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PROPOSALS FOR THE ESTABLISHMENT
OF A MEDITERRANEAN REGIONAL CENTER
FOR THE PRACTICAL UTILISATION OF RENEWABLE
ENERGY SOURCES

Submitted by the Government of the Republic of Malta

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PROPOSAL FOR THE ESTABLISHMENT OF A MEDITERRANEAN REGIONAL CENTRE FOR THE PRACTICAL UTILISATION OF RENEWABLE ENERGY SOURCES

INTRODUCTION

Positive aspects which have emerged from the recent energy crisis provide basic guide lines for the formulation of policies for energy management at global and national levels.

Foremost, the question of energy supply has now come to be recognised as a multi-national problem which can only be resolved through international cooperation. Secondly, government intervention in energy management has become essential and the procurement and utilisation of supplies have become recognised as national issues. Furthermore as the steadily growing demand for energy takes a heavy toll on known reserves thus threatening the adequacy and stability of supplies to meet future requirements, concerted efforts should be made for energy conservation and the exploitation of the hitherto untapped renewable energy sources such as solar, wind, biomass, etc.

The common factor underlying the above aspects highlights the need for the establishment of mechanisms to co-ordinate efforts amongst States for the adaptation of technologies and development of systems operating on renewable energies.

The Mediterranean is a region of contrasts, embracing a number of states with different social and economic backgrounds and with varying levels of industrial development. It is the combination of these characteristics and the energy situation generally prevailing in the countries which renders the region an ideal zone for the harnessing of renewable energies particularly solar energy, which is abundant in the Mediterranean.

Research work for the practical utilisation of renewable energies has been under way for some time, but the tempo of these activities has in general been regulated more by an urge for the pursuit of academically-oriented work rather than by a firm intent for the development of practical systems with the end-user in mind. It was only relatively recently that there appeared a widespread appreciation of the potentiality of these resources and of the economic and practical benefits offered to users particularly those located in areas where conventional energy is not readily or economically available. Some systems have appeared on the market, but there is yet no evidence of a break-through which renders competitive the exploitation of renewable energy. The main reason for this is the fact that the harnessing and utilisation of these energy sources require technologies hitherto not readily available to prospective users. Furthermore, the present state of the art does not appear to have produced low-cost commercially viable systems. Development techniques are needed to bring down the cost.

The extent of current developmental efforts are dictated primarily by the existence of any pressing needs for renewable energy source utilisation and by the financial resources allocated for such projects. However, the countries which would benefit most by a major break-through are not sufficiently technically equipped, nor in most cases are they affluent enough to indulge in such work, even though the exploitation of these resources would open for them great possibilities for social and economic improvement. The activities and results of these polarised efforts would thus be oriented to satisfy the intentions or requirements of the promoters. Also most of the developing countries are not in a position to buy expensive and sophisticated technologies because of financial stringencies and lack of the necessary infrastructure for development and maintenance.

Unlike conventional energy appliances, the suitability, performance and economics of renewable energy systems are influenced by the

climatological, geographical and socio-economic parameters prevailing in the localities of intended use. Wide differences in these conditions exist between the industrialised countries where there is ample capital and expertise but apparently subdued interest or incentive for large scale investment, and the developing countries endowed with an abundance of renewable energy but lacking in technical, physical and financial resources.

But the exploitation of renewable energy sources should not be domineered by commercial interests. It is indeed an obligation to be borne by governments as an integral element of their national energy policies and supported at international level within the context of an overall energy conservation programme.

THE MEDITERRANEAN REGION

Such a state of affairs is typical of the situation prevailing in the Mediterranean region where the more industrialised countries are undertaking advanced research studies and technological development and have already produced a variety of systems utilising renewable energies. Cost considerations have imposed limitations on the size or capacity of such systems, regarded to be of very modest proportions in relation to present-day levels of energy demands. However in an endeavour to achieve wholesale exploitation of renewable energy sources an ambitious project involving the construction of a 1 megawatt solar power plant in Sicily is currently being undertaken as a tri-party venture.

So far the results of technological achievements have proved of little tangible benefit to other countries within the region which provide ideal locations for useful application. Neither do developing countries appear to be fully aware of developments in this field and the full benefits that could be derived from their utilisation. Better

communication can assist developing countries to gain access to alternative development models evolved by their industrialised neighbours which might be more adaptable to their needs.

