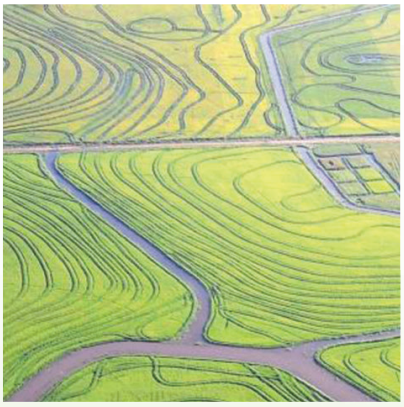
UNEP

GREEN economy

Indicators for Green Economy Policymaking

A Synthesis Report of Studies in Ghana, Mauritius and Uruguay



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Indicators for Green Economy Policymaking

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LIST OF ACRONYMS & UNITS

CONEAT	Comisión Nacional de Estudio Agroeconómico de la Tierra
CO_2	Carbon dioxide
ECG	Electricity Company of Ghana
GDP	Gross Domestic Product
GE	Green economy
GESS	Green Economy Scoping Study
GGKP	Green Growth Knowledge Platform
GHG	Greenhouse gas
GSGDA	Ghana Shared Growth and Development Agenda
GVA	Gross Value Added
ha	Hectares
IP	Integrated Policymaking
km^3	Cubic kilometres
ktoe	Kilo-tonne of oil equivalent
l/year	Litres per year
MESTI	Ministry of Environment, Science, Technology and Innovation
mg/l	Milligram per litre
m^3/year	Cubic meters per year
MGAP	Ministerio de Ganadería, Agricultura y Pesca
MID	Maurice Île Durable
MIDPSAP	MID Policy, Strategy and Action Plan
MSW	Municipal Solid Waste
MUR	Mauritius Rupee
NEDCO	Northern Electricity Distribution Company
PEI	Poverty-Environment Initiative
PM	Particulate Matter
SIDS	Small Islands Developing States
tCO_2	Total carbon dioxide
toe	Tonne of oil equivalent
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US$	United States Dollar
WEF	World Economic Forum

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FOREWORD

The transition towards a green economy must be a priority across all facets of the post-2015 development agenda in order to reduce poverty and growing inequity, achieve prosperity and gender equality, and improve livelihoods through better health and decent jobs. A green transformation holds the potential to sustain a healthy planet where ecosystems are well-managed and human well-being is preserved for future generations.

Countries seeking to transition towards greener and more inclusive economies must set priorities and targets, but they must also be able to measure progress towards those priorities and targets. Suitable yardsticks – or indicators – are essential to manage the transition. And while global indicators are important to understand the state of the planet, indicators at the country level can reveal a lot about the effectiveness of national policies. For this reason, the United Nations Environment Programme (UNEP) has developed a Green Economy Indicators Framework to support green economy policymaking and to assist governments in measuring progress towards achieving greener and more inclusive economies.

This report, "Indicators for Green Economy Policy Making – A Synthesis Report of Studies in Ghana, Mauritius and Uruguay", shares the knowledge and lessons learned in using indicators for green economy policymaking in three different national contexts. The three countries' experiences illustrate how UNEP's Green Economy Indicators Framework – which is based on a theoretical policy cycle – works in reality.

The challenges faced by these countries are often encountered by decision-makers when trying to prioritize their policy issues, find relevant indicators for setting targets, collect the data required to support the indicators, and connect the work on indicators to the broader green economy policy process. The lessons learned from these countries will help to improve the framework and direct future efforts, and can provide important insights for other countries embarking on a green economy pathway.

As more countries consider green economy policymaking – some in cooperation with UNEP and its partners, such as those jointly sponsoring the Partnership for Action on Green Economy – the role of indicators will become increasingly important. Transitioning to a green economy can help deliver sustainable development, and improve lives and livelihoods without harming the environment. Good indicators will help get us there.

Achim Steiner,
United Nations Under-Secretary-General and
Executive Director, United Nations environment Programme

EXECUTIVE SUMMARY

Green economy (GE) was recognized at the UN Conference on Sustainable Development (Rio+20) in 2012 as an essential tool in achieving sustainable development. Effective GE policymaking requires indicators that capture the nexus of economic, social and environment issues in order to provide the evidence-based information necessary for effective decision-making. UNEP has developed a Green Economy Indicators Framework that weaves various indicators into the Integrated Policymaking process and is intended to assist policymaking at the country level. The framework identifies four main types of indicators that support the integrated policy process.

First, indicators for issue identification help identify and prioritise problems to be resolved through the green economy approach. Second, indicators for policy formulation help design solutions by defining targets and measuring different policy interventions. Third, indicators for policy assessment provide critical inputs for the estimation of the cross-sectoral impacts of policy implementation and for the evaluation of the effectiveness of each policy option. Finally, indicators for policy monitoring and evaluation support the follow-up of implemented policies by assessing their real impacts.

This report synthesises three studies on the role of indicators in assisting national green economy policymaking that were conducted in Ghana, Mauritius and Uruguay. Based on these country experiences, the report discusses key findings and challenges.

KEY FINDINGS AND CHALLENGES

- Indicators are a powerful tool when it comes to engaging stakeholders. In the three countries, the selection of key sectors and identification of potential areas for action and policies was made in stakeholder-representative workshops. Reaching an agreement proved to be time consuming, but the process of reaching a consensus on national priorities ensured greater validity of the results as well as cooperation on data development in the future.

- Finding useful indicators for issue identification was the most successful task in all studies. The most precise indicators analyzed and proposed by the country studies dealt with issue identification, mainly because of the greater availability of data for these indicators. To help stakeholders define indicators for policy formulation and policy assessment, a closer collaboration with modelers is important.
- The number of indicators covered in the studies was too large. This indicates a need to improve the setting of priorities. Further consultation, statistical analysis and monitoring are required in order to be more selective and to reduce the number of targets and indicators.

– Availability and quality of data is a significant challenge in all three country studies, especially in relation to environmental issues. More partnerships and better cooperation among governmental agencies and institutions (including private) are required.

– Data gaps are significant challenges in all three country studies. To improve data collection, more focus should be given to priority issues, with a particular emphasis on the interconnection of economic, social and environmental issues. Efforts could be concentrated to reinforce the existing statistical framework for collecting the required data and developing GE indicators.

CONCLUSIONS

The country studies highlight the advantages that result from employing a framework for work on indicators as well as the strong interest that representative stakeholders have in contributing to this process. However, the country studies also stress the need for a greater effort at identifying a smaller number of indicators in accordance with key development priorities. In addition, the studies highlight the need to improve data development, particularly concerning reliable and periodical data on key green economy areas. This will require strong and qualified statisticians as well as improved institutional coordination across government agencies and other key actors for better data collection and use of indicators.

The report recommends increasing the temporal coordination between the work on modelling and indicators in order to allow both to be more useful in policy formulation and assessment. When models are better connected, they can benefit from the richer data collection needed for the construction of indicators. This helps to refine the analysis of the implications of policy interventions. Similarly, the construction of indicators must be guided by the structure of models, which will help indicators to be more precise and better articulated. Finally, work on indicators should be proactive to allow an early learning process. This will create better opportunities for improving the indicators for use in all stages of green economy policymaking.

1 INTRODUCTION

The Green economy (GE) was recognized at the 2012 UN Conference on Sustainable Development (Rio+20), as an important pathway to sustainable development. The goal is a transition towards "an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities" (UNEP, 2010). UNEP's green economy approach promotes investment in a new generation of capital: clean physical capital, natural capital, healthy and green skilled labour and equitable social institutions.

