

EVALUATION REPORT OF THE GLOBAL ENVIRONMENT FACILITY
ENABLING ACTIVITY FOR THE PREPARATION OF INITIAL NATIONAL
COMMUNICATION RELATED TO THE UNITED NATIONS FRAMEWORK CONVENTION
ON CLIMATE CHANGE (UNFCCC)- MAURITIUS

UNITED NATIONS ENVIRONMENT PROGRAMME
EVALUATION AND OVERSIGHT UNIT

January, 2000

By
T. Ngara

CONTENTS		Page
Chapter		
	EXECUTIVE SUMMARY.....	5
	I.MAURITIUS EVALUATION.....	9
	A. Background to environmental concerns in	
K0035128	050400	/...

Mauritius.....	9
B. Climate change studies before GEF Enabling Activity Programme.....	9
C. Objectives of GEF Enabling Activity Programme.....	11
D. Institutional arrangements for execution of the study.....	11
E. Background literature and experience.....	13
F. Project execution.....	13
1. Activity 1: Establishment of the Project Management and National Study Teams.....	13
2. Activity 2: Preparation of greenhouse Gas(GHG) inventories.....	14
3. Activity 3: Programme to address climate change and its adverse impact, including abatement and sink enhancement.....	15
4. Activity 4: Policy options for monitoring systems and response strategies.....	15
5. Activity 5: Policy framework for implementing adaptation measures and response strategies.....	16
6. Activity 6: Capacity-building for integration of climate change concerns into planning.....	16
7. Activity 7: Programmes related to sustainable development, research, public awareness, etc.....	17
8. Activity 8: Provision of other information.....	17
9. Activity 9: Preparation of the National Communication.....	17
G. Monitoring the progress of the project.....	18
H. Workshops.....	18
I. Policy makers' views on project results.....	19
J. Strategic distribution of the Initial National Communication.....	20
K. Sustainability of methodological issues and institutions.....	21

L.	Quality of expertise.....	21
M.	Training.....	22
N.	Views of the Project Director.....	22
O.	Special needs.....	22
P.	Results of the GEF Enabling Activity Study...	23
	1. Climate change vulnerability.....	23
	2. Response measures.....	24
	3. Mitigation options.....	25
Q.	Recommendations.....	26
	1. Time-frames.....	26
	2. National Action Plan.....	26
	3. Interim GEF finance.....	26
	4. GHG database.....	27
	5. Capacity-building in vulnerability and adaptation.....	27
	6. National communication model.....	27
R.	Observations and rating.....	28
S.	Conclusion.....	29

ANNEXES

1.	References.....	31
2.	Members of the National Climate Committee.....	32
3.	Time allocation for different activities.....	34

TABLES

1.	Activities and outputs classification.....	6
2.	Sectors studied.....	10
3.	Some options for Mauritius to mitigate climate change.....	25
4.	Rating of project implementation success.....	28

EXECUTIVE SUMMARY

1. As background information, the evaluation begins by looking at Mauritius' early interest in environmental issues such as the 1972 United Nations Conference on the Human Environment in Stockholm. It is also noted that Mauritius was the first country in the world to ratify the United Nations Framework Convention on Climate Change in September 1992.

2. Mauritius' interest in climate change had been demonstrated one year before through the formation of the National Climate Committee (NCC) under the chairmanship of the Prime Minister's Office with the Director of the Mauritius Meteorological Services as the co-chair. It is further noted that NCC established four working groups to look into the impact of climate change on the following sectors: agriculture, coastal zone, energy and water resources, and human health and quality of air. A fifth working group on Greenhouse Gas was established in 1995.

3. Still as part of the introduction, the evaluation looks at the important sectors driving Mauritius' economy which include: textile manufacturing, agriculture and tourism. About half the country's land area is under agriculture (sugar cane).

