and shared among different groups, making judgements over long time scales over which the costs and benefits would accrue, and many others. In the TNA project there are the added uncertainties of dealing with technological factors, which are also highly complex. The evaluation is unable to find a simple metric to show that this project, designed to facilitate the development of policies focussing on technologies to deal with both mitigation and adaptation over three dozen countries, (each country with variable starting points in data availability and institutional capabilities), was more complex than other efforts to improve policy making. But developing such policies required

the project to cover state of the art knowledge on multiple issues: energy and economics of energy; influences in the larger social and economic structures; costs and benefits of options, (not only as a onetime decision but with regards to future streams, with uncertainties), and where discount factors are a highly controversial subject. It also required assessments of trajectories of technologies, now and into the future; and judgements on the political economy, and other areas that could be listed, but clearly covering domains where there are no single individual experts or full agreements.

152. Its success cannot be judged by the review of the reports produced, which would require as many resources as were used in the first instance in their production. It was most successful in beginning and contributing to a useful set of steps for the national stakeholders to understand and learn from one another, providing the opportunity to share and learn more about these interconnected issues. This yielded new insights from each other, and will need to be continued in even larger conversations, nationally and globally if there will be effective actions related to mitigation and adaptation. The TNA project was found to have contributed (within the scope of the relatively small resources allocated per country of a little over US\$200,000 per country) to the further development of national policies for climate change mitigation and adaptation, to new and improved plans/strategies and to UNFCCC submissions such as NAMAs, INDC, to follow up requests to CTCN and the low carbon development strategies required.

153. Specifically, the most positive achievement of the project is the fact that it successfully completed a process in 32 countries, which was seen to be required under the UNFCCC, for countries to receive further assistance and support. The project contributed an important part to the preparation of new TNAs for most countries and the enhancement of TNAs of countries which had participated in an earlier round. The project expanded for the first time the TNA process and priorities to include adaptation including overcoming earlier gap on adaptation issues. It reached out to new knowledge partners for adaptation. The processes used ensured that the TAPs that resulted had considerable national consensus, were founded upon, and linked to, national development priorities. They are all endorsed by the governments of supported countries and the evaluation found multiple examples of utilization of the outputs. The evaluation has noted earlier that the project did not create (but worked within the constraints of) the framework conditions for more cost effective transfer of both greenhouse gas (GHG) mitigation and adaptation technologies to the supported countries as such frameworks are outside its scope and determined nationally and by UNFCCC processes. But the project has made the required contributions expected of it by the existing frameworks and institutions. It made useful and appropriate contributions to the capacities of key national actors, who were partners, and it is anticipated that they will continue to develop, implement results attained and undertake similar processes in the future.

154. Many tensions within the project had to be resolved by the TNA team for successful results. The tensions that have been discussed include - between quality of outputs and time and between the need to share experiences between countries and tight budgets. This required thoughtfulness on the one hand and the apparent bias not to push harder against "established" truths" while also balancing the need to serve many countries with their different circumstances against the tight budget and timeline. An important measure of its learning as it progressed has been observed. In summary, this evaluation finds the overall rating for the project, combining the different ratings and circumstances to be Satisfactory and falling below Highly Satisfactory for the reasons discussed.

155. To conclude this section, among the reasons behind the successes of the project in producing its different outputs and meeting good quality standards include a good design without major

shortcomings, good planning and execution, excellent arrangements for the execution with good support from all four regional centres. To this the enthusiasm, support and interest in most countries for the work was also an important contributing factor, which resulted from the countries' perception of the importance of the work. The reviews of documents and stakeholder views show high performance on most factors above, good standards led to high levels of satisfaction but of course neither the performance nor the satisfaction were at 100% perfection, an impossible standard for such a project.

## B LESSONS LEARNT<sup>85</sup>

156. Good design is almost self-evidently a critical factor for the successful execution of any project and this evaluation has given due consideration to the project design. What seems less self-evident to the agencies supporting the project is that **the original design is only one element among a number of other factors that affect success and failure**, and while good design is necessary, **multiple factors, jointly determine the final results**. Among these additional factors must be included the capacity, skills and efforts made by the people implementing the project, which in this case includes the staff at UDP, the four Regional Centres and many of the national coordinators and experts involved. We have noted in this evaluation that such **capacity, skills and efforts in the supporting teams and countries has been notably high** (but not uniformly so and not across all issues and is more uneven in the countries involved in the project) and were **among the major factors that contributed to the successes** noted. **The rigidity with which the budget was implemented, reported to be based on GEF rules for compliance, does not allow for the required adaptation to the realities on the ground**. The loss in feedback in an inherently complex process can easily lead to losses in effectiveness, while as the meagre but more easily measured gains from the higher "efficiency" in working with arbitrarily set targets for fund allocation in the design and pre-approval stage does not compensate for effectiveness losses.

157. Another **key issue** that will almost always arise **for multi-country global projects** such as the TNA, **is the fact that the context, priorities and capacities of participating countries would invariably vary. Their heterogeneity requires a degree of adaptation of the support services provided** by the project by implementing agencies such as the UNEP DTU and its technical partners. In each of the regional reports (see Annex IX) some countries noted that they had greater difficulty with the tasks, most often due to low national capacity and low national budgets for the required work; others remarked on language difficulties and some noted the specificity of their issues, which required adaptations to the common methodology developed. In all regions a lesson that emerges is that for such global projects, a minimum level of the national contexts and capacity assessments should be conducted early, and where necessary and feasible, additional support must be provided to mitigate the specific limitations found.

158. The fact that the needs and capacities of participating countries would invariably vary, would always **result in some countries proceeding faster than others**. This suggests that **mechanisms where by countries can learn from each other should be encouraged** and provided for in the implementation plans.

---

<sup>85</sup> UNEP EO suggested - "Lessons learned should be anchored in the conclusions, and an explicit finding. They should guide good practices, which could be replicated, or derived from problems encountered and mistakes made which should be avoided; and must have the potential for wider application and use.

159. **Multi-stakeholder processes need special attention and resources for their management** in order to provide the positive feedback and effective governance required given that the stakeholders usually have different priorities. It was noted that the tight budget and misplaced desire for efficiency made the project choose the time and place of the PSC meetings to coincide with other global events, in particular other COP events. The minutes reflect poor participation at the meetings as most non-UNEP participants prioritized their own work plans, resulting in cursory discussions on the TNA project and the PSC was much less useful than it could have been.

160. **Each of the additional steps** above (e.g. to increase effectiveness of workshops and countries helping each other, inclusion of financial entities in the PSC and workshops, etc.) **would have cost more money but would have made the project more effective**. Thus, **effectiveness can be reduced when the project funders**, in this case, the GEF, **utilize inadequate metric for efficiency**. The lesson with potential for future application is that **efforts to increase efficiency must be balanced against the incremental costs and efforts required to maximize effectiveness**. The evaluation provides examples of increased effectiveness if some countries could have been assisted further, if the overall design and execution had greater flexibility to adapt to circumstances during execution, if additional resources could have been added at the margin, and if they had been available for the workshops for lesson learning between countries and the PSC.

161. Among the factors responsible for project success in any complex project is the ability of the team to manage the portfolio of resources, within the budgetary caps, in the most effective manner as the project progresses, keeping in mind actual challenges and opportunities that arise during execution. This requires the project management in this case the TNA team, UDP and UNEP DTIE to have complete and accurate information on the resources available and their use. In the TNA project, as in all GEF projects seen by the evaluator, there are several budget line items for co-financing of counterpart resources (see Table 2) that is often opaque, as it has been in the TNA project. Greater transparency in the use of all resources would help projects to achieve greater effectiveness as the total resources available to the project, could be deployed most efficiently to meet gaps as they emerge.

## C RECOMMENDATIONS

The recommendations are directed at several specific organizations and by purpose: first, for the project team at UDP and for UNEP, immediate recommendations for the remaining portion of TNA Phase II; secondly, for the participating countries in this phase who should be the most immediate users of the findings in the report; and subsequently for other priority users, especially UNFCCC and GEF, the key partners in the governance structures that have framed the work done under TNA. All recommendations follow from the conclusions (based on our findings and on stakeholder feedback and within the limitations and boundaries of this evaluation referred to in the first chapter). With this broad context, specifically:

The Project team<sup>86</sup>, UDP and UNEP for TNA I and II

1. Recognize and reach out to ongoing/completed projects on technology for climate change funded by UNEP, GEF and now CTCN, the multilateral financial institutions, and others, (for example en.lighten on efficient lighting technologies) which can provide concrete lessons for TNA. Explore mechanisms to link to such projects, and their results to the TNA Phase II<sup>87</sup>, to add additional stakeholders, financial institutions and where appropriate private sector representatives, and as appropriate, additional expert inputs and for the governance) of work.
2. Work with UNFCCC to ensure all TNA reports are also available at the UNFCCC website - Link to communication/public awareness in the section on factors affecting performance
3. Explore options with the key partners – countries and regional centres and the stakeholders to enhance and improve dissemination of key issues, public policy and coverage about technology issues related to climate change in more and different forums, including the mass media by providing relevant information, promoting evidence-based results of government and international programming and contributing to on-going needs for public policy formulation; explore additional options to find ways of influencing and engaging with civil society and academics on the issues.
4. Commit to a minimum agenda (could be very brief and periodic) for following up on the core outputs, resulting outcomes and examples of successful programs emerging out of the TNA efforts<sup>88</sup>.

---

<sup>86</sup> The project team has added that it notes with appreciation the participatory process used in the evaluation. This has allowed to team to incorporate a number of the recommendations made in the TNA Phase II project which had started implementation prior to this evaluation, in November 2014. An early summary of the evaluation findings were presented in the first TNA Phase II PSC meeting in May 2016. In addition, the GEF Secretariat approved the project concept submitted by UNEP for a third phase of the TNA project, which is anticipated to start in 2017. For this third phase, the project outcome statement has been changed to "Technology Needs Assessment (TNA) process conducted by national stakeholders, and TNA/TAP results are available to be integrated into national planning processes and to be funded and implemented by interested stakeholders", which is an improved and more realistic goal. The project team reports that a number of the improvements in Phase III have been learned from the evaluation and the experiences of the current phase; and also, the team finds that at the country level there is a deeper appreciation of the benefits of TNAs.

<sup>87</sup> UNEP DTU responded that that have established linkages with CTCN for both TNA I and TNA II countries; have conducted joint or back-to-back regional/global workshops in Phase II. Linking projects seems obvious but in practice it is not that easy.

<sup>88</sup> UNEP DTIE responded it cannot be too simple an exercise as it covers many countries. And, UNFCCC has been contacting countries to collect some of this information but it has been challenging to get responses from most of the countries. UNEP suggested to GEF to develop a follow on monitoring tool, but GEF did not agree.

5. Ensure that the UDP incorporate into its strategic plans elements for future support, on the issues of technology and CC, as this is not a onetime effort; encourage and secure commitments of the competent cadre of staff involved to maintain the momentum and knowledge base on the key issues.
6. Review with UNEP DTIE and GEF on possible reallocations for the current budget for TNA Phase II, to ascertain the degree to which the GEF rules do allow for flexibility during execution of approved projects to take into account real experience and facts on the ground.
7. Examine the possible value of engaging external technical reviewers of the work done, for example in mid-term reviews, which would cost more than the current practice but can provide additional perspectives, complementing the useful project monitoring systems in place.
8. Make efforts towards a revitalized steering committee to improve strategic decision making in this highly complex project, with multiple partners, as the priorities would be viewed differently by partners, based on their own different perspectives, and effective integration of the different views is important.
9. Either through the above process, or through different mechanisms, increase the participation of global stakeholder agencies at events so they are encouraged to follow up on the implementation
10. Increase internal competencies to more flexibly apply a range of tools and methods to the specific situations faced by country, sector and purpose. Consider a greater coherence for framing the issues adding perspectives from economics and politics how they interact and are influenced, and apply systems thinking, to clarify more how UDP can increase the value of the outcomes.
11. In any discussions of technological change and innovation pay greater attention to the broader economic and financial barriers for example the effects of subsidies and to “unintended consequences”, which loom larger when a new technology is engaged at scale.
12. The issue of linkages between countries, increasing opportunities for learning between countries, linking to regional and global networks for knowledge, information, technology and finance areas area for the subsequent TNA Phase II to pay greater attention to.

TNA Participating Countries (to be incorporated in Phase II of the TNA project):

1. Countries involved in Phase II should note that many of the factors for greater national value are in their control. At the project level they include integration of such work within national decision making and climate change structures, energetic leadership at an appropriate national level with access to senior officials and to a wide range of ministries and departments, and a reasonable provision for national resources to complement the external finance.
2. Follow up at the national level after the project ends is also critical for the use of the outputs in national planning, financing and programming.
3. Almost all the countries involved rely on multi-lateral and bilateral donor partners for critical financing support to complement national resources. Linking to them at the national level and sharing information on the findings of priorities and action plans determined through the project, to develop funded activities to take them forward. For this and in general many

countries can follow some of the good examples by others in terms of dissemination, tracking and sharing information and follow up.

#### UNEP and GEF

1. UNEP FMO must work together with GEF and project team to ensure that all information on available financial resources to the project, both as provided in the GEF grant and also as co-financing are provided to the project managers in a transparent manner



## ANNEX I. TERMS OF REFERENCE FOR THE EVALUATION

### 1. *Objective and Scope of the Evaluation*

32. In line with the UNEP Evaluation Policy<sup>89</sup> and the UNEP Programme Manual<sup>90</sup>, the Terminal Evaluation is undertaken after completion of the project to assess project performance (in terms of relevance, effectiveness and efficiency), and determine outcomes and impacts (actual and potential) stemming from the project, including their sustainability. The evaluation has two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP and Project partners such as: National Teams – National Designated Entities (NDEs), Ministries of Environment, Water, Transport, Energy, National Planning, Technologies, Finance; Legal/Law/Policy formulation, Municipal/County Councils, grassroots/community groups, academia, representatives of civil society, research centres, Private firms, in-country financiers in target countries. Therefore, the evaluation will identify lessons of operational relevance for future project formulation and implementation [especially for the second phase of the project].

33. It will focus on the following sets of **key questions**, based on the project's intended outcomes, which may be expanded by the consultants as deemed appropriate:

- (a) To what extent has the project contributed to the preparation or enhancement of TNAs including TAPs that came as a result of a national consensus, are compatible with national development priorities, and were endorsed and will be utilized by the government of supported countries?
- (b) To what extent did the project identify the best available and most appropriate technologies for transfer to developing countries, and create the framework conditions for more cost effective transfer of both GHG mitigation and adaptation technologies to supported countries?
- (c) To what extent were the capabilities (including institutional structures) of key national actors/players in TNA and TAP built and strengthened, and how did these strengthened capabilities contribute to the development of TNAs and TAPs processes and can these be applied to similar processes in the future?
- (d) To what extent have the Project activities in support of TNAs and TAPs processes in target countries been able to:
  - improve national and interregional coordination and cooperation among institutions related to technology transfer and adoption;
  - increase awareness of opportunities and associated benefits of environmentally sound technology adoption by decision makers buttressed by increased local capacity to assess adequate priority technologies according to country needs; and
  - identify barriers to the adoption of new environmentally sound technologies and recommend action that are directly related to project activities?
- (e) To what extent have outreach, dissemination and networking activities been successful to promote the funding of TNAs and TAPs priorities? Are there specific examples of TNAs/TAPs funded activities and funding prospects?

### 2. *Overall Approach and Methods*

---

<sup>89</sup> <http://www.unep.org/eou/StandardsPolicyandPractices/UNEPEvaluationPolicy/tabid/3050/language/en-US/Default.aspx>

<sup>90</sup> [http://www.unep.org/QAS/Documents/UNEP\\_Programme\\_Manual\\_May\\_2013.pdf](http://www.unep.org/QAS/Documents/UNEP_Programme_Manual_May_2013.pdf)

34. The Terminal Evaluation of the Project will be conducted by independent consultants under the overall responsibility and management of the UNEP Evaluation Office in consultation with the UNEP Task Manager and the Sub-programme Coordinator of the Climate Change Sub-programme.

35. It will be an in-depth evaluation using a participatory approach whereby key stakeholders are kept informed and consulted throughout the evaluation process. Both quantitative and qualitative evaluation methods will be used to determine project achievements against the expected outputs, outcomes and impacts. It is highly recommended that the consultants maintain close communication with the Task Manager and project team and promotes information exchange throughout the evaluation implementation phase in order to increase their (and other stakeholder) ownership of the evaluation findings.

36. The findings of the evaluation will be based on the following:

(a) **A desk review** of:

- Relevant background documentation, inter alia;
  - UNEP Mid Term Strategy 2010-2013
  - UNEP Programme of Work (2012-2013), GEF Framework Priorities
  - Project Document
  - PIRs
  - Project Terminal Report
  - Workshop reports, copies of newsletters
  - Project website (<http://www.tech-action.org/>) or other relevant online publications (newsletters, papers, articles, etc)
- Project design documents (including minutes of the project design review meeting at approval); Annual Work Plans and Budgets or equivalent, revisions to the project (Project Document Supplement), the logical framework and its budget;
- Project reports such as six-monthly progress and financial reports, progress reports from collaborating partners, meeting minutes, relevant correspondence etc.;
- Documentation of the following project outputs:
- MTR of the project
- Evaluations/reviews of similar projects
- UNFCCC Secretariat Publications on TNA Phase I:

(b) **Interviews (individual or in group) with:**

- UNEP Task Manager Paris (possibly UNEP/UDT Office Denmark)
- Project management team
- UNEP Fund Management Officer Nairobi
- Project partners, including:
  - Regional Centers focal points
  - Members of the TNA teams, PMC and PSC members, local and international funders of the project, other relevant national-level partners, etc.
  - UNFCCC secretariat
  - National TNA Teams, Ministries of Environment, Water, Transport, Energy, National Planning, Technologies, Finance; Legal/Law/Policy formulation, Municipal/County Councils, grassroots/community groups, academia, representatives of civil society, research centres. Private firms, in-country financiers in target countries.
- Relevant resource persons;

(c) **Survey**

An electronic survey will be considered with questionnaires distributed to national coordinators, members of national TNA committee, members of the sectorial/technology working groups.

(d) **Country visits**

The purpose of the country visits is to meet in-country partners and Project staff. The country sample will be comprised of 10 countries, including the host countries for the three regional centres. The supporting consultants will be assigned to visit (each one) one regional center and 2 countries in the respective region.

The Lead Consultant will visit all regional centers together with the supporting consultants, visit UNEP offices in Paris and Denmark and one TNA country in Europe. Country selection criteria will be: adequate regional diversity, progress of the country in completing its TNA process, good representation of project's successes and failures, availability and access to a large number of stakeholders.

### 3. *Key Evaluation principles*

37. Evaluation findings and judgements should be based on **sound evidence and analysis**, clearly documented in the evaluation report. Information will be triangulated (i.e. verified from different sources) to the extent possible, and when verification was not possible, the single source will be mentioned. Analysis leading to evaluative judgements should always be clearly spelled out.

38. The evaluation will assess the project with respect to **a minimum set of evaluation criteria** grouped in six categories: (1) Strategic Relevance; (2) Attainment of objectives and planned result, which comprises the assessment of outputs achieved, effectiveness and likelihood of impact; (3) Sustainability and replication; (4) Efficiency; (5) Factors and processes affecting project performance, including preparation and readiness, implementation and management, stakeholder participation and public awareness, country ownership and drivenness, financial planning and management, UNEP supervision and backstopping, and project monitoring and evaluation; and (6) Complementarity with the UNEP strategies and programmes. The evaluation consultants can propose other evaluation criteria as deemed appropriate.

39. **Ratings.** All evaluation criteria will be rated on a six-point scale. Annex 3 provides guidance on how the different criteria should be rated and how ratings should be aggregated for the different evaluation criterion categories.

40. **Baselines and counterfactuals.** In attempting to attribute any outcomes and impacts to the project intervention, the evaluators should consider the difference between *what has happened with, and what would have happened without, the project*. This implies that there should be consideration of the baseline conditions, trends and counterfactuals in relation to the intended project outcomes and impacts. It also means that there should be plausible evidence to attribute such outcomes and impacts to the actions of the project. Sometimes, adequate information on baseline conditions, trends or counterfactuals is lacking. In such cases this should be clearly highlighted by the evaluators, along with any simplifying assumptions that were taken to enable the evaluator to make informed judgements about project performance.

41. **The "Why?" Question.** As this is a terminal evaluation and a follow-up project is likely, particular attention should be given to learning from the experience. Therefore, the "Why?" question should be at the front of the consultants' minds all through the evaluation exercise. This means that the consultants need to go beyond the assessment of "what" the project performance was, and make a serious effort to provide a deeper understanding of "why" the performance was as it was, i.e. of processes affecting attainment of project results (criteria under category F – see below). This should provide the basis for the lessons that can be drawn from the project. In fact, the usefulness of the evaluation will be determined to a large extent by the capacity of the consultants to explain "why things happened" as they happened and are likely to evolve in this or that direction, which goes well beyond the mere review of "where things stand" at the time of evaluation.

42. A key aim of the evaluation is to encourage reflection and learning by UNEP staff and key project stakeholders. The consultant should consider how reflection and learning can be promoted, both through the evaluation process and in the communication of evaluation findings and key lessons.

43. Communicating evaluation results; once the consultants have obtained evaluation findings, lessons and results, the Evaluation Office will share the findings and lessons with the key stakeholders. Evaluation results should be communicated to the key stakeholders in a brief and concise manner that encapsulates the evaluation exercise in its entirety. There may, however, be several intended audiences, each with different interests and preferences regarding the report. The Evaluation Manager will plan with the consultants which audiences to target and the easiest and clearest way to communicate the key evaluation findings and lessons to them. This may include some or all of the following; a webinar, conference calls with relevant stakeholders, the preparation of an evaluation brief or interactive presentation.

#### 4. Evaluation criteria

##### A. Strategic relevance

44. The evaluation will assess, in retrospect, whether the project's objectives and implementation strategies were consistent with global, regional and national environmental issues and needs. Based on an analysis of project stakeholders, the evaluation should assess the relevance of the project intervention to key stakeholder groups.

45. The evaluation will assess whether the project was in-line with the GEF's climate change priorities in GEF 5 focal area's strategic priorities and operational programme(s). The Project is supporting GEF strategy of enabling activities and capacity development in climate change and GEF5 priorities of enhancing national ownership of climate change activities and to strengthen countries' capacities to fulfil their reporting commitments under the Convention. The Project is aligned to GEF5 climate change strategic objective 6 (CCM-6) which targets to support enabling activities and capacity building for Convention obligations.

46. The evaluation will also assess the project's relevance in relation to UNEP's mandate and its alignment with UNEP's policies and strategies at the time of project approval. UNEP's Medium Term Strategy (MTS) is a document that guides UNEP's programme planning over a four-year period. It identifies UNEP's thematic priorities, known as Sub-programmes (SP), and sets out the desired outcomes [known as Expected Accomplishments (EAs)] of the Sub-Programmes. The evaluation will assess whether the project makes a tangible/plausible contribution to any of the EAs specified in the MTS 2010–2013<sup>91</sup>. The magnitude and extent of any contributions and the causal linkages should be fully described.

47. The evaluation should assess the project's alignment / compliance with UNEP's policies and strategies. The evaluation should provide a brief narrative of the following:

1. *Alignment with the Bali Strategic Plan (BSP)*<sup>92</sup>. The outcomes and achievements of the project should be briefly discussed in relation to the objectives of the UNEP BSP.
2. *Gender balance*. Ascertain to what extent project design, implementation and monitoring have taken into consideration: (i) possible gender inequalities in access to and the control over natural resources; (ii) specific vulnerabilities of women and children to environmental degradation or disasters; and (iii) the role of women in mitigating or adapting to environmental changes and engaging in environmental protection and rehabilitation. Are the project intended results contributing to the realization of international GE (Gender Equality) norms and agreements as reflected in the UNEP Gender Policy and Strategy, as well as to regional, national and local strategies to advance Human Rights (HR) & GE?
3. *Human rights based approach (HRBA) and inclusion of indigenous peoples issues, needs and concerns*. Ascertain to what extent the project has applied the UN Common Understanding on HRBA. Ascertain if the project is in line with the UN Declaration on the Rights of Indigenous People, and pursued the concept of free, prior and informed consent.
4. *South-South Cooperation*. This is regarded as the exchange of resources, technology, and knowledge between developing countries. Briefly describe any aspects of the project that could be considered as examples of South-South Cooperation.

##### B. Achievement of Outputs

48. The evaluation will assess, for each component, the project's success in producing the programmed outputs and milestones as presented in Table 2 above, both in quantity and quality, as well as their usefulness and timeliness.

---

<sup>91</sup> <http://www.unep.org/PDF/FinalMTSGCSS-X-8.pdf>

<sup>92</sup> <http://www.unep.org/GC/GC23/documents/GC23-6-add-1.pdf>

49. Briefly explain the reasons behind the success (or failure) of the project in producing its different outputs and meeting expected quality standards, cross-referencing as needed to more detailed explanations provided under Section F (which covers the processes affecting attainment of project results).

### *C. Effectiveness: Attainment of Objectives and Planned Results*

50. The evaluation will assess the extent to which the project's objectives were effectively achieved or are expected to be achieved.

51. The **Theory of Change** (ToC) of a project depicts the causal pathways from project outputs (goods and services delivered by the project) through outcomes (changes resulting from the use made by key stakeholders of project outputs) towards impact (long term changes in environmental benefits and living conditions). The ToC will also depict any intermediate changes required between project outcomes and impact, called 'intermediate states'. The ToC further defines the external factors that influence change along the major pathways; i.e. factors that affect whether one result can lead to the next. These external factors are either drivers (when the project has a certain level of control) or assumptions (when the project has no control). The ToC also clearly identifies the main stakeholders involved in the change processes<sup>93</sup>.

52. The evaluation will reconstruct the ToC of the project based on a review of project documentation and stakeholder interviews. The evaluator will be expected to discuss the reconstructed TOC with the stakeholders during evaluation missions and/or interviews in order to ascertain the causal pathways identified and the validity of impact drivers and assumptions described in the TOC. This exercise will also enable the consultant to address some of the key evaluation questions and make adjustments to the TOC as appropriate (the ToC of the intervention may have been modified / adapted from the original design during project implementation).

5. The assessment of effectiveness will be structured in three sub-sections:

- (a) Evaluation of the **achievement of direct outcomes as defined in the reconstructed ToC**. These are the first-level outcomes expected to be achieved as an immediate result of project outputs. For this project, the main question will be to what extent the project has contributed to:
  1. TNAs developed and/or made more strategic and useful in 36 countries
  2. Countries use tools and technology information provided by the project to prepare/strengthen their TNAs
  3. Countries cooperate to prepare/refine their TNAs and implement identified measures
- (b) Assessment of the **likelihood of impact** using a Review of Outcomes to Impacts (ROtI) approach<sup>94</sup>. The evaluation will assess to what extent the project has to date contributed, and is likely in the future to further contribute, to adoption of climate change mitigating and adaptation technologies, and the likelihood that those changes in turn will lead to reduced GHG emission and increased resilience to climate change.
- (c) Evaluation of the **achievement of the formal project overall objective, overall purpose, goals and component outcomes** using the project's own results statements as presented in the Project Document<sup>95</sup>. This sub-section will refer back where applicable to the preceding sub-sections (a) and (b) to avoid repetition in the report. To measure achievement, the evaluation will use as much as appropriate the indicators for achievement proposed in the Logical Framework (Logframe) of the project, adding other relevant indicators as appropriate. Briefly explain what factors affected the

---

<sup>93</sup> A ToC was developed during the design phase of the TNA Project but was not considered during monitoring processes.

<sup>94</sup> Guidance material on Theory of Change and the ROtI approach is available from the Evaluation Office.

<sup>95</sup> Or any subsequent **formally approved** revision of the project document or logical framework.

project's success in achieving its objectives, cross-referencing as needed to more detailed explanations provided under Section F. Most commonly, the overall objective is a higher level result to which the project is intended to contribute. The section will describe the actual or likely **contribution** of the project to the objective.

- (d) The evaluation should, where possible, disaggregate outcomes and impacts for the key project stakeholders. It should also assess the extent to which HR & GE were integrated in the Theory of Change and results framework of the intervention and to what degree participating institutions/organizations changed their policies or practices thereby leading to the fulfilment of HR and GE principles (e.g. new services, greater responsiveness, resource re-allocation, etc.)

#### *D. Sustainability and replication*

6. Sustainability is understood as the probability of continued long-term project-derived results and impacts after the external project funding and assistance ends. The evaluation will identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of benefits. Some of these factors might be direct results of the project while others will include contextual circumstances or developments that are not under control of the project but that may condition the sustainability of benefits. The evaluation should ascertain to what extent follow-up work has been initiated and how project results will be sustained and enhanced over time. The reconstructed ToC will assist in the evaluation of sustainability, as the drivers and assumptions required to achieve higher-level results are often similar to the factors affecting sustainability of these changes.

7. Four aspects of sustainability will be addressed:

- (a) *Socio-political sustainability.* Are there any social or political factors that may influence positively or negatively the sustenance of project results and progress towards impacts? Is the level of ownership by the main stakeholders sufficient to allow for the project results to be sustained? Are there sufficient government and other key stakeholder awareness, interests, commitment and incentives, political commitment, financial and human resource allocation? Did the project conduct 'succession planning' and implement this during the life of the project? Was capacity building conducted for key stakeholders? Did the intervention activities aim to promote (and did they promote) positive sustainable changes in attitudes, behaviours and power relations between the different stakeholders? To what extent has the integration of HR & GE led to an increase in the likelihood of sustainability of project results?
- (b) *Financial resources.* To what extent are the continuation of project results and the eventual impact of the project dependent on financial resources? What is the likelihood that adequate financial resources<sup>96</sup> will be or will become available to use capacities built by the project? Are there any financial risks that may jeopardize sustenance of project results and onward progress towards impact?
- (c) *Institutional framework.* To what extent is the sustenance of the results and onward progress towards impact dependent on issues relating to institutional frameworks and governance? How robust are the institutional achievements such as governance structures and processes, policies, sub-regional agreements, legal and accountability frameworks etc. required to sustaining project results and to lead those to impact on human behaviour and environmental resources, goods or services?
- (d) *Environmental sustainability.* Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits? Are there any foreseeable negative environmental impacts that may occur as the project results are being up-scaled?

---

<sup>96</sup> Those resources can be from multiple sources, such as the national budget, public and private sectors, development assistance etc.

8. **Catalytic role, replication and upscaling.** The *catalytic role* of UNEP interventions is embodied in their approach of supporting the creation of an enabling environment and of investing in pilot activities which are innovative and showing how new approaches can work. UNEP also aims to support activities that upscale new approaches to a national, regional or global level, with a view to achieve sustainable global environmental benefits. The evaluation will assess the catalytic role played by this project, namely to what extent the project has:

- (a) *catalyzed behavioural changes* in terms of use and application, by the relevant stakeholders, of capacities developed;
- (b) provided *incentives* (social, economic, market based, competencies etc.) to contribute to catalyzing changes in stakeholder behaviour;
- (c) contributed to *institutional changes*, for instance institutional uptake of project-demonstrated technologies, practices or management approaches;
- (d) contributed to *policy changes* (on paper and in implementation of policy);
- (e) contributed to sustained follow-on financing (*catalytic financing*) from Governments, private sector, donors etc.;
- (f) created opportunities for particular individuals or institutions ("*champions*") to catalyze change (without which the project would not have achieved all of its results).

9. *Replication* and up scaling are defined as lessons and experiences coming out of the project that are replicated (experiences are repeated and lessons applied in different geographic areas) or scaled up (experiences are repeated and lessons applied in the same geographic area but on a much larger scale and funded by other sources). The evaluation will assess the approach adopted by the project to promote replication effects and determine to what extent actual replication has already occurred, or is likely to occur in the near future. What are the factors that may influence replication and up scaling of project experiences and lessons? Additionally:

- Did the project increase awareness and capacity among key stakeholders about technology need assessment processes, resulting in more and better informed technology need assessment project for Phase II?
- What measures did the project put in place to ensure active flow of information and proper dissemination on technology transfer to national and international partners? To what extent did the project promote active information sharing among national and international partners with a view to increase replication possibilities?

#### *E. Efficiency*

10. The evaluation will assess the cost-effectiveness and timeliness of project execution. It will describe any cost- or time-saving measures put in place in attempting to bring the project as far as possible in achieving its results within its (severely constrained) secured budget and (extended) time. It will also analyse how delays, if any, have affected project execution, costs and effectiveness. Wherever possible, costs and time over results ratios of the project will be compared with that of other similar interventions. The evaluation will also assess the extent to which HR & GE were allocated specific and adequate budget in relation to the results achieved.

11. The evaluation will give special attention to efforts by the project teams to make use of/build upon pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc. to increase project efficiency. For instance, CTCN, NAMAs, NAPAs, FIRM, etc.

## F. Factors and processes affecting project performance

12. **Preparation and readiness.** This criterion focusses on the quality of project design and preparation. Were project stakeholders<sup>97</sup> adequately identified and were they sufficiently involved in project development and ground truthing e.g. of proposed timeframe and budget? Were the project's objectives and components clear, practicable and feasible within its timeframe? Were the capacities of executing agencies properly considered when the project was designed? Was the project document clear and realistic to enable effective and efficient implementation? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project implementation? Were counterpart resources (funding, staff, and facilities) and enabling legislation assured? Were adequate project management arrangements in place? Were lessons from other relevant projects properly incorporated in the project design? What factors influenced the quality-at-entry of the project design, choice of partners, allocation of financial resources etc.? Were any design weaknesses mentioned in the Project Review Committee minutes at the time of project approval adequately addressed?

13. **Project implementation and management.** This includes an analysis of implementation approaches used by the project, its management framework, the project's adaptation to changing conditions, the performance of the implementation arrangements and partnerships, relevance of changes in project design, and overall performance of project management. The evaluation will:

- (a) Ascertain to what extent the project implementation mechanisms outlined in the project document have been followed and were effective in delivering project milestones, outputs and outcomes. Were pertinent adaptations made to the approaches originally proposed?
- (b) Evaluate the effectiveness and efficiency of project management and how well the management was able to adapt to changes during the life of the project.
- (c) Assess the role and performance of the teams and working groups established and the project execution arrangements at all levels.
- (d) Assess the extent to which project management responded to direction and guidance provided by the UNEP Task Manager and project steering bodies including: Project Management Committee, Project Steering Committee, National TNA Committees, Sectorial/Technology Working Group.
- (e) Identify operational and political / institutional problems and constraints that influenced the effective implementation of the project, and how the project tried to overcome these problems.

14. **Stakeholder participation, cooperation and partnerships.** The Evaluation will assess the effectiveness of mechanisms for information sharing and cooperation with other UNEP projects and programmes, external stakeholders and partners. The term stakeholder should be considered in the broadest sense, encompassing both project partners and target users (such as National Designated Entities, Ministries of Environment, Water, Transport, Energy, National Planning, Technologies, Finance; Legal/Law/Policy formulation, Municipal/County Councils, grassroots/community, groups, academia, representatives of civil society, research centres, and at a higher level communities and governments of selected countries) the of project products.

15. The TOC and stakeholder analysis should assist the evaluators in identifying the key stakeholders and their respective roles, capabilities and motivations in each step of the causal pathways from activities to achievement of outputs, outcomes and intermediate states towards impact. The assessment will look at three related and often overlapping processes: (1) information dissemination to and between stakeholders, (2) consultation with and between stakeholders, and (3) active engagement of stakeholders in project decision making and activities. The evaluation will specifically assess:

- (a) the approach(es) and mechanisms used to identify and engage stakeholders (within and outside UNEP) in project design and at critical stages of project implementation. What were the strengths

---

<sup>97</sup> Stakeholders are the individuals, groups, institutions, or other bodies that have an interest or 'stake' in the outcome of the project. The term also applies to those potentially adversely affected by the project.



- and weaknesses of these approaches with respect to the project's objectives and the stakeholders' motivations and capacities?
- (b) the extent and effectiveness of collaboration between different functional units of UNEP involved in the project. What coordination mechanisms were in place? Were the incentives for internal collaboration in UNEP adequate?
  - (c) the appropriateness of level of involvement of the Regional, Liaison and Out-posted Offices in project design, planning, decision-making and implementation of activities appropriate?
  - (d) Whether the project has made full use of opportunities for collaboration with other projects and programmes including opportunities not mentioned in the Project Document. Have complementarities been sought, synergies been optimized and duplications avoided? How effective was collaboration with the regional Technology Transfer and Financing Centre projects implemented by the regional development banks, such as the Asian Development Bank (ADB)/UNEP regional pilot Climate Technology Network and Finance Centre project in furthering the projects' objectives?
  - (e) What the achieved degree and effectiveness of collaboration and interactions was between the various project partners and stakeholders during design and implementation of the project? This should be disaggregated for the main stakeholder groups identified in the inception report.
  - (f) To what extent the project has been able to take up opportunities for joint activities, pooling of resources and mutual learning with other organizations and networks? In particular, how useful are partnership mechanisms and initiatives such as (below) to build stronger coherence and collaboration between participating organisations? To what extent was the private financial sector engaged in the project? How effective was this collaboration?
  - (g) How the relationship between the project and the collaborating partners (institutions and individual experts) developed? Which benefits stemmed from their involvement for project performance, for UNEP and for the stakeholders and partners themselves? Do the results of the project (strategic programmes and plans, monitoring and management systems, sub-regional agreements etc.) promote participation of stakeholders, including users, in environmental decision making?
  - (h) To what extent the developed TNAs of target countries have provided opportunities for attracting investments from public and private sources?
  - (i) To what extent, project activities have been successful in engaging proper stakeholders which were able to conduct good TNA/TAP processes?
  - (j) Were key stakeholders appropriately involved in producing the programmed outputs?

16. **Communication and public awareness.** The evaluation will assess the effectiveness of any public awareness activities that were undertaken during the course of implementation of the project to communicate the project's objective, progress, outcomes and lessons. This should be disaggregated for the main stakeholder groups identified in the inception report. Did the project identify and make use of existing communication channels and networks used by key stakeholders? Did the project provide feedback channels?

17. **Country ownership and driven-ness.** The evaluation will assess the degree and effectiveness of involvement of government / public sector agencies in the project, in particular those involved in project execution and those participating in project Steering Committee, National TNA Committees and other partnership arrangements:

- (a) To what extent have Governments assumed responsibility for the project and provided adequate support to project execution, including the degree of cooperation received from the various public institutions involved in the project?
- (b) How and how well did the project stimulate country ownership of project outputs and outcomes?

18. **Financial planning and management.** Evaluation of financial planning requires assessment of the quality and effectiveness of financial planning and control of financial resources throughout the project's lifetime. The assessment will look at actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. The evaluation will:

- (a) Verify the application of proper standards (clarity, transparency, audit etc.) and timeliness of financial planning, management and reporting to ensure that sufficient and timely financial resources were available to the project and its partners;
- (b) Assess other administrative processes such as recruitment of staff, procurement of goods and services (including consultants), preparation and negotiation of cooperation agreements etc. to the extent that these might have influenced project performance;
- (c) Present the extent to which co-financing has materialized as expected at project approval (see Table 1). Report country co-financing to the project overall, and to support project activities at the national level in particular. The evaluation will provide a breakdown of final actual costs and co-financing for the different project components (see tables in Annex 4).
- (d) Describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective. Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector.

19. Analyse the effects on project performance of any irregularities in procurement, use of financial resources and human resource management, and the measures taken UNEP to prevent such irregularities in the future. Determine whether the measures taken were adequate.

20. **Supervision, guidance and technical backstopping.** The purpose of supervision is to verify the quality and timeliness of project execution in terms of finances, administration and achievement of outputs and outcomes, in order to identify and recommend ways to deal with problems which arise during project execution. Such problems may be related to project management but may also involve technical/institutional substantive issues in which UNEP has a major contribution to make.

21. The evaluators should assess the effectiveness of supervision, guidance and technical support provided by the different supervising/supporting bodies including:

- (a) The adequacy of project supervision plans, inputs and processes;
- (b) The realism and candour of project reporting and the emphasis given to outcome monitoring (results-based project management);
- (c) How well did the different guidance and backstopping bodies play their role and how well did the guidance and backstopping mechanisms work? What were the strengths in guidance and backstopping and what were the limiting factors?

22. **Monitoring and evaluation.** The evaluation will include an assessment of the quality, application and effectiveness of project monitoring and evaluation plans and tools, including an assessment of risk management based on the assumptions and risks identified in the project document. The evaluation will assess how information generated by the M&E system during project implementation was used to adapt and improve project execution, achievement of outcomes and ensuring sustainability. M&E is assessed on three levels:

- (a) *M&E Design.* The evaluators should use the following questions to help assess the M&E design aspects:
  - Arrangements for monitoring: Did the project have a sound M&E plan to monitor results and track progress towards achieving project objectives? Have the responsibilities for M&E activities been clearly defined? Were the data sources and data collection instruments appropriate? Was the time frame for various M&E activities specified? Was the frequency of various monitoring activities specified and adequate?
  - How well was the project logical framework (original and possible updates) designed as a planning and monitoring instrument?
  - SMART-ness of indicators: Are there specific indicators in the logframe for each of the project objectives? Are the indicators measurable, attainable (realistic) and relevant to the objectives? Are the indicators time-bound?

- Adequacy of baseline information: To what extent has baseline information on performance indicators been collected and presented in a clear manner? Was the methodology for the baseline data collection explicit and reliable? For instance, was there adequate baseline information on pre-existing accessible information on global and regional environmental status and trends, and on the costs and benefits of different policy options for the different target audiences? Was there sufficient information about the assessment capacity of collaborating institutions and experts etc. to determine their training and technical support needs?
- To what extent did the project engage key stakeholders in the design and implementation of monitoring? Which stakeholders (from groups identified in the inception report) were involved? If any stakeholders were excluded, what was the reason for this? Was sufficient information collected on specific indicators to measure progress on HR & GE (including sex-disaggregated data)?
- Arrangements for evaluation: Have specific targets been specified for project outputs? Has the desired level of achievement been specified for all indicators of objectives and outcomes? Were there adequate provisions in the legal instruments binding project partners to fully collaborate in evaluations?
- Budgeting and funding for M&E activities: Determine whether support for M&E was budgeted adequately and was funded in a timely fashion during implementation.

(b) *M&E Plan Implementation.* The evaluation will verify that:

- the M&E system was operational and facilitated timely tracking of results and progress towards projects objectives throughout the project implementation period;
- PIR reports were prepared (the realism of the Task Manager's assessments will be reviewed)
- Half-yearly Progress & Financial Reports were complete and accurate;
- The information provided by the M&E system was used during the project to improve project performance and to adapt to changing needs.

#### G. The Consultant's team

23. For this evaluation, the evaluation team will consist of a Lead Consultant and 3 (three) Supporting Consultants. Details about the specific roles and responsibilities of the Supporting Consultants are presented in Annex 1 of these TORs. The Lead Consultant should have extensive evaluation experience, including of large, regional or global programmes and using a Theory of Change approach; and a broad understanding of large-scale, consultative assessment processes and factors influencing use of assessments and/or scientific research for decision-making. The Supporting Consultant(s) will have a solid environmental education and professional experience; adequate monitoring and evaluation experience; and experience in managing partnerships, knowledge management and communication.