A major gap has thus been identified not only in the scientific status and development capabilities of the various States but equally so in the exchange of information on the technologies available and on the specific needs of individual States.

The cross-section of economic, social and climatic characteristics prevalent in Mediterranean countries constitutes a sound basis for a rational and integrated approach towards development of practical systems for the exploitation of renewable energy. The mutual benefits that can be derived from such an undertaking will only be effectively realised by full collaborative participation on a regional scale.

The sharing of knowledge and the inter-country movement and adaptation of new technology are crucial, not merely to activate the flow of technical know-how to the developing countries, but more so to examine the specific needs of these States with a view to adapting technologies to satisfy their requirements and thus reduce the imbalance which exists with their industrialised neighbours.

It is therefore only natural that States within the Mediterranean region sharing common interests should explore all possible avenues towards effective and concrete collaboration on a regional scale in the development of systems utilising renewable energy. Such a form of collaboration would benefit those States facing common limitations in scientific and technological resources and

development capabilities. States which are already well developed would have a wider scope for the adaptation of technologies to satisfy broader needs. Mediterranean States within both groups have, in fact, shown a firm interest in collaborative efforts, and many specified their support for the establishment of a Regional Centre devoted to the practical development of systems utilising renewable sources of energy.

MODALITIES OF REGIONAL COLLABORATION

Different modalities of collaboration are possible to promote the practical utilisation of renewable energy sources. These depend on the ultimate objectives to be realised. In essence, however; regional collaboration in this field should:

- (a) Cater in an effective manner for the needs of the region by setting up an establishment whose function will be to interlink the interests of the member states by translating available technology into practical systems.
- (b) Avoid encroachment on and/or duplication of work already being performed but rather aim at the most effective co-ordination of such work and its orientation towards the specific needs of the region.
- (c) Refrain from impinging on bi-lateral or possibly multi-lateral collaboration which should be respected as the prerogative of any individual state or states.

The more pressing needs of the Mediterranean region for collaboration in this field can be summarised as follows:

- (a) A more rational and co-ordinated approach on the research side to further enhance the technological level existing in the region, as a whole.
- (b) The compilation and analysis of available research results which can be developed into practical applications.
- (c) The detailed compilation and analysis of the conditions prevailing within the countries of the region, on which sound energy management policies should be based, and finally,
- (d) The development and implementation of a practical programme on a regional scale to design and produce those systems and components suitable for each country's specific requirements.

So far collaboration has been mainly in the form of bilateral arrangements involving Governments, international energy organisations, Research Institutions and entrepreneurs.

There have been some suggestions for joint regional ventures in the form of coordinating research programmes, increasing contacts between scientists, and improving information services. While these forms of collaboration offer a basis for the exchange of scientific knowledge, they lack the vital aspect of widespread participation by all interested states and the advantages of an overall coordinated programme on a regional scale for the development of practical systems to meet the requirements of the member states.

The practical aspects of a collaborative regional programme, i.e. the translation of individual and joint research results into integrated practical systems and the setting up of a comprehensive information and training system, can be better accomplished by the establishment of a Mediterranean Regional Centre specifically

devoted to these tasks. This is indeed most desirable as at present no such regional mechanism is in existence.

The proposed Centre would not overlap with or duplicate any activity currently being carried out within the region. Rather, it would serve as the natural complement to these activities. Neither would it affect the research programmes of any Institution or group of Institutions, but rather promote the practical utilisation of such programmes throughout the region. Furthermore, it would not interfere in any way with bilateral programmes, either existing or planned.

Several other regions (e.g. Latin America, Africa, Asia, etc) are already considering the establishment of Centres on similar lines. It is therefore highly important that Mediterranean countries should not lag behind in creating the medium necessary to enable the more effective flow of information, better liaison and collaboration so as to accelerate the development and practical application of renewable energy systems to satisfy the present and future needs of the region.

LOCATION OF THE CENTRE

For the last three years, the Government of the Republic of Malta, on its own initiative, has been engaged in discussions and consultations with the relevant UN agencies and following initial expert missions, with Mediterranean Governments, for the establishment of a Regional Centre devoted to the practical applications of renewable sources of energy. This initiative has already gained support for the concept of such a centre by a number of Mediterranean States.

The Government of the Republic of Malta has already made an offer to host such a centre and is prepared to place at the disposal of the

operating Agencies suitable quarters, lands and facilities as may be required by such an Institution for the proper and efficient performance of its functions.