Ensuring effective GE policymaking requires a robust set of indicators to identify major issues, formulate appropriate policy responses and assess, and evaluate the potential policy impacts. Indicators used in each of these major policymaking stages are instruments that capture the nexus that connects economic performance, environmental status and social dynamics. To facilitate the transition to a green economy, UNEP has developed a Green Economy Indicators Framework, which provides a structure for the use of indicators in support of green economy policymaking at the country level. This approach focuses on country applications which is in contrast with the usual emphasis on the choice of indicators, as shown in the Green Growth Knowledge Platform scoping paper (GGKP, 2013).

UNEP's framework has already been piloted in the context of broader green economy planning activities in Ghana, Mauritius and Uruguay. The general objective was to develop a set of indicators for these countries based on their existing national initiatives and statistical capacity. The intention is to use the indicators identified in these studies in sectoral and economy-wide national green economy planning.

This report synthesises the studies mentioned above as they pertain to the role of indicators in assisting national green economy policy planning. It introduces UNEP's GE Indicators Framework, discusses key findings and challenges from country examples and concludes with lessons learned and suggestions for the way forward.

2 UNEP'S GREEN ECONOMY INDICATORS FRAMEWORK

The GE Indicators Framework, proposed by UNEP, is based on an Integrated Policymaking (IP) approach developed in 2009 in collaboration with the Lee Kuan Yew School of Public Policy. The IP approach focuses on three levels of integration in order to achieve sustainable development (UNEP, 2009):

1. Integration of issues – Identify implications and interactions among economic, environmental and social dimensions;

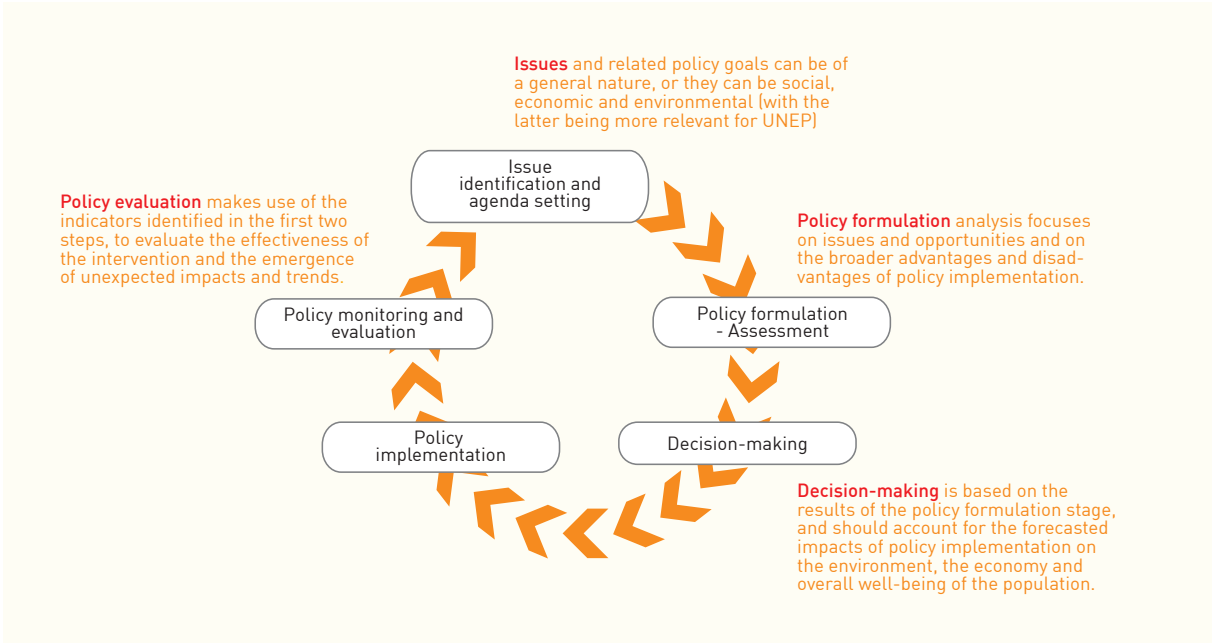
2. Integration of processes – Factor economic, environmental and social considerations into a continuous policy cycle, especially at early stages;

3. Integration of institutional support/capacity – Address policy constraints in terms of political support, administrative capacity and analytical capacity.

As indicated in Figure 1, a stylized integrated policy cycle has 5 stages. Since the robustness of a policy is critically determined at stages "a" and "b", indicators for issue identification, indicators for policy formulation and indicators for policy assessment are used to assist these two initial stages. Decision-making (stage "c") – a point in time – is informed by what comes out of the policy formulation stage and therefore, does not require separate indicators. Acting as a "report card", indicators for policy monitoring and evaluation during stages "d: and "e" reflect the performance of policy and serve to analyze trends that can inform any adjustment that may be needed in the next policy cycle.

The major difference between GE indicators and other sustainable development indicators is that GE indicators are issue-driven and may vary from country to country, whereas most sustainable development indicators – reflecting the global agenda on sustainable development – tend to be more general and share a significant amount of

FIGURE 1. OVERVIEW OF THE INTEGRATED POLICYMAKING PROCESS



commonalities from country to country. Another difference that distinguishes GE indicators is that different groups of GE indicators usually share closer connections to each other: issue indicators are to be improved through indicators of policy interventions, which may have broader, society-wide effects that must be assessed ex-ante and evaluated ex-post. In contrast, sustainable development indicators are not necessarily used in this structured manner.

A. INDICATORS FOR ISSUE IDENTIFICATION

This type of indicators can help policy participants (i.e. policymakers, analysts, private sector, NGOs, etc.) identify and prioritize sustainable development issues and set the agenda for policy interventions (UNEP, 2009). The key steps and related indicators for issue identification are as follows:

i. Identify potentially troublesome trends – Analyze data and detect troublesome trends.

ii. Assess the issue and its relationship to the natural environment – Identify environmental trends that could contribute to the problem being considered.

iii. Analyze the underlying causes of the issue of concern broadly – Investigate the broad causes for the underperforming trends.

iv. Analyze how the issue impacts society, the economy and the environment – Analyze the impacts of the identified worrying trends on sustainable development in general.

B. INDICATORS FOR POLICY FORMULATION

While indicators for issue identification help frame the issue, indicators for policy formulation help in the design of solutions. At the policy formulation stage, what makes the green economy approach different from other approaches that might superficially seem similar, is its strong emphasis on the role of investment – enabled by policy – in addressing environmental, social, economic issues in an integrated manner. In such cases, indicators are useful when it comes to defining the direction and extent of the potential investment and policy support. The key steps and related indicators for policy formulation are as follows:

i. Identify desired outcomes: define policy objectives – Based on the worrying trend and its environmental/other causes, define policy objectives and set targets for their achievement.

ii. Identify intervention options and expected outputs – Establish an initial list of potential investment and policy instruments and carry out an analysis of past interventions adopted to address the same issue and their outcomes.