24. The Lead Consultant will coordinate data collection and analysis, and the preparation of the main report for the evaluation, by ensuring that all evaluation criteria and questions are adequately covered.

25. By undersigning the service contract with UNEP/UNON, the lead consultant and supporting consultants certify that they have not been associated with the design and implementation of the project in any way which may jeopardize their independence and impartiality towards project achievements and project partner performance. In addition, they will not have any future interests (within six months after completion of the contract) with the project's executing or implementing units.

#### H. Evaluation Deliverables and Review Procedures

26. The Lead Consultant will prepare an **inception report** (see Annex 2(a) of TORs for Inception Report outline) containing a thorough review of the project, project design quality, a draft reconstructed Theory of Change of the project, the evaluation framework and a tentative evaluation schedule.

27. It is expected that a large portion of the desk review will be conducted during the inception phase. It will be important to acquire a good understanding of the project context, design and process at this stage. The review of design quality will cover the following aspects (see Annex 7 for the detailed project design assessment matrix):

- Strategic relevance of the project
- Preparation and readiness;
- Financial planning;
- M&E design;
- Complementarity with UNEP strategies and programmes;
- Sustainability considerations and measures planned to promote replication and up-scaling.

28. The inception report will present a draft, desk-based reconstructed Theory of Change of the project. It is vital to reconstruct the ToC *before* most of the data collection (review of progress reports, in-depth interviews, surveys etc.) is done, because the ToC will define which direct outcomes, drivers and assumptions of the project need to be assessed and measured – based on which indicators – to allow adequate data collection for the evaluation of project effectiveness, likelihood of impact and sustainability.

29. The inception report will also include a stakeholder analysis identifying key stakeholders, networks and channels of communication. This information should be gathered from the Project document and discussion with the project team. See annex 2 for template.

30. The evaluation framework will present in further detail the overall evaluation approach. It will specify for each evaluation question under the various criteria what the respective indicators and data sources will be. The evaluation framework should summarize the information available from project documentation against each of the main evaluation parameters. Any gaps in information should be identified and methods for additional data collection, verification and analysis should be specified. Evaluations/reviews of other large assessments can provide ideas about the most appropriate evaluation methods to be used.

31. Effective communication strategies help stakeholders understand the results and use the information for organisational learning and improvement. While the evaluation is expected to result in a comprehensive document, content is not always best shared in a long and detailed report; this is best presented in a synthesised form using any of a variety of creative and innovative methods. The evaluator is encouraged to make use of multimedia formats in the gathering of information eg. video, photos, sound recordings. Together with the full report, the evaluator will be expected to produce a 2-page summary of key findings and lessons.

32. The inception report will also present a tentative schedule for the overall evaluation process, including a draft programme for the country visit and tentative list of people/institutions to be interviewed.

33. The inception report will be submitted for review and approval by the Evaluation Office before any further data collection and analysis is undertaken.

34. The Supporting Consultants will each prepare a **regional working paper**. These should be brief (no longer than 15-20 pages – excluding annexes), to the point and written in plain English. The working papers will follow the same Table of Contents as the main evaluation report outlined in Annex 2. The papers will present evidence-based and balanced findings, consequent conclusions, lessons and recommendations, for each of the Regions (Latin America, Europe, Africa and Asia). Each paper should be presented in a way that makes the information accessible and comprehensible and easily extractable for the main evaluation report. To avoid repetitions in the paper, the authors will use numbered paragraphs and make cross-references where possible.

35. **Review of the Regional Working Papers.** The evaluation team will submit the regional working papers, no later than 3 weeks after the completion of the respective field mission, to the Lead Consultant. The Lead Consultant will assess adequacy and quality of information provided in the regional working papers, to support drafting of the main evaluation report and provide recommendation if necessary .

36. **The main evaluation report** should be brief (no longer than 40 pages – excluding the executive summary and annexes), to the point and written in plain English. The report will follow the annotated Table of Contents outlined in Annex 2. It must explain the purpose of the evaluation, exactly what was evaluated and the methods

used (with their limitations). The report will present evidence-based and balanced findings, consequent conclusions, lessons and recommendations, which will be cross-referenced to each other. The report should be presented in a way that makes the information accessible and comprehensible. Any dissident views in response to evaluation findings will be appended in footnote or annex as appropriate. To avoid repetitions in the report, the authors will use numbered paragraphs and make cross-references where possible.

37. **Review of the draft evaluation report.** The evaluation team will submit a zero draft report to the UNEP EO and revise the draft following the comments and suggestions made by the EO. Once a draft of adequate quality has been accepted, the EO will share this first draft report with the Task Manager and the Project Implementation Unit, who will alert the EO in case the report would contain any blatant factual errors. The Evaluation Office will then forward the first draft report to the other project stakeholders, in particular URC, PSC, PMC, NPSC, Regional Centers for their review and comments. Stakeholders may provide feedback on any errors of fact and may highlight the significance of such errors in any conclusions. It is also very important that stakeholders provide feedback on the proposed recommendations and lessons. Comments would be expected within two weeks after the draft report has been shared. Any comments or responses to the draft report will be sent to the UNEP EO for collation. The EO will provide the comments to the evaluation team for consideration in preparing the final draft report, along with its own views.

38. The evaluation team will submit the final draft report no later than 2 weeks after reception of stakeholder comments. The team will prepare a **response to comments**, listing those comments not or only partially accepted by them that could therefore not or only partially be accommodated in the final report. They will explain why those comments have not or only partially been accepted, providing evidence as required. This response to comments will be shared by the EO with the interested stakeholders to ensure full transparency.

**Submission of the final evaluation report.** The final report shall be submitted by Email to the Head of the Evaluation Office. The Evaluation Office will finalize the report and share it with the interested Divisions and Sub-programme Coordinators in UNEP. The final evaluation report will be published on the UNEP Evaluation Office web-site [www.unep.org/eou](http://www.unep.org/eou).

Mike Spilsbury, Chief of Evaluation  
 UNEP Evaluation Office  
 P.O. Box 30552-00100  
 Nairobi, Kenya  
 Tel.: (+254-20) 762 3387  
 Email: [Michael.Spilsbury@unep.org](mailto:Michael.Spilsbury@unep.org)

The Head of Evaluation will share the report with the UNEP/GEF Coordination Office, Task Manager TNA Project, FMO TNA Project,

39. As per usual practice, the UNEP EO will prepare a **quality assessment** of the zero draft and final draft report, which is a tool for providing structured feedback to the evaluation consultants. The quality of the report will be assessed and rated against the criteria specified in Annex 3.

40. The UNEP Evaluation Office will review the project ratings in the final evaluation report based on a careful review of the evidence collated by the evaluation consultants and the internal consistency of the report. Where there are differences of opinion between the evaluators and UNEP Evaluation Office on project ratings, both viewpoints will be clearly presented in the final report. The UNEP Evaluation Office ratings will be considered the final ratings for the project.

At the end of the evaluation process, the Evaluation Office will prepare a Recommendations Implementation Plan in the format of a table to be completed and updated at regular intervals by the Task Project Manager. After reception of the Recommendations Implementation Plan, the Task Project Manager is expected to complete it and return it to the EO within one month. (S)he is expected to update the plan every six month until the end of the tracking period. As this is a Terminal Evaluation, the tracking period for implementation of recommendations will be 18 months, unless it is agreed to make

this period shorter or longer as required for realistic implementation of all evaluation recommendations. Tracking points will be every six months after completion of the implementation plan.

## ANNEX II. TNA PHASE I PROJECT COST AND CO-FINANCING

**Table 1: Project cost and co-financing summary**

Particulars	Amount (USD)
<b>Cost to Global Environment Fund</b>	<b>8,181,818</b>
<b>Counterpart</b> Cash: \$705,000, In Kind: 2,000,000, National Beneficiary Governments	<b>Contribution: Norway 2,705,000</b>
<b>UNEP CEP Co-financing</b>	<b>150,000</b>
<b>Total Cost of the Project</b>	<b>11,036,818</b>

Source: ICA DGEF/2009/011, page 2.

**Table 2: Project Budget Allocations by Component (in US \$)**

BUDGET	GEF	CO-FINANCE	TOTAL
COMP 1	7,063,017	2,090,000	9,153,017
COMP 2	776,807	705,000	1,481,807
COMP 3	341,994	60,000	401,994
<b>Total</b>	<b>8,181,818</b>	<b>2,855,000</b>	<b>11,036,818</b>

Source: PRODOC

**Table 3: Expenditures and Balances from Cash Advance Statements (US \$)**

Project Expenditures and Balances	Amount
<b>GEF Funds for use by project executing partner (UNEP DTIE and DTU)</b>	7,381,741.20
<b>Actual Expenditures incurred:</b>	
<b>At UDP</b>	1,152,723.00
<b>Manged by the Countries (does not include national contributions to their efforts)</b>	3,526,213.00

<b>Project Expenditures and Balances</b>	<b>Amount</b>
<b>Resources provided to the Four RC</b>	996,498.00
<b>All other – travel, workshops, materials</b>	457,686.00
<b>Sub-contracts</b>	342,951.00
TOTAL Expenditures of GEF allocation	6,476,071.00
Actual Expenditures (EXP Reconciliation sheet)	<b>6,476,071.00</b>
In addition – UNEP, UDP in-kind expenditures	708,730
<b>UNSPENT GEF FUNDS</b>	<b>905,670.20</b>
<b>Advance to be returned</b>	<b>592,770.00</b>
Funds with GEF Undisbursed	312,900.20

Source:UNEP and DTU

It is noted that the actual amount spent from the GEF for the 32 countries which ultimately participated was **\$6,476,071**, which comes to around \$202, 000 per country. This allocation of funds per country, which is a modest amount, has been used as one parameter to estimate the project as having been efficient in its use of funds, see paragraph 118 above.

The evaluation also noted that some countries could have been assisted further if: the overall design and execution could have been more flexible; additional costs were incurred for some external support by Regional Centres; and other experts and additional resources were used for workshops and lesson learning between countries. This would have together made the project more effective.

Finally, the evaluation notes the lack of transparency in the decisions taken not to use allocated resources as needed even though the steering committee was appraised of such options. There was apparent reluctance from the representative at the Steering Committee to spend on activities suggested, even though the project as a whole underspent and will return the unspent balances to the GEF.

**Table 4: Details for 36 Countries targeted for TNA Phase I**

	Africa & Middle East	Date MOU START DATE	DATE of Signature	Contract amount	Date	Date	Date	Date	Total amount paid	DTU DOC No.	Comment
				USD	Amount first	Amount second	Amount third	Amount fourth			
		Subcontact begins									
1	Cote d'Ivoire	20.05.2010	04.08.2010	120,000	04.08.2010 / USD 36.000	30.10.2011 / USD 24.000	21.05.2013 / USD 51.123		111123	10/06811	
2	Ghana	01.02.2011	05.05.2011	70,000	18.05.2011 / USD 25.000	11.07.2012 / USD 15.000	06.05.2013 / USD 30.000		70,000	11/03206	

	Africa & Middle East	Date MOU START DATE	DATE of Signature	Contract amount	Date	Date	Date	Date	Total amount paid	DTU DOC No.	Comment
					USD	Amount first	Amount second	Amount third			
3	Kenya	01.07.2010	01.07.2010	120,000	01.07.2010 / USD 40.000	No payment	No payment	No payment	40000	10/06810	We need to find out with Gordon
4	Lebanon	01.04.2011	15.06.2011	120,000	20.06.2011 / USD 48.000	03.02.2012 / USD 33.000	26.06.2012 / USD 33.000	12.03.2013 / USD 6.000	120000	11/04223	
5	Mali	09.07.2010	20.07.2010	120,000	09.09.2010 / USD 40.000	04.08.2011 / USD 25.000	28.12.2011 / 25.000	14.11.2012 / USD 24.718	114718	10/06813	
6	Mauritius	01.02.2011	02.09.2011	120,000	08.09.2011 / USD 19.300	2011 / USD 25.800	2012 / USD 24.500	2013 / USD 41.700	111300	11/02816	
7	Morocco	28.06.2010	10.08.2010	120,000	2010 / USD 23.200	2011 / USD 44.000	2012 / USD 40.800		108000	10/06812	
8	Rwanda	17.03.2011	18.03.2011	120,000	18.04.2011 / USD 30.000	02.10.2012 / USD 30.000	29.01.2013 / USD 30.622	30.04.2013 / USD 16.062	106684	11/02851	
9	Senegal	15.03.2010	13.04.2010	120,000	20.04.2010 / USD 36.000	28.01.2011 / USD 12.000	17.06.2011 / USD 36.000	02.04.2012 + 12.10.2012 / USD 36.000	120000	10/06593	
10	Sudan	01.03.2011	22.03.2011	120,000	26.04.2011 / USD 30.000	21.08.2012 / USD 30.000	04.02.2013 / USD 30.000	26.03.2013 / USD 30.000	120000	11/02303	
11	Zambia	01.09.2011	07.09.2011	120,000	2011/ USD 28.197	2012 / USD 39.560	2013 / USD 54.512		122269		
12	Ethiopia	01.11.2011	24.06.2011	120,000	06.09.2011 / USD 30.000	No payment	No payment	No payment	30000	11/05899	The payment was returned
	<b>Asia &amp; CIS</b>										
13	Azerbaijan										
14	Bangladesh	15.05.2010	23.09.2010	120,000	31.01.2011 / USD 36000	29.11.2012 / USD 42.000	11.04.2013 / USD 42.000		120000	10/06814	
15	Bhutan	18.04.2011	21.07.2011	120,000	27.10.2011 / USD 30.000	13.06.2012 / USD 30.000	14.01.2013 / USD 30.000	28.05.2013 / USD 30.000	120000	11/06480	
16	Cambodia	15.04.2010	26.05.2010	120,000	02.06.2010 / USD 40.000	19.01.2012 / USD 40.000	17.04.2013 / USD 39.485		119485	10/06818	
17	Georgia	12.07.2010	12.07.2010	120,000	2010 / USD 10.500	2011 / USD 48.700	2012 / USD 60.460		119660	10/06805	
18	Indonesia	15.04.2010	09.06.2010	120,000	25.06.2010 / USD 40.000	11.10.2011 / USD 45.000	16.07.2012 / USD 35.000		120000	10/06817	
19	Kazakhstan	01.03.2011	04.03.2011	120,000	15.03.2011 / USD 30.000	20.03.2013 / USD 35.000	No payment	No payment	65000	11/01825	The remaining will be paid when the last reports are submitted, actually during Phase



	Africa & Middle East	Date MOU START DATE	DATE of Signature	Contract amount	Date	Date	Date	Date	Total amount paid	DTU DOC No.	Comment
				USD	Amount first	Amount second	Amount third	Amount fourth			
											II.
20	Laos	29.06.2011	18.07.2011	120,000	24.08.2011 / USD 30.000	18.07.2013 / USD 30.000	No payment	No payment	60000	11/06126	Same as with Kazakhstan.
21	Moldova	11.04.2011	26.04.2011	120,000	03.05.2011 / USD 30.000	21.06.2012 / USD 30.000	07.01.2013 / USD 30.000	18.03.2013 / USD 30.000	120000	11/03162	
22	Mongolia	01.04.2011	07.04.2011	120,000	06.06.2011 / USD 30.000	30.10.2012 / USD 30.000	18.03.2013 / USD 30.000	27.03.2013 / USD 30.000	120000	11/02810	
23	Nepal										No Contracts! This was done with old money from UNEP.
24	Sri Lanka	01.06.2011	24.06.2011	120,000	17.08.2011 / USD 30.000	28.06.2012 / USD 30.000	02.10.2012 / USD 30.000	07.05.2013 / USD 30.000	120000	11/04578	
25	Thailand	04.11.2010	09.11.2010	120,000	12.11.2010 / USD 30.000	12.03.2012 / USD 30.000	05.09.2012 / USD 30.000	05.09.2012 / USD 30.000	120000	10/06815	
26	Vietnam	20.07.2010	06.08.2010	120,000	16.08.2010 / USD 36.000	23.11.2011 / USD 42.000	21.08.2012 / USD 42.000		120000	10/06816	
	<b>Latin America</b>										
27	Argentina	01.12.2010	04.01.2011	120,000	2011 / USD 18603	2013 / USD 74.412			93015	10/08725	
28	Bolivia										No Contracts! Never got started
29	Colombia	16.11.2011 / 05.12.2011	06.01.2012 / 22.12.2011	119,964	2012 / USD 55.264	2013 / USD 64.702			119966	12/01273 OG 12/00558	
30	Costa Rica	01.11.2010	13.12.2010	120,000	16.12.2010 / USD 24.000	27.12.2011 / USD 48.000	23.04.2012 / USD 48.000		120000	10/06821	
31	Cuba										Paid from global resources, UNEP, see Table 3.
32	Dominican Republic	11.03.2011	30.03.2011	120,000	25.05.2011 / USD 30.000	02.10.2012 / USD 30.000	13.02.2013 / USD 30.000	26.03.2013 / USD 30.000	120000	11/02852	

	Africa & Middle East	Date MOU START DATE	DATE of Signature	Contract amount	Date	Date	Date	Date	Total amount paid	DTU DOC No.	Comment
				USD	Amount first	Amount second	Amount third	Amount fourth			
33	Ecuador	2011	2012	120,000	2011 / USD 16.380	2012 / USD 43.410	2013 / USD 49.210		109000	12/00550, 12/05763, 12/05764, 12/00551	
34	El Salvador	09.06.2011	09.06.2011	120,000	15.06.2011 / USD 30.000	23.07.2012 / USD 30.000	26.11.2012 / USD 30.000	14.02.2013 / USD 30.000	120000	11/04123	
35	Guatemala	13.04.2011	26.04.2011	120,000	02.05.2011 / USD 36.000	Cancelled	Cancelled	Cancelled	36000	10/06822 and 11/03056	The USD 36k was paid back to UDP.
36	Peru	01.05.2010	02.06.2010	115,000	16.06.2010 / USD 34.500	23.12.2011 / USD 34.500	18.12.2012 / USD 34.500		103500	10/06820 and 10/10788 and 11/02165	

Source: UNEP DTU, TNA Project management

Note: Most countries were paid US\$120,000 for covering their participation costs. Some countries who have been paid a smaller amount was due to adjustments made by UNEP DTU for funds expended on the country's behalf at the country request.

## ANNEX III. BACKGROUND INFORMATION ON CLIMATE CHANGE AND INTERNATIONAL CONTEXT

### Introduction

The background to determining the technology needs of developing countries and assisting them to acquire and use technologies available for mitigating and adapting to climate change has a long and contentious history in international negotiations going back at least to 1992. This additional information is provided here to summarize some of the relevant information about the contextual background that was used in the evaluation to assess the relevance and effectiveness of the TNA project.

The relevance of the TNA project stems from the fact that technology transfer is a key element of Articles 4.3, 4.5 and 4.7 of the United Nations Framework Convention on Climate Change (UNFCCC). Discussions on the issues began with first Conference of Parties (COP), and they continue now, and will remain an issue of concern into the future. The Technology Needs Assessments (TNA) project was designed and executed under the context of the climate change negotiations undertaken within the UNFCCC, as on the date approved. It would be expected to stay current with ongoing developments at UNFCCC, GEF and national partners, each of whom have some differences in their own prioritization of issues. In addition, this round of the TNA was prescribed to go beyond the identification of technology needs for mitigation, by also supporting technologies for adaptation to climate change, an area of greater concern to all of the participating countries. All countries involved have ratified the UNFCCC, under whose rules, as a Non-Annex I Party they had had no emissions reduction obligations. Thus the “relevance” criteria varies to different degree, by the actor involved – for the UNFCCC, GEF and other global actors. The discussions shows that the “relevance” of mitigation was higher for global actors, while for the countries involved the “objective” relevance of adaptation was higher. The additional information below illustrates that due to the moving targets and new agreements by countries at UNFCCC, the priorities and relevance are naturally shifting over time. In addition, “technology” is another large set of concepts, which also changes over time. The facts and challenges discussed below have been kept in consideration in assessing the relevance and effectiveness of the TNA project.

### Background: Climate Change

As early as 1895, scientists<sup>98</sup> began to hypothesize that the amount of Carbon di Oxide (CO<sub>2</sub>) in the atmosphere can affect the energy absorbed and radiated by the earth, and a rise in concentration would lead to a warming effect on the earth. With further work in the 1970s, a UNEP/WMO/ICSU Conference on the "Assessment of the Role of Carbon Dioxide and Other Greenhouse Gases in Climate Variations and Associated Impacts" in 1985, concluded that greenhouse gases "are expected" to cause significant warming in the next hundred years and that some warming was inevitable due to the existing trends of greenhouse gas production. Following the warning, scientific consensus was first discussed by the leaders of countries at the meeting in Rio (UNCED), in 2002 and generated the first global push for action on reducing the rate of carbon emissions to meet the threat of climate change. This led to negotiations under what became the “UN Framework Convention on Climate Change” (UNFCCC)

---

<sup>98</sup> For example, see Svante Arrhenius, Sweden, see <http://earthobservatory.nasa.gov/Features/Arrhenius/>, sourced 10 November, 2015.

launched in December 1990 by the UN General Assembly. The Convention was adopted on 9 May 1992, and entered into force on 21 March 1994, after receiving the requisite 50 ratifications by countries. As of 2014, there are 196 signatories (Parties or countries) to the UNFCCC treaty.

The first UN Climate Change Conference was held in 1995 in Berlin and the 21<sup>st</sup> such conference (COP 21) was taking place from November 30 to December 11, 2015 in Paris, as this evaluation was being undertaken. Conferences are held yearly, within the framework of the UNFCCC, to assess progress in dealing with climate change, and to negotiate legally binding obligations to reduce global greenhouse gas emissions. The Conference of the Parties (COP) has subsidiary bodies, the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI).

Some of the major events began with COP 1 (1995), followed by the adoption of the Kyoto Protocol at COP 3 (Kyoto, December 1997). The Kyoto Protocol was the first binding international climate treaty. It differentiated between the more industrialized and richer countries (Annex 1 countries<sup>99</sup>), under the principle of "common but differentiated responsibilities", and it placed ghg reduction targets on those on the basis that historically they have been responsible for the accumulation of greenhouse gases in the atmosphere, while the poorer and developing countries, (the non Annex 1 countries) had not contributed to their growth. Unfortunately, the Kyoto Protocol had only had a slight or negligible effect on curbing global emissions growth, as by 2006, energy-related carbon dioxide emissions had grown by 24%<sup>100</sup>, and the treaty had provided limited financial support to developing countries to assist them in reducing their emissions and even less for adapting to climate change.

Subsequently a notable agreement reached COP was the Bali Action Plan, adopted in the COP (2007), which emphasized long term cooperative actions, beyond Kyoto and focused on reaching agreements at the UNFCCC's 15th session in Copenhagen in December 2009. The Bali Action Plan focused on four building blocks, actions on mitigation, adaptation, technology, and financing.

The 2010 United Nations Climate Change Conference was held in Cancún, Mexico, (COP 16) from 29 November to 10 December 2010, following the breakdown in Copenhagen (COP) where a globally binding arrangement on emissions reductions could not be reached. The conference called for a large "Green Climate Fund", and a "Climate Technology Centre" and network. A Cancun Adaptation Framework was arrived at and it invited Parties to strengthen and, where necessary, establish regional adaptation centres and networks.

The Paris talks in 2015 had three major elements discussed in Paris:

**Mitigation:** Each country's commitment to reducing greenhouse gas emissions, from human sources and by what date.

**Adaptation:** Countries to put forward their commitments to actions that will help the world adapt to the impacts of climate change, such as sea level rise, drought and extreme weather events.

**Climate Financing:** Many of the countries of the world and those most vulnerable to the impacts of climate change are also the poor and did not benefit from the historical use of carbon based

---

<sup>99</sup> Annex 1 countries also included

<sup>100</sup> World Bank (2010), World Development Report.

industrialization. The UNFCCC process has a goal of raising \$100 billion annually from public and private sector by 2020 to help the poorer and most vulnerable countries adapt to the impacts of climate change, as well as put in place their own greenhouse gas mitigation plans. The wealthier countries are under pressure to contribute more money to the Green Climate Fund.

The new goal is for voluntary actions, where each country commits to reduce its own emissions by whatever amount it can manage, and all countries participate in the mitigation efforts, not just the developed countries. What remains unclear is whether the voluntary pledges are sufficient; can the economies become "low-carbon," at sufficient scale and speed; at what costs to the economy and to poor people; and finally, who will pay for this massive change in the world's energy economy, and how. See Table 1 below on the low contributions of the TNA countries to GHG emissions and also their lower capacity and resources to tackle the issues raised.

This background of the history concludes that not only are well identified issues not fully resolved at the global level there many other issues that will need to be addressed and will suggest additional technologies and options to deal with them. Some are covered in the "Climate and Clean Air Coalition to Reduce Short-Lived Climate Pollutants (CCAC)", launched by UNEP<sup>101</sup> Short-lived climate pollutants (SLCPs) those with shorter lifetime in the atmosphere than CO<sub>2</sub>— a few days to a few decades — and a warming influence on climate. They include black carbon, methane and tropospheric ozone and hydrofluorocarbons (HFCs). They are also dangerous air pollutants, with detrimental impacts on human health, agriculture and ecosystems. HFCs are currently present in small quantity, but their contribution to climate forcing is projected to climb to as much as 19% of global CO<sub>2</sub> emissions by 2050. Black carbon is produced by incomplete combustion of fuels and biomass, emitted from various sources including diesel cars and trucks, ships, residential stoves, forest fires, agricultural open burning and some industrial facilities. It has a warming impact on climate 460-1500 times stronger than CO<sub>2</sub>. In addition, black carbon is a primary component of particulate matter in air pollution and that is the major environmental cause of premature death globally, even more in poor countries. Methane (CH<sub>4</sub>) is a greenhouse gas that is over 20 times more potent than CO<sub>2</sub>, and is produced through natural processes such as the decomposition of plant and animal waste), but is also emitted from many man-made sources mines, natural gas and oil systems, and landfills. Methane directly influences the climate system and also has indirect impacts on human health and ecosystems. Action to reduce SLCPs has the potential to achieve multiple benefits, as each year, more than 6 million people die prematurely from indoor and outdoor air pollution. Fast actions on short-lived climate pollutants, such as the widespread adoption of advanced cook-stoves and clean fuels, have the potential to prevent over 2 million of premature deaths each year. Reducing methane and black carbon could also prevent major crop losses, as yield losses due to tropospheric ozone exposure range between 7-12 percent for wheat, 6-16 percent for soybean, 3-4 percent for rice, and 3-5 percent for maize. In addition, black carbon influences the formation of clouds that have a negative effect on the photosynthesis that impacts plant growth. And, reducing short-lived climate pollutants, for instance through the collection of landfill gas or the recovery of methane are estimated to avoid the annual loss of more than 30 million tons of crops. USA and Canada announced

---

<sup>101</sup> See

<http://www.unep.org/ccac/Initiatives/SupportingNationalPlanningforactiononSLCPs/tabid/130325/language/en-US/Default.aspx>

cooperative actions in May 2016 to cut methane emissions from the oil and gas sector by 40 to 45 per cent, a step that will certainly provide one new option and a set of technologies that can be used to reduce methane emissions. Similarly improved cook-stoves and improved forest management can be win-win solutions for many developing countries, where knowledge and agreements are lagging. Thus as the global process unfolds, with new knowledge, additional resources, and new technologies, the TNA Phase I can only be seen as one small step in the long path towards adequately dealing with the mitigation of and adaptation to climate change.

**Table 1: GHG Emissions for 36 TNA countries**

	TNA Countries	Total GHG Emissions (MtCO <sub>2</sub> e)	GNI Per Capita (PPP)	HDI Ranking
	<b>Africa &amp; Middle East</b>			
1	Cote d'Ivoire	30.19	2,644	171
2	Ethiopia	118.00	1,216	173
3	Ghana	27.34	3,435	138
4	Kenya	59.48	2,100	147
5	Lebanon	24.34	16,257	65
6	Mali	28.09	1,520	176
7	Mauritius	10.64	16,359	63
8	Morocco	71.44	6,672	129
9	Rwanda	6.49	1,365	151
10	Senegal	21.66	2,146	163
11	Sudan	148.62	3,403	166
12	Zambia	46.33	2,823	141
	<b>SUB TOTAL</b>	<b>593</b>		
	<b>% of Global Emissions</b>	<b>1.3%</b>		
	<b>Asia &amp; CIS</b>			
13	Azerbaijan	69.34	14,982	76
14	Bangladesh	158.51	2,592	142
15	Bhutan	0.89	6,468	136
16	Cambodia	25.85	2,648	136
17	Georgia	14.24	6,653	79
18	Indonesia	760.81	8,601	108
19	Kazakhstan	290.89	18,614	70
20	Laos	10.87	4,098	139
21	Moldova	11.72	4,631	114
22	Mongolia	32.88	9,874	103
23	Nepal	34.25	2,151	145
24	Sri Lanka	38.58	8,689	73
25	Thailand	375.70	13,056	89
26	Vietnam	264.20	4,689	121
	<b>SUB- TOTAL</b>	<b>2,089</b>		
	<b>% of Global Emissions</b>	<b>4.7%</b>		
	<b>Latin America</b>			
27	Argentina	338.00	16,779	49
28	Bolivia	46.03	5,297	113
29	Colombia	154.07	11,186	98
30	Costa Rica	12.58	12,853	68
31	Cuba	45.04	19,266	44
32	Dominican Republic	31.18	10,605	102
33	Ecuador	54.97	9,748	98
34	El Salvador	11.71	7,155	115
35	Guatemala	23.22	6,800	125
36	Peru	88.24	10,907	82
	<b>SUB TOTAL</b>	<b>805</b>		
	<b>% of Global Emissions</b>	<b>1.8%</b>		
	<b>36 TNA COUNTRY TOTAL</b>	<b>3,486</b>		
		<b>7.8%</b>		
	<b>WORLD TOTAL (2012)</b>	<b>44,815</b>		
		<b>100%</b>		

	TNA Countries	Total GHG Emissions (MtCO <sub>2</sub> e)	GNI Per Capita (PPP)	HDI Ranking
15 HIGHEST COUNTRIES TOTAL		31,126 69.5%		
15 LOWEST COUNTRIES TOTAL		6 0.01%		

Source for Emissions: UNFCCC (Excluding Land-Use Change and Forestry).

Source for PPP incomes per capita: World Bank; and for HDI: UNDP

## ANNEX IV. INDIVIDUALS INTERVIEWED

	UNEP	Name
1	UNEP FMO	Martin Okun
2	Current Task Manager:	Jonathan Duwyn
3	Former TM	Lawrence Agbemabiese
4	UNEP DGEF (Nairobi)	George Manful
5	Head, GEF Mitigation	Geordie Colville
6	UNEP EO	Genta Konci
7	UNEP EO	Harriette Matsuert
	<b>TNA Project Staff</b>	
8	Global coordinator:	Jorge Rogat
9	Regional coordinator for Asia and CIS:	Subash Dhar
10	Regional coordinator for Africa and Middle East:	Sara Trerup
11	Regional coordinator for Latin America and the Caribbean:	Jorge Rogat
12	DTU Country coordinators:	Rasa Narkeviciute
13	DTU Country coordinators:	Gordon A. Mackenzie
14	DTU Country coordinators:	Sudhir Sharma
	<b>UNFCCC supported Entity for Technology support</b>	<b>Name</b>
	Climate Technology Centre and Network (CTCN) Director	Jukka Uosukainen

### AFRICA REGION

#	Last Name, First Name	Title and Organization	Type of stakeholder
1	Dembele, Pierre	Mali Folkecenter Nyetaa	National team member , Mali
2	Diarra, Daouda	Chef de la Division Agrométéorologie	National team member , Mali
3	Sissako, Mohamed	Director, METEXA Consulting	National team member , Mali
4	Badraoui, Mohamed	Chef de Division/Direction de l'Irrigation et de l'Aménagement de l'Espace Agricole	National team member , Morocco
5	Benabdelfadil, Hamid	Chef de la Division des Ressources en eau	National team member , Morocco
6	Benrahmoune, Ibrahim	Chef de Division de la Coopération et de la Communication à la DOCC	National team member , Morocco
7	Felloun, Hamid	Chef de Division/Agence pour le développement agricole	National team member , Morocco
8	Lahbabi, Abdelmourhit	President, ADS Maroc	National team member , Morocco
9	Lakfifi, Latifa	Chef de la Division de l'Observatoire National de l'Environnement	National team member , Morocco
10	Machkori, M.	Chef de Division de l'Observation et des	National team member , Morocco



		Prévisions	
11	Maktit, Mohammed	Chef du Service de la Prospective	National team member , Morocco
12	Nbou, Mohamed	Directeur des Etudes, de la Planification et de la Prospective du Département de l'Environnement du Ministère de l'Energie et des Mines, de l'Eau et de l'Environnement	National team member , Morocco
13	Sinan, Mohamed	Expert en Ressources en Eau et en Changements Climatiques Directeur de la Recherche Ecole Hassania des Travaux Publics.	National team member , Morocco
14	Ba, Libasse	Environnement et Développement du Tiers Monde (ENDA-TM)	TNA Regional Coord, ator , Africa and Middle East
15	Sarr, Sécou	Environnement et Développement du Tiers Monde (ENDA-TM)	TNA Regional Coord, ator , Africa and Middle East
16	Aherdan, Maya	Ministère de l'Energie, des Mines, de l'Eau et de l'Environnement, Direction de l'Observation et de la Programmation	TNA Team Coord, ator , Morocco
17	Dembele, Boubacar Sidiki	Agence Nationale de la Météorologie du Mali	National team member , Mali
18	Maiga, Amadou Hamady	AMADER/Direction Nationale de l'Énergie (DNE)	National team member , Mali
19	Balaghi, Riad	Chief of the regional center in Agriculture Research in Meknes	National team member , Morocco
20	Chentouf, Abdelmonim	Chef de Service de l'Observation et des Statistiques	National team member , Morocco
21	Hafsi, Mahmoud	Ingénieur/ONEP	National team member , Morocco
22	Sedrati, Mohamed	Direction générale de l'Hydraulique	National team member , Morocco
23	Diagne, El Hadji Mbaye	President of the National Committee on Climate Change in Senegal	National team member , Senegal
24	Sambou, Mamadou	Direction de l'Electricité Ministère de l'Energie	National team member , Senegal
25	Diarra, Birama	Direction Nationale de la Météorologie du Mali (Ministère de l'Equipement et des Transports)	TNA Team Coord, ator , Mali
26	Ndour, Massamba	La Direction de l'Environnement et des Etablissements Classés (DEEC)	TNA Team Coord, ator , Senegal

## ASIA REGION

### Thailand

No	Name	Organization	Role in TNA
1	Prof. Dr. Sivanappan Kumar	Asian Institute of Technology	Leader, Regional Advisor Team
2	Dr. Mokbul Morshed Ahmed	Asian Institute of Technology	Regional Advisor, Adaptation
3	Ms. Sutharin Koonphol,	Programme Specialist, Inclusive Growth and Sustainable Development Unit, UNDP Thailand	Member of UN Climate Change Thematic Group
4	Mr.Mozaharul Alam ,	UNEP Regional Climate Change Coordinator	UNEP focal point
5	Prof. Dr. Morakot Tanticharoen	National Technology and Science Development Agency	National Consultant: Adaptation
6	Ms. Kulwarang Suwanasri	National Technology and Science Development Agency	National Consultant: Adaptation
7	Assoc. Prof. Dr. Thumrongrut Mungcharoen	Faculty of Sciences, Kasetsart University	National TNA Committee
8	Dr. Surachai Sathitkunarut,	Science Technology and Information Policy Office	TNA National Coordinator
9	Ms. Supak Virunhakarun	Science Technology and Information Policy Office	TNA coordinating team
10	Dr. Apichat Aphaiwong	Science Technology and Information Policy Office	TNA coordinating team

**Vietnam**

No	Name	Position and Organization	Role in TNA project
1	Mr. Nguyen Khac Hieu	Deputy Director General, DMHCC	Project Manager
2	Mr. Hoang Manh Hoa	Former DMHCC Officer	Project Coordinator
3	Mr. Nguyen Van Minh	Deputy Head, Division of GHG Emission Monitoring and Low Carbon Economy, DMHCC	Project Coordinating team
4	Ms. Nguyen Van Anh	Official, Division of GHG Emission Monitoring and Low Carbon Economy, DMHCC	Project Coordinating team
5	Ms. Tran Thi Bich Ngoc	Official, Division of GHG Emission Monitoring and Low Carbon Economy, DMHCC	Project Coordinating team
6	Mr. Tran Ha Ninh	Official, Division of GHG Emission Monitoring and Low Carbon Economy, DMHCC	Project Officer
7	Ms. Nguyen Thanh Hai	Official, Division of Science –Technology and International Cooperation, DMHCC	DNE, CTCN
8	Mr. Pham Van Ruc	Directorate of Forestry, Min of Agriculture and Rural Development	Project expert –forestry sector
9	Mr. Nguyen Minh Bao	Institute of Energy, Min of Industry and Trade	Project expert-energy sector
10	Mr. Bui Huy Phung	Energy Association	Leader of Mitigation team
11	Mr. Ha Ngoc Hien	Vietnam Academy of Science and Technology	Project expert-Coastal zone management
12	Mr. Tran Thanh Than	Vietnam Academy of Science and Technology	Project expert-Coastal zone management
13	Mr. Mai Van Trinh	Institute of Agriculture Environment, Min of Agriculture and Rural Development	Project expert-agricultural sector

**Sri Lanka**

No	Name	Position and Organization	Role in TNA project
1	Dr. R.D.S. Jayathunga	Director, Climate Change Division	Project Director
2	Mr. P.G. Joseph	Engineering Consultant, Sri Lanka Carbon Fund (Pvt) Ltd}	Consultant, Energy Sector
3	Mr. (Eng.) V.R. Sena Peris	Director, National Cleaner Production Centre	Consultant, Industry Sector
4	Dr.(Mrs.) Erandathie Lokupitiya	Senior Lecturer, Department of Zoology, Faculty of Sciences, University of Colombo)	Consultant, Transport Sector
5	Dr.(Mrs.) S.M. Wijesundara	Former Director, Natural Resource Management, Ministry of Agriculture and Agrarian Services	Consultant-Food Sector
6	Ms. Nirasha Kumani	Environmental Management Office	Project coordinating team
7	Ms.W.P.S.D Pathiram	Environmental Management Office	Project coordinating team
8	Ms. Kema Kasturirachchi	Environmental Management Office	Project coordinating team
9	Ms. Nimini Ranasinghe	Environmental Management Office	Project coordinating team
10	Ms. S.I. Rajapakse	Environmental Management Office	Project coordinating team
11	Ms. Iresha	Climate Change Division	Project coordinating team

**Moldova**

	Persons met	
1	Vasile Scorpan	Manager, Climate Change Office
	<b>Mitigation</b>	
2	Ion Comendant	Team Leader, Mitigation Team. Institute of Power Engineering
3	Andrei Sula	Power Sector, ANRE
4	Sergiu Codreanu	Transport, Fenosa Furnizare Energie
	<b>Adaptation</b>	
5	Ala Druta	Team Leader, Adaptation Team, Consultant.
6	Prof. Boincean Boris	Agriculture

7	Prof. Opopol Nicolae	Health
8	Monica Moldovan	Sustainable Development Advisor, UNDP

**LAC REGION**

Country	Name	Type of actor	Organization
Argentina			
1	Daniel Bouille	Regional Centre-Mitigation	Fundación Bariloche
2	Osvaldo Giraldin	Regional Centre-Mitigation	Fundación Bariloche
3	Gabriel Blanco	National coordinator	Facultad de Ingeniería Universidad Nacional del Centro de la Provincia de Buenos Aires
4	Marcela Gregori	Ministerio de Ciencia, Tecnología e Innovación Productiva de la Nación	
5	Ana Lea Cukierman	Researcher	University of Buenos Aires
6	Pablo Bonelli	Researcher	University of Buenos Aires
Colombia			
1	Mariana Rojas	Coordinator for Adaptation	Ministry of Environment
2	Diana Barba	National Coordinator	GIZ
3	Andrés Osorio	Project director-Adaptation	Universidad Nacional de Colombia
4	Oscar Mesa	Researcher	Universidad Nacional de Colombia
5	Andres Amel	Project director-Mitigation	Universidad de Antioquia
6	Yonathan Canavid.	Researcher	Universidad de Antioquia
Peru			
1	Maria Paz Cigarán	Regional Centre-Adaptation	Libélula
2	Maite Cigarán	Regional Centre-Adaptation	Libélula
3	Claudia Figallo	National coordinator	Ministry of Environment
4	Elsa Galarza	Researcher	Universidad del Pacifico

## ANNEX V. LIST OF DOCUMENTS CONSULTED

<b>Project design documents</b>	
1	Review Sheet
2	GEF SECRETARIAT REVIEW FOR LDCF/SCCF PROJECTS
3	UNEP Project Document (ProDOC)
4	08-04-2014_Council_document.pdf
5	CEO ENDORSEMENT/APPROVAL, GEF Project 3907
6	GEF SECRETARIAT REVIEW FOR LDCF/SCCF PROJECTS
7	INTERNAL COOPERATION AGREEMENT - ICA IDGEF/2009 1011
8	Internal Cooperation Agreement - ICA IDGEF/2009 1012
9	Signed Internal Cooperation Agreement - ICA IDGEF/2009 1011
10	Countries.docx
11	FinalMTSGCSS-X-8.pdf
12	Jonathan correspondence.docx
13	PIF
<b>Project supervision</b>	
14	List of docs produced.docx
15	Terminal Report TNA Phase I_FINALdraft 19 02 14.doc
16	Terminal Report.doc
17	TNA - Mid Term Review - 26.09.2011 - DTIE-NRB.docm
18	Supervision mission reports - some samples seen
19	Contacts lists, contracts and budgets
<b>Steering Committee meeting documents -</b>	
20	PSC_Meeting_Dec_2009(report).doc
21	PSC_2_Meeting_June_2010_Durban
22	PSC_3_Meeting_Nov_2010_Durban
23	PSC_4_Meeting_Nov_2011_Durban
	(2 are missing)
	Country TNA and TAP, at <a href="http://unfccc.int/ttclear/pages/home.html">http://unfccc.int/ttclear/pages/home.html</a>
24	UNFCCC and TTCLEAR
25	Previous handbooks

26	Conducting technology needs assessment for climate change
27	Methods for Climate Change Technology Transfer Needs Assessments and Implementing Activities: Experiences of Developing and Transition Countries
29	Third TNA synthesis report: <a href="http://unfccc.int/resource/docs/2013/sbsta/eng/inf07.pdf">http://unfccc.int/resource/docs/2013/sbsta/eng/inf07.pdf</a>
30	TNA flyer: What are the technology needs of developing countries?: <a href="http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TTF_TNA/08b5d49c4d7b42ba84c39b7c7a1708fe/debc9f70420f4117bd2f4440598200a4.pdf">http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TTF_TNA/08b5d49c4d7b42ba84c39b7c7a1708fe/debc9f70420f4117bd2f4440598200a4.pdf</a>
31	TEC Brief – Possible integration of the TNA process with NAMA and NAP processes: <a href="http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/4f85c880f1b54a6bb1ed32a3b7e1bc94/7262a425eab84ac8a0ab4a5980d7e58d.pdf">http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/4f85c880f1b54a6bb1ed32a3b7e1bc94/7262a425eab84ac8a0ab4a5980d7e58d.pdf</a>
32	TEC Brief – Results and success factors of TNAs: <a href="http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/6506e4f81d2746de8347b9742ff164ad/a956cb76053549a6b22c9df690f708d3.pdf">http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TEC_column_L/6506e4f81d2746de8347b9742ff164ad/a956cb76053549a6b22c9df690f708d3.pdf</a>
	<b>UNEP Strategic Documents</b>
33	Bali_Strategic_Plan 2014.pdf
34	Final PoW 20122013asapprovedbytheGC.pdf
35	POW 2010-2011 (1).pdf
36	PoW 2014-2015_as approved by the GC Feb 2013.pdf
37	UNEP_MTS_2010_2013.pdf
38	UNEP_Programme_Manual_May_2013 (1).pdf
	<b>Relevant documents of TNA participating countries in Africa and Middle East</b>
39	Terms of Reference for the implementation of the TNA project in Africa and Middle East – 15 pages
40	TNA report – Cote d'Ivoire (adaptation)
41	TNA report – Cote d'Ivoire (mitigation)
42	TNA report – Ghana (adaptation)
43	Project Ideas report – Ghana (adaptation)
44	Barrier Analysis report – Ghana (adaptation)
45	TAP report – Ghana (adaptation)
46	TNA report – Ghana (mitigation)
47	Project Ideas report – Ghana (mitigation)
48	Barrier Analysis report – Ghana (mitigation)
49	TAP report – Ghana (mitigation)
50	TNA report – Kenya (adaptation)
51	Project Ideas report – Kenya (adaptation)
52	Barrier Analysis report – Kenya (adaptation)
53	TAP report – Kenya (adaptation)

54	TNA report – Kenya (mitigation)
55	Project Ideas report – Kenya (mitigation)
56	Barrier Analysis report – Kenya (mitigation)
57	TAP report – Kenya (mitigation)
58	TNA report - Lebanon
59	TNA report – Mali (adaptation)
60	TNA report – Mali (mitigation)
61	TNA report - Mauritius
62	Barrier Analysis report – Mauritius (adaptation)
63	TAP report – Mauritius (adaptation)
64	Barrier Analysis report – Mauritius (mitigation)
65	TAP report – Mauritius (mitigation)
66	TNA report – Morocco (adaptation)
67	TNA report – Morocco (mitigation)
68	TNA report – Rwanda
69	Project Ideas report – Rwanda
70	Barrier Analysis report – Rwanda
71	TAP report – Rwanda
72	TNA report – Senegal (adaptation)
73	TNA report – Senegal (mitigation)
74	TNA report – Sudan (adaptation)
75	TNA report – Sudan (mitigation)
76	TNA report – Zambia (adaptation)
77	Project Ideas report – Zambia (adaptation)
78	Barrier Analysis report – Zambia (adaptation)
79	TAP report – Zambia (adaptation)
80	TNA report – Zambia (mitigation)
81	Project Ideas report – Zambia (mitigation)
82	Barrier Analysis report – Zambia (mitigation)
83	TAP report – Zambia (mitigation)

### Other Project Documents

84	Asian Institute of Technology (Mitigation Team); 2013 June; Technology Needs Assessments in Asia & Eastern Europe (A GEF funded project) – Regional Synthesis Report
85	Asian Institute of Technology (Mitigation Team); 2013 April; Technology Needs Assessments in Asia & Eastern Europe (A GEF funded project) - Final Report
86	Asian Institute of Technology (Mitigation Team); 2012 March; Technology Needs Assessments in Asia & Eastern Europe (A GEF funded project) – Mid term Report
87	Asian Institute of Technology (Mitigation Team); 2012 March; Technology Needs Assessments in Asia & Eastern Europe (A GEF funded project) – Progress Report
88	Asian Institute of Technology (Mitigation Team); 2010 October; Technology Needs Assessments in Asia & Eastern Europe (A GEF funded project) - Inception Report
89	GEF; 2012 February; Technology Needs Assessment Project (A GEF funded project) - Report on the Second Regional Capacity Building Workshop – Asia & CIS Barrier Analysis, Enabling Environment and Development of Technology Action Plans (Round Two Countries)
90	GEF; 2011 August; Report - Technology Needs Assessments - First Regional Capacity Building Workshop-Asia & CIS (A GEF funded project)
91	GEF; 2010 September; Report - Technology Needs Assessments First Regional Capacity Building Workshop - Asia (A GEF funded project)
92	Laos PDR ; 2013 April; Technology Needs Assessments Report - Climate Change Adaptation
93	Laos PDR ; 2013 April; Technology Needs Assessments Report - Climate Change Mitigation
94	Lebanon; 2012 December; Technology Needs Assessments Report - Climate Change Adaptation
95	Republic of Kazakhstan; undated; Technology Needs Assessments Report - Climate Change Adaptation
96	Republic of Kazakhstan; undated; Technology Needs Assessments Report - Climate Change Mitigation
97	UNDP/GEF; undated; Climate Change: Enabling Activities, Technology Needs Assessment, Project Completion Revision
98	UNEP RISO Centre; undated; Technology Needs Assessment in Asia- Terms of Reference UNEP; 2011 August 2011; GEF Funded Umbrella Technology Needs Assessment (TNA) Project- Internal Mid Term Review By UNEP
99	UNEP - Notes on discussions on TNA Project, 13th October 2009.
100	2nd Project steering committee meeting minutes, June 2010.