The geographic location and climatological locations of the Maltese Islands, and their established communication facilities with many Mediterranean States on both sides of the basin render this archipelago an ideal seat for a Regional Centre. The attributes of the Maltese Islands as a focal point for activities of international character to service Mediterranean interests has long been recognised and is in fact evident by the increasing numbers of Institutions which Malta has the pleasure to host.

Furthermore Malta already possesses the following facilities needed for the efficient functioning of the Centre:

- (1) A high incidence of renewable energy resources - sun, wind, etc.
- (2) Small territory making it ideal as a cohesive laboratory for the conduction of field trials.
- (3) Already established precedents in liaison with other Mediterranean Institutions, both regional and bilateral.
- (4) The benefits of a Formal Agreement with the European Economic Community which facilitates access by Malta to the latter's technological know-how, taking particular account of the importance of promoting regional co-operation between Malta and other states.
- (5) Ready availability of trained technical and skilled personnel.
- (6) Ready availability of workshop facilities which the Centre could utilise.

- (7) . Ample hosting facilities, including a new Conference Centre, and long-established hotel and domestic accommodation facilities.
- (8) Ease of access, with the minimum of formal restrictions.
- (9) A cost of living lower than in most Mediterranean States - a factor which would make the running of a regional centre in Malta relatively economical.
- (10) A homogeneous, hospitable and peace-loving population, possessing a good standard of education.

Above all Malta's proclaimed policy and efforts to engender a sense of fraternity and create closer co-operation amongst Mediterranean countries by the interweaving of social, economic and cultural interests, has gained the support, appreciation and confidence of Mediterranean States which are increasingly looking upon Malta as an eminently suitable centre for regional activities.

OBJECTIVES OF THE CENTRE

1. To develop economically-viable appliances utilising renewable sources of energy by adapting known technology to suit the end-user needs of the various Mediterranean Countries, making optimum use of locally-available materials in the user countries.
2. To advise and assist Mediterranean States, which so request on the best utilisation of local capabilities and materials for the production, installation and maintenance of appliances to suit their requirements.

3. To establish a data bank and to provide for the dissemination of information and training facilities relevant to the activities of the Centre.

FUNCTIONS OF THE CENTRE

In order to fulfil its objectives, the basic functions of the Centre should include the following:

A. Analysis of Local Conditions

1. To compile an inventory of energy problems in the countries of the Mediterranean basin, including form and size of needs, priorities and timings, which could be met, in whole or in part, from renewable energy sources and to assess development prospects which could be foreseen or anticipated.
2. To identify areas of application where the utilisation of renewable energy sources could offer immediate and substantial socio-economic benefits to the States within a short term.
3. To compile an inventory of available renewable energy resources in the different Mediterranean countries.
4. To compile an inventory of usable material and know-how available in the various countries.
5. To appraise the relevant developmental and socio-economic conditions influencing the introduction and maintenance of renewable energy source systems and devices.

B. Documentation and Information

1. To establish a comprehensive documentation centre in the field of renewable sources of energy, which would permit and enhance the free flow of information currently being generated in the region and which would make available to participating Governments and their member institutions relevant material generated from outside the region.
2. To keep abreast of and catalogue the various technological, scientific and research institutions within the region offering training programmes for advancement of knowledge in the field of renewable energy technology.
3. To liaise with other Centres and Institutions in various parts of the world to stimulate a world-wide exchange of data and experiences in this field.

C. Development of Systems and Components

1. To identify those technological systems whose application could satisfy common areas of need in the short term.
2. To undertake programmes of practical applications which translate known technologies into functional systems corresponding to the needs of member States.
3. To establish a technical advisory service for local institutions, commercial and industrial establishments, and citizens within the region.
4. To suggest regional research and development projects which could combine the efforts of various host

Governments and Institutions to avoid unnecessary and costly duplication of effort, or to initiate joint action on behalf of a number of member States.

5. To streamline the introduction of renewable energy technologies into existing infrastructures within the region, having regard to technical, economic, legal, cultural, social, environmental or other implications.
6. To set up a testing and evaluation station to permit the independent evaluation of systems using renewable energy technologies under typical operating conditions, whose data would be freely available to all member States so as to reduce costly duplication of effort.
7. To establish standards for renewable energy equipment compatible with conditions in the region.