C. INDICATORS FOR POLICY ASSESSMENT

Once objectives and targets are defined and the options for intervention identified, it is necessary to carry out a policy assessment in order to estimate the broad, cross-sectoral impact of the potential investment and policy options. This includes evaluating the effectiveness of each option. While indicators for issue identification help frame the issue and indicators for policy formulation help in designing solutions, indicators for policy assessment support the estimation of the impact of the interventions under consideration. The approach used for the identification of policy impact indicators covers broader social, economic and environmental consequences and thus requires a multi-stakeholder approach. The key steps and related indicators for policy impact evaluation are as follows:

i. Estimate policy impacts across sectors – Evaluate the direct economic, environmental and social benefits (and potential side effects) of the interventions under consideration.

ii. Analyze impacts on the overall well-being of the population – Identify impacts of policy implementation on poverty alleviation, equity, social inclusiveness, inclusive wealth, etc.

iii. Analyze advantages and disadvantages and inform decision-making – Analyze short-, medium- and long-term advantages and disadvantages of the various policy options considered. Compare options based on the analysis of advantages and disadvantages.

D. INDICATORS FOR POLICY MONITORING AND EVALUATION

Indicators for policy monitoring and evaluation support the ex-post assessment of the performance of the intervention that is being implemented. This approach focuses on the use of indicators already identified in the issue identification, policy formulation and assessment stages.

The integrated policymaking cycle is continuous. It requires constant monitoring and impact evaluation not only to support a new agenda-setting stage, but also to undertake corrective actions. In order to conduct comprehensive monitoring and evaluation, a broad range of stakeholders needs to be engaged to provide feedback on the policies' perceived performance. The key steps and indicators for policy monitoring and evaluation are as follows:

i. Measure policy impact in relation to the initially identified issue (indicators for issue identification);

ii. Measure the investment leveraged and assess enabling policies implemented (indicators for policy formulation);

iii. Measure impacts across sectors and on the overall well-being of the population (indicators for policy assessment).

At first glance, indicators for policy assessment and indicators for policy monitoring and evaluation look almost the same. The key difference is that policy assessment indicators deal with impacts that are only estimated, while monitoring and evaluation indicators deal with impacts that are real. Another important role of monitoring and evaluation indicators is in identifying future trends that will help in the formulation of policies for the next policy cycle. Since policy assessment and policy monitoring and evaluation indicators are very similar and since in most cases the policies that we are considering still need to be decided, the country studies discussed in the next section will only present policy assessment indicators.

3 COUNTRY STUDIES

This section discusses the results of three country studies. A comprehensive analysis for each country is available in separate reports. In this synthesis report only indicators in selected sectors will be highlighted in the context of the national green economy initiatives. Only a subset of the issues was selected in each country. Based on these issues, a relatively small set of relevant indicators (for issue identification, policy formulation and policy assessment) is presented to illustrate how indicators can support green economy policymaking.[1]

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3.1 GHANA

3.1.1 COUNTRY PROFILE

ECONOMIC PROFILE

Ghana has experienced relatively rapid growth rates over the last five years thanks to a commitment to economic reform and the expansion of commodity sectors. The agriculture sector accounts for around 50 per cent of employment in Ghana and the value of agriculture production nearly doubled in nominal terms between 2009 and 2013, although agriculture's share of GDP actually fell due to the rapid expansion of industry (UNEP, 2013b).

From the industry side, Ghana's growth relies heavily on extractive industries such as mining and oil. Crude oil grew from 2.1 per cent GDP in 2009 to just under 10 per cent GDP in 2013 (Ghana Statistical Service, 2014) and primary commodities (gold, oil and coca) account for over a third of Ghana's merchandise export receipts in 2013 (UN Comtrade and UN Service Trade, 2013a).

ENVIRONMENTAL PROFILE

Though rich in biodiversity, according to a UNEP-supported Green Economy Scoping Study (GESS) in Ghana, the country has experienced persistent environmental degradation that costs approximately 10 per cent of GDP per year (UNEP, 2013a).

Deforestation and desertification results in the loss of more than 65,000 ha of forest per year (UNEP, 2013a). This further exacerbates the effects of climate change.

In addition, Ghana's Greenhouse Gas (GHG) emissions were reportedly 0.37 CO_2e tonnes per person in 2010 (National Institute of Statistics, 2012).[2] Energy production, transport and livestock enteric fermentation were responsible for the major proportion of the emissions (13.17 per cent, 17.12 per cent and 9.46 per cent, respectively).[3]

SOCIAL PROFILE

Ghana has made significant progress in education and health, but the rapid growth of population poses challenges in the water and sanitation sectors. The annual population growth in Ghana is projected at around 2.4 per cent and the population, composed mainly of children and young adults, will reach over 29.2 million by 2017 (UN Statistics Division, 2013). Under-developed water and sanitation infrastructure further threatens people's well-being. Furthermore, population growth is leading to increased pressure in the job market.

NATIONAL GREEN ECONOMY INITIATIVES

Ghana has identified policy actions and strategies that are expected to catalyze positive development in economic, environmental and social dimensions. In collaboration with UNEP, the government has prepared a Green Economy Scoping Study, which identifies the priority areas for action. The Ghana Shared Growth and Development Agenda (GSGDA II) for 2014-2017 is the medium-term policy planning initiative. One of the strategies under GSGDA II is to promote the adoption of the principles of green economy in national development planning. Specifically the Government's policy will focus on enhancing the capacity of the relevant agencies to adapt to climate change impact, mitigate the impact of climate variability and promote a green economy.

3.1.2 SECTOR ANALYSIS

Agriculture, forestry, water, waste management and sanitation, energy and extractive industries have been identified as priorities for Ghana's green economy transition. This is based on Ghana's economic, environmental and social profiles, the existing national initiatives as well as the input of stakeholders at workshops organized in Ghana with the support of UNEP. Examples of the use of indicators in the sectors of forestry, energy and agriculture will be discussed in this section.

The country study of Ghana draws on primary data and secondary information made available by the authorities in the context of green economy activities conducted in Ghana with the support of UNEP.

FORESTRY

Ghana has the highest deforestation rate in Africa. This presents a major threat to Ghana's environmental stability. Reducing the shrinking of the country's forest coverage has become a national priority. Since deforestation is partly due to a failure to properly value forests, the work on indicators includes a consideration of the range and value of forest ecosystem services. Indicators also include the measurement of externalities generated by other sectors and activities (e.g. agriculture, land-clearing for human settlement) as well as the policies to address the externalities.

Green economy indicators for Ghana's forest sector are summarised in Table 1.

TABLE 1: PROPOSED INDICATORS FOR FORESTRY IN GHANA

ISSUE HIGHEST DEFORESTATION RATE IN AFRICA, WHICH PRESENTS A MAJOR THREAT TO GHANA'S ENVIRONMENT STABILITY	
Issue identification indicators	**Most recent value (year)**
Annual rate of deforestation	1.37% per annum (2011)
Share of wood fuels in total energy consumption (%)	Wood fuel and charcoal accounted for 55% of energy consumed (2012)
Expansion of land for agriculture (%)	Agricultural land from 55.4% 1990 to 69% of land area in 2012
Policy formulation indicator(s)	
Policy objectives	**Intervention options**
Forest cover (increased by X% in Y years)	Development of REDD+ proposal (number and amount of resources US$)
Share of protected areas (increased by X% in Y years)	Annual public expenditure to support reforestation activities (US$)
Share of wood fuels in total energy consumption (cut by X% in Y years)	Gazetting of land as protected areas
Policy assessment indicator(s)	
Change in forest cover area (%)	Change in share of protected areas (%)
Replacement of wood fuels by other clean energy in total consumption (%)	Green jobs created by additional investments
Change in indoor pollution (%)	

ENERGY

The energy-poverty reduction-environment nexus is critical to Ghana's transition to a green economy. Ghana's authorities report that wood fuel and charcoal account for 55 per cent of the country's consumption of energy. This is followed by petroleum (36 per cent) and electricity (9 per cent) (Republic of Ghana, 2013) and it is suggested that wood fuel and charcoal will continue to be the dominant sources of energy in the medium term. In terms of reliability of electricity service, the authorities report that rural customers served by the Electricity Company of Ghana (ECG) experience 282 interruptions per year and urban customers 266. The authorities attribute the failure to meet targeted improvements in reliability to the progress of rural electrification, suggesting that generation capacity has not kept pace with increased load.[4] Electricity tariffs reflect embedded subsidies, which were progressively phased out in 2014.[5]

The work on indicators in this area, therefore, focuses on the issues of reliability and affordability of access to electricity. Policies and investments in renewable sources, including distributed sources, are critical for improving the reliability of supply while promoting environmental outcomes (see Table 2).