### Related Documents

1	AIT; 2013; TNA Regional Synthesis Report: Asian and Eastern European Countries
2	Climate Technology Initiative; 2002 March; Methods for Climate Change Technology Transfer Needs Assessments and Implementing Activities - Developing and Transition Country Approaches and Experiences
3	Durban Platform For Enhanced Action; 2015 July 24; Scenario note on the tenth part of the second session of the Ad Hoc Working Group on the Durban Platform for Enhanced Action

4	Ecologic Institute; Marcellino et al.; 2010 February; Technology Transfer in the International Climate Negotiations Assessment of Proposals and Discussion of Open Questions
5	Ecologic Institute; Gerstetter C. et al.; 2009 November; The Current Proposals on the Transfer of Climate Technology in the International Climate Negotiations - An Assessment
6	GEF/ Conservation Development Centre; 2009 August; The ROTL Handbook- Towards Enhancing the Impacts of Environmental projects
7	Gerstetter C. et al.; 2010; Technology Transfer in the International Climate Negotiations – The State of Play and Suggestions for the Way Forward
8	Gillespie B.; 2005 February; Theories of Change: Exploring of IDRC Understandings about Capacity Development
9	Global Environment Facility; Rodgers D. et al.; 2013 October; Investing in Energy Efficiency-The GEF Experience
10	Global Environment Facility (EO), 2008. Lessons from GEF Climate Change Adaptation projects
11	Hausmann R. et al.; 2006 September; Doomed To Choose: Industrial Policy As Predicament
12	IDRC; 1993; Green technologies for development : transfer, trade and cooperation
13	International Centre for Trade and Sustainable Development; Cannady C.; 2009 September; Access to Climate Change Technology by Developing Countries- A Practical Strategy
14	International Centre for Trade and Sustainable Development; Barton, John H.; 2007; Intellectual Property and Access to Clean Energy Technologies in Developing Countries: An Analysis of Solar Photovoltaic, Biofuels and Wind Technologies.
15	International Institute for Sustainable Development; Keller M. et al.; 2011 November; Review of Current and Planned Adaptation Action: South America
16	IPPC, 2000, Methodological and Technological Issues in Technology Transfer
17	Karakosta Charikleia; Doukas Haris; Psarras John; 2010; Technology transfer through climate change: Setting a sustainable energy pattern, Renewable and Sustainable Energy Reviews
18	Nordhaus W.; 2014 January; Climate Clubs: Designing a Mechanism to Overcome Free-riding in International Climate Policy
19	OECD-DAC; 2002; Glossary of Key Terms in Evaluation and Results Based Management
20	Overseas Development Institute; Barnard S. et al; 2015 November; Financing climate technology transfer - Lessons from efforts under the UNFCCC
21	Overseas Development Institute, 2008. Desk review: Evaluation of adaptation to climate change from a development perspective
22	Rob D. van den Berg and Osvaldo Feinstein; 2009; Evaluating climate change and development
23	Schmidt, T. S., Huenteler, J; 2016; Anticipating Industry Localization Effects of Clean Technology Deployment Policies in Developing Countries. Global Environmental Change
24	Stokman F.; 2009 November; Is a Copenhagen Climate Treaty Still Possible? Scientific Analysis Provides New Insights for Agreement and a Better Treaty for the Planet
25	TANGO International/Overseas Development Institute (ODI); 2015; First Phase Independent Evaluation of the Adaptation Fund.
26	The Economist; 2015 November 28; Special report Climate Change-Hot and Bothered
27	UNDESA; 2008; Climate Change- Technology Development and Technology Transfer
28	UNEP; 2014; UNEP Adaptation Gap Report 2014
29	UNEP; 2013 February; UNEP Annual Report 2012
30	UNEP; 2012 December; Mid-Term Evaluation of UNEP's Medium-term Strategy - 2010 – 2013
31	UNEP; 2012 February; UNEP Annual Report 2011
32	UNEP; 2011 July; Formative Evaluation of UNEP's Programme of Work 2010-2011
33	UNEP; 2011 February; UNEP Annual Report 2010
34	UNEP; 2010 October 18; Proposed biennial programme of work and budget for 2012–2013-Report of the Executive Director; UNEP/GC.26/13



35	UNEP; 2010 October estimate, undated; UNEP Programme Performance Report for 2010-2011 Biennium, Report of the Executive Director, Report No. 1: January – June 2010
36	UNEP; 2009 September; Intersessional Meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean; UNEP/LAC-IGWG(IS).XVII/Ref.2
37	UNEP; 2009 estimate, undated; Climate Change Strategy – Programme of Work 2010-2011
38	UNEP, 2009, A Guide to the UNEP 2010-11 Draft Programme of Work
39	UNEP; 2008 estimate, undated; United Nations Environment Programme Medium-term Strategy 2010–2013; UNEP/GCSS.X/8
40	UNEP; Evaluation and Oversight Unit, 2008 March, Evaluation Manual
41	UNFCCC; 2015 December 12; Adoption of the Paris Agreement, Proposal by the President, Draft decision -/CP.21; FCCC/CP/2015/L.9
42	UNFCCC; 2015 October; Evaluation of the Poznan strategic programme on technology transfer: final report by the Technology Executive Committee; FCCC/SBI/2015/16
43	UNFCCC, 2015, Synthesis report on the aggregate effect of the intended nationally determined contributions, FCCC/CP/2015/7
44	UNFCCC; 2013 February; Conference of the Parties; Report of the Conference of the Parties on its eighteenth session, held in Doha from 26 November to 8 December 2012; FCCC/CP/2012/8/Add.1
45	UNFCCC and UNDP, 2010, Handbook for conducting Technology Needs Assessment for Climate Change
46	UNFCCC, 2008, Report of the Global Environment Facility on the elaboration of a strategic programme to scale up the level of investment in the transfer of environmentally sound technologies, FCCC/SBI/2008/16
47	UNFCCC; 2007; Climate Change: Impacts, Vulnerabilities and Adaptation in Developing Countries
48	UNIDO; Bazilian M.; 2009 September; Technology in the UN Climate Change Negotiations: Moving Beyond Abstraction
49	WWF; Gustavsson et al.; 2015 October; Energy report for Uganda-A 100% Renewable Energy Future by 2050
50	WWF/Care; 2015 estimated, undated; TWIN TRACKS: Developing sustainably and equitably in a carbon-constrained world

## ANNEX VI. INTERVIEW PROTOCOL

### **Interview guide: National TNA Team, partners and national stakeholders**

#### **ACHIEVEMENTS OF OUTPUTS**

- Has your county completed the process of identifying and prioritising technology needs for climate change mitigation and adaptation as required by the project targets? (i.e at least three technologies for each selected sector) If not, why?
- Was information on technologies, policies and measures, and barrier removal sufficiently made available to you? Through which mechanism/channels?
- Have national, regional and international sharing/networks been established to support technology transfer? Please give details.

#### **EFFECTIVENESS: ATTAINMENT OF OBJECTIVES AND PLANNED RESULTS**

- What are the objectives of your TNA project (especially those additional to the global ones)
- To what extent do you think the objectives of your TNA project have been achieved?
- What is your assessment of the quality of your country's TNA/TAP reports? Why?
- To what extent have the capacity development workshops been effective and sufficient in helping your country with the TNA/TAP process? What needs to be further improved
- How active are the established national, regional and/or international forum/networks? Are they useful for TNA and TAP implementation?

#### **EFFICIENCY**

- How timely and cost-effective were the project activities?
- Have there been efforts to make use of/build upon pre-existing initiatives to increase project efficiency? What are they?

#### **SUSTAINABILITY AND REPLICATION**

- To what extent could the TNA/TAP process introduced by the project be sustained and replicated by the country without the project's support?
- What are your strategies /mechanism to sustain and replicate the project's results? What have been done so far?
- Have the TNA reports been used to inform relevant policies and planning process in your country? What are those policies and plans?
- Have any of your TAP activities been implemented or supported for implementation? Please explain.
- What are institutional, socio-economic, environmental and political risks which can potentially affect sustainability of the project's results?

#### **FACTORS AND PROCESSES AFFECTING PROJECT PERFORMANCE**

- To what extent have the following factors affected the overall project performance at the country level? Please explain.
  - Project preparation and readiness

- Project implementation and management
- Stakeholder participation, cooperation and partnerships.
- Communication and public awareness
- Country ownership and driven-ness
- Financial planning and management
- Supervision, guidance and technical backstopping
- Monitoring and evaluation

#### **LESSONS LEARNT**

- What are the key lessons learnt from the implementation of TNA project from your perspective?

#### **RECOMMENDATIONS**

- How could the project be improved?

### **Interview Guide: Regional Center**

#### **ACHIEVEMENTS OF OUTPUTS**

- Have all participating countries in your region completed the process of identifying and prioritising technology needs for climate change mitigation and adaptation as required by the project targets? (i.e at least three technologies for each selected sector) If not, why?
- Was information on technologies, policies and measures, and barrier removal sufficiently made available to the countries? Through which mechanism/channels?
- Have national, regional and international sharing/networks been established to support technology transfer? Please give details.

#### **EFFECTIVENESS: ATTAINMENT OF OBJECTIVES AND PLANNED RESULTS**

- What is your assessment of the quality of these TNA/TAP results/reports?
- Have any of the supported countries used TNA/TAP reports to inform their national or sectoral policy planning and budgeting? Please give example.
- To what extent have the capacity development workshops been effective and sufficient in helping the countries with their TNA/TAP process? What needs to be further improved?
- How active are the established national, regional and/or international forum/networks? Are they useful for TNA and TAP implementation?

#### **EFFICIENCY**

- How timely and cost-effective were the project activities?
- Have there been efforts to make use of/build upon pre-existing initiatives to increase project efficiency? What are they?

#### **SUSTAINABILITY AND REPLICATION**

- To what extent could the TNA/TAP process introduced by the project be sustained and replicated by the countries themselves?

- At regional level, what are the major factors (positively or negatively) influencing the project's capacity in achieving its results?
- To what extent has the project played a catalytic role in your region? Please explain
  
- To what extent has the project promoted the replication effects and/or up-scaling of experiences and lessons in your region? Please explain

**FACTORS AND PROCESSES AFFECTING PROJECT PERFORMANCE**

- To what extent you think the following factors have affected the overall project performance at the regional level? Please explain.
  - Project preparation and readiness
  - Project implementation and management
  - Stakeholder participation, cooperation and partnerships.
  - Communication and public awareness
  - Country ownership and driven-ness
  - Financial planning and management
  - Supervision, guidance and technical backstopping
  - Monitoring and evaluation

**LESSONS LEARNT**

- What are the key lessons learnt from the regional perspective?

**RECOMMENDATIONS**

How could the project have been improved?

## ANNEX VII. TNA PROJECT PHASE I: REGIONAL REPORTS

### INTRODUCTION

1. This annex is a component of the Terminal Evaluation of the “Technology Needs Assessment Project - Phase I” supported by the Global Environment Fund (GEF) and executed by the United Nations Environment Programme (UNEP).
2. The overall methodology followed for the evaluation is described in section 1.4 of the main report. The findings reported have been based on the triangulation from several streams of evidence. An important source of evidence came from semi-structured interviews undertaken in 10 selected case study countries by the evaluation team members. They interviewed national project team members and key experts; representatives from the four Regional Centres which provided technical support to countries in the regions, and also international partners located in the countries.
3. In addition the evaluation undertook a detailed electronic web based survey of national coordinators and team members who participated in the TNA project. A total of 85 valid responses (out of a total of 90) were received from 25 of the 32 countries (which had successfully delivered on the national TNA outputs) giving a response rate of 78% for the TNA countries covered. In all 25 responding countries the national coordinator or the person with current responsibilities answered the survey. The response by the 25 different countries had the regional distribution of 9 from Africa & Middle East, 11 from Asia & CIS and 5 from Latin America & Caribbean. The respondents were assured full privacy of their individual names and so for that reason, no names of survey respondents are provided. All documents and names of interviewees are provided in one single place in Annex IV
4. This annex provides regional reports, with findings of the field visit and survey broken down by the regions, with more information on the countries visited. These reports are provided in order to present a more detailed picture of the sample of countries visited and to illustrate any differences between the regional and the global findings.
5. The evaluation found that the survey results supported the results from the field in the same countries, and were also in agreement with the results from semi-structured interviews in countries that were not visited. Thus the survey and the field visits provided useful validation.
6. The analysis reported here by region adds qualitative information about, and from, the many countries and stakeholder types, who were involved in the TNA Phase I, which could not be covered in the Main Report. . These reports provide additional strong sets of evidence about the project’s relevance, effectiveness, efficiency, sustainability and impacts.

## List of acronyms & abbreviations

ACIAR	Australian Centre for International Agricultural Research
AIT	Asia Institute of Technology
CCAFS	Climate Change, Agriculture and Food Security Platform, Ghana
CC-M	Climate Change Mitigation
CDM	Clean Development Mechanisms
CIS	Commonwealth of Independent States
CONCYTEC	Consejo Nacional de Ciencia, Tecnología e Innovación Tecnológica (Peru)
COP	Conference of Parties
CSIR	Council for Scientific and Industrial Research
CSOs	Civil Society Organizations
CTCN	Climate Technology Center and Network
CTI-PFAN	Climate Technology Initiative - Private Finance Advisory Network
DANIDA	Danish International Development Agency
DGEF	Division for GEF Coordination
DTIE	Division of Technology, Industry and Economics of UNEP
DTU	Technical University of Denmark
ENDA	Environment Development Action in the third world
EOU	Evaluation and Oversight Unit
EST	Environmentally Sound Technology
EU	European Union
FB	Fundacion Bariloche
FSP	Full Size Project (GEF)
GEF	Global Environment Facility
GHG	Greenhouse gases
GIZ	Gesellschaft für Internationale Zusammenarbeit , German agency
INDC	Intended Nationally Determined Contribution
KPI	Key performance indicators
LAC	Latin America and the Caribbean
MCDA	Multi-Criteria Decision Analysis
NAMAs	National Appropriate Mitigation Actions
NAP	National Action Plans
NAPAs	National Action Plan on Adaptation
NDE	National Designated Entities
NGO	Non-Governmental Organization
PoW	Programme of Work
PRA	Participatory Rural Appraisal
ROtI	Review of Outcomes to Impacts
SBSTA	Subsidiary Body for Scientific and Technological Advice
TAP	Technology Adaptation Plans

TE	Terminal Evaluation
TNA	Technology Need Assessment
ToC	Theory of Change
ToR	Terms of Reference
UDP	UNEP Partnership with Technical University of Denmark (formerly URC)
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
URC	UNEP RISOE Centre on Energy, Climate and Sustainable Development

---

**Technology Need Assessment Project Phase 1**  
**Regional Working Paper for Africa**

**Author: Jérôme Gandin**

---

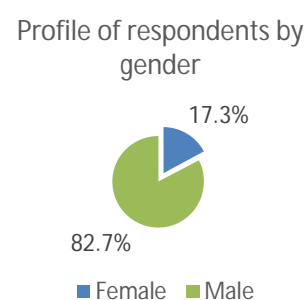
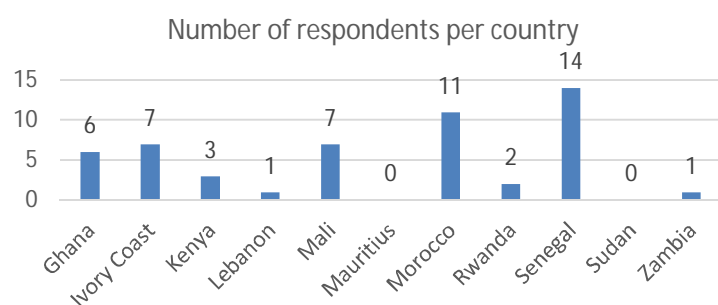


## Introduction

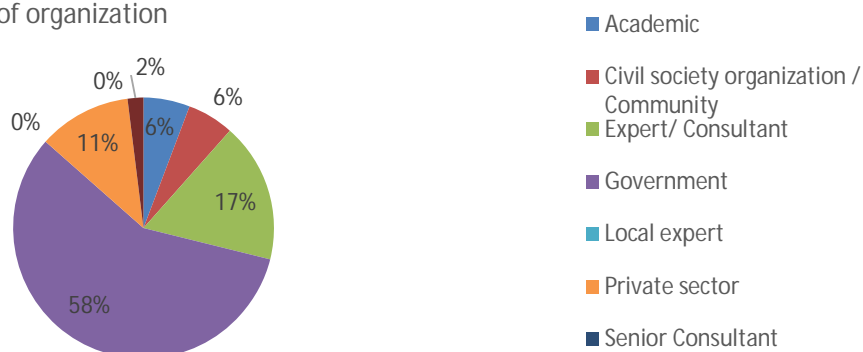
1. This regional working paper presents the main evaluation findings, conclusions and recommendations related to the TNA participating countries of the Africa and Middle East region. The evaluation is built on a methodology mixing quantitative and qualitative data collection and analysis techniques. Along with a document review and the common survey administered for the evaluation, three country visits were undertaken in Mali, Morocco and Senegal, to gain the insights from national stakeholders and assess the performance of the TNA project at country level. Selection criteria for the countries to be visited were: (i) adequate regional diversity, (ii) progress of the country in completing its TNA process, (iii) good representation of project's successes and failures, availability, and (iv) access to a large number of stakeholders, prioritized within budget constraints.

2. In terms of limitations, the evaluated project presented several dimensions of complexity, namely (i) the large number of participating countries (32), with many differences in their contexts and circumstances as well as multiple conflicts and dissensions between countries and experts on the most effective paths for addressing the issues; (ii) the highly multi-dimensional nature of the issues covered in the TNA project and the many different countries and sectors involved ; (iii) potential bias with online survey respondents, often tending to extremes - to be very enthusiastic or too negative, at other times choosing the middle to avoid controversy; and (iv) lack of availability of key actors due to the completion of the project in 2013. The budget limitations also required minimizing the travel costs hence it did not allow for Anglophone or Eastern African countries to be visited. Further details about the limitations of this evaluation may be read in the main body of the evaluation report.

3. A total of 52 respondents from the participating countries of the Africa and Middle East region have participated in the survey, with 14 of them from Senegal, 11 from Morocco and 7 from Mali. Besides, 9 out of the 11 participating countries have at least 1 respondent, with Mauritius and Sudan having no survey respondent. Besides, nearly 83% of the respondents are male and 17% are female respondents. Finally, 58% of the respondents work for the government, while 17% are experts/consultants, 11% work in the private sector and 6% work in the academic sector.



Respondents by type of organization



## Evaluation Findings

### Strategic relevance

**Finding 1: The design of the TNA project and its associated objectives are fully relevant to the needs and priorities of participating countries. The developing country Parties to the UNFCCC have participated in the design of the TNA project and ensured that their needs and priorities are taken into consideration.**

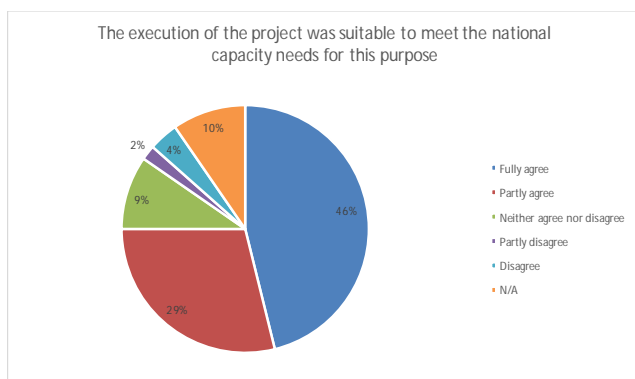
4. The TNA project, as part of the Strategic Programme on Technology Transfer, is highly relevant to national strategies. It has been elaborated upon the request of developing countries Parties to UNFCCC at the COP 13 in 2007 and was widely endorsed in the COP 14 in 2008.

5. The survey respondents for the Africa and Middle East region revealed that 46% of them fully agree with the suitability of the project execution to meet the national capacity needs (Figure 1). In addition, 29% of the survey respondents partly agree. In other words, 75% of the respondents either fully or partly acknowledge that the project execution was suitable to meet the national capacity needs.

#### Country case:

*In Mali, the National Team recognized the TNA project design as being relevant to the needs and priorities of the country. The TNA project enabled them to address pre-existing difficulties, namely the absence of an institutional framework for technology transfer, the lack of technical, human and financial resources, poor communication and information sharing between actors, as well as a weak attention to climate change in the development and use of technologies. Given this context, TNA design encouraged the appointment of a national coordinator, the recruitment of a national consulting company, and the elaboration of terms of reference for both mitigation and adaptation that integrate priorities and needs of the country.*

**Figure 1: Suitability of the project execution to meet the national capacity needs**



6. The project design encouraged national leadership for the assessments and for the ultimate conclusions to be endorsed by the authorities of each country through a strong national institutional framework. It is supported by a set of mechanisms that stimulates the involvement of national stakeholders from different sectors. In this regard, as strongly recommended by UNEP-DTU and Enda, all of the participating countries have set up an organizational structure for the successful implementation and ownership of the project. This organizational structure at the national level consisted of i) National TNA Team; ii) a National Steering Committee; iii) Technical/sectorial Working Groups; iv) the TNA National Coordinator and v) the Consultants, as developed in the section 3.9 of this report.

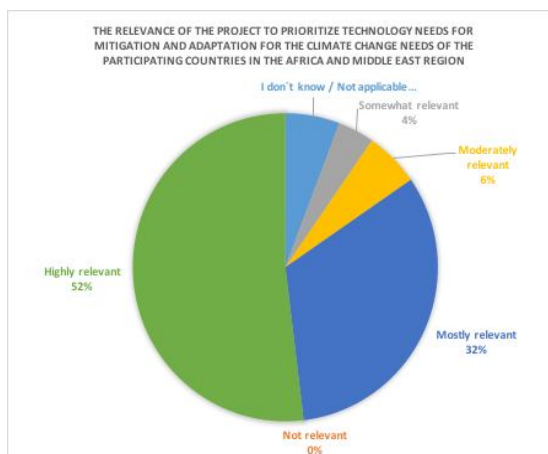
7. The vast majority of the national stakeholders that have been interviewed throughout the three country visits reported that the above-described groups resulted in the participation of national stakeholders from a wide range of sectors. In their opinion, the complementarity of these groups contributed to a more integrated analysis and a better quality of the TNA and TAP reports. In other words, the designed structure of the TNA project was appropriate to ensure the attainment of the planned objectives.

**Country case:**

*In Morocco, the National TNA Committee was composed of 26 members representing various departments of Ministries, public institutions, private sector, university and research centers as well as the members of the sectorial and technical workgroups.*

8. In this regard, the survey results confirm the relevance of the TNA project to the needs and priorities of the participating countries in the Africa and Middle East region. A vast majority of the respondents (84%) think that the TNA project is either highly or mostly relevant (Figure 2). Indeed, 52% of the respondents consider that the TNA project is highly relevant, while another 32% view it as mostly relevant.

**Figure 2: Relevance of the project to prioritize technology needs for mitigation and adaptation**



9. The TNA project design also stimulated the participating countries to drive the activities in identifying and determining the mitigation and adaptation technology priorities that correspond to their own needs and priorities. The table 1 indicates the sectors that were selected by the participating countries to respond to their national development priorities and comply with their climate change management policies.

**Table 3: Sectors selected by participating countries for adaptation and mitigation to climate change**

Country	Sector	
	Adaptation	Mitigation
Côte d'Ivoire	1) Agriculture 2) Water Resources	1) Energy 2) Waste
Ghana	1) Agriculture 2) Water Resources	None <sup>102</sup>
Kenya	1) Agriculture 2) Water Resources	1) Energy 2) Industry
Lebanon	1) Agriculture 2) Water Resources	1) Energy 2) Transport
Mali	1) Agriculture 2) Water Resources	1) Energy 2) Agriculture and Land Use change and Forestry
Mauritius	1) Agriculture 2) Water Resources 3) Coastal zone and Tourism	1) Energy
Morocco	1) Agriculture 2) Water Resources	1) Energy
Rwanda	1) Agriculture	1) Energy
Senegal	1) Agriculture 2) Water Resources	1) Energy
Sudan	1) Agriculture 2) Water Resources	1) Energy 2) Industry 3) Agriculture and Land Use change and Forestry
Zambia	1) Agriculture 2) Water Resources	1) Energy 2) Agriculture and Land Use change and Forestry
Ethiopia	N/A	N/A

10. The most frequently prioritized sectors for adaptation included 1) Agriculture 2) Water resources and 3) Coastal zones and tourism, while the most frequently prioritized sectors for mitigation were those of 1) Energy; 2) Industry; 3) Transport; 4) Agriculture and Forestry; and 5) Waste.

11. Many countries have prioritized the same sectors showing that they share the same concerns. Indeed, it is clear that the agricultural sector, water resources and energy are important for the countries in Africa and Middle East, as they are considered as being the most affected sectors by climate

change. In Africa, living conditions of nearly 70% population depend on rainfed agriculture. Besides, agriculture is the sector that contributes the most to the regional GDP. Similarly, energy plays an important role for the economy of the participating countries, and it is one of the sectors that contribute the most to GHG emissions. Also this sector offers a large potential for renewable energies.

## Achievement of outputs

**Finding 2: The outputs of the three components of the TNA project – Phase 1 have been largely achieved with the effective leadership and the sound support from the regional centre.**

12. As described earlier in the report, the architecture of the TNA project – Phase 1 is made of three principal components that are supported by a series of outputs. The table below shows that all the outputs of the TNA project – Phase 1 have been achieved in the Africa and Middle East region.

**Table 4: Achievement of the outputs within the Africa and Middle East region**

Component	Outputs	Achievement	Evidence
<b>Component 1:</b> Support for the development or strengthening of TNAs in 35-45 countries	1. A network of participating individuals and institutions at national level informed and bringing capacity to secure national consultations in order to reach a national consensus on adequate technologies	Yes	Enda requested all of the TNA national coordinators to nominate 3 participants each for the regional workshops. All of the countries identified 3 experts including the national coordinator. However, participants from Rwanda were not able to come and only 1 participant represented Lebanon.
	2. A synthesis of methodological applications and hurdles carried out at national level and serving as input for TNA elaboration	Yes	Participating countries have been able to carry out this synthesis and use it as input for TNA elaboration.
	3. Between 35 and 45 TNAs including TAPs produced, identifying barriers to technology transfer at national level and means and actions to overcome them.	Yes	11 out of the 12 participating countries in the Africa and Middle East region have produced both TNA and TAP.
	4. Feedback for TNA handbook update based on national experiences and processes.	Yes	Enda has collected information, reports and papers related to the national policies with a view to update the TNA handbook.
<b>Component 2:</b> Development of tools and provision of methodology information to support TNA and TAP processes	1. A tool to prioritize mitigation options based on cost effectiveness, existing potential, resource availability and relevance for national situations developed and presented.	Yes	Enda has developed this tool and shared it with participating countries through emails and Skype exchanges. Enda also presented this tool at the regional workshops. The TNA Help Desk also provided support to the participating countries throughout the TNA and TAP processes.
	2. A tool to prioritize adaptation technological options based on climate change impacts as well as human, economic, social and costs related aspects developed and presented.	Yes	In parallel to the support from the Help Desk, Enda has ensured a follow up via Skype to assist countries in identifying and prioritizing the technologies.
	3. A simple and efficient market assessment tool made available	Yes	This tool was presented and discussed with participating countries at the regional training workshops.
	4. A process to apply the tools at national level agreed upon.	Yes	Enda has established the mechanisms set by the TNA project architecture to ensure the use of the tools at the national level.
	5. Access and links to information database elaborated and serving as a base for technology specification in terms of performance, cost and availability.	Yes	Enda has developed and shared the required tools.
	6. Reporting template for TNA elaborated.	Yes	Enda has shared the templates for TNA and TAP

Component	Outputs	Achievement	Evidence
<b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination	1. A network involving both national and supra national institutions recognized for their success in technology transfer activities established and operational	Yes	reports to the participating countries. Enda has established the project mechanisms for the participating countries in the Africa and Middle East region. Enda has organized regional workshops and participated technical/support missions.
	2. Proven approaches to elaborate good quality TNAs developed. Institutional responsibilities set up. Capacities built to elaborate, implement and revise TNAs and associated TAPs.	Yes	A thorough support has been provided to the TNA country teams mostly by e-mails. A lot of e-mails exchanges have happened with the Lebanese, Sudanese, Kenyan, Ethiopian, Mauritian teams. Most of them used a lot the Help Desk support. Kenya got an on-site support while Senegal took advantage of visiting us and through phone calls.
	3. Replication approach available to all GEF beneficiary countries together with a proposed mechanism for interactive support.	No	No evidence found.
	4. A "Best Practices and Lessons Learnt report" from the project produced and disseminated.	Yes	Enda has produced a Regional Synthesis Report in May 2013 that contains a section dedicated to lessons learnt. Best practices and lessons learnt from participating countries within the Africa and Middle East region were shared at the regional experience workshop organized in 2013 by AIT, as the Asian TNA regional Centre.
	5. Synthesis report from the project produced and disseminated.	Yes	Enda has produced a Regional Synthesis Report in May 2013.

13. A key contribution to the successful achievement of the TNA outputs was the leadership of the regional centre Enda. It has successfully established and maintained active mechanisms with national stakeholders to ensure an effective dissemination of critical information to support TNA and TAP processes at the country level.

14. The participating countries of the Africa and Middle East region acknowledged that both Enda and UNEP-DTU provided adequate support to ensure the development of TNA and TAP reports. For instance, 66 questions from the country teams have been addressed to the Help Desk, especially from the second group of countries, during the project execution. These enquiries were received and treated in a timely manner to help the country teams progress in their respective processes.

15. Furthermore, the participating countries reported to be satisfied with the development of tools and provision of technology information. For instance, the tool to prioritize mitigation technologies helped them to focus on the identification, selection, adaptation and development of appropriate technologies. Participating countries also got access to all the methodological materials on UNEP website.

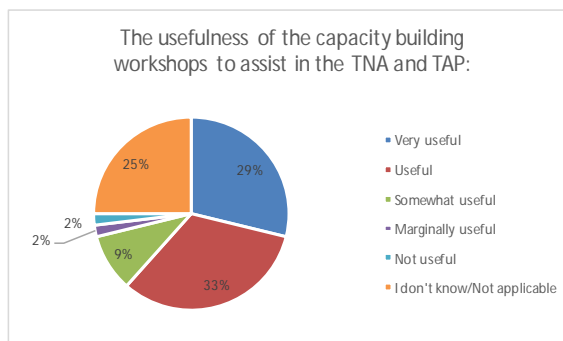
#### Country case:

*Ghana's participation in the two regional workshops contributed to establish the TNA mechanisms at the national level. The TNA national team held two meetings with national stakeholders in the early phase of the project, including (i) Ministries and Departments, (ii) Knowledge-based Institutions (Universities & Research Institutes), (iii) Financial Institutions, (iv) Civil Society Groups and NGOs, (v) Women's Groups and (vi) Farmer Groups.*

*This participatory process enabled the achievement of the following outputs: 1) the establishment of the TNA working team, 2) the selection of the TNA co-coordinator and the national consultants, and more importantly 3) the selection the validation and prioritization of appropriate adaptation technologies in the water and agriculture sectors, as well as 4) the preparation and adoption of the project workplan.*

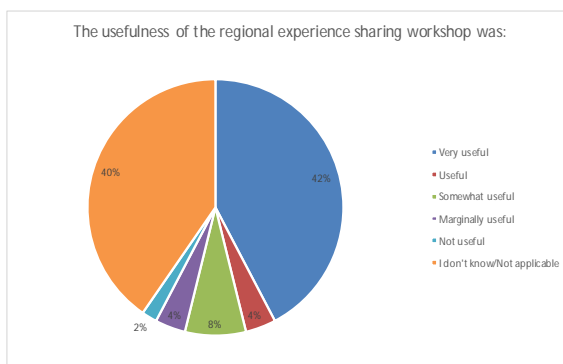
16. The survey results validate the insights from the people interviewed during the country visits (Figure 3). Indeed, 29% of the survey respondents view the capacity building workshops to assist the participating countries in the elaboration of the TNA and TAP reports as very useful. Another 33% of the respondents consider the workshops as useful.

**Figure 3: Usefulness of the capacity building workshops to assist in the TNA and TAP**



17. In the same vein, a larger portion of respondents (42%) consider the regional experience sharing workshop as very useful (Figure 4). 4% and 8% of the respondents view it respectively as useful and somewhat useful.

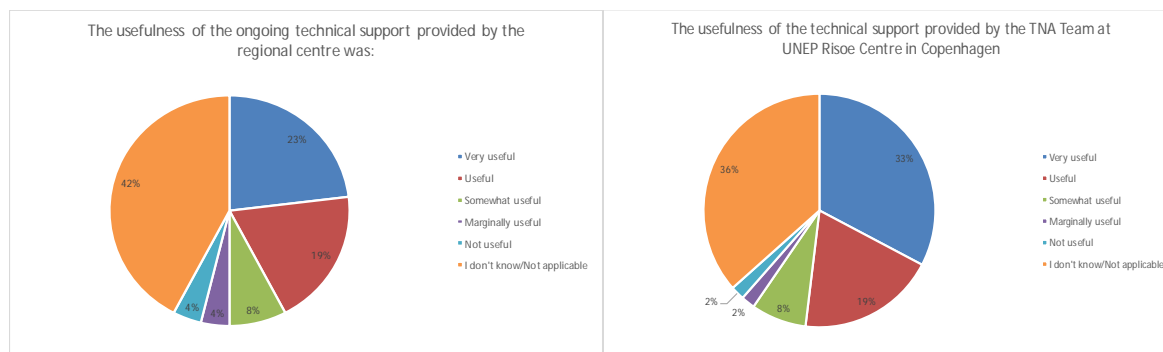
**Figure 4: Usefulness of the regional experience sharing workshop**



18. Beyond the development of these tools, the participating countries greatly appreciated the support from both Enda and the TNA management team at UNEP-DTU to adjust TNA tools to the national priorities. In this view, the regional workshops were the opportunity for national representatives to discuss the appropriate adjustments for tools to better help them to implement the activities in their country. The TNA handbook was very helpful as it provided guidance to the participating countries throughout the different steps of the TNA and TAP processes. The TNA handbook was revised by participating countries and complemented with methodologies that facilitate the availability of technology information to the countries.

19. The survey results confirm this degree of satisfaction. Indeed, 23% and 19% of the respondents consider the technical support provided by Enda as being respectively very useful and useful (Figure 5). As regards the usefulness of the technical support provided by the TNA management team at UNEP-DTU Centre, the survey results show that a larger number of respondents (52%) view it either as very useful (33%) or useful (19%) (Figure 6). It has to be noted that Enda provided technical support primarily to the TNA national team coordinator and in some instances to other individuals. Nevertheless, the technical support from Enda directly reached a limited number of individuals, which explains the large portion of respondents answered "I don't know/not applicable".

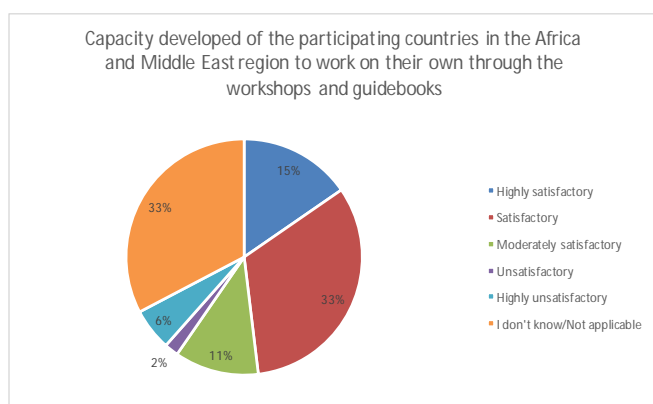
**Figures 5 and 6: Usefulness of the ongoing technical support provided by the regional centre and UNEP-DTU**



20. The participating countries in the Africa and Middle East region recognized that regional workshops, guidebooks and methodological tools helped them to get access to critical technology information and reinforced their capacities to develop TNA and TAP reports. They also admitted that the exchange of experiences between countries throughout the regional workshops greatly contributed to the elaboration of the TNAs and TAPs. In this regard, the technical support provided by UNEP-DTU and Enda to the participating countries represents a central factor of the successful performance of the TNA project (see section 2.6).

21. In addition to the views gathered during the country visits, the survey has generated results that go in the same direction. The majority of the respondents recognize that the workshops and guidebooks have developed their capacities to work on their own. More specifically, 15% of the respondents consider that the quality of the workshops and guidebooks provided by Enda and the TNA management team to help the participating countries to work on their own is highly satisfactory (Figure 7). 33% and 11% of the respondents respectively consider the quality of these inputs as satisfactory and moderately satisfactory.

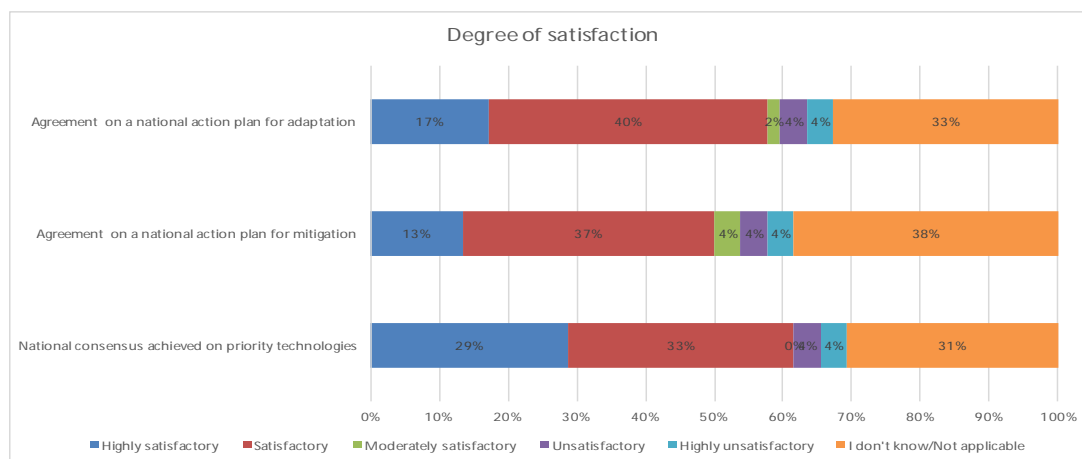
**Figure 7: Capacity developed of the participating countries**



22. To conclude, all the participating countries have obtained a national consensus on priority technologies and agreed on a national action plan. They all affirmed that Enda has successfully played its role in providing technical support to the national TNA teams and region, ensuring quality in all the reports, generating greater awareness about technology needs of the countries at regional level and enhancing capacities within the region (see section 2.6. about factors of performance). Furthermore, the majority of the survey

respondents are either highly satisfied or satisfied with the national consensus achieved on priority technologies and the agreements on a national action plan for both mitigation and adaptation (Figure 8).