D. Other Activities

1. To offer short training courses for technicians from the region, based on the practical application of renewable energy technologies organised at the Centre.
2. To organise Workshops, Conferences and Symposia in the relevant fields of interest.
3. To assist member States, on request, in the formulation of renewable energy policies, and to advise, also on request, on the setting up and expansion of national programmes in these fields of action.
4. To offer, on request, technical advice and information to developing countries on renewable energy technologies and their application.

As a long term component, the Centre should also pursue the following functions:

1. To set up within the region technical committees to develop overall programmes and activities for future development within the region, as part of a long term planning programme to enable renewable energy systems to be developed and integrated into energy demand and supply patterns within the Mediterranean Region.
2. As a policy, develop rational methodologies of approach for the utilisation of renewable energy sources which would consider systems as a whole, and would integrate renewable energy technology with effective energy conservation practices.

The programme outlined above for the objectives and functions of the proposed Centre implies the following:

- (a) That the proposed Centre should under no circumstances be considered as a Research Centre in the general sense of the word. It does not replace any existing organism, and is only designed to fill the gap which exists between the results of research and the balanced practical application of renewable energy sources.
- (b) In the performance of its activities, the Centre should never be in direct confrontation with industries in Mediterranean Countries. In a later phase of its activities, the Centre would assist individual Governments to establish local industries capable of manufacturing systems for the utilisation of renewable energy sources particularly suited for conditions in their own territory.

ORGANISATION OF THE CENTRE

The organisation requires a staff structure capable not only of launching the centre but also of achieving quick results in the interest of Mediterranean Countries.

The following structure is suggested:

(a) Direction and Administration

- 1 Director
- 1 Deputy Director (Administration)
- 1 Administrative Officer
- 2 Secretaries
- 2 Clerks
- 4 General employees

(b) For Analyses of Local Conditions

- 3 Experts (Senior status)
- 3 Experts
- 2 Secretaries

(c) For Documentation and Information

- 3 Experts (Senior status)
- 3 Experts
- 2 Secretaries

(d) For Development of Systems and Components

(1) Solar Energy

- 1 Expert (Senior status)
- 5 Experts
- 5 Technicians
- 2 Secretaries

(2) Wind Energy

1 Expert (Senior status)

2 Experts

1 Technician

1 Secretary

(3) Biomass Energy

1 Expert (Senior status)

2 Experts

2 Technicians

1 Secretary

(4) Building Construction

1 Expert (Senior status)

3 Experts

3 Technicians

1 Secretary

(e) Other Activities

3 Experts

2 Technicians

1 Secretary

Total

1 Director

1 Deputy Director

10 Experts (Senior status)

21 Experts

13 Technicians

19 Clerical, Secretarial and General

65

The duties of the Senior Staff of the Centre, who would be recruited at international level from among expert personnel in Mediterranean States, and the desirable qualifications for their recruitment, are outlined below:

- (1) The Director, who should be recruited at D-1 level would be responsible for all activities of the Centre and for the maintenance of coordination with UNEP and the UN specialised agency designated to execute the project. He would also be responsible for liaison with other Centres and Institutions. He should have scientific qualifications relevant to the field of renewable energy resources, and experience in the administration and management of group activities in the public sector. Experience with an international organisation or in the coordination of multinational projects would be an added advantage.
- (2) The Deputy Director, who should be recruited at P-5 level, would be responsible for all the purely administrative duties of the Centre, and would be directly responsible to the Director. He should have considerable administrative experience, preferably in connection with organisations.
- (3) Experts of Senior status (P-5 level) would be responsible for the management of the different sectors of the activity to the Director. They should have at least 10 years experience in research work, including at least 5 years in the management of a research team, and 2-3 years experience in the specific sector, in addition to the requirements detailed below for Technical Experts.
- (4) The Technical Experts (P-3 to P-4 level) would be responsible for the performance of the technical operations of the Centre, including training activities in the different sectors. They

should have held responsible positions in either the public or private sectors in fields relevant to the work of the Centre. They should be appropriately qualified in scientific or technological disciplines, and should have a record of proven ability in the application of this knowledge to practical situations. They should be able both to exercise initiative and independent judgement, and to merge satisfactorily into interdisciplinary groups. In the case of experts recruited for work in documentation and information relevant qualifications in librarianship and information retrieval would of course be required.

Physical Facilities

The Centre would require the following physical facilities:

- (a) Office and library space, including seminar and reading rooms and a demonstration area.
- (b) Laboratories for electronic, thermal, optical and biological work.
- (c) Preparation rooms, equipment assembly rooms and storage space.
- (d) Ancillary space and facilities.