In the meantime, externalities associated with energy production and consumption, for example, the use of water resources for hydropower generation and emissions intensity of energy production and use, are also worth tracking to inform policy responses. The proposed indicators in these areas are also presented in Table 2.

TABLE 2: PROPOSED INDICATORS FOR THE ENERGY SECTOR IN GHANA

ISSUE LIMITED ROLE OF GENERATION CAPACITY FROM RENEWABLE SOURCES AND PROBLEM OF RELIABILITY AND AFFORDABILITY OF ACCESS TO ELECTRICITY	
Issue identification indicators	Most recent value (year)
Percentage of households with access to electricity, from the grid and through distributed sources (%)	72% of the population (2012)
Share of generation capacity accounted for by renewable sources (%)	Share of renewables (excluding large-scale hydro) is 0.01% of total capacity (2011)
Interruptions (number), distribution losses (%)	Rural customers served by the Electricity Company of Ghana (ECG) experienced 282 interruptions per year and urban customers 266 (2011); Distribution losses were 27% for ECG and 20.2% for NEDCO (Northern Electricity Distribution Company), which supplies specific northern regions (2011)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Interruptions and distribution losses (cut by X% in Y years)	Amount invested in transmission and distribution networks (US$)
Fuel and electricity price subsidies (phasing out by Y years)	Government spending through feed-in tariffs (US$)
Share of total installed generation capacity for renewables (excluding hydro) (10% by 2020)	Investments in increasing generation capacity from renewable sources, including distributed and small-scale generation (US$)
Policy assessment indicator(s)	
Economic gains from improved reliability (US$)	Generation capacity from renewable sources

AGRICULTURE

Agriculture plays a vital role in Ghana's economy. The sector employs nearly 50 per cent of the labour force and increasing income from agriculture is critical to alleviating rural poverty. Authorities are concerned that growth in the sector is too slow. The Government's Medium Term Agriculture Sector Investment Plan (METASIP) reported that productivity in major food crop sectors, as measured by yields per hectare, remained largely unchanged between 2002 and 2008 and that these yields fall well short of potential yields.[6]

In the view of authorities, the main constraints to productivity are: poor soil conditions (further affected by land degradation), overreliance on rain-fed agriculture and unreliable rainfall patterns, the prevalence of pests and diseases, limited technical advancement and limited access to superior seed varieties and animal breeds.[7] Inadequate storage and transport infrastructure results in significant post-harvest losses. Reported figures are 35.1 per cent for maize, 34.6 per cent for cassava, 24.4 per cent for yam and 6.1 per cent for rice. Agriculture also suffers from a poor level of physical connectivity to markets and a lack of integration into value chains. Examples of indicators to address the above mentioned areas are summarized in Table 3.

This work points to several challenges in developing

TABLE 3: PROPOSED INDICATORS FOR AGRICULTURE IN GHANA

ISSUE PRODUCTIVITY IN MAJOR FOOD CROP SECTORS HAS STAGNATED. THIS IS ASSOCIATED WITH POOR SOIL CONDITIONS, OVERRELIANCE ON RAIN-FED AGRICULTURE, LIMITED TECHNICAL ADVANCEMENT AND HIGH AFTER-HARVEST LOSSES	
Issue identification indicators	Most recent value (year)
Productivity (% of achievable yield)	45.3% cassava, 62.9% maize and 63.5 yam (2011)
Agricultural mechanisation	Tractor to farmer ratio (1:1 500 in 2011); Number of services established (89 in 2011)
Post-harvest losses (% of total harvest)	Reported figures are 35.1% for maize, 34.6% for cassava and 24.4% for yam (2013)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Agriculture mechanisation (increased by X% in Y years)	Investments in mechanisation services (US$); Number of farmers trained per year in the proper use of mechanisation
Cultivated land under irrigation (increased by X% in Y years)	Government spending through feed-in tariffs (US$)
Food storage and transport infrastructure capacity (increased by X% in Y years)	Investments in food storage and distribution systems (US$)
Policy assessment indicator(s)	
Productivity (% of achievable yield)	Water consumption efficiency
Improvements to food security	Green jobs created by additional investments
Impact on poverty rates	

green economy indicators. For example, even when data exists for indicators, more effort is needed to ensure that data collection is systematic and there is a greater level of disaggregation. While Ghana has made great efforts in developing a statistical basis to support evidence-based policymaking, major difficulties were experienced when it came to gathering official data to support the country study. Ways must be found to address this problem, especially if data-gathering across multiple sectors is to become a routine exercise.

Overcoming these barriers and ensuring that the work done on indicators is carried forward into sectoral and economy-wide strategies requires action at the institutional level. The authorities have considerable experience in establishing steering groups for the purpose of project formulation. This experience can provide a useful model for inter-ministerial cooperation.

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3.2 MAURITIUS

3.2.1 COUNTRY PROFILE

ECONOMIC PROFILE

Since the late 1960s, Mauritius has transformed itself from a low-income, agriculture-dependent economy to an upper middle-income diversified economy. From 1981 to the present, the growth rate has fluctuated between 5 per cent and 15 per cent (IMF, 2014b), resulting in higher income, increased life expectancy, lower infant mortality and robust infrastructure (Statistics Mauritius, 2013).

From 1976 to 2012, the percentage of GDP devoted to agriculture has decreased from 22,5 per cent to 3,5 per cent of GDP, while the manufacturing and services sector have become predominant sectors of the economy (Statistics Mauritius, 2014). According to the World Economic Forum (WEF), Mauritius recently overtook South Africa as the most competitive economy in Sub-Saharan Africa (Mahomed, 2013).

ENVIRONMENTAL PROFILE

Mauritius has limited fossil fuels and mineral wealth, but it is rich in fisheries, forests, biodiversity and overall natural beauty. Environmental management and protection are strong and the country is likely to achieve all environment-related Millennium Development Goals. However, the plan to significantly expand the tourism industry may put Mauritius's natural resources, such as coral reefs, at risk.

SOCIAL PROFILE

The population growth rate in Mauritius is approximately 0.5 per cent per year and the country expects to face an ageing population in the coming years. The population over the age of 60 is projected to increase from 9 per cent in 2000 to 23 per cent by 2040 (Mauritius Ministry of Environment and Sustainable Development, 2013).

Due to economic structural reform, the labour force is experiencing similar changes. The services sector is the largest employer of the country. Financial intermediation, tourism and real estate are the main drivers.

Sustained growth has created income growth, but it is not equitably distributed, with the Gini coefficient rising from 0.388 in 2006/2007 to 0.413 in 2012 (Statistics Mauritius, 2012).