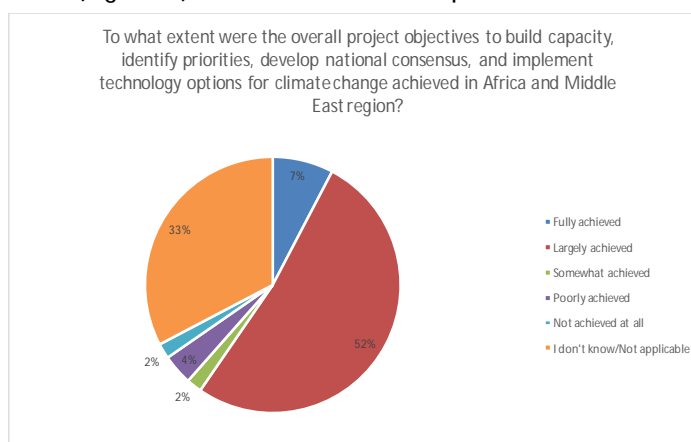
**Figure 8: Degree of satisfaction about national action plan**

### Effectiveness: Attainment of project objectives and results

23. **Finding 3: The participating countries in the Africa and Middle East region have largely achieved the objectives and expected results of the TNA project.**

24. Overall, the results obtained in the Africa and the Middle East region show that the project objectives have been met within the deadlines and the budget. The three main outcomes of the TNA project have been achieved. First, all the participating countries with the exception of Ethiopia have elaborated both TNA and TAP reports for mitigation and adaptation (Outcome 1). Second, Enda has developed adequate tools and methodologies to carry out the TNA and TAP reports. Although the quality of the tools was recognized by the participating countries, their late elaboration has caused some delays in the early phase of the project execution (Outcome 2). Third, the national and interregional cooperation mechanisms as a mean to support technology transfer remain limited within Africa and Middle East, in spite of the regional workshops organized by Enda (Outcome 3).

25. The survey results reveal that a large majority of respondents consider the overall TNA project objectives to be either fully or largely achieved (Figure 9). 52% of the total respondents think that the objectives to build capacity, identify priorities, develop national consensus and implement technology options for climate change have been largely achieved. Another 7% of the total respondents consider these objectives have been fully achieved. As explained earlier in this section, only a limited number of individuals have benefited from the technical support directly from Enda. This explains the large portion of respondents who answered "I don't know/not applicable".

**Figure 9: Degree of satisfaction about national action plan**

## Direct outcomes from reconstructed project-level ToC

26. **Finding 4: all the participating countries with the exception of Ethiopia have produced TNA and TAP reports for both mitigation and adaptation (OUTCOME 1).**

27. As shown in the table below, 11 out of the 12 participating countries in the Africa and Middle East region have developed their own TNA and TAP with the support of the TNA project –Phase 1103.

28. As mentioned earlier in this section, the TNA project – phase 1 has been built on previous efforts to support developing countries in elaborating TNA. In this regard, the table 3 shows that nine out of the 13 participating countries in the TNA project – Phase 1 have developed a TNA prior to participate in the TNA project - Phase 1. In other words, the TNA project – phase 1 was the opportunity for four countries to elaborate their first TNA, which are Morocco, Rwanda, Sudan and Zambia. To a certain degree, the TNA project – phase 1 filled existing needs within the Africa and Middle East region.

### Country case:

*In Mali, the national stakeholders recognized that the TNA project –Phase 1 helped them to achieve a better quality in the assessment of the technology needs than the one undertaken in 2002. This results from the use of stronger tools, sounder methodology and the involvement of actors from different sectors, as per the design and objectives of the TNA project – Phase 1.*

29. Given 11 countries have either developed or strengthened their TNA, the TNA project – Phase 1 was helpful for them to 1) update the technologies in line with more recent national needs and priorities and 2) make them more strategic and useful in an operational sense. In addition to the TNA, the participating countries were requested to produce a Technology Action Plan (TAP), which consists of making the TNA operational comprising targeted actions for creating an enabling framework. The TAP integrates project ideas as well as an analysis of the barriers and means to overcome them. Both project ideas and barriers analysis reflect the rigorous approach requested for participating countries.

**Table 5: Existence of TNA before the TNA Project-Phase 1**

Participating countries in the TNA Project – Phase 1	Existence of previous TNA (UNFCCC's First Round of TNAs)	TNAs and TAPs developed under the TNA project – Phase 1 (UNFCCC's Second round of TNAs)
Côte d'Ivoire	TNA 1, 2002 TNA 2, 2002	Mitigation TNA and TAP, 2013 Adaptation TNA and TAP, 2013
Ethiopia	TNA, 2007	Not completed
Ghana	TNA 1, 2003 TNA 2, 2003	TNA, 2013 Barriers, 2013 TAP, 2013 Project Ideas, 2013
Kenya	TNA, 2005	Mitigation TNA, 2013 Adaptation TNA, 2013 Mitigation Barrier, 2013 Adaptation Barrier, 2013 Mitigation TAP, 2013 Adaptation TAP, 2013 Mitigation Project Ideas, 2013

103 Ethiopia has not completed TNA project - Phase 1, since “the country did not provide the relevant reports relating to the project” (Regional Synthesis Report, p.10).

Participating countries in the TNA Project – Phase 1	Existence of previous TNA (UNFCCC's First Round of TNAs)	TNAs and TAPs developed under the TNA project – Phase 1 (UNFCCC's Second round of TNAs)
Lebanon	TNA 1, 2002 TNA 2, 2002 TNA 3, 2002 TNA 4, 2002 TNA 5, 2002	Adaptation Project Ideas, 2013 TNA and TAP, 2012
Mali	TNA, 2002	Mitigation TNA and TAP, 2012 Adaptation TNA and TAP, 2012
Mauritius	TNA, 2004	TNA, 2012 Mitigation Barriers, 2012 Adaptation Barriers, 2012 Mitigation TAP and Project Ideas, 2012 Adaptation TAP and Project Ideas, 2012
Morocco	No TNA	Mitigation TNA and TAP, 2012 Mitigation TNA and TAP-Summary, 2012 Adaptation TNA and TAP, 2012 Adaptation TNA and TAP-Summary, 2012
Rwanda	No TNA	TNA, 2013 Barriers, 2013 TAP, 2013 Project Ideas, 2013
Senegal	TNA 1, 2007 TNA 2, 2007 TNA 3, 2007	Mitigation TNA and TAP, 2012 Adaptation TNA and TAP, 2012
Sudan	No TNA	Mitigation TNA and TAP, 2013 Adaptation TNA and TAP, 2013
Zambia	No TNA	Mitigation TNA, 2013 Adaptation TNA, 2013 Mitigation Barriers, 2013 Adaptation Barriers, 2013 Mitigation TAP, 2013 Adaptation TAP, 2013 Mitigation Project Ideas, 2013 Adaptation Project Ideas, 2013

30. Source: data have been obtained from UNFCCC website (available here: [http://unfccc.int/ttclear/templates/render\\_cms\\_page?TNR\\_cre](http://unfccc.int/ttclear/templates/render_cms_page?TNR_cre))

31. In short, the TNA and TAP reports from all the participating countries were submitted in time, before the end date of the TNA project – Phase 1. These reports are grounded on a national consensus that is consistent with national development priorities and needs of specific stakeholder groups involved in the project.

**32. Finding 5: The project team has developed appropriate tools and methodologies to carry out the TNA and TAP reports. Although the quality of the tools were recognized by the participating countries, their late elaboration has caused some delays in the early phase of the project execution (OUTCOME 2).**

33. Enda worked with the tools and methodologies to provide the adequate technical support to participating countries.

34. Most of the survey respondents were satisfied with the mechanism established by Enda for providing technical support and disseminating appropriate information on supportive policies and measures, as well as barrier removal approaches. Enda has shared the adequate information on

technologies, policies and measures and barriers removal to the national project teams, as well as a common template for the TNA and TAP reports.

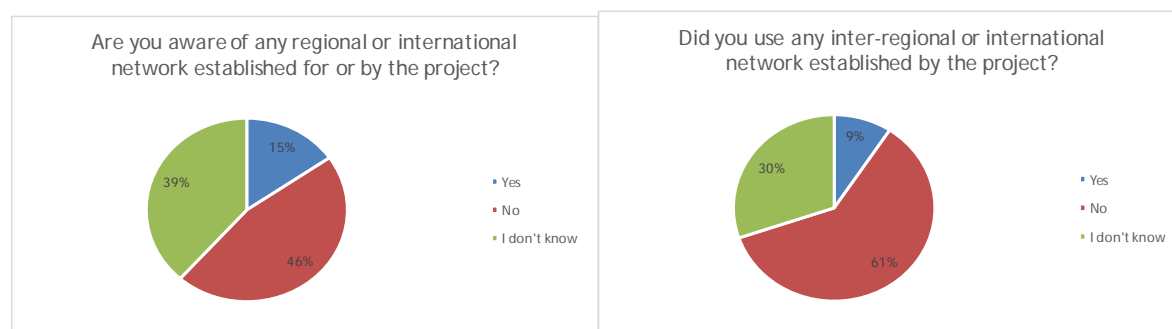
35. Furthermore, both survey respondents and interviewees recognized that the regional workshops organized by Enda played a central role in both technical support and information sharing. On one hand, these workshops have contributed to build the capacities of national stakeholders in developing the TNA and TAP reports. On the other hand, they have been the opportunity for participating countries to get familiar with the TNA guidebook, including the different methodologies and tools to execute the project in their country. Given the satisfaction rates from the survey results, we may assert that the national stakeholders have been adequately trained on the different tools and methodologies to ensure the completion of the TNA project in all of the participating countries within the Africa and Middle East region.

**36. Finding 6: The national and interregional cooperation mechanisms as a mean to support technology transfer remain limited within Africa and Middle East, in spite of the regional workshops organized by Enda (OUTCOME 3).**

37. The third outcome of the TNA project aims at establishing a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination. While the national stakeholders interviewed in the visited countries acknowledged that regional workshops/newsletters contributed to an increased national and interregional cooperation to support technology transfer, it remains largely insufficient to ensure the implementation of the projects suggested by the participating countries.

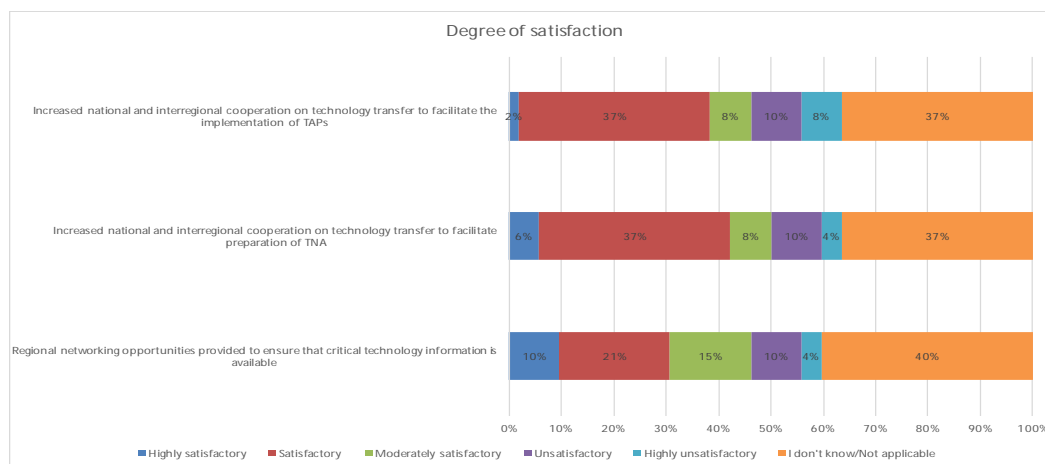
38. The survey results confirm the discussions during the country visits. The majority of the survey respondents (46%) are not aware of any regional or international network established for (Figure 10) or by the TNA project and a larger number of them (61%) have not used any inter-regional or international networks established by the TNA project (Figure 11).

**Figures 10 and 11: Degree of satisfaction about national action plan**



39. Although the national teams acknowledge the limited number of regional and international networks established for and/or by the TNA project, they explain the few existing networks have increased national and interregional cooperation on technology transfer to facilitate both preparation of TNA reports and implementation of the TAP reports. In their opinion, the regional workshops organized by Enda represent the main opportunity for national stakeholders of participating countries to build inter-regional cooperation and share experiences and knowledge (Figure 12).

**Figure 12: Degree of satisfaction about national action plan**



40. In Ghana, the TNA national team has worked on adaptation in two sectors, namely Water and Agriculture. The representatives of the stakeholder institutions participating in the process have been involved in other projects for creating synergies. In Kenya, the TNA project has been translated into full project proposals which were submitted to donors for possible funding.

### Likelihood of impact using RoTI and based on reconstructed project-level ToC

41. **Finding 7: The outcomes registered within Africa and Middle East are likely to contribute ultimately to reduce greenhouse gas emissions and adaptation to climate change even though their impact can be magnified with stronger cooperation mechanisms and further funding to implement technology projects.**

42. As per the reconstructed ToC, the ultimate goal pursued by the TNA project consists in reducing greenhouse gas emissions and/or adaptation to climate change. In this regard, the majority of the respondents for the region affirmed that this goal is likely to be reached as a result of the outcomes registered at both national and regional levels. Nevertheless, the likelihood of this expected goal depends on many other variables, as well as other risks and assumptions that go beyond those related to the TNA project, namely the national consensus, the policies and plans agreed and/or enforced.

43. Indeed, the TNA project has created opportunities for the countries that include the establishment of a vibrant TNA Team and Stakeholder committee, the involvement of a broad spectrum of experts in the process thereby giving it a national character and encouraging cooperation mechanisms at both national and regional levels. These opportunities are likely to contribute to the use of adequate global rules and mechanisms to support climate change related actions as well as the implementation of attractive technologies with low barriers.

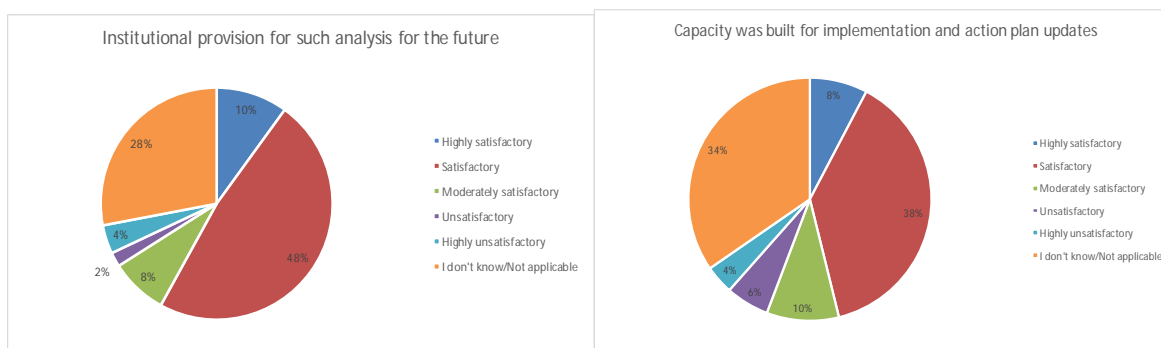
**Country case:**

*In Cote d'Ivoire, the likelihood of the TNA project impact on reducing greenhouse gas emissions is reflected through the national consensus around the prioritized sectors and technologies and the use of the TNA and TAP reports for the elaboration of proposals for transfer technology implementation as well as national policies and managements plans to address climate change.*

44. The TNA project has strengthened the capacities of national stakeholders to catalyse change, namely the adoption of national and international policies and management plans to address climate

change. The survey results reveal that 48% of the total respondents consider the institutional provision for such analysis in the future as satisfactory and another 10% as highly satisfactory (Figure 13). Besides, the survey respondents admit that their capacity for the implementation and action plan updates was built through the technical assistance provided 38% of the respondents are satisfied and another 8% are highly satisfied with their capacity for implementation and action plan updates (Figure 14).

**Figures 13 and 14: Degree of satisfaction about national action plan**



### Achievement of project goal and planned objectives

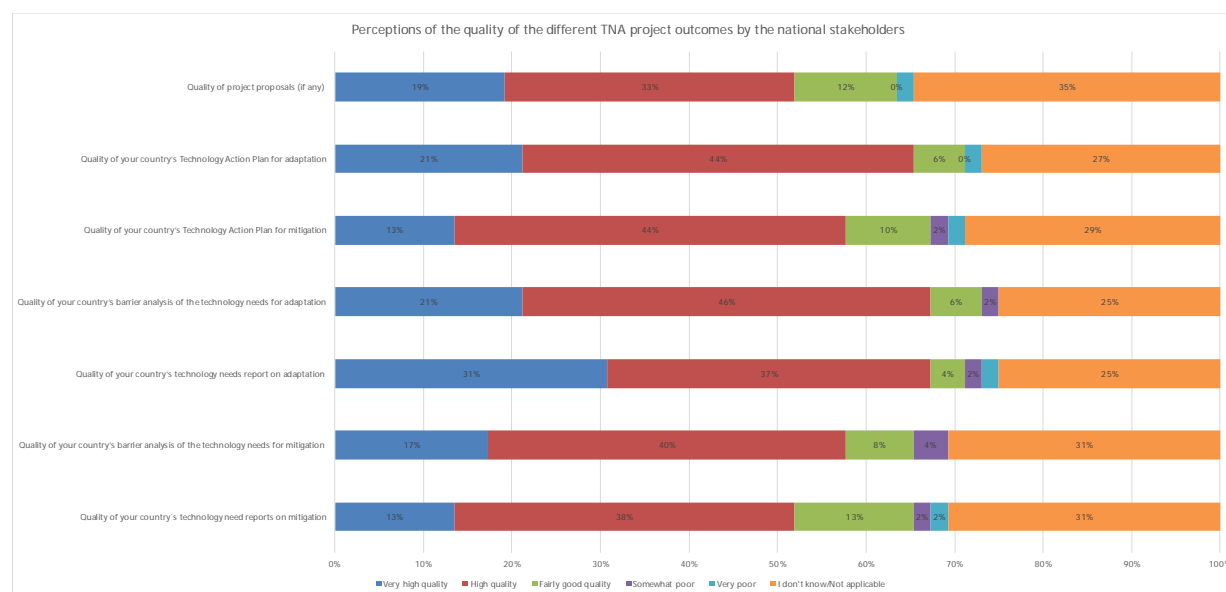
45. **Finding 8: National stakeholders of participating countries are largely satisfied with the quality of their TNA and TAP reports. Yet, they consider that the technology transfer implementation would not happen unless there are further financial resources and a stronger high level political engagement.**

46. The aim of the TNA project was to provide assistance to a group of developing countries to identify and analyse the priority technology needs for their country, which provide a portfolio of environmentally sound technology (EST) projects and programmes to facilitate the transfer of, and access to ESTs and related know-how.

47. The vast majority of respondents acknowledged the quality and usefulness of the TNAs and TAPs they have developed for technology transfer implementation (Figure 15).

#### Country case:

*In Cote d'Ivoire, the TNA national team reported that the project has contributed to the achievement of the following objectives: capacity-building of the national stakeholders, building team of experts from different sectors, national consensus on prioritized sectors and technologies, identification of barriers, prioritization of sectors and technologies, project ideas including an action plan that help in removing the barriers, experience sharing between experts at both national and regional levels, awareness of national stakeholders.*

**Figure 15: Perception of TNA project outcomes**

48. Overall, the survey results show that the majority of the national team members view the quality of the TNA project outcomes as very high or high. It is interesting to note that the quality of the work done for adaptation have been viewed as being higher than the work done for mitigation. For instance, the quality of the TNA report for adaptation is seen as very high for 31% (against 17% for the TNA report for mitigation) and high for 37% of the respondents (against 40% for the work for mitigation). In the same vein, the respondents perceive a higher quality of the TAP for adaptation than for mitigation (21% of the respondents view it as very high for adaptation against 13% for mitigation) (Table 4).

**Table 4: Respondents' Views of the Quality of Outputs**

Perceptions	Quality of your country's technology need reports on mitigation	Quality of your country's barrier analysis of the technology	Quality of your country's technology needs report on adaptation	Quality of your country's barrier analysis of the technology	Quality of your country's Technology Action Plan for mitigation	Quality of your country's Technology Action Plan for adaptation	Quality of project proposals (if any)
Very high quality	13%	17%	31%	21%	13%	21%	19%
High quality	38%	40%	37%	46%	44%	44%	33%
Fairly good quality	13%	8%	4%	6%	10%	6%	12%
Somewhat poor	2%	4%	2%	2%	2%	0%	0%
Very poor	2%	0%	2%	0%	2%	2%	2%
I don't know/Not applicable	31%	31%	25%	25%	29%	27%	35%

49. A combination of factors explains the completion of the TNA project objective for all the participating countries as well as the high quality of both TNA and TAP reports. The first factor is the robustness of the methodology used to identify and prioritize the technologies. The second factor deals with the profile and the number of stakeholders involved in the process. The structure of the TNA project indeed encourages the participation of stakeholders from different sectors ranging from national

ministries to private sector and civil society organizations. The participation of various stakeholders led to a national consensus around the sectors and the technologies to be prioritised, which reflect the needs and priorities of the country. The third factor is the selection and the active role of the contracting entities for coordinating the working group in mitigation and adaptation. For example, in Mali, the Folkcenter has played an important role in getting access to the existing data because this organization is well recognized in the country and maintain strong collaborative relationship with national ministries and other public institutions that hold the relevant documentation. The fourth and last factor is the role of the regional centre and its capacity in providing technical support and capacity building through the organization of high level regional workshops, timely and appropriate dissemination of information and sharing of knowledge.

50. However, national stakeholders consider that the TNA project could have a greater impact with a larger budget. The actual budget is not sufficient to invite certain categories of stakeholders, mainly peasants and farmers that live in remote areas and cannot cover travel expenses from remote areas to the main city. Furthermore, most of interviewed stakeholders acknowledge that the budget allocated for the dissemination of the results was not sufficient to raise the attention of both decision makers and

**Country case:**

*In Mali, national stakeholders considered that the TNA and TAP reports have reached a high quality level in spite of the limited financial resources and budget allocated to do so. Yet, they consider the reports would gain a better quality and a more in-depth analysis with a larger budget. Some national stakeholders have even admitted for having been constrained to slow down their involvement in the TNA project due to the limited financial support and their other professional commitments.*

technology users and to convince potential financing institutions to invest in the implementation of the technologies. Therefore, the national stakeholders regret that most of the technologies have not been implemented so far, in spite of the quality of the reports and the high potential and relevance of technologies in response to country needs and priorities (see section 2.6. on performance factors).

## Sustainability and replication

### Socio-Political sustainability

**Finding 9: The TNA project has contributed to the establishment and/or the strengthening of national coordination teams, institutional committees or working groups on climate change. In this regard, it has increased the level of political will/awareness and stakeholder engagement in the participating countries.**

51. The political process and stakeholder engagement were deemed very important for this TNA project. Political will and support are prerequisite for a successful development and transfer of technologies. Following the methodology proposed by the project, the participating countries have established an institutional arrangement for the management of the process and for the consultation and engagement of the stakeholders.

**Country case:**

*In Senegal, the political process and the stakeholder engagement is an important achievement of the TNA project. A permanent framework for consultation and exchange of all actors involved in the TNA project has strengthened the existing national climate change committee.*



## Financial resources

52. **Finding 10: The sustainability of the TNA results largely depends on the ability of the national stakeholders to obtain additional funding, as the nature of the TNA project does not provide any mechanisms to ensure the implementation of the prioritized technology.**

53. The sustainability of the TNA project may be analysed here through two criteria: the attainment of additional funding and the institutional ownership.

54. Many respondents during the country visits and comments from the online survey expressed their disappointment of not being able to implement the projects ideas reported in the TNA project, due to the lack of financial mechanisms and assistance from the regional centre and the TNA management team. Rather, the project was limited to the assessments and capacity building and does not aim at providing any technical support to carry on the TNA/TAP implementation. As stated in the project document, the resulting TNA, TAP and PI reports would be used to:

- Identify a portfolio of technologies that have the potential to combat climate change, in terms of GHG emissions reduction and climate change adaptation, and contribute to sustainable development
- Communicate participating countries' climate change technology requirements to the global community
- Facilitate the access to international sources of funding for the implementation of mitigation and adaptation activities
- Support individual countries' positions in climate change negotiations in the area of technology transfer.

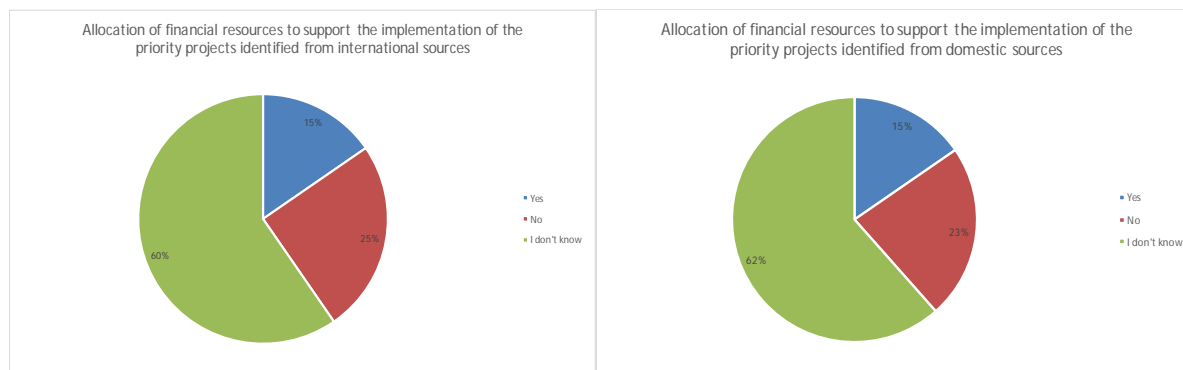
### **Country case:**

*In Senegal, the most commonly prioritized technologies in the TNA report include solar photovoltaic systems, biomass and biofuel. the government's objective by 2020 is to cover 20% of energy needs using solar photovoltaic. This is an ambitious goal and many barriers need to be overcome. The most commonly identified barriers to solar photovoltaic technologies include among others the following:*

- high initial cost for the private sector or households to invest in the technology
- low access to credit
- absence of an enabling environment for private independent power producers
- a small market, not too developed for both small individual solar kits and isolated systems for grid-connected systems, due to lack of information and awareness of the stakeholders
- lack of qualified people in particular for the grid-connected systems
- lack of access to land, because of the large areas required for large solar power plants and compliance with measures of environmental and social safeguard related to potential impacts and waste management
- absence of sensitization campaigns towards potential producers or end-users
- Inadequate coordination of activities

55. The survey results show that a limited number of respondents (15 of the total respondents from the Africa and the Middle East region) have seen the allocation of additional financial resources to support the implementation of the priority projects identified in the TNA and TAP reports from either international or domestic sources (Figures 16 and 17). To a certain degree, these results confirm that the sustainability of the TNA results may be hampered by the absence of financial resources.

**Figures 16 and 17: Degree of satisfaction about national action plan**



56. Yet, the TNA project included activities and workshops at both national and regional levels to disseminate the results with a view to attract the attention of decision-makers, politicians and potential investors. In this regard, Enda delivered a presentation about the possibilities for funding the technologies during a regional workshop. Enda presented the UNFCCC's mechanisms and financing channels to support developing countries, such as the Global Environment Fund, bilateral funds and the Clean Development Mechanisms (CDM). Still, most of interviewed national stakeholders recognized that they are not sufficiently equipped to prepare funding requests to these funding channels and that the TNA communication tools need to be improved and adapted to the purpose of decision-makers and politicians.

57. Given the nature of the TNA project, the continuation of the TNA project results falls under the responsibility of the national stakeholders. National stakeholders need to find the financial support and institutional capacities on their own, in the event they aim at implementing the appropriate technologies. In this regard, most of the participating countries within the Africa and Middle East region have initiated some funding requests. For instance, Ghana has submitted a proposal for the implementation of some projects that were identified and discussed in both Project Ideas and TNA reports. Kenya has also submitted a concept note to the Donor Committee hosted by the Ministry of Environment for the implementation of a technology. In other countries, the TNA results have benefited to the financing of larger programmes. For example, the GEDEFOR II in Mali includes a cross-cutting component related to the adaptation to Climate Change and is funded by both Swedish aid agency and Mali government. In Morocco, some projects in water and agriculture sectors, namely the

**Country case:**

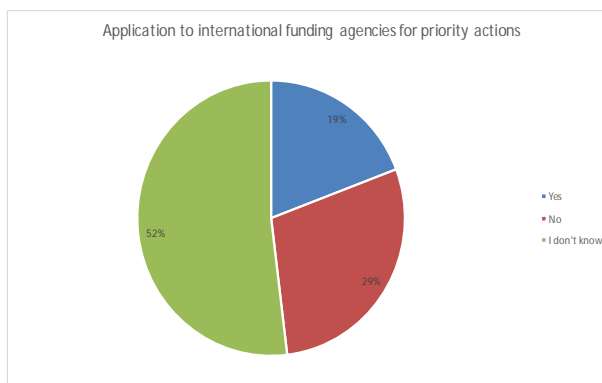
*In Mali, TNA results retained the attention of national government and the implementation of some technologies have even been financed. For instance, results of the TNA in the energy sector for the mitigation to climate change have been implemented through the Felou dam construction and the building projects of two other dams in Gouina and Kenile. The African Development Bank is also undertaking an impact study for micro-sized power dams. The creation of a national agency for biofuels in 2014 illustrates the importance given by the national government to this EST. Besides, newly established agency on renewable energies uses loans for solar equipment is an idea proposed in the TNA report. At last, national ministries have funded activities to promote technologies in the field of agro-meteorology among peasants and farmers.*

**Country case:**

*Cote d'Ivoire was reported as being one of the best participating countries in its ability to use TNA results for the elaboration of national policies and/or the implementation of new technologies. The success of this country derives from the TNA national team coordinator, who is also the head of the CTCN. Thus, his double mandate made the financing and the implementation of appropriate technologies easier. On a different note, it was reported that a group of experts and consultants has designed a software programme for helping participating countries throughout the different steps of the TNA project execution.*

PICC-PMV, CANA and SWIM-ACLIMAS projects, have received funding, respectively from the World Bank, ACIAR and the European Commission.

58. Though, the survey results reveal that only 15% of the respondents are aware of the existence of application to international funding agencies for priority actions (Figure 18). The national stakeholders acknowledge that Enda and TNA management team at UNEP-DTU have provided information to identify potential international funding agencies, but are faced with a lack of capacity to put a project proposal or funding request at the same time.



**Figure 18: Degree of satisfaction about national action plan**

59. To some extent, this configuration affects the capacity of national stakeholders to sustain the results obtained through the TNA project, as the use of the TNA/TAP reports essentially relies on the initiative and capacities of national stakeholders.

### Institutional framework

60. **Finding 11: The use of the TNA/TAP reports for the elaboration of national policies demonstrates the capacity and the ownership of the national stakeholders built through the TNA methodology and processes to generate opportunities for replication at both national and regional levels.**

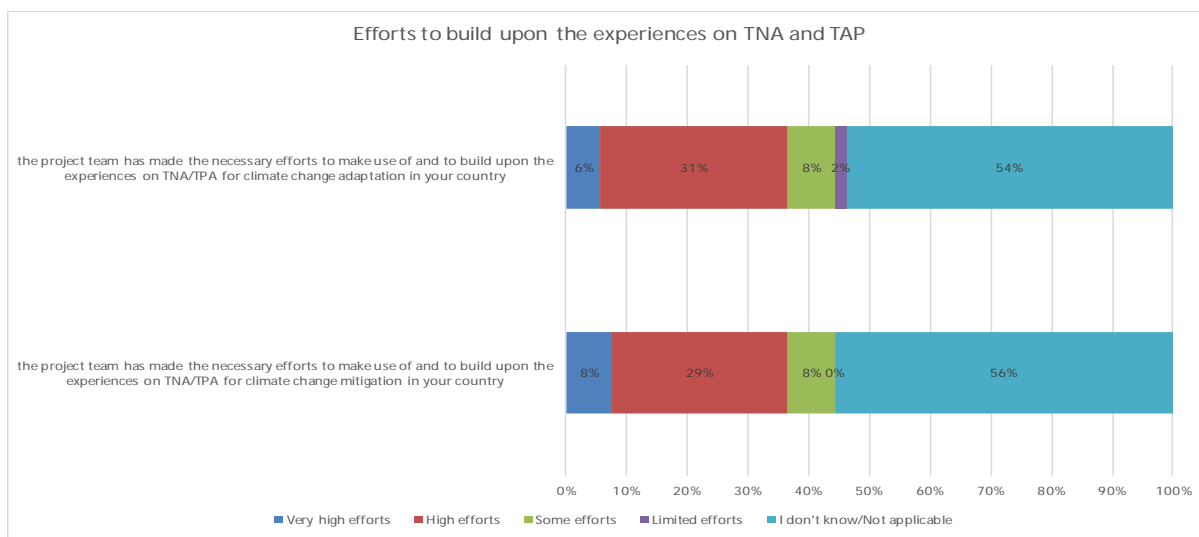
61. Another area to assess the sustainability of the TNA project relates to the ability of the national stakeholders to replicate the process. While the degree of replicability may vary from a country to another as a result of both internal and external factors (financial, socio-political, institutional and environmental), most of the interviewed respondents acknowledged that they feel sufficiently equipped to replicate the TNA exercise in their own country.

62. The survey results confirm that efforts have been made to build upon the experiences on TNA and TAP for climate change adaptation and mitigation in participating countries (Figure 22). Indeed, 31% and 6% of the respondents consider that respectively high and very high efforts have been made for climate change adaptation. The results for climate change mitigation are roughly the same, since 8% and 29% of the respondents affirm that respectively very high and high efforts have been made in their country.

#### **Country case:**

*In Mali, national stakeholders demonstrate a strong ownership and capacities to replicate and/or sustain of the TNA project results. The TNA methodological tools are used for assessing technology needs of population living in rural areas as part of the GEDEFOR II project. Besides, the TNA results have contributed to institutional changes with the creation of organizations, such as the AMADER, CENESOLER and "réseau climat". The TNA results also reinforced the institutional framework on Technology Transfer, since it is composed of TNA national team members.*

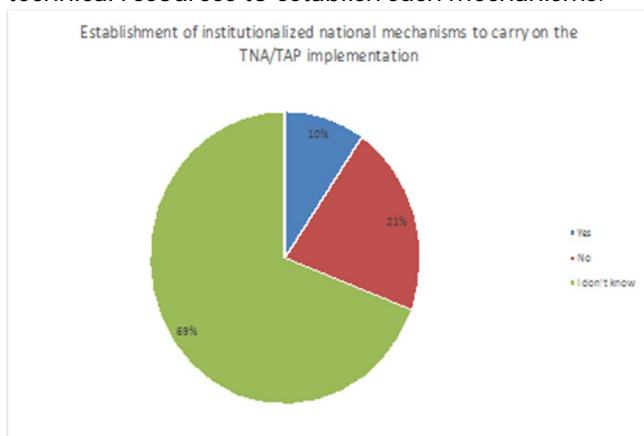
**Figure 22: Degree of satisfaction about national action plan**



63. Furthermore, the TNA project approach contributed to the ownership of the results by the national stakeholders. The influence of TNA and TAP reports in the elaboration of national policies and plan for climate change management demonstrate that national stakeholders of the participating countries have adequately used the TNA projects results. In some countries, such as Mali, TNA report is recognized by national ministries and organizations as a reference report to develop further policies and management plans (such as the INDC and the CPDM).

64. Lastly, it is important to mention that Enda has organized regional workshops to share experiences and lessons learnt between the participating countries. These workshops demonstrate the potential of replicability of the TNA project within the region, as some countries may face similar context and mutual interests in identifying and/or implementing sounded technologies.

65. Nevertheless, the establishment of institutionalized national mechanisms to carry on the implementation of the TNA and TAP reports remains limited within the participating countries of the Africa and Middle East region. The survey results reveal that 21% of the respondents affirm that no institutionalized national mechanisms have been established in their country to carry on the TNA and TAP implementation (Figure 23). In spite of the willingness of national stakeholders and even the efforts made to build upon the experience of the TNA project, national stakeholders have limited financial and technical resources to establish such mechanisms.



**Figure 23: Establishment of national action plan**

## Environmental sustainability

**Finding 12: Although the ultimate goal of the TNA project aims at contributing to reduce the emission of greenhouse gas in the world, the environmental sustainability of its achievements is hardly measurable two years after the completion of the project. In some countries, the TNA and TAP reports have been used as a preliminary step to inform national and sectoral policies, such as NAMA and NAPA but they would require to be implemented in order to foster the environmental sustainability.**

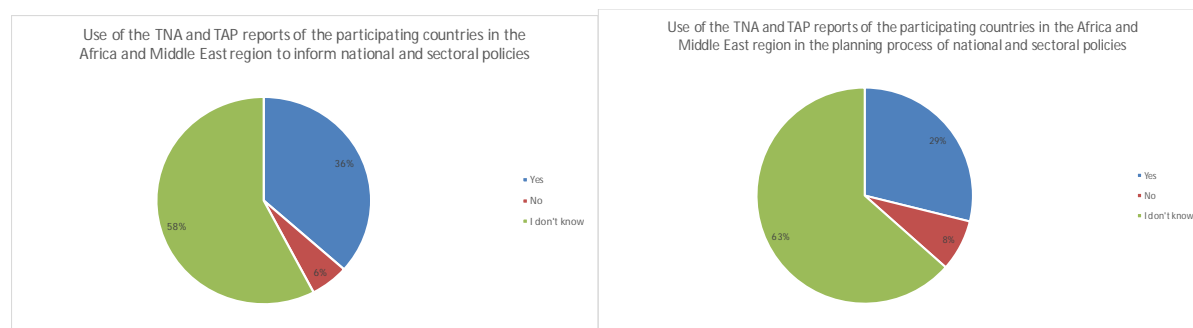
## Catalytic role, replication and upscaling

**Finding 13: Despite the fact that the TNA project does not provide any financial mechanisms to carry on the implementation of the technologies, its catalytic role has significantly contributed to the institutional, behavioural and policy changes in the participating countries.**

66. While the lack of financial mechanisms may hamper the sustainability of the results, the TNA project has played a catalytic role in building the capacity of national stakeholders for institutional and policy changes. It indeed created opportunities for national institutions and individuals to catalyze change, without which the TNA project would not have achieved all of its results. By nature, the TNA project is built on a participatory approach that requires national stakeholders to be the main actor of the assessment of the technology needs to mitigate and adapt to climate change effects. There is solid evidence that the participating countries within the Africa and Middle East region have been fully engaged in the TNA project. As a result of their strong participation, national stakeholders have strengthened their capacities, especially in the identification of needs and the prioritization of sectors and technologies. They have used these newly developed or strengthened capacities to conduct both institutional and behavioural changes.

67. In this regard, the survey results confirm that the majority of the national stakeholders affirm the TNA and TAP reports have been used either to inform national and sectoral policies or to plan process of national and sectoral policies (Figures 19 and 20). 36% of the respondents indeed acknowledge that TNA and TAP reports have been used in their country to inform national and sectoral policies (against 9% of the respondents that say “No”).

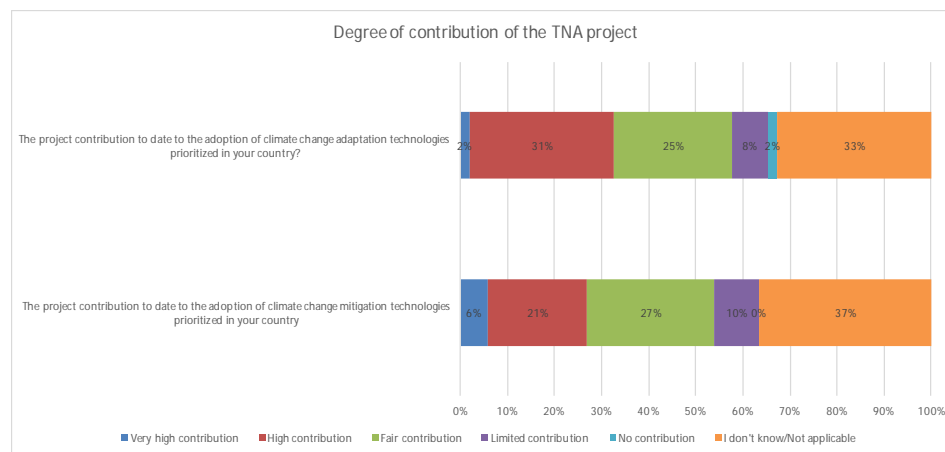
**Figures 19 and 20: Degree of satisfaction about national action plan**



68. Interestingly enough and as reported earlier in the section about the quality of the TNA and TAP reports, the survey results show that the work for adaptation is perceived as having a higher contribution than the work for mitigation. The figure 21 indeed shows that 31% of the respondents

consider that the the TNA project has had a high contribution to the adoption of climate change adaptation technologies prioritized in their countries (against 21% of the respondents for the mitigation technologies).

**Figure 6: Degree of satisfaction about national action plan**



69. The TNA and TAP reports have influenced national policies and plans for climate change management in most of the participating countries. The interviews held during the country visits combined with the survey results revealed that actions and decisions have been made upon the completion of the TNA and TAP reports in most of the participating countries. Many examples from participating countries provide evidence of this statement.

- In Ghana, the TNA report has been used for the work on Climate Smart Agriculture for the Ghana CCAFS Platform. The main output is the Action Plan on the Agriculture and Food Systems Component of the National Climate Change Policy and the Third National Communication Reports.
- In Lebanon, both TNA and TAP were the basis for the elaboration of two NAMAs and some of the technologies identified throughout the TNA process have been already implemented.
- In Rwanda, the TNA and TAP reports have inspired policy-makers during the development of energy policies, NAMAs and INDCs. Besides, they were useful for planners in the energy sector, especially for hydropower and solar PV technologies.
- In Kenya, the TNA and Tap reports appear in the Kenya Climate Change Action Plan 2013-2017 for future funding and have been submitted as project proposals to donors by NEMA by the resource management unit.
- In Mali, the TNA report has been a reference document for the elaboration of the new energy national policy and serves as a credible starting point for projects related to transfer technology. The results of the TNA project in the country have also been used for the development of the CPDN and the INDCs as well as the third national communication on Climate Change.