The total floor area required would be in the region of 2500 square metres (1500 sq m for offices and 1000 sq m for laboratories, etc). In addition, the Centre would require 30000 sq metres of open area for experimental work near the sea.

Technical and Other Facilities

In order to support the activities of the Centre so that it can achieve its objectives and functions, it would be necessary to provide:

- (a) Facilities within the Centre for producing plans and designs.
- (b) Facilities for the organisation of meetings, workshops, seminars and training courses.
- (c) Basic laboratory facilities within the Centre, including meteorological instrumentation and electrical storage batteries.
- (d) Basic workshop facilities within the Centre, and easy access to workshop facilities outside the Centre.
- (e) Transport facilities for travel between the Centre and various areas of experimentation.

INSTITUTIONAL AND FINANCIAL ARRANGEMENTS

INSTITUTIONAL

The establishment and running of the Centre will be a joint cooperative venture between Governments of Mediterranean States, with the assistance of the appropriate agencies of the United Nations System. There appear to be two alternative possibilities to consider regarding its institutional framework.

If the Centre is established as part of the Priority Actions Programme of the Mediterranean Action Plan, the Institutional pattern will be

expected to fall into line with that already prevailing for the Action Plan as a whole. While remaining under the overall coordinating aegis of UNEP, the administration of the Centre would be entrusted to one of the appropriate United Nations organisms, which would assume the functions of Executing Agency. The general policy and work of the Centre would therefore come under the jurisdiction of Mediterranean States, and would be reviewed either during Intergovernmental Meetings held to review progress of the Action Plan as a whole, or specifically convened for the purpose.

Alternatively, if the Centre were to be established as a separate regional cooperative venture outside the general framework of the UNEP-sponsored Action Plan, a specific UN Agency would still be allocated executive responsibility for the Project. As overall policy would have to be determined by those Mediterranean States actually participating in the project, this would necessitate the formation of an ad hoc Governing Council or equivalent body for the Centre, composed of appropriate representatives of the States concerned.

Renewable sources of energy have been included as one of the fields of activity in the Priority Actions Programme within the Integrated Planning Component of the Action Plan for the Mediterranean. Initiatives taken by the Government of Malta in this field with UN agencies have been included in the Executive Director of UNEP's report to the Intergovernmental Review Meeting in Monaco in January 1978, and that meeting formally requested UNEP/UNDP to convene a meeting of Government experts to develop a regional cooperative programme in this field.

The establishment of the proposed Centre is considered to be one of the most effective means of realising such a cooperative programme having regard to the specific requirements of the

region. As the regional mechanism for cooperation between Mediterranean States is already organised on a firm basis, therefore, the first alternative i.e. establishing it as part of the Priority Actions Programme of the Mediterranean Action Plan, appears to be the obvious one, in order to avoid duplication of cooperative machinery. As with other elements of the Action Plan, such an institutional framework would still leave the extent of collaboration open to individual Mediterranean States.

FINANCIAL

The estimated budget for the establishment and operation of the Centre is given in Annex I. This is based essentially on costs prevailing in 1978, and in considering this budget, escalation due to inflation (normally considered at 10% per annum) will have to be taken into account. Operational costs are based on full staff complement - i.e. on the full recruitment of the staff listed in this paper.

As both recruitment and operations build-up will necessarily have to be phased out, the estimated budget for the period 1979-83 as presented in Annex II is based on the assumption that, given approval in February 1979, the "key" staff members will have been recruited by 1 July 1979, and the full complement of staff will be attained by 1 January 1981. Inflation costs have been taken into account.

Schedule for recruitment of staff is set out in Annex III.

ANNEX IESTIMATED BUDGET FOR ESTABLISHMENT AND OPERATION
OF THE CENTRE

<u>A. External Contributions</u>	<u>US Dollars</u>
<u>I. Installation Costs</u>	
1. Setting up of Meteorological Station	70,000
2. EDP Facilities	150,000
3. Instrumentation and Other Facilities	230,000
4. Library	<u>50,000</u>
	500,000
<u>II. Annual Operational Costs (on attaining full establishment)</u>	
1. International Staff (33)	
Director (D-1)	47,000
Deputy Director (P-5)	38,000
Experts, Senior (P-5) (10)	380,000
Experts (P-3, P-4) (21)	650,000
2. Local Support Staff (32)	
Administrative Officer	12,000
Technicians (13)	86,000
Secretaries and Clerks (14)	80,000
General Employees (4)	<u>7,000</u>
	1,300,000
3. Travel	150,000
4. Maintenance of Facilities	100,000
5. Maintenance of Library	50,000
6. Training	50,000
7. Miscellaneous	<u>50,000</u>
	400,000
	<u>1,700,000</u>