NATIONAL GREEN ECONOMY INITIATIVES

There is a strong political commitment at the national level to advance sustainable development through the adoption of the new long-term vision, "Maurice Île Durable" (MID). The main objective is to make Mauritius a model of sustainable development, particularly in the context of the Small Islands Developing States (SIDS). A National Sustainable Development Strategy in the form of the MID Policy, Strategy and Action Plan (MIDPSAP) has been elaborated and the MID Commission in the Prime Minister's Office harmonizes efforts, ensures timely implementation of relevant projects and looks into all aspects of sustainability. Green economy is one of the priority programmes in the MIDPSAP and green economy principles are central to the MID strategy.

3.2.2 SECTOR ANALYSIS

Agriculture, energy, transport, manufacturing, tourism, waste and water sectors were identified during stakeholder consultations as having significant potential for greening the economy because of their contribution to GDP, employment creation, global competitiveness and environmental impact. These sectors are not only inter-related, but also reflect the country's challenges as they relate to food and water security, dependence on imported energy with high energy costs, traffic congestion, impacts related to waste management and the vulnerability and fragility of the tourism sector. In the next section, indicators in the tourism, waste management and water sectors are discussed.

TOURISM

TABLE 4: PROPOSED INDICATORS FOR TOURISM INDUSTRIES IN MAURITIUS

ISSUE MITIGATE POTENTIAL NEGATIVE IMPACT OF AN INCREASE IN THE NUMBER OF TOURISTS, GIVEN THE RELATIVELY POOR RESOURCE EFFICIENCY OF THE SECTOR	
Issue identification indicators	**Most recent value (year)**
Coastal ecosystem degradation (coastal water quality (mg/l))	Nitrate, phosphate and silicate concentrations in underground freshwater seepage water were high, reaching 9 485, 105 and 24 775 mg/l, respectively (2002).
Total waste disposal by hotels and restaurants (tonnes/year)	Total waste in Mauritius amounts to 416 000 tonnes of solid waste in 2009 (2011)
Energy and water consumption in hotels and restaurants (ktoe and m^3/year)	Water consumption from domestic, industrial and tourism accounts for 205 m^3/year or 27% of total water used (2012)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Number of marine conservation areas (increased by X% in Y years)	Marine protection fee per year by pleasure crafts (MUR/year)
Number of hotels with waste water treatment facilities (increased by X% in Y years)	Investment in beach protection (MUR/year)
Energy and water consumption in tourism sector (cut by X% in Y years)	Hotels that have carried out energy audits (number of audits)
Policy assessment indicator(s)	
Health of coastal ecosystem	Improvement of coastal water quality (mg/l)
Resource efficiency	Green jobs created by additional investments
Production/sales of locally produced handicrafts in touristic areas (MUR/year)	

The government projects a significant increase in the number of tourists arrivals in the foreseeable future. As a result, a number of issues need to be closely monitored in order to mitigate the potential negative impact as indicated in Table 4.

In the policy formulation stage, specific targets can be set (step 1) to measure progress towards the achievement of policy objectives within a given time frame. In step 2, decision makers use indicators to assess a number of different instruments (including comparing their costs and benefits) to induce green investments in the sector as well as create the enabling conditions for a shift to more sustainable development of tourism.

WASTE MANAGEMENT

The waste management strategy in Mauritius still focuses largely on end-of-life, sanitary landfilling. This results in missed economic opportunities and is of concern because of the limited availability of land. Indicators for this sector focus on identifying worrying trends related to unsustainable waste management (see Table 5). Greening the waste sector is likely to have a positive impact across key sectors. For example, waste recycling increases resource availability. Reduced pollution and improved environmental quality from better waste management has a positive impact and increases attractiveness for tourists. The result is improved revenues from tourism and the sector's contribution to GDP.

WATER

The sustainable use of water resources is a priority

TABLE 5: PROPOSED INDICATORS FOR WASTE MANAGEMENT INDUSTRIES IN MAURITIUS

ISSUE LARGELY AN END-OF-LIFE ACTIVITY WITH A FOCUS ON SANITARY LANDFILLING, WHICH IS OF CONCERN BECAUSE OF THE LIMITED AVAILABILITY OF LAND	
Issue identification indicators	Most recent value (year)
Total MSW landfilled (tonnes/year)	The total amount of solid waste disposed at sanitary landfill went up to 416 000 tonnes in 2009 (2011)
Total MSW recycled (tonnes/year)	130.9 tonnes of recycled waste materials as of 2006 (2011)
Hazardous waste generated, collected and treated (tonnes/year)	Total hazardous waste generated as of 2003 was 8 500 tonnes/year in average reaching a maximum value of 22 600 tonnes/year (2011)
Policy formulation indicator(s)	
Policy objectives	Intervention options
MSW landfilled (cut by X% in Y years)	Marine protection fee per year by pleasure crafts (MUR/year)
Total MSW recycled (tonne/year) (increased by X% in Y years)	Fiscal incentives for waste reduction and recycling (MUR/year)
Hazardous waste collected and treated (increased by X% in Y years)	Disposal fees for hazardous wastes (MUR/year)
Policy assessment indicator(s)	
Improvements on health due to better waste management	Economic value of wastes recycled (MUR/year)
Revenue from waste taxes/disposal fees (MUR/year)	Green jobs created by additional investments

TABLE 6: PROPOSED INDICATORS FOR WATER IN MAURITIUS

ISSUE UNSTAINABLE USE OF WATER RESOURCES IS A CENTRAL CONCERN. IN PARTICULAR, IMPROVEMENTS IN WATER EFFICIENCY ARE NEEDED TO CURB WATER DEMAND	
Issue identification indicators	Most recent value (year)
Water consumption, per type of user (m^3/year)	Domestic, industrial (used through Central Water Authority) and tourism sector accounts for 205 m^3/year (2012), agricultural sector accounts for 356 m^3/year (2012), hydropower sector accounts for 181 m^3/year (2012)
Pressure on water resources (total freshwater withdrawal as % of actual renewable water resources)	26.35 % (2003)
Volume of treated waste-water (m^3/year)	Average monthly potable water production from treatment plants amounts to 93.3 m^3/year in the whole island (2012)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Volume of treated waste and desalinated water (increased by X% in Y years)	Tax incentives/subsidies for use of treated waste and desalinated water
% of meters checked for heavy users of water (increase by X in Y years)	Amount spent in meters replacement and in campaigns on water savings (MUR/year)
Share of population with access to safe drinking water and connected to sewage treatment (increase by X in Y years)	Amount invested on water and sewage treatment systems (US$)
Policy assessment indicator(s)	
Volume of water availability from sustainable sources	Water productivity (MUR/m^3)
Incidence of water borne diseases	Green jobs created by additional investments

for Mauritius. In particular, improvements in water efficiency are needed to curb water demand (see Table 6). The indicators analyzed focus on unsustainable water resources management. They include stock of water resources and pressure on water resources, water consumption, cost of water and water productivity and intensity of the economy.

The work on indicators in Mauritius revealed important data challenges. For example, although data are available for issue identification when it comes to socio-economic issues, major gaps were found in indicators of resource efficiency. Some of the data was generated by the private sector. Other data came from academic or research institutions. Cooperation among key actors is needed along with partnerships to assemble the best quality data available. The country study recommended that the MID Commission, in collaboration with Statistics Mauritius, chair a National Steering Committee on Indicators for Green Economy and Sustainable Development comprising representatives of the Ministries concerned, the private sector and civil society to organize data collection and fill the data gaps. This would include the "validation" of non-official statistics, where the government could coordinate with other actors on methodologies and data collection efforts.