## Efficiency

70. **Finding 14: The activities in the Africa and Middle East region have been undertaken according to the timeframe established by the TNA project, even though the project execution has registered some delays when starting and developing the material.**

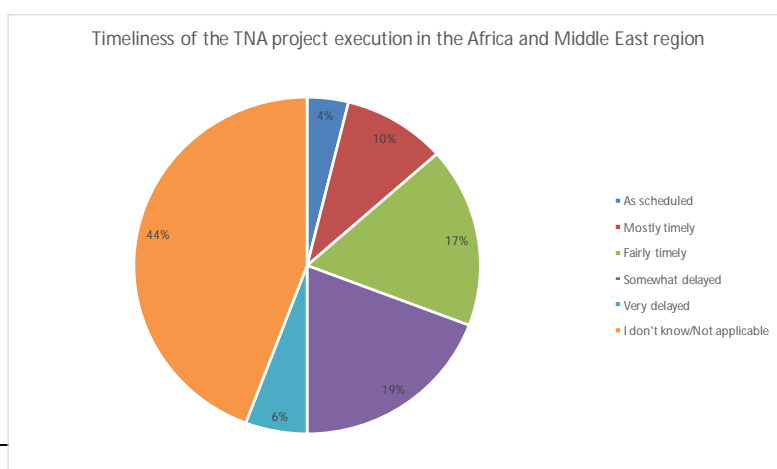
71. Overall, the activities have been undertaken in a timely manner, and the quality of the TNA and TPAs reports have been met, the reports have been submitted within the deadlines, as a result of timely activities and outputs.

72. A certain amount of time and effort were saved thanks to previous works done at the national level. For instance, Ghana quickly identified and mobilized the relevant national stakeholders since most of the latter had worked together in the past. For instance, the Science and Technology Policy Research Institute of the Council for Scientific and Industrial Research (CSIR-STEPRI) collaborated with SINTEF of Norway and the Water Research Institute of Ghana to implement a project in Rainwater Harvesting with funding from the Nordic Development Fund. The CSIR-STEPRI also worked on the CSA projects in the Ghana CCAFS Platform in collaboration with ICRISAT as well as in the CIRCLE Programme coordinated by the Association of Commonwealth Universities based in London (Ghana).

73. Although the project was completed in time, it has to be mentioned that the project execution has met minor delays for two main reasons. The first cause relates to the elaboration of the methodological tools and the handbook. Most of the people interviewed recognized that the execution of the TNA project went very slowly at the very beginning as the material needed to be developed. The delays encountered at this stage were absorbed while the project was being executed.

74. The second reason for the delays registered is linked to the time needed for some countries to identify relevant national stakeholders and to form the national team. Some countries, namely Ethiopia, Cote d'Ivoire and Rwanda have met difficulties to set up a national team, which caused some delays in the project execution. While Enda had conducted a country mission to Cote d'Ivoire and Rwanda to help these countries to deliver and meet the deadlines, it was not possible to have such an opportunity for Ethiopia<sup>104</sup>. Ethiopia remains the unique country out of the 11 participating countries that has not achieved the expected outcomes of the TNA project, in spite of the Enda's efforts and support.

75. The delays registered during the TNA project execution – even though they are minor - are reflected in the survey results. Only 4% of the respondents consider that the TNA project has been executed as scheduled, while 19% of them affirm it was somewhat delayed and 6% view it as very delayed (Figure 24).



**Figure 24: Degree of satisfaction about the timeliness of the TNA project execution**

<sup>104</sup> Ethiopia was among the second round countries participating in this project. However, the country did not provide the relevant reports relating to the project.

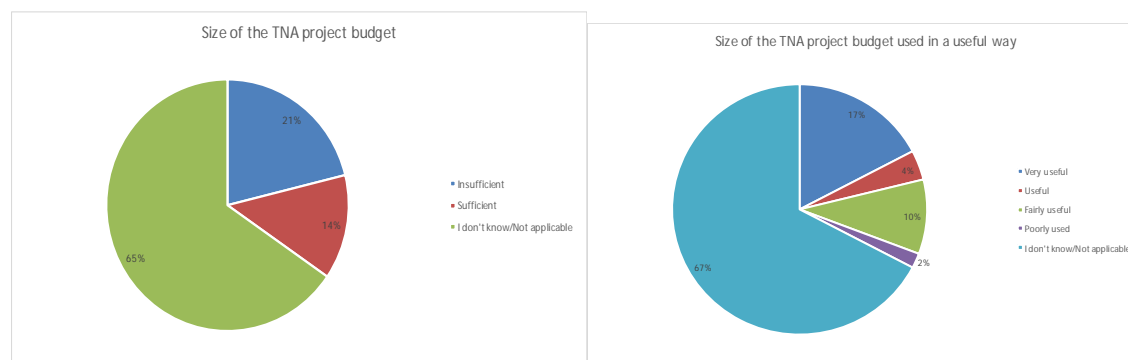
**Finding 15: The activities in the Africa and Middle East region have been undertaken according to the budget established.**

76. At the regional level, the budget allocated for fees and reimbursable for technical support within the Africa and Middle East region reached a total of 302.950 USD and the budget allocated for reimbursable for travel and accommodation for regional workshop managed by Enda reached a total of 222.000 USD.

77. Interviewees reported that the TNA project has not registered any extra costs. Rather, they considered that the total budget was not sufficient to mobilize additional national stakeholders, to conduct a deeper assessment of the technologies and ultimately produce a more in-depth analysis and better quality of the TNA and TAP reports. For example, some national stakeholders regretted that the budget allocated for the TNA project can only help two sectors, while more sectors are affected by climate change and would need technical support. National stakeholders also admitted that a technical officer from Enda came to the country to support the national consultant firm in conducting the barrier analysis. However, due to the limited time and budget, the rest of the analysis had to be done online.

78. In addition to the insights gathered from interviews, the survey reveals important results which confirm the lack of resources. The majority of the respondents (21%) consider that the budget size of the TNA project is insufficient, against 14% of the respondents estimating that the budget size is sufficient (Figures 25 and 26). On the other hand, 17% of the survey respondents acknowledge that the TNA budget was used adequately, while 2% of the respondents consider it has been used poorly (Figures 25 and 26).

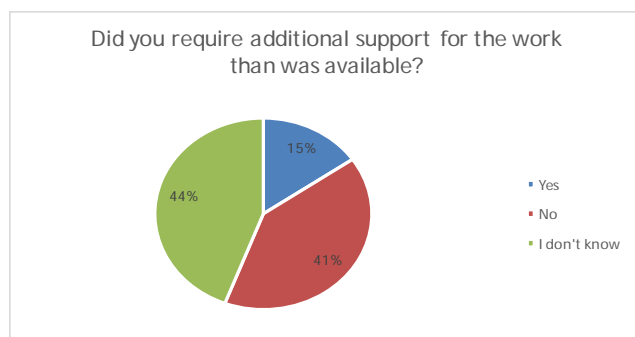
**Figures 25 and 26: Degree of satisfaction about TNA project budget<sup>105</sup>**



79. At last, it is interesting to note that 41% of the survey respondents have not required additional support to complete the elaboration of the TNA and TAP reports (Figure 27).

<sup>105</sup> The high rates of "I don't know/Not applicable" results of the high proportion of national team members that have been involved in the TNA project on a temporary basis and/or for specific tasks (e.g. consultants).



**Figure 27: Degree of satisfaction about national action plan**

### Factors affecting performance

80. In light of the above-mentioned findings, there is a certain number of factors that explain both success and limitations of the TNA project in producing its different outputs. The table below summarizes all the main factors that positively or negatively influence TNA's project's capacity to successfully achieve its intended results.

**Table 6: Positive and negative factors influencing the TNA project performance in the Africa and Middle East region**

Areas	Factors and evidence observed within Africa and Middle East	Influence	Example (but not limited to)
Project preparation and readiness	National Stakeholders that have participated in the TNA project have solid competencies and expertise in the field of climate change.	Positively	All the participating countries
	Existing partnership and previous works in the field of climate change make the identification of stakeholders faster and coordination easier.	Positively	Mali, Senegal, Ghana
	The sustainability of the results obtained through the development of TNA and TAP reports is not ensured as the TNA design does not include a workshop/exit strategies/ communication activities to support countries in getting funds to implement the technologies.	Negatively	All the participating countries
	Time for training coordinators and consults on TAP and project preparations was too short.	Negatively	Ghana
Project implementation and management	Appropriate methodological tools and approaches have been developed to ensure the participation of a wide range of stakeholders from different sectors and to get a consensus around the technologies and the sectors to be prioritized.	Positively	All the participating countries
	Leadership and quality of the technical support from the regional center.	Positively	All the participating countries
	TNA structure that requires countries to appoint a National Team Coordinator and two facilitating institutions for adaptation and mitigation.	Positively	Ghana, Kenya, Morocco
	Access and quality of the existing information might be difficult at the national level.	Negatively	Cote d'Ivoire, Mali
	Political instability.	Negatively	Cote d'Ivoire
Relationship with the Autorité Nationale Désignée (AND). Sharing TNA and TAP reports with the AND is important to ensure the sustainability of the results. Further, there is a need to create a mechanism to support	Positively	Mali	

Areas	Factors and evidence observed within Africa and Middle East	Influence	Example (but not limited to)
Stakeholder participation, cooperation and partnership	<p>the AND in the implementation of TNA results.</p> <p>Effective coordination as a result of the selection of the contracting entities and national stakeholders varies in function of motivation, expertise/experience/relationship and resources of the entities. It may be challenging for some countries to identify and/or engage a technical/sectoral expert into the TNA project because the financial resources are limited.</p>	Either positively or negatively	All the participating countries
	<p>TNA structure and methodological tools associated encourage the participation of stakeholders from different sectors and intersectoral consultations.</p>	Positively	Ghana, Kenya, Morocco, Mali, Senegal
	<p>The nature of the TNA project required to identify experts in very precise areas. It may be difficult to identify and mobilize experts in the country as regards the expertise required and/or his/her availability. Use and richness of the expertise from both regional and national stakeholders.</p>	Negatively	Ghana, Kenya
	<p>Technical and financial support from national governments and/or development bilateral agencies.</p>	Positively	Kenya
	<p>Organization of sound and effective regional workshops to share lessons learnt and experience to provide capacity building and resource materials as well as foster the engagement of national stakeholders. Insufficient budget to reach all the stakeholders and organize field activities in remote areas.</p>	Positively	All the participating countries
Communication and public awareness	<p>The TNA project mobilized communication resources (budget/tools) to disseminate TNA results, even though more resources would have been needed to reach a wider audience. The audience reached by the TNA activities is limited to stakeholders involved in the project. Budget was not sufficient to disseminate the results to reach and convince decision-makers and investors. The communication tools also need to be customized and be less technical so as to ensure a better understanding for potential users and medias.</p>	Positively	All the participating countries
	<p>The TNA project design requires participating countries to drive the activities. Thus, TNA design contributes to the ownership of most of national stakeholders.</p> <p>Lack of engagement of high-level political institutions and decision-makers, as a result of a shortfall in the TNA project design and/or lack of sounded communication tools and exit strategies to implement and to sustain the results obtained by the TNA project.</p>	Positively	All the participating countries
Financial planning and management	<p>TNA project has a limited budget that cannot encourage field activities and participation of most vulnerable populations to climate change living in remote areas. Delays in funds transfers have been recorded due to the late start of the activities in the region. Though, financial management was performed adequately.</p>	Negatively	All the participating countries
	<p>Limited budget for the activities of dissemination of the results.</p>	Negatively	All the participating countries
Supervision, guidance and technical backstopping	<p>Effective support from UNEP-DTU and Enda. The TNA national teams are satisfied with the technical support for the execution of the project, capacity building, availability of resource materials and guidance throughout the different steps of the project, even though some delays have been met in the beginning.</p>	Positively	All the participating countries
Monitoring and Evaluation	<p>Effective role played by Enda as regional center, in spite of limited resources. Missions to country were realized to help the country to identify the national stakeholders and get the TNA and TAP reports done. Enda performed its monitoring function adequately.</p>	Positively	Rwanda, Cote d'Ivoire

Areas	Factors and evidence observed within Africa and Middle East	Influence	Example (but not limited to)
Intellectual rights/property	Mistrust of technologies owners and difficulties to get the licence to use/implement a technology	Negatively	Cote d'Ivoire, Mali

Degree of satisfaction	Preparation and readiness of the team	Project implementation and management	Adequate stakeholder participation	Communication and public awareness	Country ownership and drivenness	Financial planning and management	Supervision, guidance and technical	Monitoring and evaluation
Highly satisfactory	15%	13%	27%	8%	21%	4%	19%	10%
Satisfactory	37%	37%	27%	25%	17%	27%	25%	25%
Moderately satisfactory	12%	6%	10%	23%	15%	10%	10%	13%
Unsatisfactory	0%	2%	2%	6%	8%	2%	2%	4%
I don't know/Not applicable	37%	42%	35%	38%	38%	58%	44%	48%

## Complementarity with UNEP strategies and programmes

81. The evidence of the complementarity of the TNA project with UNEP strategies and programmes is shown by some linkages between it and others programmes and mechanisms related to climate change. For instance, the TNA project is connected to the "Mécanisme Technologique (CRTC et TEC)" and the "Mécanisme financier (FVC)" of the UNFCCC.

## Conclusions, Recommendations and Lessons Learned

### Conclusions

#### Strategic relevance

82. The design of the TNA project and its associated objectives are fully relevant to the needs and priorities of participating countries and developing country partners participated in the design to ensure that their needs and priorities are taken into consideration.

#### Achievement of outputs

83. The outputs of the three components of the TNA project – Phase 1 have been largely achieved with the effective leadership and the sound support from the regional centre.

#### Effectiveness: Attainment of project objectives and results

84. The participating countries in the Africa and Middle East region have largely achieved the objectives and expected results of the TNA project. The results obtained in the Africa and the Middle East region show that the project objectives have been met within the time and budget deadlines. The three main outcomes of the TNA project have been achieved. First, all the participating countries with the exception of Ethiopia have elaborated both TNA and TAP reports for mitigation and adaptation (Outcome 1). Second, appropriate tools and methodologies to carry out the TNA and TAP reports were delivered. Although their late elaboration has caused some delays in the early phase of the project

execution (Outcome 2). Third, the national and interregional cooperation mechanisms as a mean to support technology transfer was effective with the regional workshops, even though most of the national teams consider they might be reinforced(Outcome 3).

85. The outcomes registered within Africa and Middle East are likely to contribute ultimately to reduce greenhouse gas emissions and adaptation to climate change even though their impact can be magnified with stronger cooperation mechanisms and further funding to implement technology projects.

86. As regards the achievement of project goal and planned objectives, national stakeholders of participating countries are largely satisfied with the quality of their TNA and TAP reports. The aim of the TNA project was to provide assistance to a group of developing countries to identify and analyse the priority technology needs for their country, which provide a portfolio of environmentally sound technology (EST) projects and programmes to facilitate the transfer of, and access to ESTs and related know-how. Yet, they consider that the technology transfer implementation would not happen unless there are further financial resources and a stronger high level political engagement. The respondents regret that most of the technologies have not been implemented so far, in spite of the quality of the reports and the high potential and relevance of technologies in response to country needs and priorities

### **Sustainability and replication**

87. From a social and political point of view, the TNA project has contributed to the establishment and/or the strengthening of national coordination teams, institutional committees or working groups on climate change. In this regard, it has increased the level of political will/awareness and stakeholder engagement in the participating countries.

88. In financial terms, the sustainability of the TNA results largely depends on the ability of the national stakeholders to obtain additional funding, as the nature of the TNA project does not provide any mechanisms to ensure the implementation of the prioritized technology.

89. As regards the institutional framework, the use of the TNA/TAP reports for the elaboration of national policies demonstrates the capacity and the ownership of the national stakeholders built through the TNA methodology and processes to create opportunities for replication at both national and regional levels.

90. In an environmental perspective, the environmental sustainability of the TNA project's achievements is hardly measurable two years after its completion. In some countries, the TNA and TAP reports have been used as a preliminary step to inform national and sectoral policies, such as NAMA and NAPA but would require to be implemented in order to foster the environmental sustainability.

91. Concerning its catalytic role, replication and upscaling, the sustainability of the TNA project may be analysed here through two criteria: the attainment of additional funding and the institutional ownership. The first criteria to determine the extent to which the TNA project ensures the sustainability of its results consists in analysing the funding obtained by participating countries for the implementation of the technologies identified in the TNA and TAP reports.

92. Despite the fact that the TNA project does not provide any financial mechanisms to carry on the implementation of the technologies, its catalytic role has significantly contributed to the institutional, behavioral and policy changes in the participating countries.

## Efficiency

93. The activities in the Africa and Middle East region have been undertaken according to the timeframe established by the TNA project, even though the project execution has registered some delays when starting and developing the material. The activities in the Africa and Middle East region have been undertaken according to the budget established.

## Complementarity with UNEP strategies and programmes

94. The analysis of the data collected through the country visits and the interviews held at the regional level has found evidence of the complementarity of the TNA project with UNEP strategies and programmes. Indeed, there are some linkages between the TNA project and others programmes and mechanisms related to climate change. For instance, the TNA project is connected to the “Mécanisme Technologique (CRTC et TEC)” and the “Mécanisme financier (FVC)” of the UNFCCC to ensure the participation of the decision-makers at the early stage of the project and the dissemination of the results to all the stakeholders.

## Lessons learned

95. The TNA project has been a 3-year assessment process involving a large number of countries within the Africa and Middle East region. Therefore, some lessons have been registered in terms of political process, institutional arrangements, technical support, reporting and results.

96. The establishment of the proposed structures was not always smooth in the participating countries. In a few countries, the steering committee was missing or has not worked properly. Three findings could be drawn here:

- the National Climate Change Committees are not always appropriate to do what they were being asked to do;
- no institutional framework exists in the countries to deal with technology transfer
- the involvement of stakeholders (population, technical structures, NGOs, civil society) and the authorities in the process of identification of relevant projects and priority in the transfer of technologies for adaptation to the effects of climate change and mitigation of GHG emissions was slow.

97. As a result, a better national capacity assessment/institutional analysis in project design should be conducted and validated by the regional center/TNA management team to ensure the effective functioning of the different structures of the TNA national team, namely the steering committee.

98. The following lessons learnt have emerged from the evaluation findings and conclusions:

99. **Lesson #1: The TNA project enables participating countries to generate a consensus and to make decisions using a participatory and multi-sectoral approach.** The TNA project gave the opportunity for different stakeholders to work together and learn different approaches/opinion/etc. This can be explained by the nature of the TNA project. Its structure stimulates 1) the participation of a wide range of stakeholders from different sectors and 2) an integrated approach to identify and prioritize technologies with a consensus basis in light of needs and priorities of the participating country. Such an approach is crucial for challenges, such as Climate Change that affect the world regardless the sector, level of development or location. This evaluation has shown that stakeholder consultation

process is the key factor to the success of any project preparation and implementation. Building the capacity of national stakeholders through regional workshops and remote technical support was also another key factor which allowed the full engagement of institutions from different sectors and ensured the successful assessment of technology needs.

100. **Lesson #2: The TNA project provides a set of sound methodological tools that is helpful to engage national stakeholders from different sectors and get them to the elaboration of TNA and Tap reports.** Overall, the participating countries recognized the strong Technical Support provided by Enda. The Multi-Criteria Analysis was not easy to understand by many consultants but it made the prioritization process easier and contributed to get a consensus among the national stakeholders. National stakeholders have also appreciated the methodology for carrying out barriers analysis and the evidence-based approach for the diffusion of environmentally-sound technologies for Climate Change. They also view this methodology as a way for attracting climate finance and for developing NAMAs. However, they regretted the slow availability of the guidebooks and other tools, which caused delays in the project execution. Besides, the first guidebooks were made available only in English and needed to be translated into other languages, namely French, which delayed further the project execution. In the future, the appropriate methodological tools should be released at the early phase of the project execution.

## Recommendations

101. Considering the findings and conclusions of the evaluation of the TNA project in the Africa and Middle East region, we propose the following recommendations as a way to adjust the next phases of the TNA project:

102. **Recommendation #1:** The TNA project design should integrate mechanisms that ensure the implementation of the prioritized technologies, as most of the participating countries regretted that nothing else was heard from the TNA management team once the final documents were submitted. These mechanisms should search for availability of necessary and adequate financial resources in order to concretely and immediately implement the technological Action Plan (TAP) accompanied by transfer of technology in adaptation and mitigation projects. Thus, an institutional framework dedicated to the technology development and transfer as an outcome of the process would need to be established to provide capacity building on applying for funds.

103. **Recommendation #2:** The TNA project should ensure the participation of decision-makers and potential funding agencies at the early beginning of the project and allocate a greater portion of the budget to activities related to the dissemination of TNA and TAP reports. For instance, in Mali and Senegal, TNA results have been shared with the heads of departments of the national ministries, which are not in charge of making decisions and allocating budget. So, the technologies are unlikely to be implemented due to a lack of financings. In this vein, the TNA project should pay more attention to the political economy, and especially the national institutional arrangements, within which the project is embedded. For more success, it would be imperative to get the involvement of Ministries, “particularly the Ministry of Finance squarely, at the centre of the project or at least very closely associated with it” (Regional Synthesis report, 2013). As an example of outputs in this area, a web documentary might be produced to talk about the project and promote the technologies.

104. **Recommendation #3:** The TNA project should get equipped with a communication strategy and tools, including a website, where lessons learnt from participating countries can be shared.

Communication channels should also be set up with a view to disseminate the results of the TNA reports, project ideas and EST and stimulate the financing of the implementation of the technologies identified by the participating countries.

105. **Recommendation #4:** The TNA project should allocate a larger portion of its budget to enable the participation of local stakeholders, especially communities and most vulnerable groups that live in remote areas. In addition, there is a need to build the TNA structure down to the field and to synchronize the project cycle with national budgeting process to ensure it is fully incorporated in the annual workplan.

106. **Recommendation #5:** Due to the limited time and budget, the rest of the analysis had to be done online. Some national team members strongly recommend the technical support for the barrier analysis to be conducted in person, rather than online.

107. **Recommendation #6:** The TNA project should extend the number of sectors (not limited to 2 sectors) given the social and economic importance of the EST and the impact of climate change on a large number of sectors.

108. **Recommendation #7:** The TNA project tools could be further enhanced as the capacity building and development component is crucial. The improvements might be made in the following areas:

- Encourage experience sharing among the countries.
  - Review the report template and reduce the number of pages and of reports. It would help for avoiding the long repetitive reports.
  - Revise current handbooks to give actual complex examples and issue new/updated version of handbooks at the onset of the project.
  - Make tools available on time and provide the translated versions.
- Provide technical assistance to national stakeholders for preparing funding requests to the suggested funding channels.

---

**Technology Need Assessment Project Phase 1  
Regional Working Paper for ASIA and CIS**

**Author: Walaitat Worakul**

---



## **Introduction**

1. This regional input to the Main Report is based on desk reviews of key documents, an electronic survey among key informants from participating countries, and visits to selected countries for in-depth stakeholder interviews. Due to time and budget constraint, only 3 countries in Asia were visited during October-November 2016, including Thailand, Vietnam, Sri Lanka and Moldova (CIS). Each field mission was 2-3 days and was supported by UNEP DTU team, the Regional Centre AIT for Asia, and as required by the country focal point and/or coordinator and the common survey. Each country visit was preceded by a review of relevant programme documents and other sources of data on activities in the country, the context, and other related issue as appropriate. Information collected at the country level allowed the evaluator to assess the operational performance of the project, with the survey results adding to the information collected. Selection criteria for the countries their diversity, progress the TNA process, with some successes and challenges, prioritized within the budget constraints for the evaluation. The budget limitations required Thailand as one choice as it is both an implementing country and the home country of the Regional Centre for Asia. Details about the limitations will be found in the main body of the evaluation report.

2. Stakeholders interviewed during the country visits included members of TNA national committee, national director, national coordinator, mitigation and adaptation consultants, as well as members of sectoral working groups. In total 34 people were interviewed in Asia: 10 for Thailand, 13 for Vietnam and 11 for Sri Lanka. For the online survey, 11 out of 14 countries in Asia and CIS except Mongolia, Indonesia and Nepal have answered the survey. The total number of the respondents is 21; with 15 males and 6 females. Eight of them were TNA national coordinators, the rest were sectoral coordinators (5), national consultants (3), technical experts (4) and member of sectoral working group (1). A list of documents consulted, people interviewed and respondents to the electronic survey is provided in Annex 8.4 of the main report.

3. All of the participating countries in Asia & CIS have been experiencing threats from Climate Changes in different ways although some are more vulnerable than the others. Many countries report changes in weather patterns such as hotter summers, irregular monsoon, untimely rainfall, or heavy rainfall for very short period. Countries with long, low-lying coastal areas such as Vietnam and Sri-Lanka are considered most vulnerable to climate change, especially to rises in sea-level and extreme events and disasters such as floods, landslides, and occasional cyclones.

4. Prior to the formulation of TNA project in 2009, most of these countries had developed policies and mechanisms to address climate change issues, either as the integral part of the national development plans or as separate climate change strategic plans or both. Some countries have developed successive strategic plans in the same period of the project implementation. For example:

- Bangladesh Climate Change Strategy and Action Plan (2008)
- National Target Programme to Respond to Climate Change (2008) (Vietnam)
- National Climate Change Strategic Plan (2008-2012) (Thailand)
- National Strategic Development Plan (2009-2013), stating climate change as the major priority (Cambodia)

- New Development Policy, embedded with green economy concept and principles (2010) (Bhutan)
- National Action Plan for Reducing Emissions of GHGs (2010) (Indonesia)
- Kazakhstan Strategic Development Plan until 2020) where climate change is integrated in economic diversification strategy (approved in 2010)
- Strategy on Climate Change of the Lao PDR (WREA, 2010)
- National Action Plan on Climate Change (2011) (Mongolia)
- National Climate Change Adaptation Strategy (2011) and National Climate Change Policy (2012) (Sri Lanka)
- National Climate Change Master Plan (2015-2050) (Thailand)

5. In all countries (except Nepal which dropped out in 2012 due to limitations in national technical and financial capacity), implementation followed the structure provided in the TNA implementation guideline. A Project Steering Committee and TNA National Committee were established. A TNA coordinator/ coordinating agency was appointed and sectoral working groups set up. National experts for selected sectors were also engaged to facilitate the stakeholder consultation process.

6. In most cases, the TNA coordinating role was assigned to relevant department/unit under Ministry of Natural Resources and Environment. One country delegated the role to Ministry of Science and Technology and one to a non-governmental organization (Table 1). From country visits, it was observed that delegating coordinating role to an organization which has direct policy issuance mandate was one of the key factors contributing positively to the sustainability of project results.

**Table 1: National arrangement for TNA coordination**

	Country	Delegated TNA Coordinator
<b>Round 1</b>		
1.	Bangladesh	Ministry of Environment and Forests (MoEF),
2.	Cambodia	Climate Change Department (CCD), Ministry of Environment
3.	Georgia	Climate Change Division, Ministry of Environment Protection
4.	Indonesia	National Council for Climate Change
5.	Thailand	National Science Technology and Innovation Policy Office, Ministry of Science and Technology
6.	Vietnam	Department of Meteorology, Hydrology and Climate Change, Ministry of Natural Resources and Environment
<b>Round 2</b>		
1.	Azerbaijan	Ministry of Ecology and Natural Resources (MENR)
2.	Bhutan	National Environment Commission (NEC)
3.	Kazakhstan	Climate Change Coordination Centre (NGO working in the field of the UN Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol (KP) and Vienna Convention on Ozone Layer Protection)
4.	Lao	Department of National Disaster Management and Climate Change, Ministry of Natural Resources and Environment
5.	Moldova	Ministry of Energy, Mines, Water and Environment
6.	Mongolia	Climate Change Coordination Office, Ministry of Environment and Green Development

7.	Nepal	(Country dropped out in 2012 due to limitations in national technical and financial capacity)
8.	Sri Lanka	Climate Change Division, Ministry of Environment and Renewable Energy

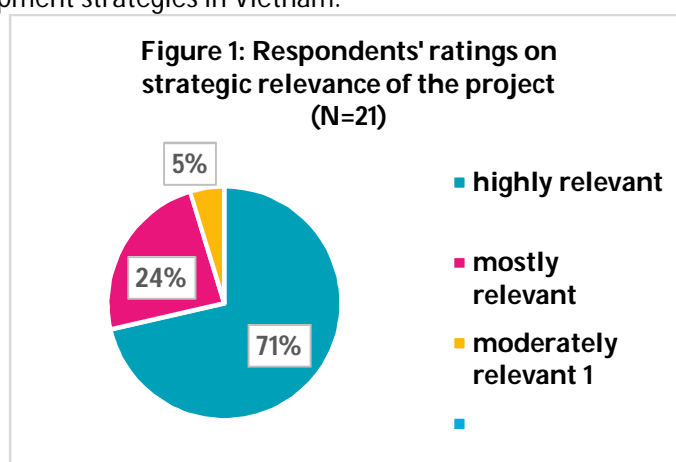
7. Details about the project objectives and components; key milestones/dates in project design and implementation; project financing; and project partners are described in Section 2 of the Main Report of the evaluation.

## Evaluation findings

### A. Strategic Relevance

8. The project was perceived by most respondents as highly or mostly relevant to the country's needs. Those from the government and academic sectors, and engaged as project/sectoral coordinators and consultants, rated it as more relevant than representatives from civil society organization. There was no difference in the rating by gender, between the Round 1 and Round 2 countries, nor between the countries with larger and smaller economy scales.

9. The participatory approach followed by the project was stated to have given ample opportunity for stakeholders to identify technology needs in relevant sectors at a deeper level. The results of the project have influenced national policies and strategies in addressing climate change issues through several channels, for example, National Climate Change Plan, Nationally Appropriate Mitigation Action (NAMA), National Development Plan and Agricultural Master Plan in Thailand as well as Intended Nationally Determined Contribution (INDC), NAMA and national sustainable development strategies in Vietnam.



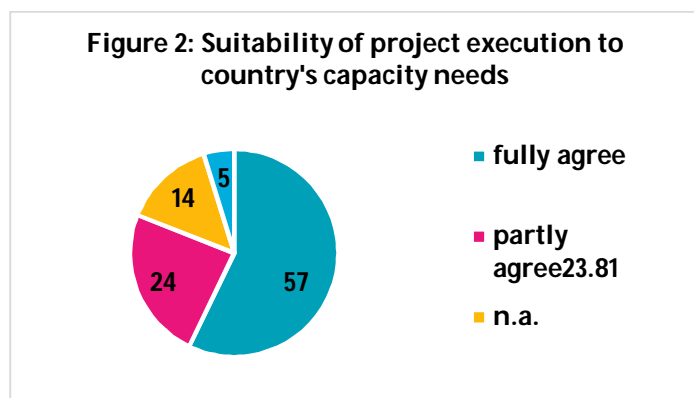
10. TNA country reports reaffirmed that the TNA process has supported the implementation of existing climate change-related strategies and plans and/or laid a foundation for the development of new strategic plans as below:

*Technology Needs Assessment (TNA) builds on the already accomplished and ongoing climate change studies conducted in Georgia (Georgia)*

*Implementation of the Cambodian TAPs will significantly contribute to the achievement of the Cambodia Millennium Development Goals and national sustainable development objectives (Cambodia)*

*Today, climate change is no longer a mere environmental problem; it has become a social and economic issue. Responding to climate change is a vital imperative to Vietnam's development. On the one hand, climate change will adversely influence the socio-economic development. On the other hand, it also represents opportunities for Vietnam to obtain, develop and deploy environmental-friendly technologies to address climate change and mitigate greenhouse gas (GHG) emission effectively and develop towards a low carbon economy. (Vietnam).*

11. Most of the respondents indicated that the execution of the project was suitable to meet the national capacity needs to systematically identify and prioritize technologies for climate change mitigation and adaptation, assess barriers in implementing them within the context of the country, and develop technology action plan. Only one respondent from Round 1 country partly disagreed.



12. The reasons given to support the positive ratings were not the same across countries but among some examples are:

*The project provided opportunity to a wide range of stakeholders to participate.*

*The criteria and prioritization process applied in the TNA corresponded to the national capacity needs.*

*It is the first time the country has a process to identify climate change-related technologies.*

*Moldova is a small country and do not have enough capacity to develop and produce new technologies. Most of them are transferred from abroad. In order to promote them, a broad public awareness campaign is required. Direct participation of the national consultants in the project helped to reach this goal.*

13. One respondent however indicated that the project implementation was only partially responding to the national capacity needs because capacity building workshops providing through the project was not done at individual country level but more as a group at regional level.

## B. Achievement of Outputs

14. Overall findings from the document review, electronic survey and country visits indicated that the project in Asia & CIS has achieved all of its individual outputs under the three project components, although with some limitations for some countries. For example, Sri Lanka which had requested for project extensions twice, and Vietnam submitted its reports much behind the agreed schedule due to its processes for the project approval and a late start. Countries with smaller economies tended to have difficulties to support the TNA process with own budgets. One country had to engage international consultant from outside the country to lead the TNA process due to the lack of local expertise.

**Table 2: Achievement of project outputs in Asia and CIS region**

Component	Outputs	Achievement	Evidence
1: Support for the development or strengthening of TNAs in 35-45 countries	1. A network of participating individuals and institutions at national level informed and bringing capacity to secure national consultations in order to reach a national consensus on adequate technologies Identification and creation of stakeholders groups will be based on recommendations contained in the draft TNA handbook.	Yes	All countries have established TNA working groups, comprising of national coordinator, sectoral experts, and representatives of relevant government agencies, academic/research institutes, private sector and NGOs, under the supervision of the Project Steering Committee who provided policy guidance/back up. These working groups were capacitated through regional and national workshops as well as coaching by AIT. After the project had ended, some of these working groups continued to put joint efforts to materialise ideas from the Technology Action Plans (TAPs) At regional level, two technical regional workshops were organized by AIT where three representatives from each country participated. The workshops served as a platform to build national capacity as well as to establish a regional learning network.
	2. A synthesis of methodological applications and hurdles carried out at national level and serving as input	Yes	All countries in the region were able to synthesise methodologies introduced in the TNA guidebook and the technical workshops and apply it in the TNA process. However, some countries whose

Component	Outputs	Achievement	Evidence
<b>Component 2:</b> Development of tools and provision of methodology information to support TNA and TAP processes	for TNA elaboration		native language is not English faced some constraints understanding the guidebook written in English.
	3. Between 35 and 45 TNAs including TAPs produced, identifying barriers to technology transfer at national level and means and actions to overcome them.	Yes	13 out of the 14 participating countries in the Asia and CIS region (except Nepal) have produced both TNA and TAP reports, although some were behind the schedule.
	4. Feedback for TNA handbook update based on national experiences and processes.	Yes	Feedback/reflections on TNA methodological application to country specific context were made in the regional workshops and through AIT.
	1. A tool to prioritize mitigation options based on cost effectiveness, existing potential, resource availability and relevance for national situations developed and presented.	Yes	Tools introduced by TNA guidebook were applied to prioritize sectors and technologies with some modification/additional input from AIT, such as training on Participatory Rural Appraisal (PRA) techniques as a tool to engage stakeholders in thorough analysis of the climate change situation. The TNA Help Desk also provided support to the participating countries throughout the TNA and TAP processes.
	2. A tool to prioritize adaptation technological options based on climate change impacts as well as human, economic, social and costs related aspects developed and presented.	Yes	Process to prioritize adaptation technological options was based on TNA's guidebook but participating countries have adjusted some of the tools to suit their national context. For example, adding or removing some criteria in the Multi-Criteria Decision Analysis (MCDA).
	3. A simple and efficient market assessment tool made available	Yes	This tool was presented and discussed with participating countries at the regional training workshops. Some countries felt that it would have been more beneficial if more time was allocated to the training on this tool.
	4. A process to apply the tools at national level agreed upon.	Yes	Through AIT's facilitation, this process was discussed and agreed upon by all participating countries.
	5. Access and links to information database elaborated and serving as a base for technology	Yes	AIT has developed and shared the required tools through the website established for this project.

Component	Outputs	Achievement	Evidence
	specification in terms of performance, cost and availability. 6. Reporting template for TNA elaborated.	Yes	AIT has shared the templates for TNA and TAP reports to the participating countries and helped with the editing of each report to ensure its compliance with the given format.
<b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination	1. A network involving both national and supra national institutions recognized for their success in technology transfer activities established and operational  2. Proven approaches to elaborate good quality TNAs developed. Institutional responsibilities set up. Capacities built to elaborate, implement and revise TNAs and associated TAPs.	Yes	In several countries, formal and informal networks among project's participating agencies/institutes have been formed. These networks have actively promoted TNA results at the national level. The project has organized regional experience sharing workshops for Round 1 and Round 2 countries, as one step of inter-country networking. Apart from face-to-face training, AIT assigned one consultant to one country to provide technical support, including the quality control of the TNA /TAP reports. It also developed Technology Fact Sheet (TFS) based on needs identified by the participating countries.
	3. Replication approach available to all GEF beneficiary countries together with a proposed mechanism for interactive support.	Yes.	From AIT's perspective, after the regional training workshops and on-site coaching, most countries were capable of developing TNA/TAP reports by themselves. The process could be further replicated by the national teams/stakeholders in the future. An inter-region experience sharing workshop organized by the project served as a platform for mutual learning on approaches and best practice. However, there has not been replication approach and proposed mechanism for interactive support for other GEF beneficiary countries apart from those participating in the project.
	4. A "Best Practices and Lessons Learnt report" from the project produced and disseminated.	Yes	Best practices and lessons learnt from selected participating countries within Asia were compiled and presented in the regional experience sharing workshop

Component	Outputs	Achievement	Evidence
	5. Synthesis report from the project produced and disseminated.	Yes	and were posted on AIT's project website. AIT produced a Regional Synthesis Report in June 2013.

15. Most respondents to the survey assessed the quality of their TNA and TAP reports which were the project's main outputs as 'very high' and 'high'. Although there are slight differences in the details of the ratings across individual outputs, all follow a positive trend. The TNA for adaptation report received the highest rating among the 7 outputs listed. (Table 3)<sup>106</sup>

**Table 3: Respondents' assessment of country reports quality**

Report/Output	Assessment by respondents (%) (N=21)						Total
	Very Poor	Somewhat Poor	Fairly good quality	High quality	Very high quality	Don't know	
Quality of TNA Mitigation Report			14	33	29	24	100
Quality of Barrier Analysis-TNA Mitigation			14	33	33	20	100
Quality of TNA Adaptation Report				33	43	24	100
Quality of Barrier Analysis-TNA Adaptation			10	33	33	24	100
Quality of TAP Mitigation			14	38	29	19	100
Quality of TAP Adaptation			10	43	24	23	100
Quality of Project Proposals				43	33	24	100

16. The respondents also found that the overall TNA project outputs with regard to technical support and capacity building were 'very useful' or 'useful'. *The experience sharing workshop* held at the regional level received the highest 'very useful' rating, followed by the *capacity building workshops* to assist in the TNA and TAP process, *the ongoing technical support by the regional centre*, and *the technical support by TNA team and UNEP* respectively.

**Table 4: Respondents' views on the usefulness of technical support provided**

Type of technical support	Respondents' assessment on usefulness (%) (N=21)					
	Not useful	Marginally useful	Somewhat Useful	Useful	Very Useful	Don't know
The capacity building workshops to assist in the TNA and TAP			5	33	48	14

<sup>106</sup> For several questions many respondents (19-24%) replied "I don't know" or "Not applicable". This is reasonable as they were often members of technical working groups and/or members of the sectoral consultation process, engaged in the specific tasks and were not knowledgeable about other aspects of the project.



Type of technical support	Respondents' assessment on usefulness (%) (N=21)					
	Not useful	Marginally useful	Somewhat Useful	Useful	Very Useful	Don't know
The regional experience sharing workshop			5	29	<b>52</b>	14
The ongoing technical support provided by the regional center			10	33	<b>38</b>	19
The technical support provided by the TNA team at UNEP DTU			10	<b>38</b>	33	19

17. Despite their satisfaction about the usefulness of technical support from the project, a number (8) of the respondents have expressed a need for additional training and follow-up activities. The most needed area of support (4 respondents) was for more training/technical information for the conduct of cost and benefit analysis of the prioritized technologies. Another area for possible further technical support (3 respondents) was the process/methodologies to regularly update the TNA and TAP reports to respond to changing global and national circumstances.

18. Most respondents were unaware of the existence of any regional and international network established by the project. Only some knew a few networks, most commonly known networks were the Climate Technology Centre and Network (CTCN) and Southeast Asia Network of Climate Change (SEAN-CC). The respondents confirmed the relevance of networking processes for experience sharing and mutual support. Regional/international networking was perceived as an important mechanism to stimulate the collaboration among countries that face the same problems for better solutions. But only some of the respondents have used the regional/international networks - mainly for newly updated documents and learning about experiences of other countries. The most frequently used method of networking was through the TNA website established by AIT (<http://www.tna.ait.asia>).

19. Respondents' opinions on factors which were most important for achieving the project results varied across the countries, so as factors hindering the achievement of the project results as illustrated in Table 5.

**Table 5: Factors contributing and hindering achievement of the project results<sup>107</sup>**

Country	Contributing factors	Hindering factors
Azerbaijan	Support by GEF/UNEP and competence of local experts	(No answer)
Bangladesh	Contact with relevant national experts and institutions	(No answer)
Bhutan	(No answer)	Lack of funding and national expertise
Cambodia	(No answer)	Lack of local expertise
Georgia	Capacity building through provision of knowledge on technologies	Support provided from outside was not sufficient and not country-specific

107 Not all countries answered the questions

Country	Contributing factors	Hindering factors
Indonesia		
Kazakhstan	Exchange of experiences and access to knowledge	Limited access to information: handbook is only in English
Lao PDR	Capacity building and stakeholder participation; involvement of policy makers	Limited data/information and capacity in some prioritised sectors
Moldova	Quality of the project team; technical support by project	National political instability
Mongolia	(No answer)	(No answer)
Sri Lanka	Continuous support of the national experts	Lack of expertise in some fields; lack of funding for implementation of TNATAP results
Thailand	Competence and collaboration of national experts; and clear national Climate Change plan, roadmap and institutional framework	Not sufficient time for extensive public consultation process; Some policy makers not having full awareness on the need for adaptation
Vietnam	Experiences of experts; cooperation between TNA coordination agency and related experts; economic benefits from compliance of the TNATAP results with national priorities; the MCDA tool	Limited project timeframe and budget;

20. Additional information from stakeholder interviews during country visits also confirmed that one of the most important factor contributing to achieving the project results was the competence and commitment of the national teams/consultants/experts, which led and facilitated the TNA process, linked to national development priorities, so as to identify and prioritise mitigation and adaptation sectors and technologies in congruence with the national priorities. Due to budget constraints, many experts were not paid at their full rates but were often seen to be highly committed to delivering quality outputs. TNA tools and quality of capacity building and knowledge sharing activities helped to develop common understanding about the concepts and methodologies among the stakeholders, leading to a good quality of the results.

### C. Effectiveness: Attainment of project objectives and results

#### Achievements of direct outcomes

1. Despite some country specific limitations in the respondents' views as illustrated in Table 5, the project has regionally attained its direct outcomes, indicated by strengthened capabilities of stakeholders in all participating countries, national consensus on technology prioritization, production and synthesis of TNA and TAPs reports, identification of national mechanisms to carry on TNA/TAPs results after the project ended.