Annex I (Cont)

<u>B. Counterpart Contribution by the Government of Malta as Host Country</u>	<u>US Dollars</u>
<u>I. Installation Costs</u>	
Preparation of premises and provision of basic facilities	50,000
<u>II. Annual Operational Costs</u>	
1. Rental of premises	120,000
2. Rental of experimental site/s	50,000
<u>Resume'</u>	
Total Installation Costs	550,000
Total Annual Operating Costs	1,870,000

ANNEX II

ESTIMATED BUDGET FOR THE ESTABLISHMENT AND OPERATION OF THE CENTRE, 1979 - 83

	1979		1980		1981		1982		1983	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
<u>Personnel (International)</u>										
Director (D-1)	6	30,000	12	50,000	12	55,000	12	60,000	12	65,000
Deputy Director (P-5)	6	24,000	12	40,000	12	44,000	12	48,000	12	53,000
Experts, Senior (P-5) (10)	9	30,000	72	250,000	120	420,000	120	450,000	120	500,000
Experts (P-3, P-4) (21)	--	--	108	310,000	234	700,000	252	750,000	252	1,000,000
Component Total	21	84,000	204	650,000	378	1,219,000	396	1,308,000	396	1,618,000
<u>Personnel, Support (Local)</u>										
Administrative Officer	6	6,000	12	12,000	12	13,000	12	14,500	12	16,000
Technicians (13)	9	5,000	114	80,000	156	98,000	156	107,000	156	120,000
Secretaries and Clerks (14)	27	12,000	156	80,000	168	90,000	163	98,000	163	116,000
General Employees (4)	12	2,000	48	7,500	48	8,300	48	9,100	43	10,000
Component Total	54	25,000	330	179,500	384	209,300	384	228,600	384	262,000
<u>Accommodation</u>										
* Preparation of premises	--	50,000	---	---	---	---	---	---	---	---
i Rental of premises	--	120,000	---	132,000	---	145,000	---	160,000	---	176,000
* Rental of experimental areas	--	30,000	---	55,000	---	60,000	---	66,000	---	73,000
Maintenance of premises	--	1,000	---	4,000	---	4,000	---	5,000	---	5,000
Component Total	--	201,000	---	191,000	---	209,000	---	231,000	---	254,000

Annex II (Cont)

	1979		1980		1981		1982		1983	
	m/m	\$	m/m	\$	m/m	\$	m/m	\$	m/m	\$
<u>Operational Expenditure</u>										
Meteorological Station	--	70,000	---	---	---	---	---	---	---	---
EDP Facilities	--	50,000	---	100,000	---	---	---	---	---	---
Instrumentation & Other Facilities	--	30,000	---	150,000	---	50,000	---	---	---	---
Library	--	20,000	---	80,000	---	50,000	---	50,000	---	50,000
Travel	--	50,000	---	100,000	---	150,000	---	150,000	---	150,000
Maintenance of Facilities	--	---	---	50,000	---	100,000	---	110,000	---	120,000
Training	--	---	---	30,000	---	50,000	---	50,000	---	50,000
Miscellaneous & Contingencies	--	20,000	---	50,000	---	50,000	---	50,000	---	50,000
Component Total	--	240,000	---	560,000	---	450,000	---	410,000	---	420,000
Grand Total	--	550,000	---	1,580,000	---	2,087,300	---	2,177,600	---	2,554,000
Counterpart Contribution by Government of Malta	--	200,000	---	187,000	---	205,000	---	226,000	---	249,000
Total required from external sources	--	350,000	---	1,393,500	---	1,882,300	---	1,951,600	---	2,305,000

* Counterpart Contribution by Government of Malta

STAFF RECRUITMENT SCHEDULE

	1979		1980			1981			1982			1983		
Director		(1)												
Dep. Director		(1)												
Experts Senior		(3)	(5)	(7)	(10)									
Experts			(6)	(12)	(18)	(21)								
Adminst. Officer		(1)												
Technicians		(3)	(6)	(13)										
Secretaries & Clerks		(3)	(6)	(12)	(14)									
General Employees		(2)	(4)											