The Mauritian Ministry of Finance also requested that further work be done to create a suite of high level indicators to complement the sectoral level assessments. An initial draft was put together by the University of Mauritius. This will be subject to further discussion with the government of Mauritius.[8]

3.3 URUGUAY

3.3.1 COUNTRY PROFILE

Photo: CIAT/Neil Palmer

ECONOMIC PROFILE

After a severe economic crisis in 2002, Uruguay entered a period of recovery with an average GDP growth rate of 5.2 per cent that was sustained over the last 10 years. Uruguay is a small country and its economy is based mainly on agriculture, livestock and forestry. Agriculture and livestock products provide the main inputs in the industrial sector and generate strong demand for services. This has a positive effect on employment. Beef is the main export, representing 30 per cent of the total value of food exports for 2011 and 17 per cent of Uruguay's overall exports (UN Comtrade and UN Service Trade, 2013b). The main industrial sectors are the production of appliances (e.g., refrigerators), dairy, flour milling, textiles and more recently pulp, among others. Also, the mining sector has been growing significantly in recent years.

ENVIRONMENTAL PROFILE

Intensive use of natural resources and the adoption of unsustainable production practices in key economic sectors (e.g., agriculture, livestock, forestry) have contributed to environmental deterioration in Uruguay. In turn, environmental issues such as soil erosion, water pollution and limited resilience to climatic change challenge the performance of key economic sectors such as agriculture and livestock.

The generation of emissions also has an impact on the environment. CO_2 emissions derive mainly from the energy sector (burning of fossil fuels). Transport is the main source of GHG emissions, accounting for 40 per cent of total emissions. Emissions from transport more than doubled between 1990 and 2012 (National Energy Authority, 2012).

SOCIAL PROFILE

Uruguay is in a state of advanced demographic transition. The fertility rate is below replacement level. As a result, the Uruguayan population is ageing.

In terms of employment, the economic growth experienced in recent years generated significant, positive spillovers in the labour market and the unemployment rate reached a record low at 6.4 per cent in 2013. However, unemployment mostly affects women and people under 25 years old.

NATIONAL GREEN ECONOMY INITIATIVES

Since the Earth Summit in 1992, Uruguay has achieved important progress towards sustainable development. This has led the country to establish an extensive normative framework for sustainable development, particularly with respect to the environmental pillar (Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente [MVOTMA], 2012). Some relevant sectoral initiatives include, in the transport sector, the "urban mobility plan of the Municipality of Montevideo", in the agriculture sector, the "soil management plans (Law 18.564)" and in the tourism sector, the "Land management plans (Law 13.308)".

Uruguay carried out studies to demonstrate the inter-linkages between poverty and environmental degradation in Montevideo (MVOTMA, 2012). The studies were done in the context of the Poverty-Environment Initiative (PEI) supported by UNDP and UNEP. The Packaging Law, which was introduced as a measure for greening the waste sector, successfully demonstrated the links between improved environment, health and jobs and became a success story (UNEP, 2013). As a result, the Ministry of Social Development engaged itself in supporting the integration of these poverty-environment linkages into development policies for poverty, environment and waste management initiatives (UNEP, 2013). Subsequently, the ministries of Environment and Social Development, the municipality of Montevideo and the private sector approved – with the support of PEI – the Montevideo Management Plan for the Recovery of Non-returnable Packaging Waste.

3.3.2 SECTOR ANALYSIS

A workshop was held in Montevideo in August 2013 for the selection of key sectors and the identification of potential policies and areas of action to create the enabling conditions for a green economy transition. Participants to the workshop included representatives of all ministries belonging to the project steering committee. Five sectors were selected for inclusion in the Uruguay Green Economy Study: Agriculture, Livestock, Tourism, Transport and Industry. For each sector, several problems were identified as the main barriers to a green economy transition. In the following sections, indicators in Agriculture, Transport and Tourism will be illustrated.

AGRICULTURE

Employment in the agriculture sector increased from 4.1 per cent in 2000 to 10.9 per cent of the employed in 2012 (UN, 2012, 2014). In terms of its multiplier effects, it is estimated that every dollar of additional expenditure in the agriculture sector contributes US$6.22 to the economy as a whole.
Two main environmental issues for the agriculture sector were identified by national stakeholders. These are: 1) low use of water run-offs and high vulnerability of agricultural yields to climatic events; and 2) soil erosion and degradation. Indicators are presented in Table 7.

TRANSPORT

According to the latest available data, the Gross Value Added (GVA) of transport represents 4.9 per cent of the country's GDP (Central Bank of Uruguay, 2012). During the period 2005-2012, transport GVA grew at an annual rate of 5.2 per cent, in line with national economic growth (5.6 per cent).

Increasing public transportation is one of the priority issues in Uruguay's transport sector. According to the results of the Household Survey on mobility and opinion of the System of Urban Public Transport 2009 (Municipality of Montevideo, 2010), a systematic decline in the modal share of public transport (buses) has been recorded since 1996 (from 57 per cent to 41

TABLE 7: PROPOSED INDICATORS FOR AGRICULTURE IN URUGUAY

ISSUE HIGH VULNERABILITY OF AGRICULTURAL YIELDS DUE TO A LOW USE OF WATER RUN-OFF AND SOIL EROSION AND DEGRADATION	
Issue identification indicators	Most recent value (year)
Volume of unused water run-off, (km^3)	2.5-2.7 km^3/92 km^3 yearly (2013)
Non-irrigated crop area (1 000 ha)	238 of 1 760 1 000 ha (2013)
Soil losses in agriculture (tonne/ha/year)	Estimated to be between 13 and 17 tonnes/ha/year
Policy formulation indicator(s)	
Policy objectives	Intervention options
Irrigated crop area (increased by 50% in 10 years)	Amount of fiscal incentives for dam construction (US$)
Soil losses (cut by 53% in 20 years)	Number of soil management and use plans presented to MGAP
Volume of unused water run-off (cut by X% in Y years)	Volume of unused water run-off (cut by X% in Y years)
Policy assessment indicator(s)	
Share of irrigated crop area	Soil losses caused by erosion (tonne/ha/year)
Productivity losses	Green jobs created by additional investments

per cent in 2009). Another important aspect is the low use of railways in transporting cargo. Estimates are that rail transport only covers 5 per cent of the total volume of cargo transported annually.

The high concentration of private cars is generating congestion problems at the city level. The result is an increase in average travel times, higher fuel consumption and related CO_2 emissions. Table 8 presents a set of relevant indicators that address some of the main issues identified in the transport sector.

TOURISM

Tourism in Uruguay is characterized by a concentration of hotels in the southeast and the prevalence of "sun and beach" activities. Concerns about sustainability relate to the degradation of the coast due to intensive exploitation and especially to real estate pressure (both hotels and second homes).[9] In particular, the Ministry of Tourism and Sports (MINTUR) recognizes that this problem is more relevant in the coastal departments of Colonia, Canelones, Maldonado and Rocha. In response to sustainability issues related to the uncontrolled exploitation of the coasts, Law 18.308 of June 2008 introduced the Instruments of Spatial Planning and Sustainable Development (IOTDS), which provides a general regulatory framework. The law applies to areas of particular interest due to their heritage, cultural and environmental importance.