**Table 6: Attainment of project's direct outcomes**

Outcome	Attainment	Evidence
Capabilities strengthened	Yes	Most national stakeholders demonstrated ability to follow TNA methodologies and procedures provided in regional workshops as well as TNA guidebooks
National consensus achieved on priority technologies	Yes	TNA and TAPs reports reflected processes of national consensus on prioritised technology for both mitigation and adaptation in congruence with the country's development priorities and circumstances.
Agreement on a national action plan for mitigation	Yes	TAPs on mitigation was a result of comprehensive consultation processes based on criteria commonly agreed by broad-based multi-sectoral stakeholders to respond to country specific mitigation priorities.
Agreement on a national action plan for adaptation	Yes	TAP on adaptation was developed through the same process as the mitigation TAP.
Institutional provision for such analysis for the future	Yes	In most countries, institutions assigned as national TNA focal point are mandated to carry on TNA results.
Capacity was built for implementation and action plan updates	To some extent)	Technically, most countries are capable to implement and update their action plans. However, the biggest barrier for them is the lack of funding for implementation.
Regional networking opportunities provided to ensure that critical technology information is available	Yes	The regional capacity building workshop provided a platform for skill development and knowledge sharing for participating countries. The experience sharing workshop showcased the best practices of the project. Conference participation by countries of the TNA project from the 3 continents helped sharing experience and challenge faced on global issues.
Increased national and interregional cooperation on technology transfer to facilitate preparation of TNA	Less likely	Most of the countries indicated that existing policies, laws and regulations were insufficient to address the transfer of technologies. Similarly, existing capacity in country was also not sufficient for the technology transfer process; and many countries highlighted the need of capacity building, training and research. <sup>108</sup>
Increased national and interregional cooperation on technology transfer to facilitate the implementation of TAPs	Less likely	

21. The survey results indicated that most respondents were satisfied with the level of achievement of the overall direct outcomes of the project. The outcome which received the highest satisfactory rating was the *increased capacity of stakeholders to work on their own through TNA workshops and guidebooks*, followed by the outcome on *agreement as a national action plan on mitigation*.

---

108 Source: Regional Synthesis report, AIT, 2013

**Table 7: Respondents' assessment on the level of achievement of the project outcomes**

Outcome Respondents' (%) (N=21)	Highly unsatisfactory - none				
	Unsatisfactory	Moderately satisfactory	Satisfactory	Highly Satisfactory	Don't know
Capacity developed to work on your own through the workshops and guidebooks		10	57	10	23
National consensus achieved on priority technologies		5	48	14	33
Agreement on a national action plan for mitigation	5	5	52	10	28
Agreement on a national action plan for adaptation		5	43	14	38
Institutional provision for such analysis for the future		10	48	19	23
Capacity was built for implementation and action plan updates		19	48	5	28
Regional networking opportunities provided to ensure that critical technology information is available	5	19	43	5	28
Increased national and interregional cooperation on technology transfer to facilitate preparation of TNA	5	24	38	5	28
Increased national and interregional cooperation on technology transfer to facilitate preparation of TAPs	5	19	38	5	33

22. Reasons supporting positive ratings provided, include for example:
- The results of TNA and TAP is part of several national policies and plans, for example, Climate Change Master Plan (2015-2050) and the Five-Year National Socio-Development Plan.
  - Thailand has been selected among 6 countries to implement the TNA results supported by UNFCCC and the UNEP DTU, starting in 2016.
  - From the results of TNA, now we developed wind power NAMA and biogas NAMA proposals

#### **Likelihood of impact using RoTI and based on reconstructed project-level ToC**

23. The ultimate impact based on the project-level ToC is actions to reduce greenhouse gas emissions, and/or adaptation to climate change by participating countries. In the longer run it is likely that this will be achieved by most of the countries<sup>109</sup>. Findings from the evaluation which took place 2 years after the project ended also revealed that some of the medium-term outcomes have gradually been attained in several countries, indicated by national policy changes/strengthened to address climate change and increased national budget to support implementation of TNA and TAP results through relevant line ministries/agencies as well as funding from various donors. At national levels, capacity is built and mechanisms established/identified to operationalise ideas from TAPs

<sup>109</sup> In its Regional Synthesis report, AIT stated that the countries aimed to implement measures in their TAPs within 0-15 years..

24. Globally, the attainment of the long-term impact of the project depends largely on the global rules and mechanisms to adequately support climate change related actions. Although there was no clear evidence how the TNA outcomes have directly contributed to the global movements towards the reduction of GHG emission, national TNA teams have reported inclusion of TNA outcomes into country reports shared in the COP 21 in Paris. The agreement reached in the COP21 emphasising country-led strategy to achieve GHG emission targets is one enabling factor for participating countries to push forward their TNA/TAP results and secure flow of funds from emerging mechanisms such as CTCN and others.

### **Achievement of project goal and planned objective**

25. Most countries in Asia & CIS indicated that the project has largely achieved its overall objective to provide assistance to developing countries to identify and analyse the priority technology needs for their country, evidenced by the delivery of TNA with TAP reports in most cases. Unplanned benefits were also addressed as increased ability of the national partners to conduct TNA process in light of their country specific needs and priorities.

26. Interviews with stakeholders during the country visits also revealed that country specific objectives of the TNA have been achieved to a good extent. For example, in addition to the project objective specified in the project document, Thailand TNA has included “to evaluate the various social issues relevant to the proposed policy, conduct and analysis on the pros and cons of different control strategy alternatives, and provide estimates of the costs and impacts of legislative mandates” as a country-specific objective. To respond to this objective, multi-faceted criteria including environment, social, economic improvement, GHG reduction potential and reduction of vulnerability were adopted in technology prioritization process whereas in the barrier analysis for TAP development criteria such as capability, accessibility, policy, law and regulation, social perception, and user acceptance were taken into consideration. In the same way, Sri Lanka’s country specific objective to establish enabling framework for the diffusion of prioritized technologies was achieved through the integration of TNA and TAP results in the National Action Plan and National Environment Policy.

27. The project’s contribution to the adoption of Climate Change mitigation and adaptation technologies was perceived as ‘high’ and ‘very high’ by most of the respondents of the survey. Adaptation technologies received relatively higher rating than the mitigation technologies.

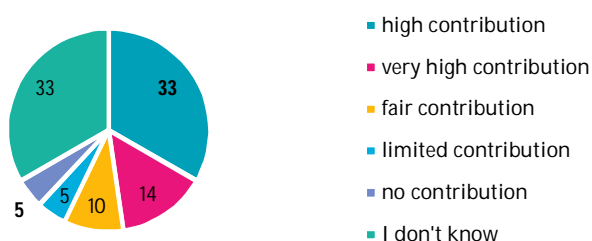
28. The reasons supporting ratings on ‘high’ and ‘very high’ contributions of both technologies as reflected by the respondents are listed below.

- *Some mitigation technologies from TNA are prioritized in NAMA proposals, namely low carbon NAMA and NAMA for sustainable rural development.*
- *In the first Biennial Update Report (BUR), TNA was cited as one of major activities in climate change context.*
- *The results of TNA and TAP is part of several national policies and plans.*
- *For the project Low Emission Capacity Building (LECB) launched by UNDP, the technologies and experience gained from TNA project have been used broadly.*

**Figure 3 : Ratings on project's contribution to the adoption of mitigation technologies prioritised (N=21)**



**Figure 4: Ratings on contribution of the project to the country's adoption of prioritised adaptation technologies (N=21)**



#### D. Sustainability and replication

- Sustainability is understood as the probability of continued long term project derived results and impacts after the external project funding and assistance ends. Information from the online survey and stakeholder interviews which were conducted about two years after the project completion has positively reflected how the project results have been sustained in most countries.

#### Socio-political sustainability

29. Risks associated with socio-political sustainability of the project results are relatively low. All of the participating countries in Asia & CIS have ratified the UNFCCC and are politically committed to GHG emission reduction, with time-bound targets to be achieved. National policies and mechanisms are in place to address climate change issues and its impact on environment/nature, human livelihood and social life, and overall national development and security. Climate change mitigation and adaption have become top priorities of national development agenda in most countries in Asia and CIS countries.

#### Institutional framework

30. From the survey, most countries indicated that their respective TNA and TAP results have been used to inform national and sectoral policies and were actually used in the planning of national and sectoral policies. For example, in Thailand the TNA/TAP results have been used by

the National Climate Change Committee as well as referred to in the Thai Biennial Update Report (BUR). As a result, TAP has become an integral part of the National Climate Change Master Plan (2015-2050). For other countries, the following statements have been made.

- *This Mitigation Report was most likely to be taken into consideration when developing the sustainable rural NAMA proposal and Mitigation part is being considered in LEDS preparation process.*
- *TNA and TAP reports have been used by the National Planning Commission, the Department of Environment, DNA and many sectoral agencies.*
- *Reports have been used to identify projects to request for CTCN funding. It is a policy document for developing INDC as well as Cambodia Climate Change Strategic Plan.*
- *Wind power plants are considered in the planning process of energy sector.*

31. Only one country indicated that there has been the institutionalization of the TNA products whereas a few other countries said there was no specific institution officially assigned to implement the TNA results. In most cases, line ministries take TNA/TAP results in relevant sectors to inform their sectoral planning with facilitation from the institution designated as TNA focal point. The one country which has clearly institutionalised TNA products is Thailand where the National Science Technology and Innovation Policy Office (STI) is the organization to implement TNA/TAP and is appointed as the Designated National Entity (DNE) to coordinate proposals submitted to CTCN. STI's key function is to provide support to the government in terms of STI policy formulation, coordination, and promotion in order to strengthen the country's capacity in its move towards knowledge-based economy. The selection of STI as the project coordinator as well as DNE was therefore relevant both in terms of its role and strategic position. STI is able to link the project results with the various national and sectoral plans, including the National Climate Change Master Plan which has one section contributing to mitigation and adaptation technologies.

#### **Financial sustainability:**

32. There are indications of financial allocation to support the implementation of priority projects in some countries from both domestic and international sources, although information on the amount of such allocations were not given. There have been some efforts to apply for international funding to support the country's priority projects but rather to a minimal extent. Only some of the survey respondents (20%) indicated that they have applied to international funding agencies. International funding sources to which the proposals have been submitted were CTCN, UNFCCC, and UNEP.

**Table 8: Respondents answers on financial resources allocation to support the implementation of priority projects**

Financial allocation	Respondents' answer (%)		
	Yes	No	I don't know/not applicable
From international sources	29	19	52
From domestic sources	29	19	52

33. An example of a domestic funding source is the water management fund in Thailand when the country was hit by a series of flash floods in 2010 and the government budget to upgrade the design and operation of the sea dike in Vietnam, as proposed in the TAP. International financial support that have been noted came from CTCN, UNFCCC, and UNEP. In some countries, the results of TAPs were also used to apply for funding from bilateral donors. For example, the wind power plant project in Vietnam was supported by the US government on a trial basis before the idea was further developed into a larger scale proposal to be submitted to relevant international funds on climate change. As TNATAP results are integrated in national policy and planning of most countries, it is likely that prioritized mitigation and adaptation technology projects from the TAPs will receive national co-funding. For less developed countries or countries with smaller economy scale, financial sustainability will have to be secured from international sources.

### Catalytic effects

The project proved to have catalytic effects in some of the participating countries. For example, two of the project ideas from Vietnam's TAP (wind power and biogas) have been further supported by the US and DANIDA to test the idea before full proposals were developed as part of the NAMA 2. In Sri Lanka, the project team had secured a small budget from the project to pilot a rooftop rain harvest project. The result of the pilot was used to support the scaling up proposal to be submitted to international donors. An expert of the energy sector who was also advisor to several private companies has pushed for private sector's adoption of the project ideas from TAPs: A proposal to generate energy from municipal waste has been submitted to the National Electricity Board and a feasibility study for the conversion of biomass (woodchips) to energy is being conducted by a research institute.

### E. Efficiency

34. The project execution was perceived by most of the respondents as fairly timely, though 24% said the project execution was 'somewhat delayed. Information from stakeholder interviews supplemented that the delay was caused by a combination of factors: late MoU signing, lengthy approval process by government, time consuming participatory consultation process (which usually took longer than planned), and unavailability of the consultants for some specific periods as they were not full time with the project.

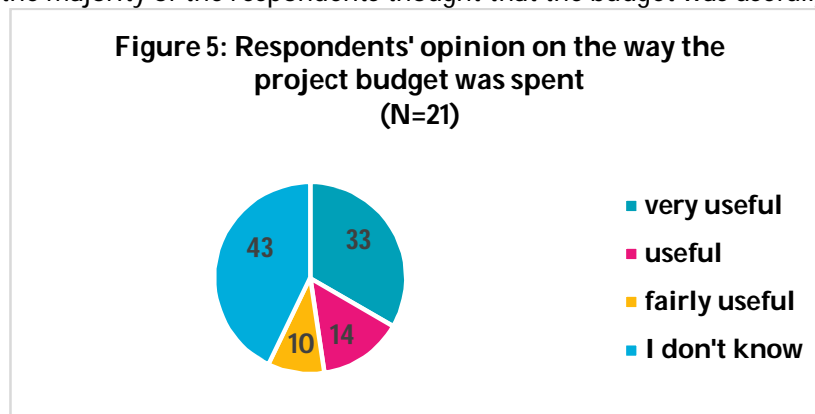
**Table 9: Respondent's assessment of the project's timeliness.**

	Country/respondent	Respondents' assessment					
		Very delayed	Somewhat delayed	Fairly timely	Mostly timely	As Scheduled	Don't know
	<b>Phase 1</b>						
1	Bangladesh (1)						•
2	Bangladesh (2)				•		
3	Cambodia		•				
4	Georgia					•	
5	Thailand (1)		•				



	Country/respondent	Respondents' assessment					
		Very delayed	Somewhat delayed	Fairly timely	Mostly timely	As Scheduled	Don't know
6	Thailand (2)		•				
7	Thailand (3)				•		
8	Vietnam (1)		•				
9	Vietnam (2)			•			
10	Vietnam (3)			•			
	<b>Phase 2</b>						
11	Azerbaijan				•		
12	Bhutan				•		
13	Kazakhstan		•				
14	Lao PDR			•			
15	Moldova (1)						•
16	Moldova (2)			•			
17	Moldova (3)					•	
18	Moldova (4)				•		
19	Moldova (5)				•		
20	Moldova (6)				•		
21	Sri Lanka						•

35. There were opposing views on the sufficiency of the project budget. A number of the respondents thought the budget was sufficient whilst the same number said it was not sufficient. A larger in number said they did not have knowledge about the project budget. Despite this, the majority of the respondents thought that the budget was usefully spent.



36. Most of the respondents thought that the project team has made the necessary efforts to make use of and to build upon the experience on both mitigation and adaptation TNA/TAP. In Thailand, it was stated that the results of the TNA are now included in the technology section of the National Climate Change Master Plan.

**Figure 6: Respondents' opinion on project team's efforts to build upon TNA/TAP for climate change mitigation (N=21)**



**Figure 7: Respondents' opinions of the project team's efforts to build upon the TNA/TAP for climate change adaptation (N=21)**



## F. Factors affecting performance

37. Theoretically there are several factors which could affect the project performance during its preparation and implementation period. These factors were rated by the respondents in relation to the degree of their relevance to the performance of the project in their respective countries.

**Table 10: Positive and negative factors influencing the TNA project performance in the Asian and CIS countries**

Area	Factors and evidence observed	Influence	Example (but not limited to)
Project preparation and readiness	Project was country-driven and countries were prepared to set up necessary mechanism for effective project management and implementation.	Positively	All participating countries
	National coordinators were strategically selected from the top list.	Positively	All participating countries
	Actual starting date was delayed due to lengthy project approval process	Negatively	Vietnam
	Engagement of top experts as sectoral consultants	Positively	Almost every country except

Area	Factors and evidence observed	Influence	Example (but not limited to)
Project implementation and management	Time for capacity building workshop was too short	Negatively (partially)	Bhutan which hired consultant from outside the country
	TNA guidebook is in English. Non-English speaking stakeholders found it's difficult to thoroughly understand and follow.	Negatively	All participating countries
	Capacity building workshop was conducted at regional level, only 3 people from each country were engaged	Negatively (partially)	Some countries
	Strong commitment and good management by national coordinating team	Positively	All participating countries
	Knowledge and skills of national experts to facilitate the stakeholder consultation process	Positively	Almost every country
	Ability of sector experts to understand certain limitations of MCDA and adjust the methodology to suit the country context	Positively	Almost every country
	Experienced and well-connected experts, especially with the private sector who have eventually adopted the TNA/TAP results and put them into implementation	Positively	Some countries, e.g. Sri Lanka, Thailand
	Political will and support from the PSC helped to secure smooth implementation and likelihood of policy impacts	Positively	Sri Lanka
	Technical support from URC and AIT	Positively	Almost every country
	Stakeholder participation, cooperation, and partnership	.High level of stakeholder participation; stakeholders are engaged from all relevant sectors	Positively
Good inter-ministerial collaboration-resulting in comprehensive TAPs and follow up actions by line ministries after the project has ended		Positively	Every country
Communication and public	Frequent changes of workshop participants from meetings to meetings resulted in lack of understanding on the issues and technologies under the discussion	Positively	Some countries, e.g. Vietnam, Thailand
	Regional workshops helped to build informal learning networks among participating countries	Negatively	Some countries, such as Sri Lanka
	Regular communication to the public through various channels has raised public awareness on	Positively	All participating countries

Area	Factors and evidence observed	Influence	Example (but not limited to)
awareness	climate change issues on a wider scale		
Country ownership and driven-ness	The project was designed through the 'top-down country-driven' process' based on collective demand from the countries. Countries participated on a voluntary basis, hence a strong sense of ownership	Positively	All participating countries
	TNA methodologies and process were adjusted to best respond to the country's needs while still complying to the overall objective of the project	Positively	All participating countries
Financial planning and management	Budget was well managed, mainly to engage services of top experts in each sector and support series of stakeholder consultation process, both of which were key to the project's success	Positively	All participating countries
	Some countries felt that the budget was too tight, given many activities to be covered and limited national capacity to provide co-funding	Negatively	Some countries, esp. those with lower level income
Supervision, guidance, and technical backstopping	The regional capacity building workshop provided a platform for skill development and knowledge sharing among the participants	Positively	All participating countries
	Technical support missions by AIT proved to be important as it helped strengthen capacity for more persons in addition to those participated in the regional workshop.	Positively	All participating countries
	Technology Fact Sheets provided by the regional centre were found to be insufficient in providing information on some technologies. Consultants had to explore additional information from the internet which was also quite limited.	Negatively	Some countries, e.g. Vietnam, Sri Lanka
Monitoring and Evaluation	Regular reports were required from participating countries to monitor progress. Most countries were able to catch up with the reporting timelines.	Positively	Most countries, except those with late start and limited national capacity (e.g. Vietnam, Lao, Bangladesh)
	Frequent/regular report back to the PSC for technical and policy implication advice/support	Positively	Some countries, e.g. Thailand
Intellectual rights/property	No clear evidence		

38. Factors which have been rated as having highest 'positive' effects on the project performance (indicated by 'highly satisfactory' and 'satisfactory' rankings) included (a) preparation and readiness of the team, (b) project implementation and management, (c) adequate stakeholder participation, and (d) supervision, guidance, and technical backstopping.

## Conclusions, Recommendations and Lessons Learned

### Conclusions

39. **Project relevance:** All participating countries indicated that the project was highly relevant to the country's need for climate change mitigation and adaptation. It helped to support and improve the implementation of existing national policies/plans and contributed to the establishment of mechanisms to carry out technology-focused mitigation and adaptation plans.

40. **Achievements of outputs:** Regionally, the project has achieved its overall objective to a great extent. All participating countries, except Nepal have produced TNA and TAP reports based on national consensus. The reports were compatible with national development priorities in addressing climate change issues. It was claimed by most countries that the project was the first attempt at national level to systematically identify and prioritize technology needs for climate change mitigation and adaptation. Through the TNA process, the stakeholders have reviewed national development priorities, including in climate change sector. Necessary tools were introduced to identify and prioritize technologies, analyse barriers and develop priority actions. Overall, the stakeholders were satisfied with the quality of their respective country's outputs and they rated the quality of the TNA adaptation reports at the highest rating among all. Most participating countries agreed that they also benefited from the project with regard to their national capacity building needs.

41. The stakeholder consultation aspect of the project was perceived as very crucial for the achievements. It engaged a wide range of stakeholders at all levels. It helped to raise the level of national partners' understanding about climate change mitigation and adaptation technologies and how to prioritise them. The stakeholders reported that the capacity building workshops on TNA and TAP process, regional experience sharing workshop, and ongoing technical support provided by the regional center were very useful. Despite their satisfaction about the usefulness of technical support from the project, most of them have indicated needs for additional support apart from what had been given. These additional supports could have been more training on cost-benefit analysis of the technologies and more information about their prices and comparative documents among developing countries. As a result of the project, national networks of concerned ministries, institutions, experts, private sector and research centres have been established and continued in most countries after the project. Inter-regional networks, however, were not firmly established nor used by most of the participating countries.

42. **Effectiveness:** Most participants were satisfied with the level of achievement of each individual project outcome. Among the nine outcomes, outcome related to the improved capacity of stakeholders to work on their own through the workshops and guidebooks received the highest rating. However, there was a small indication of not fully satisfaction for the outcome related to regional and international networking and cooperation.

The ultimate impact based on the project-level ToC is actions to reduce greenhouse gas emissions and/or adaptation to climate change by participating countries. In the longer run it is likely that this will be achieved by most of the countries. At national levels, capacity is built and mechanisms established/identified to operationalise ideas from TAPs

43. The evaluation concurs with the view of most stakeholders that the project has largely achieved its objective and that the project has contributed to the adoption of climate change mitigation and adaptation technologies prioritized through the project, evidenced by the inclusion of these technologies in the Nationally Appropriate Mitigation Actions (NAMAs), Intended Nationally Determined Contributions (INDCs), National Development Plan, and National Climate Change Master Plan in some countries.

44. TNA/TAP results have contributed to the development of several national and sectoral policies, strategies and plans. They have become references for further work in some countries and have been included in the NAMA, NAPA and INDC of most participating countries. Some of the ideas from the TAPs have been piloted on a small scale through bilateral funding. In some countries mechanisms established under the TNA project (i.e. PSC, National Committee, TNA coordinating bodies) continue work together to develop proposals to secure national and international funding to operationalise ideas from the TAPs.

45. The project has enhanced opportunities for participating countries to exchange experience/lessons learned and establish contacts among themselves and with the regional expert centre. It also prepared the countries to be ready for support from international Technology Mechanisms. However, the outcome on increased inter-regional cooperation on technology transfer has not been fully achieved and needs further attention.

46. The project has contributed to collaboration between the government sector, academic, private sector, and in some countries CSOs and NGOs. The TNA and TAP are not just reports but the capacity built for implementation. Specifically, it was recommended by the participating countries that national TNA/TAP reports of each country should be regularly updated to respond to ongoing changes and new knowledge in the climate change situation and national climate change policies/plans. Additional technical assistance would be useful to the countries in pursuing this process.

47. Factors identified by the stakeholders as important for achieving their project results varied from country to country but the most commonly named factors were capacity and commitment of national experts, followed by quality of capacity building and knowledge sharing activities, and stakeholder consultation process. Meanwhile, limited project timeframe and budget as well as lack of local expertise in some selected sectors were seen as factors hindering the project progress/achievements.

48. **Sustainability and replication:** In all countries, risks associated with socio-political sustainability of the project results are relatively low. Every country has ratified the UNFCCC and politically committed to GHG emission reduction with time-bound targets. Institutional frameworks have been developed with the inclusion of TNA and TAP results in the national and related sectoral policy and plans. There have been some efforts to apply for international funding to support the country's priority projects although still at a minimal degree. National budgeting has been secured for a number of TAP ideas which have been included in ministerial/departmental plan. Implementation of these plans will eventually have direct impact on improving the environment in the longer term.

In some countries, the project has provided for catalytic effects. Ideas from the TAPs were further tested through small pilot projects funded by bilateral donors. Results of the pilots were used to develop proposals for larger scale projects to apply for funding from international sources. Private sector has also adopted some of the TAP ideas.

**Efficiency.** The execution of the project was seen as mostly timely. Although there were mixed opinions about the sufficiency of the project budget, most stakeholders indicated that the budget was spent in a useful way. The project teams were also seen as having made necessary efforts to make use of and to build upon the previous experiences on TNA/TAP

49. To provide additional background to the context, implementation and performance at country level, a brief summary of country cases from the three countries visited in Asia, and one CIS country, is provided subsequently.

## Lessons Learned and Recommendations

### Project design

75. The project was designed through the ‘top-down country-driven’ process’ based on collective demand from the countries. After UNEP’s Division of Technology, Industry and Economics (DTIE) sent invitations to all eligible countries and got confirmations from those interested, the design of the umbrella programme began, followed by the kick-off workshop. Most countries participating in the first round TNA were those who had significant and decision making role in international conventions. The fact that it was country-driven contributed to national commitment to push the project to the best success as evidenced by the achievement of the project objectives and results in most countries. Despite this fact, there was one country in Asia (Nepal) which could not complete the project due to the lack of local expertise to conduct project activities.

76. **Recommendation:** For the next phase, national capacity assessment based on multi-dimensional criteria should be conducted before their enrolment in the project. If necessary/possible, special arrangements should be arranged to help countries with specific limitations which are beyond their own capacity to address.

77. The project design did not include an exit strategy for smooth transition to ensure that its results would be sustained and ultimate impact gradually achieved in the long run. In most cases, countries are left to struggle their own way to operationalise the results of the project.

78. **Recommendation:** For TNA Phase 2, at least one regional workshop should be conducted to facilitate countries to develop their exit plans. Relevant information on potential funding windows and their application requirements should be shared, including information on emerging UNFCCC and GEF technology transfer funding.

### Project budget

79. GEF project expects that its national partners provide co-funding for project implementation. For some countries, especially the LDC, this requirement is difficult to fulfil whereas some other countries (e.g. middle income countries or countries with several foreign funding windows) can do better in this regard.

80. **Recommendation:** The project budget should be allocated on basis of national needs rather than as a flat rate to all countries.

#### **Technical support from regional centre-AIT**

81. Although most countries were satisfied with the quality of technical back-up by AIT, the designated regional centre for Asia, it was also observed that AIT had quite limited expertise on adaptation technologies.

82. **Recommendation:** For the next phase this issue should be carefully reviewed and alternate solutions should be developed, e.g. engagement of other academic centres or professionals with more proven experience and background in climate change.

#### **National experts**

83. National experts play a vital role for the quality of project outputs. Due to budget constraints, not all of them have direct access to the regional workshops on key methodologies of the project. Instead, they were coached by AIT during their county visit missions or by the team leader who participated in the workshop. This posed certain constraints in the application of project tools by national experts.

84. **Recommendation:** All national consultants should be receiving direct training from the project through regional training workshops rather than from team leaders or national coordinators who may have limited technical background on some sectors.

#### **Capacity building workshops**

85. Capacity building workshops were conducted at regional level. Given the budget constraints, only three participants from each country have participated in these workshops. It was also reflected that the time for the workshops was too short, not sufficiently engaging practical exercises/hands-on experience on some of the introduced methodologies.

86. **Recommendation:** Capacity building workshops are pre-requisite to the success and quality of the project outputs. They should engage national consultants and key actors from all prioritized sectors. One alternative is to conduct the workshop at sub-regional level to save travelling time and costs. With the same budget, more people could participate and more time could be allocated to practical exercises on tools/methodologies.

#### **Stakeholder participation**

87. Although in most cases stakeholders were selected from a wide range of relevant sectors, it was observed that the financial sector and retailers were under-represented in some countries.

88. **Recommendation:** A thorough stakeholder analysis /identification exercise should be conducted at an early stage of project implementation as it is one of the key factors for the



project success and sustainability. A user-friendly stakeholder analysis tool should be introduced during the capacity building workshop to ensure that the project has included all key relevant sectors in its consultation process. More efforts should be made to encourage active participation of finance sector and retailers.

### **TNA tools/methodologies**

89. Common business people found MCDA too complicated to follow. It also lacked criteria on the appropriateness of the technology to the country. Without this, the most impacted sector might become less important.

90. **Recommendation:** Criteria suggested in MCDA should be reviewed to allow for some flexibility to suit specific condition of each country. Costing should not be the dominating criteria in MCDA and MCDA results should be reviewed by a separate technical planning team who has deep understanding about the selected technologies before developing the action plans.

### **TNA guidebook**

91. The TNA guidebook serves as a key reference for project implementation but many stakeholders found it difficult to follow/understand due to language constraint and its technical complexity.

92. **Recommendation:** The guidebook could be made more user friendly, linking all steps to be carried out clearly. If possible UNEP should consider to have it translated into local languages. Considering that participating countries will need to periodically update their TNA/TAP reports to respond to changing circumstances, this is a good investment which helps to keep the TNA process continually rolling.

### **South-south cooperation**

93. The project has established quite solid ground for national collaboration among the public, private, academic and CSO sectors in each country through its highly participatory process. However, inter-regional/international networking has been rather weak during the first phase implementation.

94. **Recommendation:** In the next phase, objectives, structure, and communication channels for regional and inter-regional networks should be clearly defined through consultation with all participating countries. More efforts should be made to establish and stabilize them.

### **Implementation of TAPs**

95. Some of the TAP ideas require inter-ministerial collaboration /action to implement. In most countries, national planning and budgeting system is sector-based, bound to key performance indicators (KPI) of individual agencies.

96. **Recommendation:** National TNA coordinating bodies should coordinate closely with all agencies which are engaged in the same TAP project to ensure that their action and budget plans for the specific project are harmoniously contributing to the common project objectives/outcomes. In some countries, efforts have been made to develop a new budgeting category called integrated budget for projects which require integrated planning and joint implementation actions by several ministries/departments. In such case, joint KPIs will be initiated and applied.

### **Additional notes on the countries visited**

---

#### **Thailand**

50. The TNA project was highly relevant to the country's situation. It was reported that GHG emissions in Thailand had increased by approximately 4.7% per year from 2000 to 2008. It was also projected that the country would experience an increase in temperature of 1.4 to 5.8 ° C. over the period from 1990-2100. Being the region's second largest economy and energy consumer, Thailand contributed to nearly 30.2% of ASEAN energy consumption and consequently high GHG emissions.

51. Thailand accepted the invitation to join the TNA project in 2009 through the Office of Natural Resources and Environment Policy and Planning Office (ONEP) which is the national focal point for the UNFCCC. Having seen the potential linkage of the project's initiatives and results to the higher level of national planning bodies, the Royal Thai Government appointed the Science Technology and Innovation Policy Office (STI) to be the project coordinator. STI's key function is to provide support to the government in terms of STI policy formulation, coordination, and promotion in order to strengthen the country's capacity in its move towards knowledge-based economy. The selection of STI as the project coordinator was therefore relevant both in terms of its role and strategic position.

52. According to the project's consultant, Thailand had participated in the TNA process a few years ago prior to the GEF-UNEP supported TNA. The assessment was conducted by a single expert and did not include comprehensive stakeholder consultations. The result of the TNA had limited use, mainly as reference sources with no further actions on technology implementation. The current approach recommended in the UNEP guideline is seen as more consultative and result-based. The Thai TNA process engaged key stakeholders from government, academic institutes, research centres and private sector. It was able to engage the top experts in each sector. What contributed to its success and sustained results is the system to report back to the PSC every three months for technical as well as policy implication advice/support. TNA results were approved by key relevant ministries sitting in the PSC, leading to adoption of the results into sectoral as well as national development plans.

53. There are several factors which help secure sustainability of project results to-date. Socio-political risks are very low because the level of country ownership is high. The TNA/TAP reports have been approved by the National Committee on Science and Technology for Climate Change who called for more detailed TAP proposals to secure funding from available sources. Members of PSC and TNA Committee established during the project's time continue to meet regularly

(every two months) after the project ended to support TAP implementation through various funding channels including government fund, National Research Fund, etc. The institutional framework has also been conducive. Mitigation and adaptation measures are being addressed in the national planning and budgeting system, and there is a new budgeting category called integrated budget for projects which require integrated planning and joint implementation actions by several ministries/ departments. Some of the projects from TAPs can benefit from this new budgeting window as they involve inter-ministerial collaboration.

54. There are several funding sources in the national and sectoral plans to support the implementation of TNA/TAP results, and STI has worked with the National Socio-Economic Development Board and the National Budget Bureau to make mitigation and adaptation technologies integral part of the planning and budgeting system. Potential external financial resources could be from CTCN for which STI is appointed to be the NDE.

55. Climate change mitigation and adaptation projects are about improving the environment, so they are less likely to produce negative impact on the environment. The process and results have raised the awareness of policy makers on the relevance of mitigation and adaptation actions, leading to increased funding to support research and up-scaling of adaptation and mitigation technologies.

56. Thailand's experience in TNA implementation is well-recognized and it was selected to be one of the six countries to participate in the regional experience sharing workshop with Phase 2 countries.

## Vietnam

57. Because of its long, low-lying coastal line, Vietnam is considered one of the most vulnerable countries to climate change, especially to sea-level rise. It is now facing many climate change impacts on livelihoods, natural resources, society, infrastructure and economic development. Responding to climate change is a vital imperative to Vietnam's development. Vietnam's Second National Communication to the UNFCCC contains the GHG inventory for the base year 2000 and estimations of GHG emissions for three main sectors: energy, agriculture and land use, land use change and forestry for 2010, 2020 and 2030. It also introduces a number of adaptation measures and GHG mitigation options and deployment of eco-friendly technologies in Vietnam. The TNA further supports national climate change strategies. It was one of the countries in the first round of Phase 1.

58. Project implementation started later than it was expected due to the delay in the global project kick off workshop in Paris as well as the lengthy national approval process for MoU. The process took around 5-6 months and engaged several rounds and levels of review/feedback from concerned ministries before the government's approval. TNA coordinating team is based in MONRE.

59. Vietnam received a total budget of USD 120,000 from UNEP and has provided in-kind contribution around USD 12,000 to support project implementation. This was perceived as insufficient. All national consultants were paid at lower fee compared to their standard rates but they were happy and committed to carry out the tasks.

60. Although the main inputs (TNA and TAP reports) were delivered behind the schedule, they were treated by national stakeholders as core references to several of the sectoral and national planning forums. The reports proved to have the following direct and indirect impacts in several sectors.

- Two of the project ideas from TAP (wind power and biogas) have been further supported by US government and DANIDA and full proposals developed as part of the NAMA 2.
- Information from TNA reports will be used for the 3<sup>rd</sup> National Communication to UNFCCC.
- Ministry of Industry developed policies on renewable energy to be included in the NAMA. Project proposals will be developed to apply for CTCN funding
- Ministry of Industry is planning to adjust the Electricity Master Plan and integrate recommendations from TNA/TAP reports. The target of RE production/utilization will be increased to 8% by 2030, focusing on wind power technologies
- TNA/TAP results for agricultural sector have been integrated into the Intended Nationally Determined Contributions (INDC) to follow COP 21 in 2015.
- Ministry of Agriculture has set up emission reduction target from agricultural sector by the year 2030, focusing on the prioritized technologies.
- In March 2014, the government issued the policy on Sustainable Forest Management, using result from TNA and knowledge from TNA process in setting the target

61. Vietnam also participated in regional experience sharing workshop with Phase 2 countries due to its significant achievements. It was claimed that the success was due to a combination of factors including strong commitment of the national coordinating team; a large pool of experts from all concerned sectors; high level of stakeholder participation; support from the Project Steering Committee who also serve as National Climate Change Committee and technical support from URC and AIT. Good inter-ministerial collaboration-resulting in comprehensive TAPs and follow up actions by line ministries after the project has ended. More importantly, the Vietnam TNA team has developed regular communication channels to inform the public about the project and its relevance to the country.

## Sri Lanka

62. As an island, Sri Lanka is highly vulnerable to climate change impacts. During the recent years, it has already experienced significant climate imbalances witnessed by increasing average climate temperatures, drastic variations in rainfall patterns, and extreme climate events such as heavy rainstorms, flash floods, extended droughts and weather-related natural disasters in various forms and severity. During the past two decades, the country has made a significant contribution to strengthen national policy as well as legal and institutional capacities in order to create an enabling environment for the implementation of obligations under the UNFCCC and Kyoto protocol. The TNA project is considered especially useful as it does not only focus on technology prioritization and action plan for climate change mitigation and adaptation but also

aims to develop an enabling framework for the development and diffusion of prioritized technologies for relevant sectors.

63. Sri Lankan TNA has engaged quite a wide range of stakeholders from many sectors. Apart from government, academic /research institutes and relevant NGOs, it has given room for representatives from industries, technology distributors, users and suppliers as well as organizations engaged in manufacturing, import and sale of technologies to participate in consultation process. Sector experts were engaged to facilitate the process of technology identification and prioritization. Sector prioritization was based on multi-criteria including:

- Contribution to the development priorities of the country
- Contribution to climate change mitigation - GHG emission reduction potential
- Contribution to minimized vulnerability to climate change
- The market potential
- Access to/availability of technologies in the sector.

64. Despite limited project budget and government's co-funding, the project team has managed to secure a small project budget to pilot an idea from TAP. With support from the National Water Board, the project team piloted the 'rooftop rain water harvest' project in one village of 40-50 families before developing a full proposal for the Green Climate Fund.

65. It was noted that for energy sector, private companies were keen to participate and implement some project ideas. For industry sector, private sector found that the MCDA process was too technical and was not easy to follow. However, private sector has been active to adopt some of the ideas proposed in the TAP. The consultant of the energy sector was the advisor to several private companies and had played a vital role to mobilise private sector's support to further carry on some of the TAP's ideas. A proposal to generate energy from municipal waste has been submitted to the National Electricity Board, waiting for their approval. A feasibility study for the conversion of biomass (woodchips) to energy is being conducted by a research institute through the initiations of the sectoral consultant.

66. For transportation sector, the government has adopted carpooling idea, starting from maximizing number of passengers per taxi during rush hours. The sector's consultant has also integrated knowledge about the TNA process and climate change adaptation technologies in her course syllabus at the Colombo University.

67. A few follow-up actions have also been conducted in the industrial section including the integration of 'Energy Efficient Motors' for the tea sector which is the largest industry of Sri Lanka into the NAMA. Feasibility study on 'variable speed drivers for motors' is being conducted by Climate Change Division with the help from the consultant, aiming to get funding from the government.

68. One of the limitations for TAP implementation by the government is that most TAP ideas require inter-ministerial integrated planning but the country's planning system is sector-based.

69. Technically, it was observed by national consultants that MCDA methodology was good but had some limitations. It's too complicated for common business people to follow. It also lacked criteria on the appropriateness of the technology to the country. Without this, the most impacted sector might become less important. Overall, national consultants have recommended that costing should not be the dominating criteria in MCDA and MCDA results should be

reviewed by a separate technical planning team who has deep understanding about the selected technologies before developing the action plans.

70. It was mentioned that participatory process took long time but the results are more sustainable as they are owned by all stakeholders. However, the process may not lead to the best decisions if the stakeholders do not have enough knowledge about the issues/technologies.

## Moldova<sup>110</sup>

71. The Republic of Moldova is a small country (population below four million), is landlocked and has Romania and Ukraine as its bordering countries, located in Central Eastern Europe<sup>111</sup> and with its capital city as Chişinău. It has warm and long summers, where the temperatures go past 40C, which raise concerns for effects on human health with the expected increase in the duration and peaks of high summer temperatures.<sup>112</sup> Moldova has undergone several periods of political instability and public protests, which were ongoing during the visit. It is also a poorer country in Europe, where 94 percent of the population were below the poverty line (based on the Europe and Central Asia regional poverty line of US\$5/day (PPP)) in 2002, with improvements to 55 percent below the line in 2011.

72. Moldova signed the UNFCCC in 1992, and ratified it in 1995. It had set a target for the reduction of GHG by at least 25% by 2020, compared to its base or reference year of 1990. Moldova is one of the countries Annex I Parties (industrialized country members of the Organization for Economic Co-operation and Development (OECD) in 1992, and countries with "economies in transition" (EITs), which were formed after the breakup of the Soviet Union, and was recognized as an independent state by the United Nations)<sup>113</sup>. A major fact that distinguishes Moldova from other countries (non CIS) in the group is that between 1990 and 2000, the national GHG emissions fell from around 43 Mt CO<sub>2</sub> equivalents to around 12 Mt CO<sub>2</sub> equivalents, around 70%, in 2000 due to the collapse of industrial production (and industrial energy use) by over 50%. Thus it would be difficult for Moldova not to meet the GHG reduction targets for 2020. Thus while GHG reductions by themselves are not required, Moldova imports all its energy and energy security, lowering costs and increasing efficiency of production and use are among the national priorities. On the adaptation side, Moldova has concerns on the impacts of climate change on its agriculture, water resources and human health.

## The TNA activities

---

<sup>110</sup> Moldova was visited by the team leader, Amitav Rath, who has contributed the notes..

<sup>111</sup> Moldova and the other countries in TNA Phase I were grouped as Asia and Central Europe for the project management and were served by AIT, the Regional Centre in Bangkok.

<sup>112</sup> This report is based on review of documents, visit to Moldova and interviews, and from the survey completed by Moldovan participants in the TNA. For general information on the country see - ; for additional information on CCO, see <http://www.clima.md/pageview.php?!=en&idc=191>

<sup>113</sup> There are three other countries - Azerbaijan, Georgia and Kazakhstan, participating in the TNA I exercise which belong to Central and Eastern Europe, and are also EIT countries, which were covered in the TNA grouping under Asia, supported by AIT, the regional centre for Asia.

73. The TNA project in Moldova was managed and executed exactly as guided by the TNA project guidelines. There was a national TNA team, located at CCO, reporting to the Ministry of Environment. This office coordinates all work related to climate change in the country and so is very well situated to link to all projects being undertaken in the country on CC; with excellent links to both international agencies and to government ministries relevant to the tasks required. Moldova also receives EU support for its work on climate change, also coordinated by the CCO.<sup>114</sup>

74. The working groups on each component consulted national development strategies, sectoral strategies, sectoral plans, to develop a cluster of development priorities with relevance to climate change. There was a TNA Coordinator, National TNA Team, a National TNA Committee and National consultants/experts, organized in workgroups. A National Steering Committee was also created as the top most decision making body of the TNA Project, comprising policy makers from relevant key ministries. The TNA Team and stakeholders agreed upon the activities and then a detailed Work Plan was elaborated, discussed with stakeholders, and finally agreed upon.

75. The team followed the methodological guidance provided at the TNA workshop in Bangkok (8-11 August, 2011) and the additional sources such as the Handbook on Technology Needs Assessment for Climate Change, Climate TechWiki website, Multi-criteria analysis: a manual, the TNA guide Technologies for Climate Change Adaptation, and so on. A first group of 78 technologies were included in a long list, then the best two or three technologies per each use were identified based the scoring process of TNA, followed by Cost-Benefits and Sensitive analysis. The process was used to narrowed down to 38 technologies in Energy and Agriculture, from which finally six technologies were further prioritized – for energy, the three technologies included Combined heat and power plants; Gasification of Municipal Solid Waste for Electricity/Heat production; and Hybrid Electric Vehicles for transport. Moldova had also conducted a technology needs assessment in 2002<sup>115</sup> and the differences between the two assessments after one decade are noteworthy and suggest the need for the current round of TNA work in all countries supported. Earlier the document provided a much larger coverage of the energy sector, both production and use and examined many different options, under the conditions prevailing then. It had identified energy efficient lamps as one priority sector for GEF support. The conditions in Moldova had changed in the interim, shifting some of the priorities and the technology situation had also changed, making this new assessment useful. While it is not possible here to assess the selections made the low priority given to renewable options of PV and wind was surprising.

---

114 For example the project - Technical Assistance to Armenia, Azerbaijan, Georgia and Moldova with respect to their Global Climate Change Commitments EuropeAid/115123/C/SV/Multi – Lot No. 2. This assists the countries in building institutional and technical capacity for participation in the UNFCCC and the Kyoto Protocol, to support a CDM portfolio and projects, increase awareness, develop local capacity in emission modelling and assessment of sectoral mitigation potentials and national climate change strategies, including mitigation and adaptation measures. All highly complementary to the TNA project work and support not available to any other country in the TNA Phase I.

115 Sources - Technology Needs Assessment and Development Priorities Report elaborated under the United Nations Framework Convention on Climate change, 2002; interviews and survey responses.

76. On the other hand TNA for adaptation was undertaken for the first time, so made a beginning on the needs and gaps. It contributed to institutional capacity building in the area of adaptation, and resulted in TAPs for agriculture and the health sector. The choice and prioritization of agriculture is common with most countries given potential challenges to crops due to anticipated changes in temperature and water availability. For agriculture the conservation technologies were prioritized - "No-Till", "Mini-Till soil cultivation" and classic tillage, all including a vetch field for green fertilizer<sup>116</sup>. The choice of anticipated heat waves as a priority issue did surprise the evaluator and is unique among the participating countries. But a review suggests that it is indeed an important potential issue in the country and is likely to be an underestimated hazard for many other countries.

### Outcomes

77. The reports were used to inform national and sectoral policy makers of line Ministries; for example in agriculture and health, the reports were used in development of specific policy documents. In the health sector first aid, emergency shelter and early response practices for anticipated heat waves were implemented by the health authorities and conservation technologies in agriculture were promoted through the Ministry of Agriculture programmes. Project ideas formulated have been taken up with bilateral donors and with the local UNDP office. While no new national mechanisms were established (perhaps as the necessary mechanisms were in place) several actions were taken as per the needs identified. It was reported that the work contributes the "Low Emissions Development Strategy" for Moldova.

### Factors

78. The discussions, quick reviews of the reports and the survey responses were all in accord. The consensus is that the work done in Moldova resulted in the achievement of all the project outputs and outcomes specified and the team there was satisfied with the resources and the support provided by the project (there was one interviewee who would have liked more to have been done). In their view the factors most important for achieving the project results stemmed from the efforts to include all stakeholders and to generate interest and active contributions, while the most important barrier was the ongoing political instability of many years duration. In the view of the evaluator, additional factors that contributed to the achievement of the project outputs and outcomes were also very specific to the country and they include the past decision to coordinate all climate change activities through the CCO, its experience and competence built over almost one decade, and strong linkages with government administrative structures, which allowed the CCO to use the resources effectively and efficiently. In addition while in the past decade, Moldova has been losing national experts to "brain drain", it continues to have the residual assets of strong technical capacity built earlier and also has been a recipient of significant technical support from the EU.

### Suggestions

79. Among suggestions that were made in the survey, for possible improvements, only some are noted here – the TNA could have designed the "Project ideas" formulation based more on

---

<sup>116</sup> See Republic of Moldova report, Technology Needs Assessment for climate change mitigation: report Technology Prioritization May, 2012. Annex 6 provides the list of 15 stakeholders involved.



the UNDP NAMA template, which would have made the outputs more directly usable within the UNFCCC process. Another commented that the “data taken into consideration during the TNA” and the technologies, both change and so the process should be reviewed regularly every few years.

---

**Technology Need Assessment Project Phase 1  
Regional Working Paper for Latin America and the  
Caribbean**

**Author: Mario Bazán**

---

## Introduction

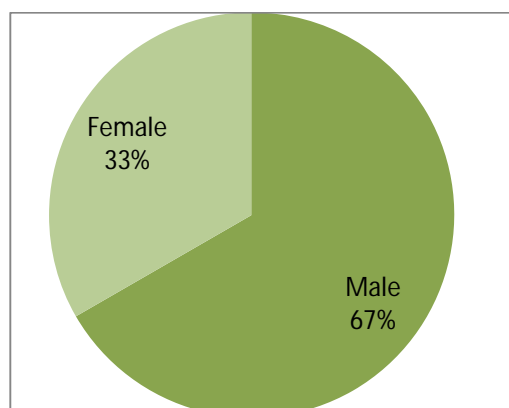
1. This regional input to the Main Report is part of the Terminal Evaluation of the UNEP/GEF Project: "Technology Need Assessment Phase 1". This is based on three country visits in Argentina, Colombia and Peru for meetings with country teams in nine interviews with 12 people in total: 2 in Peru, 4 in Argentina and 6 in Colombia. Each field mission was 2-3 days and was supported by UNEP DTU team, and the Regional Centres in LAC. Each country visit was preceded by a review of relevant programme documents and other sources of data on activities in the country, the context, and other related issue as appropriate. Information collected at the country level allowed the evaluator to assess the project, with the survey results adding to the information collected. Selection criteria for the countries their diversity, progress on the TNA process, with some successes and challenges, prioritized within the budget constraints for the evaluation. The budget limitations required Argentina and Peru as two choices as they were implementing countries and the home countries of the two Regional Centres for LAC. Details about the limitations will be found in the main body of the evaluation report. Amitav Rath accompanied the consultant on the visits to Argentina and Peru.

2. The team carried out visits and interviews to researchers at the regional centres —Libélula in Peru and Fundación Bariloche in Argentina. In addition, the team visited. Also, the survey was sent to each national coordinator in the nine countries participating. 12 responses were received from five countries: Argentina, Colombia, Dominican Republic, El Salvador and Peru (table 1). 2 did not complete answers to all questions. The names of survey respondents has been removed from all results. Some of the people in the LAC region could not be contacted because they had moved from their earlier positions and their new contact information could not be ascertained. This constraint mainly affected follow up in Ecuador, Cuba, Costa Rica and Guatemala, from where no responses were obtained.

Table 1. **Number of respondents by country**

Latin America & Caribbean	Total	Interviews	Survey
Argentina	7	4	3
Colombia	10	6	4
Costa Rica			
Cuba			
Dominican Republic	2		2
Ecuador			
El Salvador	1		1
Guatemala			
Peru	4	2	2
Total		12	12

3. By gender, 67% of the respondents of the survey are male and females 33% (figure 1). The respondents come from different organizations: 57% from the academy, 25% from the government, 8% from the civil society and 8% are independent experts or consultants (see table 2).

Figure 1: **Distribution of respondents by gender**Table 2. **Respondents of the survey by type of organization they belong**

Region / Country	Academia	Civil society organization / Community	Expert/ Consultant	Government	Private sector	Other	Grand Total	%
LAC								
Argentina	2		1				3	25,0%
Colombia	4						4	33,3%
Dominican Republic		1		1			2	16,6%
El Salvador				1			1	8,3%
Peru	1			1			2	16,6%
<b>Grand Total (LAC región)</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>100,0%</b>

## Evaluation findings

### Strategic relevance

4. The project had three main objectives: to identify and prioritize through country-driven participatory processes, technologies that can contribute to mitigation and adaptation goals while meeting their national sustainable development goals and priorities; to identify barriers hindering the acquisition, deployment and diffusion of prioritized technologies and; to develop Technologies Action Plans (TAP). These objectives contribute to the international framework of the UNFCCC that all the participant countries in the region are involved.

5. In the moment the project started in the region, most of the countries did not have similar projects going on. Then the contribution of the project was to transfer methodologies, to have a first proposal of a prioritization for appropriate technologies for climate change and to have with an action plan. In the case of visited countries during the evaluation, Colombia and Peru, the Ministry of Environment were in charge of leading the project, while in the case of Argentina the project was led by the Science and Technology Ministry. This fact, that each country could have different leadership shows

that the project had many dimensions relevant for the countries and the approach of each country responded to their own priorities.

6. Most consulted participants indicated that the project was relevant and pertinent. However, some of them had higher expectations about the project's final outcome. These opinions include "lack of understanding the reality of each country", "lack of continuity"; "limited budget" and "lack of time to do a deeper study". Some of the comments from the interviews were:

7. "[In the case of Colombia], the project was pertinent, but the countries have very different processes and may be needed more flexibility to adapt the project for each case" (TNA National Coordinator, Colombia).

8. "Over time, the expectation and stakeholder participation began to decline". The reasons: they felt that the end was only a report with no resources for implementation, the interest fell rapidly. (TNA Coordinator, Argentina).

9. Most of the respondents find that the project was relevant to the prioritized technology needs for mitigation and adaptation for the climate change needs of their countries: 58.4% of participants identified it as highly or mostly relevant. Only one respondent indicates that the project was not relevant (table 3).

Table 3. **The relevance of the project to prioritize technology needs for mitigation and adaptation for the climate change needs of your country**

Qualification	# of respondents	%
Highly relevant	5	41.7%
Mostly relevant	2	16.7%
Moderately relevant	3	25.0%
Somewhat relevant	1	8.3%
Not relevant	1	8.3%
<b>Total valid answers</b>	<b>12</b>	<b>100.0%</b>
Not answered	0	
<b>Grand total</b>	<b>12</b>	

10. In the case of El Salvador, "the project allowed to identify and prioritize actions and technologies to the performance of the country on the issue of climate change and it was a reference to the first National Climate Change Plan" (TNA National Coordinator, El Salvador). A Colombian expert indicates that "technological intervention strategies were defined that led to other phases of detail of prioritized technologies".

11. In Dominican Republic, the perception was that "The analysis of technologies in each of the prioritized sectors of the country took into account key issues and problems that affect them due to weather variability and climate change. Therefore, it was necessary to implement adaptation and mitigation measures."

12. In other cases, perceiving a more moderate relevance of the project, the Peruvian National Coordinator indicates that "the issue related to technology for development projects with a climate change approach faces a major issue because of the diversity of ecosystems and geography of the country, as well as for the institutional fragmentation in this area. The TNA project had a short time for its implementation that has not permitted to have better results than those required for facilitating their implementation, however it would still be an initiative that had its contribution." In the same way, the

National Coordinator of the TNA project in Argentina said “the project lost relevance as the key players did not perceive that the results were to be implemented through concrete projects.”

13. Most of the respondents of the survey also indicate that the execution of the project was suitable to meet national capacities needs (see table 4). In the case of El Salvador, the National Coordinator indicates: “the project strengthened the capacity for analysis and prioritization of national actions necessary to implement adaptation actions”. In the same way, a civil society stakeholder from the Dominican Republic said “the process was important, not just the outcome. The fact that different institutions articulate, discuss and make common plans was beneficial because it allowed to building capacity around this process, even if most were not innovative proposals. In addition, another outcome is a portfolio of pilot projects.”

Table 4. **Project execution was suitable to meet national capacity needs**

Qualification	# of respondents	%
Fully agree	9	75.0%
Partly agree	2	16.7%
Neither agree nor disagree	1	8.3%
Partly disagree	0	0.0%
Disagree	0	0.0%
N/A	0	0.0%
<b>Total valid answers</b>	<b>12</b>	<b>100.0%</b>
Not answered	0	
<b>Grand total</b>	<b>12</b>	

14. In the case of Argentina, a senior consultant specifies that “the chosen sectors were strategically selected and the results were an important tool for the adoption of future policies.” While an academic from one of the research teams in that country indicates that “the resources available for the development of the TNA in Argentina were not enough to cover all economic and productive sectors, with the results were limited in scope. The methodologies used for the prioritization of sectors and technologies were very valuable and should be improved to disseminate and generate more frequent use among decision makers.”

15. Most of these findings are positive and indicate the relevance of the project for informing national processes of climate change planning. Moreover, most respondents perceive positively the dissemination of methodologies and the participatory approach to improve national capacities at identifying and demanding technologies that have a potential to contribute to a more sustainable development. However, the impact could have been larger. Most respondents indicated that more time and resources available could have allowed participating countries to advance from identifying alternatives to starting to implement some of the proposed strategies.

### Achievement of outputs

The project identified a set of technologies for mitigation and adaptation for climate change. For mitigation, the identified technologies correspond to the energy, transport, waste, agriculture and industry sectors, while for adaptation the corresponding sectors were water, agriculture, coastal zones, forest, observation systems, tourism, health, infrastructure, education and energy.

In sum, there were 14 types of technologies that participant countries in the region identified as most relevant for adaptation and mitigation purposes. Most common technologies correspond to information and observation systems (scenario, hydro climatic, forest); soil conservation and sustainable agricultural/agroforestry practices; watershed/water management (adaptive, for particular crops); efficient irrigation; housing with reduced vulnerability components/practices; water treatment plants; and rehabilitation of degraded ecosystems; among others (table 5).

Table 5. **Types/groups of technologies**

Types/groups of technologies	Classification (soft/hard)	Number of countries
Information and observation systems (scenarios, hydro climatic, forests)	Hard	6
Soil conservation and sustainable agricultural / agroforestry practices (including terrace systems)	Soft and hard	6
Watershed/ water management (adaptive, for particular crops)	Soft	4
Efficient irrigation	Hard	3
Housing with reduced vulnerability components/ practices	Soft and hard	2
Water treatment plants	Hard	2
Rehabilitation of degraded ecosystems (mangroves, etc.)	Soft and hard	2
Beach nourishment	Hard	1
Well restoration (underground water)	Hard	1
Water quality monitoring	Hard	1
Education/ awareness measures	Soft	1
Water harvesting	Hard	1
Participatory diagnosis of infrastructure	Soft	1
Energy efficiency	Soft and hard	1

Source: Libélula and Fundación Bariloche (2013), "Regional Synthesis Report on Technology Needs Assessments (TNAs)", Lima and Buenos Aires: Libélula and Fundación Bariloche.

16. A summary of the achievements of outputs is in the following table:

Table 6. **Achievement of the outputs within the LAC region**

Component	Outputs	Achievement	Evidence
<b>Component 1:</b> Support for the development or strengthening of TNAs	1. A network of participating individuals and institutions at national level informed and bringing capacity to secure national consultations in order to reach a national consensus on adequate technologies	Yes	Representative in the workshops and consultation process and regional report from Regional Centres.
	Identification and creation of stakeholders groups will be based on recommendations contained in the draft TNA handbook.		
	2. A synthesis of methodological applications and hurdles carried out at national level and serving as input	Yes	Participating countries have been able to carry out this synthesis and use it as input for TNA elaboration.

Component	Outputs	Achievement	Evidence
	for TNA elaboration		
	3. Between 35 and 45 TNAs including TAPs produced, identifying barriers to technology transfer at national level and means and actions to overcome them.	Yes	7 participating countries in the LAC region have produced TNA reports in adaptation and 6 in mitigation.
	4. Feedback for TNA handbook update based on national experiences and processes.	Yes	Inclusion of alternative methodologies and a wider view on technologies to include traditional technologies as well as market technologies.
<b>Component 2:</b> Development of tools and provision of methodology information to support TNA and TAP processes	1. A tool to prioritize mitigation options based on cost effectiveness, existing potential, resource availability and relevance for national situations developed and presented.	Yes	Each country has adapted the project methodologies to a more adequate process for each case.
	2. A tool to prioritize adaptation technological options based on climate change impacts as well as human, economic, social and costs related aspects developed and presented.	Yes	Each country has adapted the project methodologies to a more adequate process for each case.
	3. A simple and efficient market assessment tool made available	I don't know	No evidence found
	4. A process to apply the tools at national level agreed upon.	Yes	Libélula and Fundación Bariloche have established the mechanisms set by the TNA project architecture to ensure the use of the tools at the national level.
	5. Access and links to information database elaborated and serving as a base for technology specification in terms of performance, cost and availability.	Yes	Libélula and Fundación Bariloche have developed and shared the required tools.
	6. Reporting template for TNA elaborated.	Yes	Libélula and Fundación Bariloche have shared the templates for TNA and TAP reports to the participating countries.
<b>Component 3:</b> Establishment of a cooperation mechanism that aids preparation and refinement of TNAs and TAPs implementation and dissemination	1. A network involving both national and supra national institutions recognized for their success in technology transfer activities established and operational	Yes	Libélula and Fundación Bariloche have organized regional workshops and participated in technical/support missions.
	2. Proven approaches to elaborate good quality TNAs developed. Institutional responsibilities set up. Capacities built to elaborate, implement and revise TNAs and associated TAPs.	Yes	Libélula and Fundación Bariloche have share methodologies, gave technical support when it was required and reviewed the final reports.

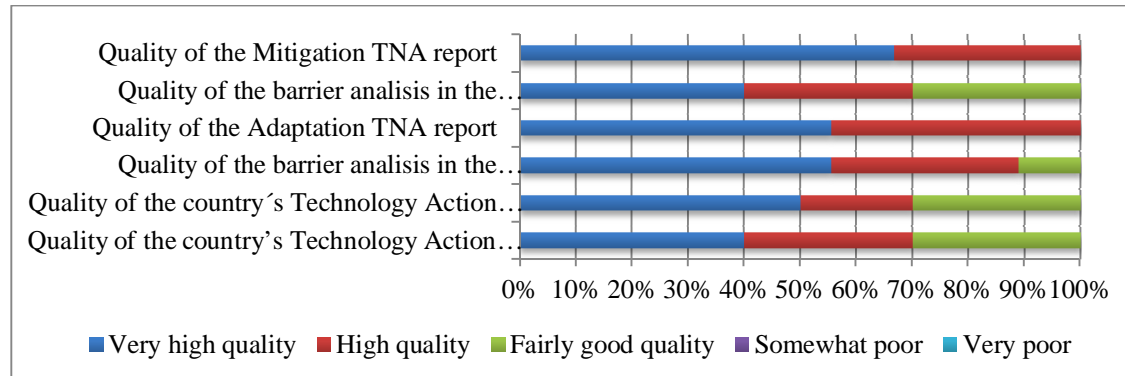


Component	Outputs	Achievement	Evidence
	3. Replication approach available to all GEF beneficiary countries together with a proposed mechanism for interactive support.	No	No evidence found.
	4. A "Best Practices and Lessons Learnt report" from the project produced and disseminated.	Yes	Libélula and Fundación Bariloche have produced a Regional Synthesis Report that contains a section dedicated to lessons learnt.
	5. Synthesis report from the project produced and disseminated.	Yes	Libélula and Fundación Bariloche have produced a Regional Synthesis Report in May 2013.

17. All survey respondents qualified the project as very-high- and high-quality. Also, the barrier analysis was perceived in a very positive way. Figure 2 shows the survey answers regarding the quality of TNA reports and the quality of the barrier analysis.

18. The technology action plans for mitigation were qualified by 58.4% as very high and high quality, while 16.7% indicates as a fairly good quality. In the same way, 58.3% of the people that participated in the survey qualified the technology action plan for adaptation as very high and high quality, while 25% indicates that was fairly good quality.

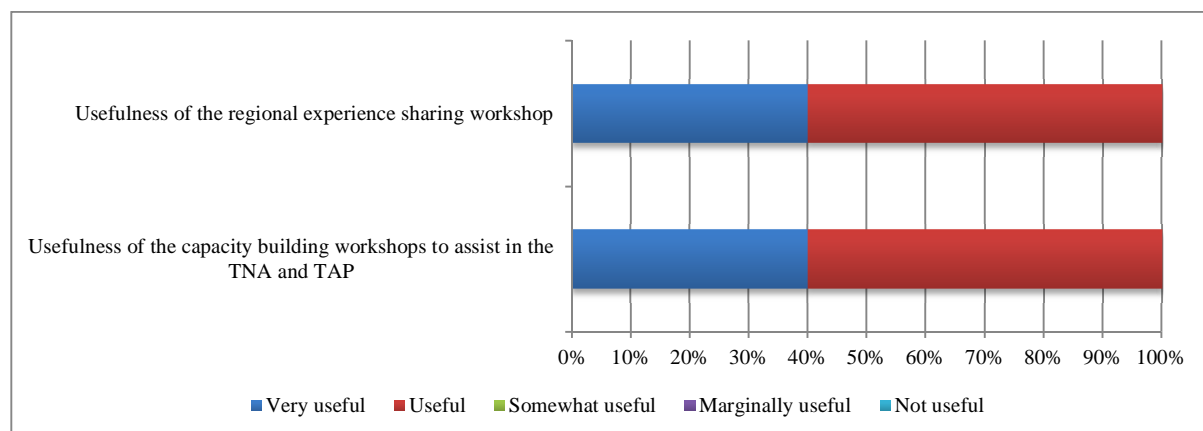
Figure 2. **As a result of TNA project support, the quality of the country's technology need reports and of the quality on barrier analysis**



19. In general, the role of workshops was very useful as a way to facilitate processes, transfer methodologies and exchange experiences with other countries, according to respondents. Perceptions about the usefulness of capacity building workshops around the TNA and TAP were very positive, and all respondents participating in the workshops qualified it as 'very useful' or 'useful' (Figure 3).

20. Regarding experience sharing, workshops were perceived also positively, and 8 out of 10 respondents rank it as very useful or useful, while two indicated that was somewhat useful. The perception about workshops was also positive. Participants from Colombia and Argentina highlight the opportunity of knowing about the consultation approach and multi-criteria analysis. However, they needed more time to share their experiences and listen to other countries' ones.

Figure 3. The usefulness of the regional sharing-experience workshop was:



21. The technical support by the TNA team at the UNEP Risoe Centre (an important project outputs) was found 'very useful' or 'useful' to all research teams (table 8). They provided not only technical support but also advice on the administration of the project, according to interviewees. Nine out of eleven was satisfied with the range of support available. One person from Colombia, said they needed further support, mentioned this was needed for using the multi-criteria analysis for their technology selection process.

Table 7. The usefulness of technical support by the TNA Team at UNEP Risoe Centre

Qualification	# of respondents	%
Very useful	4	33.3%
Useful	5	41.7%
Somewhat useful	0	0.0%
Marginally useful	0	0.0%
Not useful	0	0.0%
I don't know/N. A.	3	25.0%
<b>Total valid answers</b>	<b>12</b>	<b>100.0%</b>
Not answered	0	
<b>Grand total</b>	<b>12</b>	

22. The most important factors for achieving the project results are: the support of the decision of making teams at the national level (El Salvador, Dominican Republic, Peru, Argentina); the science and technical capacities of national teams (El Salvador, Dominican Republic, Peru, Colombia, Argentina); the toolkits (Dominican Republic); the freedom to propose new methodologies for the project (Peru); and the availability of information (Argentina).

23. The factors that hindered the achievement of the project results were: limited availability of national consultants to carry out the studies (El Salvador); changes in local authorities (Dominican Republic); time to have appointments (Dominican Republic); time to carry out the studies (Peru); the peer review from the regional consultants was not on time and in some cases they lacked rigor (Colombia); lack of local technical capacities (Colombia); lack of flexibility (Colombia); lack of participation of private sector (Colombia); lack of statistics and sectorial historical data from national entities (Colombia); limited access to resources and lack of links of results of the project with financial sources (Argentina).

## Effectiveness: Attainment of project objectives and results

24. The participant countries in the LAC region have achieved their objectives and expected results of the TNA project. Seven countries produced 15 TNA reports on mitigation and adaptation (table 6). Argentina produced TNA reports on mitigation and adaptation and an executive summary for each one. Colombia, Costa Rica, Cuba, the Dominican Republic, and Peru produced two reports each, one in TNA for adaptation and one TNA report for mitigation. Finally, El Salvador produced only a TNA report on adaptation on climate change. In addition, the regional centers jointly produced a Regional Synthesis Report.

Table 8: Reports produced by country

Country	Adaptation	Mitigation
Argentina	<ul style="list-style-type: none"> <li>• Technology Needs Assessment for Climate Change - Final Report on Technologies for Adaptation (ES)</li> <li>• Technology Needs Assessment for Climate Change - Summary Report on Technologies for Adaptation (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology Needs Assessment for Climate Change - Final Report on Technologies for Mitigation (ES)</li> <li>• Technology Needs Assessment for Climate Change - Summary Report on Technologies for Mitigation (ES)</li> </ul>
Colombia	<ul style="list-style-type: none"> <li>• Technology Needs Assessment and Technology Action Plans for Climate Change Adaptation (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology Needs Assessment and Technology Action Plans for Climate Change Mitigation (ES)</li> </ul>
Costa Rica	<ul style="list-style-type: none"> <li>• Technology Needs Assessment for Climate Change in Costa Rica - Adaptation (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology Needs Assessment for Climate Change in Costa Rica - Mitigation (ES)</li> </ul>
Cuba	<ul style="list-style-type: none"> <li>• Technology Needs Assessment on Climate Change - Adaptation Final Report (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• Technology Needs Assessment on Climate Change - Mitigation Final Report (ES)</li> </ul>
Dominican Republic	<ul style="list-style-type: none"> <li>• TNA Summary Report and Action Plan for Transfer of Prioritized Technologies - Adaptation (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• TNA Summary Report and Action Plan for Transfer of Prioritized Technologies - Mitigation (ES)</li> </ul>
El Salvador	<ul style="list-style-type: none"> <li>• TNA Summary Report and Action Plan for Transfer of Prioritized Technologies - Adaptation (ES)</li> </ul>	
Peru	<ul style="list-style-type: none"> <li>• Peru - Technology Needs Assessment on Climate Change - Adaptation (ES)</li> </ul>	<ul style="list-style-type: none"> <li>• Peru - Technology Needs Assessment on Climate Change - Mitigation (ES)</li> </ul>

Source: <http://www.tech-action.org>

25. The project included six types of methodologies that were transmitted in the regional workshops and through the project guidelines.<sup>117</sup> These methodologies were:

- Market mapping
- Intellectual property rights
- Multi-criteria analysis
- Barriers related to the enabling conditions
- Access to financing options and financing mechanisms
- Implementation of bottom-up and consultation processes

26. The TNA inputs such as the guidelines, methodologies and tools were well perceived by most of the participant of the survey and also by the people interviewed during the visits to the countries. The methodologies used in the TNA project, the way the countries designed their work and devised their

<sup>117</sup> Libélula and Fundación Bariloche (2013), pp. 31-32.

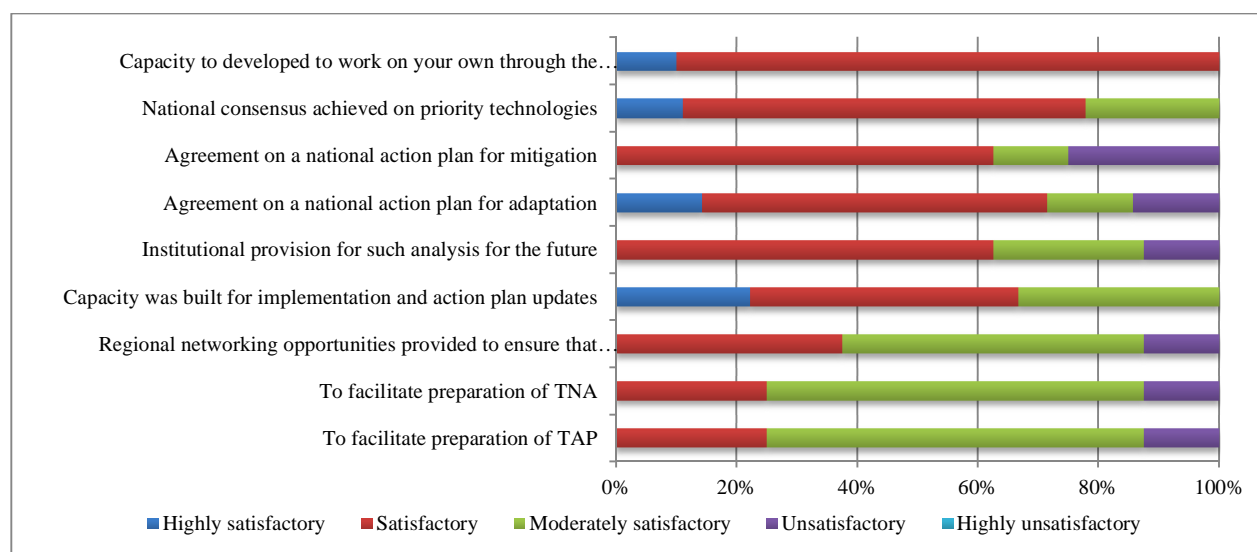
policies and policies instruments, were consistent. Where countries had some past experiences using those methodologies, they suggested and contributed to adaptations to the methodologies, which contributed to improved quality and relevance.

27. The attainment of project objectives and results was broadly satisfactory (see figure 4). The respondents (90% satisfactory and 10% very satisfactory) were satisfied with the project contributions to their capacity building and to work on their own through the workshops and guidebooks. Similarly, the national consensus achieved on priority technologies for mitigation and adaptation was highly satisfactory to 10% of respondents, satisfactory for 60%, and a final 20% said that it was moderately satisfactory. The responses were similar to the outcomes on the national action plan for mitigation and for adaptation. On the other hand, the level of achievement of regional networking opportunities to ensure that critical technology information is available was moderately satisfactory for half of valid respondents, while 3 out of 8 said that it was satisfactory while another indicates that it was unsatisfactory.

28. The level of achievement of any increased national and interregional cooperation on technology transfer to facilitate the preparation of TNA and of TAP, in both cases, was only moderately satisfactory for a 5 out of 8 people that answered.

29. A Peruvian expert indicates that the “development phase and the process followed have been valuable, but moving to implementation is still far away”. Among the reasons that are mentioned by several respondents is the lack of financial resources or cooperation for the implementation phase (Peru, Dominican Republic). Also, a Colombian consultant pointed out that “they had not been called to do dissemination actions to stakeholders, national institutions or to the national cooperation entity.”

**Figure 4. Responses on the levels of achievement**



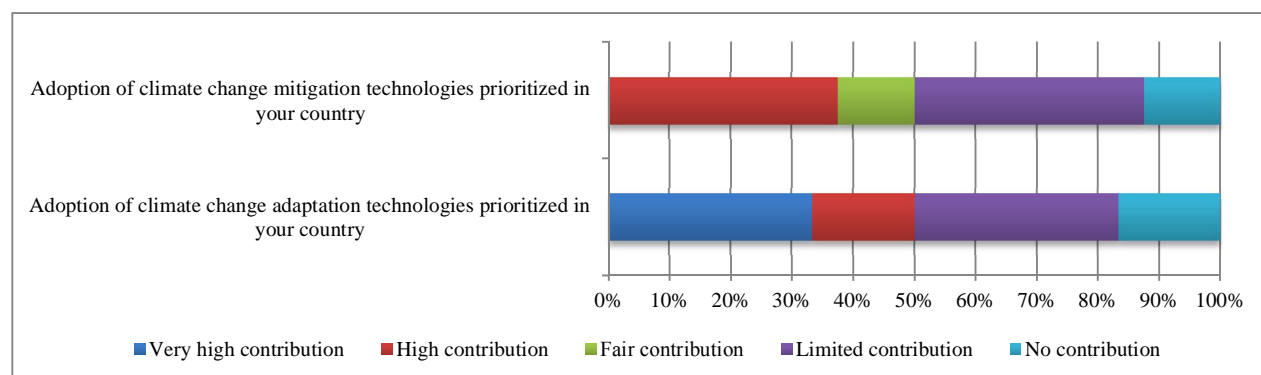
30. The overall project objectives to build capacity, identify priorities, develop national consensus, and implement technology options for climate change were largely achieved according to 50% of the respondents. On the other hand, the respondents were more moderately satisfied with the facilitation provided (less than the other regions).

Table 9. **Achievement of project objectives: build capacity, identify priorities, develop national consensus, and prioritize technology options**

Qualification	# of respondents	%
Fully achieved	0	0.0%
Largely achieved	5	50.0%
Somewhat achieved	3	30.0%
Poorly achieved	1	10.0%
Not achieved at all	0	0.0%
I don't know/Not applicable	1	10.0%
<b>Grand total</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

31. The project contribution to date to the adoption of climate change mitigation priorities in each country was high and fair for 40% of the respondents. Also, 40% said that it had limited or no contribution at all. In the case of adaptation, 30% indicates that it had very high or high contribution, while another 30% indicates that it had limited or no contribution at all (Figure 5).

Figure 5. **Contributions to date for the adoption of climate change mitigation and adaptation technologies prioritized in your country**



32. In the case of El Salvador, respondents explained that they only submitted the adaptation measures since the mitigation ones only reached the first phase. In the case of the Dominican Republic the adaptation projects prioritized were incorporated in the National Adaptation Plan. Peru has not implemented any yet. In Colombia, the results helped to engage other institutions that did not participate in the project. In Argentina, beside that most actors were interested at the beginning, the barriers did not allow them to the use of any technology identified.

33. All the results were satisfactory for most of the country projects. As per the reconstructed ToC, the ultimate goal pursued by the TNA project consists in reducing greenhouse gas emissions and/or adaptation to climate change. In this regard, there is not a direct impact. However, most of the countries had identified that the contribution of the project through methodologies, actors and results were the base for other initiatives that have a more direct impact, as it was mentioned in the case of Dominican Republic and Colombia and their impact on national or regional plans.

## Sustainability and replication

34. The TNA project was not designed explicitly to be articulated with further projects and funding, and the sustainability of the project depended, in a wide sense, on the ownership that each country could develop.

### **a) Socio-political Sustainability**

35. In terms of socio-political sustainability of the results, including capacity building, consultation processes and technical recommendations, depended on the political will from the functionaries at the lead sector, the leadership of the national coordinator and the ownership from stakeholders. Good technical reports, but without the governmental ownership have had no impact, as happened in Ecuador, and countries that had the skill to link the results to other national processes have had more sustained impact considering socio-political factors.

36. In Dominican Republic and Colombia, the consulted actors indicated that other national or regional plans have used the results of the TNA project as a direct input for those plans. In these cases, the methodology used in the TNA project such as a stakeholder consultations and barrier analysis, to mention some, were useful to support the results to be used in the national or regional plans. Those are some cases were political process in the sectorial or local level influence in the level of ownership of the results. However, as in the case of Peru, there is some other cases were no evidence that the results have been used after finishing the projects.

37. Countries have used the TNA and TAP reports to inform national and sectorial policies according to 60% of the people (table 10). Among the mentioned examples: “[they] has been used as references for institutional planning or strategies under the framework of the national efforts to face climate change” (El Salvador). In the Dominican Republic they are using the plan for energy efficiency in public buildings. In Colombia, Colciencia has launched a research program on efficiency of thermic energy. However, respondents indicate that Peru has not used any of these results.

Table 10. **Use of the TNA and TAP reports in the countries**

Qualification	TNA and TAP reports used in your country to inform national and sectorial policies		TNA and TAP reports used in the planning process of national and sectorial policies	
	# of respondents	%	# of respondents	%
Yes	6	60.0%	4	40.0%
No	1	10.0%	2	20.0%
I don't know	3	30.0%	4	40.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>	<b>10</b>	<b>100.0%</b>
Not answered	2		2	
<b>Grand total</b>	<b>12</b>		<b>12</b>	

38. Regarding the planning process of national and sectorial policies there is 40% of respondents who think that it has been used and 20% think contrarily. In the case of El Salvador there is a contribution to the National Plan of Climate Change, in the sectorial strategy for climate change of the agricultural sector; and in the infrastructure plan for adapting to climate change. In the same way, in the Dominican Republic the results were used as part of the National Plan for Adaptation and in sectorial plans as the one for environment and natural resources. No national mechanisms have been established to carry on the TNA or TAP implementation phase (table 11).

Table 11. **Have any national mechanisms been established to carry on the TNA/TAP?**

Qualification	# of respondents	%
Yes	0	0.0%
No	4	40.0%
I don't know	6	60.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

### **b) Financial Resources**

39. In terms of financial sustainability, the project did not have any mechanism to tie the results with domestic or external budgeting for implementation. In the case of Argentina, the lack of funding and concrete actions for implementation implied that some actors that were enthusiastic at the beginning of the project lost their interest soon. However some countries used the results to explore other financial mechanisms. In the case of the survey, only in 2 respondents indicates they have applied to other international funding agencies for their priority actions (table 12). In the case of El Salvador, they had contact with the French government and the **German** Federal Enterprise for International Cooperation (GIZ). Also in Argentina, they are preparing their NAMAs in two sectors that were part of TNA project.

Table 12. **Did you apply to any international funding agencies for priority actions?**

Qualification	# of respondents	%
Yes	2	20.0%
No	4	40.0%
I don't know	4	40.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

40. In three cases, countries have secured financial resources from international and domestic sources to support implementation of the priority projects identified (table 13). The cases were:

- No-till, mini-till practices as core components of conservation technology were promoted through the Ministry of Agriculture program (Colombia, Government)
- The Ministry of Agriculture have subsidized the acquisition of machinery for no-till technology implementation (Colombia, Government)
- Wind power plants through a domestic environmental fund from the mechanism of electricity purchase price (Argentina, Government)

Table 13. **Have any financial resources been allocated to support the implementation of the priority projects identified from international or domestic sources?**

Qualification	International sources		Domestic sources	
	# of respondents	%	# of respondents	%
Yes	3	30.0%	3	30.0%
No	3	30.0%	3	30.0%
I don't know	4	40.0%	4	40.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>	<b>10</b>	<b>100.0%</b>
Not answered	2		2	
<b>Grand total</b>	<b>12</b>		<b>12</b>	

### **c) Institutional framework**

41. In terms of institutional sustainability the contribution of the project was to develop a dynamic linkage among actors that usually did not work together. For many countries in the region it was not common to have national sectors working with the academia, and civil society organization to propose policies and plans. A first challenge was to decide which sector had the leadership of the project. Later, the leader sector had to establish ways of coordination with other sectors, and with the academia and civil society organizations that represented business or territories on the industry, sector, or place that was prioritized. The methodologies used and proposed by the project were very helpful to create this mechanism that has been useful for the following projects in climate change in some of the countries (Colombia, Dominican Republic). However, one recommendation from the regional centres was not to consider bottom-up approach for LAC countries as mandatory because of the difficulties (socio political and cultural factors) they find in some countries for this type of methodology. But in the case on the TNA project for some countries this kind of approach has been a lesson for their own policy design process that could be considered as a result by itself.

42. In contrast with other experiences in the region, the bottom-up approach has been very useful for the information that is provided by local stakeholders and the possibility to create a better ownership from the local authorities and stakeholder for the implementation and use of the results of the project.

### **d) Environmental Sustainability**

In terms of the environmental sustainability of the project, the results are not measurable in the terms that not implementation had happening in the project or up to now that the evaluation process have get any evidence. In terms of the goals of the project is expected to have a positive environmental sustainability.

### **Catalytic Role, replication and upscaling**

As a catalytic role, the project was positive in terms of the contribution of establishing a process to the execution of technology assessment and climate change project that could be useful for all countries. As well as a way of being a step forward to identify technologies for climate change and proposing action plans that could be useful for reaching some other funding sources. Some of them find these sources in national plans (as in the case of the adaptation measures in Colombia) and other in international sources. A relevant issue pointed out for the regional centres was to consider this project as "seed



money”, because there are possibilities to get some funds to conduct similar assessment in other sectors.

The project arrived in an early stage of the environmental policy design for climate change, which had helped most of the countries to open paths for improving their research methodologies and consultation process. Also, most of the countries have used the results of the project in other plans and strategies. Also, the capacity building in the project had identified institutions and consultants that could contribute to the research and review of the policy instruments for climate change in their countries.

## Efficiency

43. In general terms, the project was cost-efficient. The results were achieved with a very limited budget. However, the project had some difficulties to kick off in some countries. In Colombia there were problems with the signing of the Memorandum of Understanding to start the project. Also, in the case of Peru, they have some problems to start the project because the initial focal point in the country, the National Council for Science and Technology, could not start the project on time. It wasn't until the Ministry of Environment took the leadership of the project that the execution started.

44. Also, in the case of Colombia, they had some difficulties at the beginning to find expert in each area that was selected as priority. This also had some influence in the delay of the project that drove them to have some extension at the end of the project. In the case of Peru, the consequence of the delay of the starting of the project was that only one sector could be analyse for adaptation and one for mitigation. They only work with one research team for both reports. But in the other side, Argentina had an open call to find the research teams and it seems that worked with good results. The research teams were very competitive, and some of them had never work for this kind of project in the past.

45. In general, the execution of the project was as scheduled or mostly timely for most of the participants. Only in 2 cases the project was somewhat delayed or very delayed (table 14). Even some difficulties appear at the beginning most of the countries finished under the time that was expected.

Table 14. **The execution of the project was?**

Qualification	# of respondents	%
As scheduled	2	20.0%
Mostly timely	6	60.0%
Fairly timely	0	0.0%
Somewhat delayed	1	10.0%
Very delayed	1	10.0%
I don't know/Not applicable	0	0.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

46. In most of the countries the budget was not enough, around US\$120,000 received by every country for the execution of the project. Most of the interviewed people identify this as a limitation, and the regional report made by Libélula and Fundación Bariloche recommends more to be budgeted for the

next phase. For example, in the case of Colombia the National Coordinator indicated that the government invested around US\$40,000 to complement the budget of the project.

47. Most respondents thought that the budget was insufficient (60%), while only 20% thought it was enough (table 15). Nevertheless, all respondents point out that the budget was spent in a very useful or useful way (table 16).

Table 15. **Adequacy of budget nationally**

Qualification	# of respondents	%
Sufficient	2	20.0%
Insufficient	6	60.0%
I don't know/Not applicable	2	20.0%
<b>Grand total</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

Table 16: **The size of project budget was spent in a useful way?**

Qualification	# of respondents	%
Very useful	4	40.0%
Useful	5	50.0%
Fairly useful	0	0.0%
Poorly used	0	0.0%
Not at all	0	0.0%
I don't know/Not applicable	1	10.0%
<b>Total valid answers</b>	<b>10</b>	<b>100.0%</b>
Not answered	2	
<b>Grand total</b>	<b>12</b>	

48. The capacities of each country were different when the project started. For example, in the case of Argentina they had a high level of research capacity from their scientific institutions and they were confident on them to have the best results. In their case, each sector had one research team. In contrast, in the case of Peru, one well-known university had the possibility to respond to all the challenges of the project. This diversity of capacities and difficulties from each country makes this kind of project more complex and highlights the need to have certain level of flexibility for future projects.