Another key sustainability issue is the inefficient consumption of electricity in tourism facilities. According to the results of the survey on energy use and consumption (DNE, 2009), the hotel sector's total energy consumption was 14.1 ktoe (kilo tonnes of oil equivalent) in 2006. That represented 5.4 per cent of the total consumption in commercial and services sectors. In particular, electricity supplies 53 per cent of the total net energy consumption of the sector, with energy being used by hotels mainly for cooling (24 per cent), lighting (23.2 per cent) and refrigeration (10.3 per cent).

Similar concerns relate to the waste management in tourism facilities. In order to respond to these concerns, the Ministry of Tourism has relied on the

TABLE 8: PROPOSED INDICATORS FOR TRANSPORT IN URUGUAY

ISSUE LOW USAGE OF PUBLIC TRANSPORTATION, CONGESTION PROBLEMS AT THE CITY, HIGHER FUEL CONSUMPTION AND RELATED CO_2 EMISSIONS	
Issue identification indicators	Most recent value (year)
Share of public transport in total average daily trips (%)	41% (2009)
Energy consumption (ktoe)	3 688.4 ktoe (2012)
CO_2 emissions (tonne)	3 251.3 tonnes (2012)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Share of public transport in total average daily trips (increased by 80% in 20 years)	Annual budget for improving efficiency and incentives to encourage the use of public transport (US$)
Energy efficiency of passenger transport (improve by 15% in 20 years)	Amount of investments for implementing a vehicle efficiency standard system (US$)
Emissions of transport (cut by X% in Y years)	Number of implemented circulation regulations
Policy assessment indicator(s)	
Average travel time in the public transport system (in minutes)	Energy intensity of transport (toe/US$)
Emissions intensity in transport (tonne CO_2/toe)	Green jobs created by additional investments

Manual on Environmental and Social Management (EGAS) as a guide for its investment projects since 2011. According to the manual, the share of costs dedicated to waste disposal must comprise between 10 per cent and 30 per cent of the total project cost. Table 9 presents relevant indicators for these issues.

The analysis found that while economic and social indicators show relatively good progress, environmental indicators still lag behind. Economic and social indicators have been collected for a long time, so data quality tends to be higher and policy decisions are effectively informed by the data. In contrast, the data quality for environmental indicators tends to be lower and the information is often dispersed and fragmented across several sectors of competence. In fact, it is not easy to find indicators and often these are only available for certain years. In this regard, it is important to highlight the effort being made by the National Direction of Environment of Uruguay (DINAMA in Spanish) to improve the collection of environmental indicators. It is an initiative that promises to support ongoing and future efforts to formulate policy by keeping environmental indicators in a coherent database.

TABLE 9: PROPOSED INDICATORS FOR TOURISM INDUSTRIES IN URUGUAY

ISSUE SUSTAINABILITY CONCERNS RELATED TO INTENSIVE EXPLOITATION OF THE COASTAL AREA ESPECIALLY DUE TO REAL ESTATE PRESSURE, INEFFICIENT USE OF ELECTRICITY AND WASTE MANAGEMENT	
Issue identification indicators	Most recent value (year)
Waste generation (% of total)	Costal area represents 80% of total. Expected rate of growth by 2030 for costal area (12.52%) vs total national (11.59%). (2011)
Electricity consumption in hotels and restaurants on the coast (kWh/year)	100 898 505 kWh (2012)
Area impacted by regulatory instruments.	Currently 6 local plans within IOTDS, involving 2 041.2 km^2 (2014)
Policy formulation indicator(s)	
Policy objectives	Intervention options
Electricity efficiency of tourism (increased by 15% in 20 years)	Amount of investments in projects of energy efficiency in tourism (US$); Amount invested in energy consumption from renewable resources (US$)
Properly managed solid waste in coastal departments (tonne/year) (improve by 14% in 20 years)	Amount of resources allocated solid waste management
Areas that use local land plans in the coastal departments of Colonia, Canelones, Maldonado and Rocha (increased by 30% in 20 years)	Number of zoning rules; Total area impacted by the new plans (km^2); Number of municipalities involved
Policy assessment indicator(s)	
Tourism energy productivity (US$/ktoe).	Value of costal biodiversity
Emissions intensity in the tourism sector (tonne CO_2/toe).	Green jobs created by additional investments

4 KEY FINDINGS AND CHALLENGES

INDICATORS COULD BE A POWERFUL TOOL TO ENGAGE STAKEHOLDERS.

In all the country studies, key sectors and the identification of potential policies and areas of action were decided in a series of workshops with relevant stakeholders, including representatives of key ministries. Although reaching an agreement was a time consuming activity and imposed some challenges, the process was highly positive. Achieving consensus of national priorities ensured greater validity of the results obtained as well as the potential for cooperation on data development in the future.

FINDING USEFUL INDICATORS FOR ISSUE IDENTIFICATION WAS THE MOST SUCCESSFUL TASK IN ALL STUDIES.

The most precise indicators analyzed and proposed by the studies were in the sections dealing with issue identification. This was mostly because of the relatively higher availability of data for related indicators and also because it is easier to reach consensus on the issues that need to be addressed than it is on the specific policies that need to be implemented to handle them.

It was more challenging to define the indicators for policy formulation and monitoring. A closer collaboration with modelers is important when it comes to helping stakeholders define indicators for policy formulation and policy assessment. Modelling for policy assessment requires targets to be specified in terms of a concrete set of indicators. The choice of a set of policy indicators should be matched with the answers modelling tools can provide (e.g. if we want the model to provide sectoral information, we need to adapt the model and the type of indicators available in order to do so). This will enhance the role of indicators within the Integrated Policymaking Process.

TOO MANY INDICATORS WERE PRESENTED IN THE COUNTRY STUDIES, IMPLYING THE NEED TO IMPROVE THE SETTING OF PRIORITIES.

Although the country studies – which served as the basis for this synthesis paper – highlighted the need to keep the number of indicators small, the desire to be more comprehensive and to cover a broad spectrum of issues and challenges often resulted in too many measures. In order to reduce the number of indicators, a clear distinction must be made between those indicators that are critical to guiding the policymaking process and those that are needed mostly for background technical analysis. In this report, we have chosen to present only a small set of indicators to illustrate how UNEP's Green Economy Indicators Framework may be applied at the country level. A full range of indicators (and their related issues) can be found in the complete country reports.[10] The idea is to highlight the importance of prioritizing a small set of indicators for which data are relatively easy to collect, to analyze and to update periodically. To do so, further consultations on national priorities as well as a pre-assessment of the availability of data to capture these priorities with indicators are required. To ensure coherence, the chosen set of indicators will need to be linked to existing national indicator frameworks.

DATA GAPS ARE SIGNIFICANT CHALLENGES IN EACH OF THE THREE COUNTRY STUDIES.

Significant gaps exist in the data for indicators that highlight the connection between the three dimensions of sustainable development. In order to improve data collection, more focus needs to be given to priority issues, with a particular emphasis on the interconnection of economic, social and environmental issues. Many national statistical offices have only limited experience collecting the data needed to construct green economy indicators. This is due to the lack of issue prioritization (within and across green economy dimensions). If priorities were to be set and measured by a selected number of indicators, it would be possible to concentrate efforts to reinforce the existing statistical framework in order to collect the required data and to provide sufficient resources to support the development of GE indicators. In this respect, international cooperation and capacity building are needed to ensure the effectiveness of the indicators that support policymaking.

Even when data for the indicators already exists, an extra effort is needed to ensure that the data is collected more systematically (e.g. annually) and, if possible, at a greater level of disaggregation than is currently done. Higher availability of disaggregated data will significantly enhance the role of indicators in identifying potential linkages among all spheres of green economy (economic, social and environmental).

5 CONCLUSIONS AND RECOMMENDATIONS

This report discusses the country work on the role of indicators in supporting integrated green economy policymaking processes in Ghana, Mauritius and Uruguay. Indicators that are policy relevant, analytically sound, measurable and easy to communicate will provide decision-makers with meaningful information to enhance an evidence-based policymaking process. For example, indicators can help policymakers identify potential problems and inform them on whether their development strategy is headed in the desired direction.

These pilot studies highlight the advantages of having a framework for work on indicators. However, they also illustrate important challenges in fully integrating indicators into green economy policymaking. Country priorities must be clear so that the consultative process with key stakeholders results in the selection of a small set of critical indicators, chosen from the larger set needed as part of the background technical analysis and as follow up to green economy policies. In addition, it is important to make a greater effort to propose indicators for policy assessments that identify potential impacts in all spheres of sustainable development (economic, social and environmental).

As the framework is applied to other countries in the future, increasing the temporal coordination between modelling and indicators work will be key to making both indicators and modelling more useful for policy formulation and assessment. When better connected, models can benefit from the richer data collection for the construction of indicators, thereby helping to refine the analysis of the implications of a policy intervention. Similarly, the construction of indicators must be guided by the structure of models, which will help ensure that indicators are more precise and better articulated. One way forward would be to have the same team work on both indicators and modelling. However, in cases where this is not possible, it is imperative to promote close cooperation and coordination between these two sets of activities. For those countries in which work on modelling and indicators is already undertaken, it is advisable to carry out a revision to the proposed set of indicators, taking into account the recommendations provided in this report.

In terms of the Guidance Manual for Green Economy Indicators, further work is needed to better define and present indicators in a succinct but comprehensive way. In addition, some of the elements learned from the pilot cases as well as other lessons from future applications can be used to revise the document and enhance its capacity to provide key information to policymakers. Moreover, work on indicators should be undertaken at an early stage to allow an early learning process and to create better chances for their improvement to support all stages of policymaking.

Finally, in the future, when countries have gained further experience with the construction of indicators for green economy policy making, it will also be important to select or create indicators that can facilitate comparisons across sectors/countries, in order to assess global progress towards a green economy.

NOTES

1 A larger list of issues and indicators can be found in the country reports.

2 Notice that this is a relatively low value, since global average CO_2 emissions are 4.88 tonnes per person, while the average for Sub-Saharan Africa is 0.81 tonne per person. See World Development Indicators (2014).

3 See UNEP (2013b) Green Economy Scoping Study: Ghana.

4 National Development Planning Commission (2012), The Implementation of the GSGDA, Monitoring Report 2011, p. 129.

5 IMF (2014a), Ghana Staff Report for the 2014 Article IV Consultation, p. 8.

6 Ghana Ministry of Agriculture (2011), Medium Terms Agriculture Sector Investment Plan (2011-2015), p. 6.

7 Ghana Ministry of Agriculture (2013), Food and Agriculture Sector Development Policy.

8 More detailed information about the list of indicators can be found in the country report.

9 Tourism pressure has to be associated with the concept of carrying capacity, which is the limit of volume (of people) and intensity (of activity) that can be supported by a given geographical area without causing irreparable damage (Marchena et al., 1999).

10 It is important to notice that alternative lists of indicators could be made for different audiences depending on their role in the policymaking process (e.g. some actors may need a shorter list of key indicators while others may require a more extensive list of indicators for their analysis).

REFERENCES

FAO. (2014) AQUASTAT. Country Factsheet Mauritius. Accessed 20 October 2014. http://www.fao.org/nr/water/aquastat/data/cf/readPdf.html?f=MUS-CF_eng.pdf

Ghana Ministry of Agriculture. (2011). Medium Terms Agriculture Sector Investment Plan (2011-2015).

_____. (2013). Food and Agriculture Sector Development Policy.

Ghana Statistical Service .(2014). Gross Domestic Product 2014. Retrieved from: http://www.statsghana.gov.gh/docfiles/GDP/GDP_2014.pdf

Green Growth Knowledge Platform, (2013). "Moving towards a Common Approach on Green Growth Indicators – A Green Growth Knowledge Platform Scoping Paper",
http://www.greengrowthknowledge.org/sites/default/files/downloads/resource/GGKP%20Moving%20towards%20a%20Common%20Approach%20on%20Green%20Growth%20Indicators.pdf

IMF. (2014a). Ghana Staff Report for the 2014 Article IV Consultation.

_____. (2014b). World Economic Outlook (WEO) Database.

Mahomed, F. (2013). Mauritius proves to be the most competitive economy in Sub-Saharan Africa. CNBCAfrica.com. Retrieved from: http://www.cnbcafrica.com/news/southern-africa/2013/09/05/mauritius-proves-to-be-the-most-competitive-economy/

Marchena Gómez, M., Vera Rebollo, F., Fernández Tabales, A. y Santos Pavón, E. (1999). Agenda para planificadores locales: turismo sostenible y gestión municipal, Madrid: Organización Mundial del Turismo.

Mauritius Ministry of Environment and Sustainable Development. (2013). Maurice Île Durable Policy, Strategy and Action Plan. Retrieved from: http://mid.govmu.org/portal/sites/mid/file/full%20report%20midpolicy.pdf

Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente. (2012). Documento del proceso nacional hacia Río + 20. Retrieved from: http://sustainabledevelopment.un.org/content/documents/811MVOTMA_-_Documento_hacia_Rio__20.pdf

Republic of Ghana. (2013). Ghana Shared Growth and Development Strategy II (draft December 2013), 2014-2017.

Statistics Mauritius. (2013). Digest of Demographic Statistics. Retrieved from: http://statsmauritius.gov.mu/English/Documents/demography2012.pdf

Statistics Mauritius. (2014). Historical series – National accounts. Percentage distribution of Gross Domestic Product by industry group at current basic prices, 1976-1998 and 2006-2014. Retrieved from: http://statsmauritius.gov.mu/English/Pages/Historical-Series--National-Accounts.aspx

UN Comtrade and UN Service Trade. (2013a). Ghana Trade Profile. Retrieved from: http://data.un.org/CountryProfile.aspx?crName=ghana

_____. (2013b). Uruguay Trade Profile. Retrieved from: https://data.un.org/CountryProfile.aspx?crName=URUGUAY

United Nations Department of Economic and Social Affairs, Statistics Division. (2012). World Statistics Pocketbook 2011. Retrieved from: http://unstats.un.org/unsd/pocketbook/Pocketbook%202011.pdf

_____. (2013). World Statistics Pocketbook 2013. Retrieved from: http://data.un.org/CountryProfile.aspx?crName=ghana

_____. (2014). World Statistics Pocketbook 2014 edition. Retrieved from: http://unstats.un.org/unsd/pocketbook/WSPB2014.pdf

UNEP. (2009). Integrated Policymaking for Sustainable Development.

_____. (2010). Green Economy Developing Countries Success Stories. UNEP, Geneva.

_____. (2013a). Building inclusive green economies. Success stories from South-South cooperation. Retrieved from: http://www.unep.org/pdf/UNEPSSCSuccess-Stories.pdf

_____. (2013b). Green economy scoping study. Ghana. Retrieved from: http://www.unep.org/greeneconomy/

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