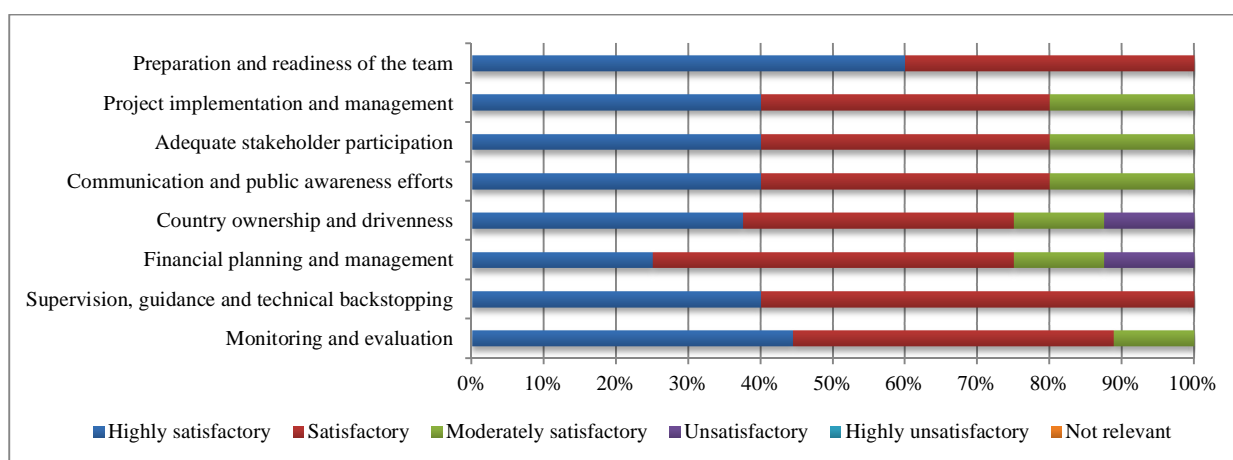
## Factors affecting performance

49. The survey indicates that the factors that affected the performance of the project in a positive way have been the preparation and readiness of the team and the supervision, guidance and technical backstopping, both ranked as 100% highly satisfactory or satisfactory. Then, project implementation and management, adequate stakeholder participation, communication and public awareness efforts, and monitoring and evaluation have been ranked by 80% of the respondents as highly satisfactory or satisfactory. Sixty percent of respondents identify country ownership and financial planning and management as highly satisfactory or satisfactory factors affecting project's performance (see figure 6).

50. The preparation and readiness of the team was satisfactory for all the participants of the survey. Also, in the interview done in three countries most of the national coordinator point out the local capacities to hold this kind of projects and research. Most of them highlight the capacities that their universities and consultants firms have. However in the interviews were pointed out some factors that affect the project in different ways. On the preparation and readiness of the team not all the countries had the same performance as was explained before.

51. The project implementation and management was also perceived as a satisfactory for most of the participant of the survey. However in the interviews were pointed out some difficulties with the kick-off of the project for some contracts that were delayed and the time to start with the research teams took more time that was planned. However in most of the implementation of the project there were no problems reported during the consultation of this evaluation.

Figure 6. **Factors and processes affecting project performance**



52. The stakeholder participation was also perceived as satisfactory, but it did not always contribute to the project objectives as was expected by the research teams. Also, for some countries (Argentina as an example) some questions have emerged in the sense if the bottom-up methodology works for LAC countries.

53. Also, there was the perception that the project did not consider the dissemination of the results after the project ended other than publishing the reports in the Ministry web page and in the TNA program. Most of the research teams were from universities and they find that some of these results could be published in academic journals or printed as books. In the case of Peru, the university in charge of the research printed a book based on the results of the project. In the case of Argentina they expressed their interest to publish the result in an academic journal and in the case of Colombia they were not aware of what possibilities they have to publish the results of their work, but their perception was that the work was not disseminated at all.

## Conclusions, Recommendations and Lessons Learned

### Conclusions

54. The project was relevant and timely for the participants from Latin American and the Caribbean countries. At the beginning of the TNA-Phase 1, most countries had not developed studies regarding their technology needs for climate change. The project helped them to identify domestic capacities,

improve and systematize guidelines and methodologies, contact relevant stakeholders and obtain relevant studies that helped countries to develop their own policy instruments and technology demands on climate change.

55. In general, achieving most outputs was due to good quality, timely and well-designed project's guidelines; the technical support, workshops and peer review done by the regional centers; the political and financial support from the countries; and the domestic capacities to implement the project with skilled professionals. However, some challenges during the implementation phase arose: delays in the administrative arrangements for signing MoU; lack of knowledge regarding the availability of domestic capacities; the need for adaptation of the guidelines for each country reality; short time to prepare participative studies in depth; limited budget to continue the project's recommendations; and lack of clarity on what are the future uses of the project's results.

56. Project implementation was effective in seven of the nine countries of the region: Argentina, Colombia, Costa Rica, Cuba, Dominican Republic, El Salvador and Peru. Six of them completed their mitigation and adaptation reports, while El Salvador only completed the adaptation one. Bolivia and Guatemala did not present any report. These reports include a national consensus on priority technologies and agreed to a technology action plan.

57. The project had different levels of influence in each country. Subsequent national projects have utilized the methodological guidelines and have replicated their guidelines for designing policy instruments at the local and national level. Also, in some cases the technologies identified were adopted as national or local priorities for specific action plans. Furthermore, the relationship between national research teams, public servants, stakeholders and most international cooperation agencies has improved while the network of actors interested in these topics increased. Therefore, the sustainability of these results and domestic capacities are related to the deployment of domestic capacities and the availability of national and international resources for fostering the use of these outcomes in new scenarios.

58. Overall, the use of the financial resources has been efficient. Each country's budget was limited to cover all the activities planned around the project. Yet, some countries mobilized additional resources through counterparts but in most cases, countries prioritized specific sectors in order to accomplish results even with a constrained budget and time limits.

## **Recommendations**

59. Looking forward to future projects, one recommendation is to introduce specific improvements to the readiness phase of the project. During this phase, the project should undertake short analysis on country specific conditions and capacities: the key initial conditions of the country, what is needed to adapt methodologies to the national level and how the project will contribute to strengthen national capacities. Moreover, during this phase it could be valuable to obtain a clear commitment from the government to make sure that the identified policies and technologies would secure their time, interest, and attention so as to integrate the findings into national plans and functions.

60. To improve the quality of the project's outcomes, the interviewed experts participating in the project proposed several recommendations. One is that the regional centres by themselves do not necessarily have complete information on each specific technology, and so the project should plan to identify and assist connections to other key actors as required and to foster exchange of experiences with participants from other countries.

61. The exchange of experience between participants has been highlighted as a useful tool to peer learning process. Allocate more resources on regional workshops where they can present their approaches, priorities, results and findings from their research process could be a significant contribution for attending common challenges.
62. Improve the peer-review system with top scientist could also be value by the research teams. One of the recommendation from the scientist in Argentina was to use the UNEP network to have access to a wider community of scientist and no to be limited to the regional centres.
63. One of the results highlighted the need to switch from international technology options to start identifying domestic and traditional technology options that could be more adequate, mainly for adaptation objectives. This was deemed to be the main way to integrate the project's objective with national interests. For future projects, this should be an explicit practice to adapt the project to the cultural framework at the local or national level.
64. To improve the project's sustainability, we recommend that a future phase explicitly links the project with future opportunities that could be emerging in the framework of the CTCN, the Paris Agreement on Climate Change, or the Sustainable Development Goals. Also, to foster and help countries to link and mobilize their own domestic resources and projects with similar objectives in order to generate synergies and continuity in the assessment and implementation of technologies needed to mitigate and adapt to climate change.
65. The allocated budget and time for the project should respond to different requirements and emphasis from each country. A fixed budget and timeframe for each country may reduce flexibility for implementation. The TNA experience could be used as a reference framework but not as a fixed one. Nevertheless, a diversity of arrangements in each country will require a better monitoring and accountability system to function smoothly.

## **Lessons learned**

66. The main lesson relates to having identified a set of technologies to face climate change, for mitigation and adaptation purposes, relevant to each country case. Moreover, the use of the project's guidelines facilitated the process of identifying technologies, as well as the international support through the regional centers and the Risoe-UNEP team. It is clear that today the countries have more knowledge and awareness about climate change technologies than they had at the beginning of Phase 1. Therefore, the combination of these factors, plus the support from international cooperation resources, the technical support and the participatory methodologies put countries in a better perspective regarding the type of technologies needed to face the challenge of climate change.
67. The technology approach should consider rescuing and valuing traditional technologies that are already operating in each country. Colombia, Peru and Argentina's experts were very confident on the value of looking at traditional technologies, because they consider those technologies as more appropriate and easy to appropriate from users. Even if outside technology could be useful, there is no an explicit mechanism to incorporate traditional technologies into the project.
68. The process of prioritization with local stakeholders was perceived as more useful than the suggestions made by national actors in the case of some countries. The reason is that actors and experts at the national level did not have direct link with the implementation of adaptation measures. Thus, the

lesson is that, in the case of adaptation technologies, it is necessary to make sure than the consulted stakeholder have knowledge and information on local issues in order to provide valuable recommendations at the local level. (Colombia).

69. A UNEP announcement for a new project will have a good reception from public actors. However, public actors interests will be sustained in order to have an adequate scale and enough resources to support the implementation of activities that results from their participation. In the case of Argentina, at the beginning several actors from various sectors participated in the meetings and workshops, but when they found out there was not clarity on what was the next steps or how the proposed recommendations will be funded, they lost interest and stopped participating. Therefore, it is important to have strategies within the project to keep the interest of the relevant stakeholders.

### **Additional notes on the countries visited**

---

#### **Argentina**

70. At the beginning, the project was led by the Secretary of Environment, but after a while, changes in the political situation drove the project to be directed by the Ministry of Science and Technology. From there, the focus of the project took on a more scientific approach, not precisely how it was originally conceived. The idea was to support 5 research groups, led by Gabriel Blanco, who was the coordinator of the consultants. The Ministry of Science and Technology had the task of internal coordination with stakeholders inside of the ministry and with other public sectors.

71. The TNA project in Argentina followed the proposed methodology, with the assistance of the Bariloche Foundation, and the consultants were Argentinean. There were 2 workshops, the first only with the participation of the public actors and a second which included the scientific community. With an open call, five research consultants were selected for different areas. Most of the teams followed the proposed methodology, except for the transportation sector, which adopted their own methodology. The total budget was US\$120 thousand, which was considered to be very limited.

72. For Ana Lea Cukierman, who led one of the research teams and is an expert in biomass from the University of Buenos Aires, it was an interesting project and they decided to participate even if the budget and time were limited for the work and some of the methodologies (such as multicriteria analysis and barrier analysis) were new for them. For them, this was an opportunity to go from more basic research to applied research.

73. The methodology adopted by the research groups aimed at having more scientific support for decision makers. The work of the research groups was 'amazing' for Marcela Gregory from the Ministry of Science and Technology. She also highlighted the role of the Action Plans, as an important issue of the project. In her opinion, climate change and environmental issues has permeated in the scientific community and this community is aware of the need to prioritize the local knowledge and to have into account the cultural specificities. The products had to be publishable and easy to transfer to decision makers.

74. According to Marcela Gregory, from the Ministry of Science and Technology, the research groups made remarkable work and they had the opportunity to show that the recommendations could be implemented. However, they are waiting to have the resources allocated to start the implementation. Nevertheless, according to Gabriel Blanco, some of the sectorial support was dropping, as they

perceived the project will end up as desk research. Even though the results were “remarkable” (Gabriel Blanco), there were difficulties to transfer the ownership to the public sector during the time of the Action Plans. However, some of the results have been used as inputs for other processes as NAMAs or another GEF project. Also, the methodologies have been used in the National Communication on Climate Change process.

75. **Fundación Bariloche** is an Argentinean think-tank founded in 1963, with extensive experience in the region working on mitigation technologies. They put their areas of environment and energy to work together for this project.

76. According to Fundación Bariloche, the methodology could be improved. They point out “it was not a project where they made research and implementation, there were guidelines to develop, discuss and implement.” Also they found that the methodological issue was a barrier in itself. Some issues were related to social, cultural and political context in LAC. In some cases, the methodology had a Northern perspective that was not related to the national perspective. The methodology had a bottom-up approach, which was considered as “not an approach that is normally implemented in LAC”. As they explained “the power of stakeholders is not equal in LAC, in comparison with other regions. In LAC it is more top down.”

77. For them, the reports were all fine, but some were better than others. They point out the reports from Dominican Republic, Ecuador and Cuba as being well done. Also, they indicate that their perception is that the countries accept the projects but this does not necessarily imply ownership of the project. For example, the report from Dominican Republic was aligned with the government, while in Ecuador the government did not accept the report from their consultants. In the case of El Salvador, the problem was the lack of capacity to identify what was the problem in mitigation, therefore, the recommendation was to drop the mitigation report and concentrate on adaptation.

78. In the case of the LAC region, a common position could not be reached. And the political will and the capacity for implementation is a critical issue. The workshops Fundación Bariloche held were fine and most of people evaluated them with positive reaction. One of the issues that Fundación Bariloche identified was the fact that the selection of technologies was from outside, and the reports that were made had limited potential to have an impact on the political decision of the country. For example, they indicated that in Argentina they do not need a technical approach, but they could take advantage of the political process to make decisions. Also, they recommended the inclusion of a monitoring system for the project, in order to follow up on versions of the project.

## Colombia

79. The TNA project in Colombia was led by the Ministry of Environment. Diana Barba was the coordinator of the project in the ministry and also was the adaptation coordinator. Also, Mariana Rojas, was the coordinator for the mitigation area. The project took some time to have the MoU signed. Also, it was not easy to identify the adequate institutions that had the capacity to execute the project. The available budget was limited to only US\$120,000, but the Colombian government contributed US\$40,000 of their own resources. The link with Colciencias was limited to producing inputs for the project and there was not much interest from them on climate change matters at that moment.

80. One of the first issues was to define how to focus within the adaptation and mitigation areas. In the case of adaptation, the marine coastal areas were selected, while in mitigation the focus was on metalworking and the brick industry. This selection was the result of a multi-criteria analysis with

stakeholders. Regarding the mitigation teams, they were invited to go to Bogota to coordinate, while for the adaptation area the Ministry visited the selected regions. One of the issues with the adaptation area was that the technologies identified in the national level were not relevant in the selected local areas that were chosen.

81. The methodologies used to identify the technologies were very useful for the Colombian case, however it also had some limitations in the capacity to adapt to local realities or for some specific industry. The participatory approach helped them to have these technologies contrasted with local interest and capacities. This was a major contribution on the style of the decision-making process for the Ministry of Environment. They have used this methodology in later projects.

82. Yonathan Canavid and Andrés Amill were part of the team at University of Antioquia. They were in charge of research on technologies for the efficient use of energy. They found the multi-criteria analysis useful, but they suggested including technology analysis in the same framework as the social, economic and environmental analysis. Also, they included field research and were only limited to secondary information. In this area of research they needed to test their proposals with reality, but this was more expensive than what the project had as its budget. The workshop had representation from the industry, but did not have enough information to have detailed cost information.

83. In the case of Adaptation, Andrés Osorio from the National University of Medellin, was selected as a consultant to do the analysis. Previous to this experience, the Ministry of Environment had little experience working with scientific researchers in this area and took some time to find him. In contrast with the mitigation area, in adaptation working with sectors did not make sense. The adaptation work is normally done with a territorial approach. They identify at the national level the regions in which they should work and later they contrast national and local prioritization.

84. The results were published as the national report, but there was not enough dissemination of the results in the academia or political networks in Colombia. However, there were different uses of the results in internal processes such as the NAMAs for the mitigation technologies or the local strategic plans in the case of the adaptation technologies.

## Peru

85. In the case of Peru the TNA project arrived first at CONCYTEC, the science and technology authority, but the project did not start well and the Ministry of Environment, led by the Climate Change Area took the project as their own. When Claudia Figallo, arrived at the Climate Change division in the Ministry of Environment, the project was in standby mode at Concytec, with 8 months gone without doing much. They wanted to change the project to what were important issues for the Ministry of Environment. Because of that, they focused on two issues: water and waste. With limited time and other resources, Peruvian authorities decided to contract Universidad del Pacifico to work in both sectors, waste for mitigation and water for adaptation. These sectors were selected in the National Communication on Climate Change as relevant. Also, they decided to include traditional technologies and not only modern technologies. Even though the focus was more on commercial technologies, the traditional technologies are more likely to be used than modern technologies in Peru.

86. According to Elsa Galarza, in charge of project research, the project helped to connect technologies with the environmental function, especially on how traditional technologies help on adaptation (for example fog capture or terrace systems). Also, for Claudia Figallo, this prioritization



linked their actions with the local and regional levels. Finally, the project was ended on time and Universidad del Pacífico published the results as a book.<sup>118</sup> In the case of Latin America two centres divided the task of mitigation and adaptation advocacy. Mitigation technologies were assumed by the Fundación Bariloche, from Argentina, while the adaptation technologies were supported by Libélula, from Peru.

87. **Libélula** is a private organization located in Lima, Peru that was founded in 2007. In Latin America, Libélula has worked in the Climate Change Adaptation field and plays an important role in the region. Their role in the TNA project was as regional centre and they had a contract for US\$115,000. Their participation started in May 15, 2010, and had to present their final product no later than June 30, 2012 (25 months). The role of Libélula as regional centre was to provide external support to the national TNA and consultants in the field of Climate Change Adaptation.

88. Before initiating the TNA project, Libélula and the people who are part of the organization had a long experience working in the adaptation to climate change field. Maria Paz Cigarán, head of the organization, has been a climate change negotiator for the Peruvian government in the past, and as a firm they were in charge of several local projects on adaptation, and at the national level were in charge of the National Communication on Climate Change. This project was “an excellent opportunity to bring their knowledge in the country to other countries” indicates Maria Paz in the interview.

89. For Libélula, the methodology of the project needed to be adjusted. They found that their feedback was welcomed and taken very positively by the UNEP DTU. The methodology was adjusted as the project went on, as it was “was good for presentations but not for the exchange of experiences”, to one where the project provided “a framework to the countries to take advantage of the opportunities they want”. Libélula considered countries with an Environmental Ministry as counterpart, limited the value of the technology component of the project, and the research results would not necessarily end up in an implementation phase.

90. Some of the difficulties they found included that the original design of the project was not entirely appropriate for the region, it took time to have the MoUs signed by the countries, the rotation of consultants had an impact on the project and at the beginning the countries did not ask for help, it was not until the first visit to the countries that communication become more fluid. Also, for a long period they did not have contact with other regional experiences, only at the end of the project there was a joint event where they got to know some of the other regional experiences.

91. The evaluation from each of the country experiences was interesting. The involvement and ownership of the Dominican Republic government was highlighted. The commitment of the Colombia government to support with almost double of the financial resources available for the research teams showed their interest for the project, and the quality of the Colombian reports was good. In the case of Costa Rica, they identified it as desk research report, with good results from the technical perspective but not supported by any kind of participation. The conclusion of the TNA project was that it was a good experience to help to connect things.

---

118 Galarza, Elsa and Joanna Kamiche (2014), Perú: Evaluación de Necesidades Tecnológicas para el Cambio Climático, Lima: Ministerio del Ambiente y Universidad del Pacífico. Available in: <http://www.minam.gob.pe/cambioclimatico/wp-content/uploads/sites/11/2013/10/PERU-EVALUACIÓN-DE-NECESIDADES-TECNOLÓGICAS.pdf>

92. Their recommendations for the future also included the use of webinars to exchange experiences and lessons. Also, it could be used as a space to answer questions as they arose in real time.

## ANNEX VIII. BIO OF THE EVALUATION TEAM

### **Amitav Rath**

Dr. Amitav Rath is the Director of Policy Research International, a consulting practice based in Ottawa. He is also associated with research institutions in Canada, India, South Africa and Tanzania. His education incorporates interdisciplinary training, combining science and engineering with studies in economics, finance, and statistics and natural resources systems. He obtained his B. Tech. (Hons) from the Indian Institute of Technology, Kharagpur, and his M. S. and Ph.D. from the University of California, Berkeley. His diverse experience of over 30 years includes work on many intersecting issues of development, policy and programs, in the public and private sectors, in over fifty countries.

His areas of work include policy analysis and M&E related to energy, technology, capacity building and innovation, as applied to challenges of poverty, growth, renewables and efficiency, natural resources, climate change and other facets of sustainable development. He has worked with many programs, agencies and governments - the IDRC and many agencies of the Government of Canada; the regional development banks; the World Bank; the African Union; many UN agencies such as the UNEP; UNESCO; UNU; UNDP; UNIDO; the UN Fund for the Montreal Protocol; the Commonwealth Secretariat; DfID; GIZ; Sida; the International Energy Agency; several NGOs and Community based organizations and also national governments as in China, India and Rwanda. He often works in multidisciplinary and multi-stakeholder networks and teams, as a team leader and as a team member. He has been involved in over fifty many complex evaluations, on economic development, research, innovation, energy, environment, natural resources, small enterprise development, education and capacity building in Africa, Asia and Latin America allowing for cross country learning and institutional sharing.

Earlier he worked at the International Development Research Centre in Ottawa, for over a decade, managing several global programs. His primary focus at IDRC was in the programs on Science, Technology and Innovation, and on Energy Policy. He also contributed to programming on economic policy, environment and natural resources, enterprise development, education and institutional capacity building. He has continued to be involved in teaching and research, beginning at Berkeley, then as a professor and a director of the research and consulting on Indian industry and economics, at the Management Development Institute, New Delhi. Subsequently, he has been involved in different capacities with over a dozen research and teaching institutions in several countries, most recently he was a visiting professor at the Indian Institute of Technology, Bhubaneswar. He has contributed as the author or co-author to over sixty research articles, reports and books on key development challenges.

### **Mario Bazan**

Mario Bazán has a Bachelor's Degree in Economics and a Master Degree in Environmental Development from the Pontificia Universidad Católica del Perú. He is Senior Researcher at FORO Nacional Internacional and Consultant for Helvetas Swiss Intercooperation on the project PlanCC (Climate Change Planning). He has been consultant on the field of sustainable development and environmental economist for international organizations as UNDP, UNICEF, and Global Green Growth Initiative (GGGI).

He teaches courses in sustainable development at Antonio Ruiz de Montoya University (Lima) and on science, technology and innovation policy at Universidad Peruana Cayetano Heredia. He has experience in project management, research, evaluation and policy design in the fields of sustainable development, climate change (mitigation and adaptation), science and technology, strategic planning and future studies.

### **Jérôme Gandin**

Dr Jérôme Gandin is an international development specialist and a Credentialed Evaluator by the Canadian Society of Evaluation with over ten years of extensive experience in project management, advisory and program evaluation. Prior to join the European Investment Bank in 2016, Dr Gandin was senior consultant and director of operations in West Africa at Universalia. Since 2005, he has provided technical assistance and management advisory services to a varied clientele of international development agencies, among which are: European Commission-DEVCO, the World Bank Group, UNESCO, UNICEF, FAO, OCHA, IDLO, the Rockefeller Foundation, Plan International, Plan Nagua, Search for Common Grounds, Fundacion Kukulkan, and the MasterCard Foundation.

His particular areas of expertise in international development and evaluation have been informed by a PhD in Geography, a Master in Business Administration (MBA), a Master of Arts degree (M.A) in International Affairs and a Master of Science (MSc.) in Geography. Dr. Gandin has also obtained in 2015 a training certificate in Disaster and Humanitarian response management, awarded by McGill University. A proponent of mixed methods research design and operational research, Dr Gandin has strong competencies in research and data analysis through the use of a quantitative and qualitative software packages to conduct socioeconomic analysis, household surveys, and gender analysis.

Beyond his professional commitments, Dr Gandin is on the faculty of the University of Montreal and Laval University, where he is a lecturer in the field of international development. Furthermore, Dr Gandin serves as a Board Member of the International Development Evaluation Association (IDEAS) and the Quebec Society in Program Evaluation (SQEP). In 2015, Dr. Gandin has co-funded and then co-coordinated the Francophone Network of Emerging Evaluators with the view to foster the professional development of emerging evaluators. Dr Gandin has working experience in Latin America, Africa, Europe and North America and he is fluent in four languages, namely, French, English, Spanish and Italian.

### **Walaitat Worakul**

Walaitat Worakul has a B.Ed. in education from Chulalongkorn University in Thailand and an MS in international development education from Florida State University, USA. She has over 25 years' experience as manager and technical advisor/consultant to a wide range of local, national and international development projects/programs. Among others, are programs on environment, sustainable livelihoods, gender, drugs abuse prevention, education/learning, poverty alleviation, community development, organizational strengthening and networking, and climate change. For several years, she has conducted mid-term and terminal evaluations of several UNDP/GEF funded projects in Thailand, including mid-term review of projects: Community-based Forest and Catchment Management (Jul-Nov 2015), Catalyzing Sustainability of Thailand's Protected Area System (March-June 2015), Sustainable Management of Biodiversity in Thailand's Production Landscape (November 2014-January 2015), and Promoting Renewable Energy in Mae Hong Son (Jul-Aug 2013), as well as terminal

evaluations of projects: Sustainable Management of Bio Diversity in Thailand's Production Landscape (Oct 2015-Jan 2016), Strengthening Capacity of Vulnerable Coastal Communities to Address the Risks of Climate Change and Extreme Weather Conditions (March-April 2014), and Poverty-Environment Initiative (Nov-Dec 2012).

Her experiences in other Asian countries are also diverse as technical consultant, trainer and evaluator of several projects. Among others are: evaluator of GTZ-funded projects in Bangladesh, Cambodia, and Lao PDR; education advisor to UNESCO-funded project in Mongolia; as well as trainer to a series of regional workshop on gender and women empowerment organized by UNESCO PROAP in several southeast and south Asian countries.

## ANNEX IX. Quality Assessment of the Evaluation Report

Evaluation Title:

### Technology Needs Assessment Phase 1

All UNEP evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is affected by more than just the consultant's efforts and skills. Nevertheless the quality assessment is used as a tool for providing structured feedback to the evaluation consultant(s), especially at draft report stage. The guidance in this template is consistent with guidance on the structure of the main evaluation report and is provided to support consistency in assessments carried out by different Evaluation Managers and to make the quality assessment process as transparent as possible.

	UNEP Evaluation Office Comments	Draft Report Rating	Final Report Rating
<b>Substantive Report Quality Criteria</b>			
<p><b>Quality of the Executive Summary:</b></p> <p>The Summary should be able to stand alone as an accurate summary of the main evaluation product. It should include a concise overview of the evaluation object; clear summary of the evaluation objectives and scope; overall evaluation rating of the project and key features of performance (strengths and weaknesses) against exceptional criteria (plus reference to where the evaluation ratings table can be found within the report); summary of the main findings of the exercise, including a synthesis of main conclusions (which include a summary response to key strategic evaluation questions), lessons learned and recommendations.</p>	<p><b>Draft report:</b> None was prepared for the (both initial and subsequent) draft report but it appears that the consultant was not required to include one at that stage.</p> <p><b>Final report:</b> The Executive Summary is an adequate summary of the main evaluation product and covers all expected content. The key strategic questions for this evaluation are covered throughout the report itself.</p>	-	5
<p><b>I. Introduction</b></p> <p>A brief introduction should be given identifying, where possible and relevant, the following: institutional context of the project (sub-programme, Division, regions/countries where implemented) and coverage of the evaluation; date of PRC approval and project document signature); results frameworks to which it contributes (e.g. Expected Accomplishment in POW); project duration and start/end dates; number of project phases (where appropriate); implementing partners; total secured budget and whether the project has been evaluated in the past (e.g. mid-term, part of a synthesis evaluation, evaluated by another agency etc.)</p> <p>Consider the extent to which the introduction include a concise statement of the purpose of the evaluation</p>	<p><b>Draft Report:</b> The section sufficiently discusses the scope of the evaluation including the project's contextual background, scope and objectives. Institutional context, including budget, previous evaluations/reviews are covered in the Project Identification Table. The purpose of the evaluation and the intended audience of the evaluation report are also described.</p> <p><b>Final report:</b> As in draft</p>	5	5

and the key intended audience for the findings?			
<p><b>II. Evaluation Methods</b></p> <p>This section should include a description of how the <i>TOC at Evaluation</i><sup>119</sup> was designed (who was involved etc.) and applied to the context of the project?</p> <p>A data collection section should include: a description of evaluation methods and information sources used, including the number and type of respondents; justification for methods used (e.g. qualitative/quantitative; electronic/face-to-face); any selection criteria used to identify respondents, case studies or sites/countries visited; strategies used to increase stakeholder engagement and consultation; details of how data were verified (e.g. triangulation, review by stakeholders etc.).</p> <p>The methods used to analyse data (e.g. scoring; coding; thematic analysis etc.) should be described.</p> <p>It should also address evaluation limitations such as: low or imbalanced response rates across different groups; extent to which findings can be either generalised to wider evaluation questions or constraints on aggregation/disaggregation; any potential or apparent biases; language barriers and ways they were overcome.</p> <p>Ethics and human rights issues should be highlighted including: how anonymity and confidentiality were protected and strategies used to include the views of marginalised or potentially disadvantaged groups and/or divergent views.</p>	<p><b>Draft Report:</b> The evaluation scope, approach, and methods used are described fairly well. The use of TOC approach at inception and implementation phase is covered. Methods used to gather, triangulate and verify data, as well as limitations have been discussed in detail. Ethical considerations and human rights issues have not been covered although the report does mention Gender considerations in data collected (i.e. survey responses were disaggregated by gender)</p> <p><b>Final report:</b> As in draft</p>	4.5	5
<p><b>III. The Project</b></p> <p>This section should include:</p> <ul style="list-style-type: none"> <li>• <i>Context:</i> Overview of the main issue that the project is trying to address, its root causes and consequences on the environment and human well-being (i.e. synopsis of the problem and situational analyses).</li> <li>• <i>Objectives and components:</i> Summary of the project's results hierarchy as stated in the ProDoc (or as officially revised).</li> <li>• <i>Stakeholders:</i> Description of groups of targeted stakeholders organised according to relevant common characteristics</li> <li>• <i>Project implementation structure and</i></li> </ul>	<p><b>Draft report:</b> The context, components and objectives are covered in sufficient detail. The report mentions that a stakeholder analysis was undertaken during the evaluation, but how this was done in practice is unclear. (The description of various stakeholders' roles and responsibilities during the project implementation is however covered in detail.) Key milestones and changes in implementation have been presented briefly in table format. Assessment of implementation</p>	5	5

119 During the Inception Phase of the evaluation process a *TOC at Design* is created based on the information contained in the approved project documents (these may include either logical framework or a TOC or narrative descriptions). During the evaluation process this TOC is revised based on changes made during project intervention and becomes the *TOC at Evaluation*.

<p><i>partners</i>: A description of the implementation structure with diagram and a list of key project partners</p> <ul style="list-style-type: none"> <li>• <i>Changes in design during implementation</i>: Any key events that affected the project's scope or parameters should be described in brief in chronological order</li> <li>• <i>Project financing</i>: Completed tables of: (a) budget at design and expenditure by components (b) planned and actual sources of funding/co-financing</li> </ul>	<p>arrangements covers roles of the implementing and executing agencies, the task manager, as well as the key partners. The overall project budget by component and source is also included.</p> <p><b>Final report</b>: As in draft</p>		
<p><b>IV. Theory of Change</b></p> <p>A summary of the project's results hierarchy should be presented for: a) the results as stated in the approved/revise Prodoc logframe/TOC and b) as formulated in the TOC at Evaluation. <i>The two results hierarchies should be presented as a two column table to show clearly that, although wording and placement may have changed, the results' 'goal posts' have not been changed.</i> The TOC at Evaluation should be presented clearly in both diagrammatic and narrative forms. Clear articulation of each major causal pathway is expected, (starting from outputs to long term impact), including explanations of all drivers and assumptions as well as the expected roles of key actors.</p>	<p><b>Draft report</b>: There is no discussion of the formal logframe in previous sections, however the section mentions that a presumed ToC was developed during the inception period and shared with TNA project staff at the inception phase. There are minor inconsistencies in the use of terminologies (e.g. Drivers, Assumptions) as well as unclear references to a staged process that has no prior explanation in the text. The narrative is in some cases convoluted, requiring editing to improve its clarity. The diagram has not been submitted in an editable format. There are some inconsistencies in the description of activities, components and outputs when compared to the project logframe, with no prior explanations for the modifications that have been made. The narrative also fails to articulate the drivers or assess the validity of the assumptions presented in the diagram.</p> <p><b>Final report</b>: TOC adequately addressed in diagrammatic and narrative forms.</p>	3	5
<p><b>V. Key Findings</b></p>			



<p><b>A. Strategic relevance:</b></p> <p>This section should include an assessment of the project's relevance in relation to UN Environment's mandate and its alignment with UN Environment's policies and strategies at the time of project approval. An assessment of the complementarity of the project with other interventions addressing the needs of the same target groups should be included. Consider the extent to which all four elements have been addressed:</p> <ol style="list-style-type: none"> <li>1. Alignment to the UNEP Medium Term Strategy (MTS) and Programme of Work (POW)</li> <li>2. Alignment to UNEP/GEF/Donor Strategic Priorities</li> <li>3. Relevance to Regional, Sub-regional and National Environmental Priorities</li> <li>4. Complementarity with Existing Interventions</li> </ol>	<p><b>Draft report:</b> Alignment to regional, sub-regional and national environmental priorities and to GEF priorities is and the findings are fairly well supported with evidence. Complementarity with existing interventions and project alignment to UNEP MTS is missing from this section but can be found under section F (Factors and processes affecting performance). A significant amount of text is out-of-place and guidance has been provided on the appropriate criteria to move the text to.</p> <p><b>Final report:</b> Issues raised at draft addressed in final.</p>	4	4.5
<p><b>B. Quality of Project Design</b></p> <p>To what extent are the strength and weaknesses of the project design effectively <u>summarized</u>?</p>	<p><b>Draft report:</b> Aspects of the project design are mentioned under the criterion "preparation and readiness" in a general manner, with more emphasis being given to the process (the TOR required a more detailed assessment of the project design quality in the Inception Report)</p> <p><b>Final report:</b> As in draft</p>	5	5
<p><b>C. Nature of the External Context</b></p> <p>For projects where this is appropriate, key external features of the project's implementing context that may have been reasonably expected to limit the project's performance (eg conflict, natural disaster, political upheaval) should be described.</p>	<p><b>Draft report:</b> Chapter 2 alludes to the complexity of the contextual background in which the project had to operate (e.g. technical capacity, methodological challenges, etc.).</p> <p><b>Final report:</b> As in draft</p>	3.5	3.5
<p><b>D. Effectiveness</b></p> <p><b>(i) Outputs and Direct Outcomes:</b> How well does the report present a well-reasoned, complete and evidence-based assessment of the achievement of a) outputs, and b) direct outcomes? How convincing is the discussion of attribution and contribution, as well as the limitations to attributing effects to the intervention.</p>	<p><b>Draft report:</b> Some inconsistencies noted in the outputs discussed (Table 12) when compared to the programmed outputs in the project logframe. No prior explanation has been provided to account for the changes made. The outputs have never the less been assessed, some with supporting evidence although</p>	3	4.5

	<p>this does not come out strongly. Cross referencing to appropriate sections of the regional reports (where the said evidence is supposed to be found) is inadequate. There are instances where outputs are erroneously phrased as outcomes.</p> <p>Inconsistencies noted between the direct outcomes discussed in the narrative and those presented in the TOC section. Assessment of outcomes for the most part lack substantiating evidence and cross references to other sections where such evidence is supposed to be found is ambiguous. The assessment of medium term outcomes includes several examples to substantiate the assessment although the consultant has been advised to go over the text to check grammar and completeness of the sentences for better clarity, and to correct some instances of contradictory information found within the narrative. Use of graphs in the Effectiveness chapter has for the most part not been found value-adding to the assessment especially as they lack explanatory text.</p> <p><b>Final report:</b> Issues raised at draft addressed in final.</p>		
<p><b>(ii) Likelihood of Impact:</b> How well does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to likelihood of impact?</p> <p>How well are change processes explained and the roles of key actors, as well as drivers and assumptions, explicitly discussed?</p>	<p><b>Draft report:</b> Although there is a discussion presented on the change process and the drivers and assumptions, there are fundamental problems with the TOC diagram and corresponding narrative – mainly to do with inconsistency, as if they had been developed separately. The assessment also refers to use of the ROTI method but there is no evidence of this in the report. The section concludes with a HL rating for impact achievement but it contradicts findings presented in the report.</p>	3	4

	<b>Final report:</b> Issues raised at draft addressed in final.		
<p><b>E. Financial Management</b></p> <p>This section should contain an integrated analysis of all dimensions evaluated under financial management. And include a completed 'financial management' table.</p> <p>Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> <li>• <i>completeness</i> of financial information, including the actual project costs (total and per activity) and actual co-financing used</li> <li>• <i>communication</i> between financial and project management staff and</li> <li>• <i>compliance</i> with relevant UN financial management standards and procedures.</li> </ul>	<p><b>Draft report:</b> The coverage of this criterion is insufficient, comprising the evaluators' perception of financial management competency by the project.</p> <p><b>Final report:</b> Discussion of financial management remains weak in the final report. Basic cost and financing information is provided.</p> <p><i>(If this section is rated poorly as a result of limited financial information from the project, this is not a reflection on the consultant)</i></p>	1	2
<p><b>F. Efficiency</b></p> <p>To what extent, and how well, does the report present a well-reasoned, complete and evidence-based assessment of efficiency under the primary categories of cost-effectiveness and timeliness including:</p> <ul style="list-style-type: none"> <li>• Implications of delays and no cost extensions</li> <li>• Time-saving measures put in place to maximise results within the secured budget and agreed project timeframe</li> <li>• Discussion of making use of/building on pre-existing institutions, agreements and partnerships, data sources, synergies and complementarities with other initiatives, programmes and projects etc.</li> <li>• The extent to which the management of the project minimised UNEP's environmental footprint.</li> </ul>	<p><b>Draft report:</b> Some examples of synergies, complementarities with other initiatives, cost-saving measures are presented. Effect of delays on project efficiency is however not sufficiently covered. There is mention of various sources of data for the assessment of efficiency including the evaluator's own observations, although the text relies largely on survey results to substantiate findings (it is however unclear what has helped form the basis of the respondents' opinions on cost related efficiencies).</p> <p><b>Final report:</b> As in draft</p>	4.5	4.5
<p><b>G. Monitoring and Reporting</b></p> <p>How well does the report assess:</p> <ul style="list-style-type: none"> <li>• Monitoring design and budgeting (<i>including SMART indicators, resources for MTE/R etc.</i>)</li> <li>• Monitoring implementation (<i>including use of monitoring data for adaptive management</i>)</li> <li>• Project reporting (<i>e.g. PIMS and donor report</i>)</li> </ul>	<p><b>Draft report:</b> The section on M&amp;E is incomprehensible.</p> <p><b>Final report:</b> This remains weak and insufficient in the final report.</p>	1	1
<p><b>H. Sustainability</b></p> <p>How well does the evaluation identify and assess the key conditions or factors that are likely to undermine or contribute to the persistence of achieved direct</p>	<p><b>Draft report:</b> This section was really covered in great detail but there are significant weaknesses observed such as: contradictory findings, insufficient</p>	4	4

<p>outcomes including:</p> <ul style="list-style-type: none"> <li>• Socio-political Sustainability</li> <li>• Financial Sustainability</li> <li>• Institutional Sustainability (<i>including issues of partnerships</i>)</li> </ul>	<p>evidence to corroborate the findings, some minor misinterpretation of TOR requirements for this criterion, and an overall rating (HL) that is inconsistent with what has been reported in other related sections of the report.</p> <p><b>Final report:</b> The overall rating for sustainability should be recorded as L (the lowest of the sustainability sub-categories).</p>		
<p><b>I. Factors Affecting Performance</b></p> <ul style="list-style-type: none"> <li>• Preparation and readiness</li> <li>• Quality of project management and supervision<sup>120</sup></li> <li>• Stakeholder participation and co-operation</li> <li>• Responsiveness to human rights and gender equity</li> <li>• Country ownership and driven-ness</li> <li>• Communication and public awareness</li> </ul>	<p><b>Draft report:</b> Overall, the report covers all the required sub-criteria to varying degrees of quality, but it is for the most part wanting. Comments provided include: out-of-place assessments (i.e. under inappropriate sub-headings), inadequate citing of evidence, weak analysis in some of the sub-criteria, and general failure to follow the requirements of the TOR.</p> <p><b>Final report:</b> Some sections remain weak</p>	2	3
<p><b>VI. Conclusions and Recommendations</b></p> <p><b>i. Quality of the conclusions:</b> The key strategic questions should be clearly and succinctly addressed within the conclusions section? It is expected that the conclusions will highlight the main strengths and weaknesses of the project, and connect them in a compelling story line. Conclusions, as well as lessons and recommendations, should be consistent with the evidence presented in the main body of the report.</p>	<p><b>Draft report:</b> The conclusions section lacks clarity and relies heavily on the ratings table.</p> <p><b>Final report:</b> The conclusions lack conciseness and rely heavily on the comments in the ratings table, which are frequently copied from the main body of the report. The RoTI method is applied but the explanations not provided.</p>	3.5	4
<p><b>ii) Quality and utility of the lessons:</b> Both positive and negative lessons are expected and duplication with recommendations should be avoided. Based on explicit evaluation findings lessons should be rooted in real project experiences or derived from problems encountered and mistakes made that should be avoided in the future. Lessons must have the potential for wider application and use and should</p>	<p><b>Draft report:</b> Lessons lack clarity and appropriateness in some cases.</p> <p><b>Final report:</b> The lessons are not presented in a way that makes it easy to lift them from the report to share with others.</p>	3	4

<sup>120</sup> In some cases 'project management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded projects, it will refer to the project management performance of the executing agency and the technical backstopping provided by UNEP.

briefly describe the context from which they are derived and those contexts in which they may be useful.			
<p><b>iii) Quality and utility of the recommendations:</b> To what extent are the recommendations proposals for specific actions to be taken by identified people/position-holders to resolve concrete problems affecting the project or the sustainability of its results. They should be feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when. Recommendations should represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations.</p>	<p><b>Draft report:</b> Recommendations are numerous and need to be specific in terms of who would do what, when.</p> <p><b>Final report:</b> The recommendations lack specificity. Some may not be feasible.</p>	3	4
<b>VII. Report Structure and Presentation Quality</b>			
<p><b>i) Structure and completeness of the report:</b> To what extent does the report follow the Evaluation Office guidelines? Are all requested Annexes included and complete?</p>	<p><b>Draft report:</b> Several iterations of the draft have been required to bring the draft to specified guidelines. Further structural and clarity issues are still required in the draft under review. The requested annexes have been included.</p> <p><b>Final report:</b> Issues raised at draft stages addressed in the final report.</p>	4.5	5
<p><b>ii) Quality of writing and formatting:</b> Consider whether the report is well written (clear English language and grammar) with language that is adequate in quality and tone for an official document? Do visual aids, such as maps and graphs convey key information? Does the report follow Evaluation Office formatting guidelines?</p>	<p><b>Draft report:</b> The language and tone are acceptable. Visual aids used include graphs (of varying quality and utility). Requests have been made to improve instances of lengthy and overly complex sentences.</p> <p><b>Final report:</b> Issues raised at draft addressed in the final report.</p>	4.5	5
<b>OVERALL REPORT QUALITY RATING</b> <i>(note that this assessment form has been under review during this evaluation process leading to some mismatch between the structure of the report and this template.)</i>		<b>3.53</b>	<b>4.15</b>

A number rating 1-6 is used for each criterion: Highly Satisfactory = 6, Satisfactory = 5, Moderately Satisfactory = 4, Moderately Unsatisfactory = 3, Unsatisfactory = 2, Highly Unsatisfactory = 1. The overall quality of the evaluation report is calculated by taking the mean score of all rated quality criteria.