4. Before the Global Environment Facility (GEF) Enabling Activity, Mauritius had been involved in climate change capacity-building studies, specifically the United States Country Studies Programme (USCSP) and the Economics of Greenhouse Gas Limitation funded by UNEP and the Collaborating Centre on Energy and the Environment (RISO). These studies later provided the basis for the GEF Enabling Activity. The objective of the GEF Enabling Activity was to enable Mauritius to fulfil its obligations under UNFCCC as required by Article 4.1 and 12.4 of the Convention, i.e. preparation of the initial national communication.

5. The evaluation also looks at the institutional arrangements put in place to facilitate the implementation of the GEF Enabling Activity. The project was executed under the auspices of the Mauritius Meteorological Services in collaboration with NCC which is both a technical and a policy advisory body in the area of climate change. It played a key role in the preparation of the initial national communication.

6. The evaluation also looks at the activities of the project. Strategically, it was divided into nine categories of activities whose outputs were eventually synthesized to produce the Initial National Communication. These activities were classified as follows:

Table 1

Activities and outputs classification

ACTIVITY	OUTPUT
Establishment of the project management and national study	Get the organizational structure to operate with

teams.	minimal problems.
Preparation of greenhouse gas inventories.	An inventory of greenhouse gases.
Programme to assess climate change and its adverse impact.	Identification and assessment of mitigation options - mitigation strategies workshop report.
Comprehensive climate change assessment.	Policy options for monitoring systems and response strategies.
Policy framework for implementing adaptation measures.	Identification and assessment of adaptation options.
Capacity-building to integrate climate change concerns into planning.	Enhanced capacity for decision makers to integrate climate change concerns into planning.
Promote programmes related to sustainable development, research, and public awareness.	Enhanced public awareness at all levels - information packages and videos.
Provide other relevant information.	Adequate information on UNFCCC obligations.
Preparation of national communication.	Initial national communication to be submitted to UNFCCC secretariat.

7. After the launching of the project it was necessary to monitor its progress closely at different working group levels. Draft summaries of the progress of the project were sent to UNEP on a three to four month basis.

8. A total of six workshops and two seminars were held between August 1997 and January 1999 when the project was completed. These workshops were necessary in order to check for consistency across the different working groups.

9. After the completion of the Initial National Communication and its submission to the UNFCCC secretariat, the question arose as to what would happen to the recommendations in the report. In the case of Mauritius, the National Action Plan was adopted by the Government as a basis for future climate change projects.

10. Confidence in the project results was underscored by the fact that a one day brainstorming session was held to discuss the way forward after the completion of the project. The session

identified the sectors of agriculture, water resources, coastal zone and tourism, energy-industry-transport, and health infrastructure as well as economic development as the main ones from which project proposals would be drafted. These proposals were to be vetted by the Ministry of Economic Development before submission to donors for funding.

11. The GEF Enabling Activity has shown that Mauritius has special needs in the area of climate change. These needs include the following:

- (a) Transfer of environmentally sound technologies;
- (b) Training in climate change modelling;
- (c) Need to switch over to renewable forms of energy; and
- (d) Need to improve the research and observation systems, among others.

Mauritius should be financially assisted to implement the National Action Plan outlined in chapter 7 of the Initial National Communication as soon as possible in order to maintain the momentum.

12. The following recommendations are put forward by the evaluation:

(a) When deciding on time-frames for project implementation, it would be useful in future to state that what is referred to in the project document is the technical time-frame as opposed to the political time frame. Technical time-frames should be used as benchmarks when rating projects for timeliness;

(b) The interim funds (\$100 000) which GEF intends to set aside for capacity-building for those non-Annex I Parties that have submitted their Initial National Communication to the UNFCCC secretariat should be released as soon as possible;

(c) The preparation of annual greenhouse gas inventories should become routine practice for the Central Statistics Office (CSO) in Mauritius;

(d) There is an urgent need for capacity-building in the area of vulnerability and adaptation in spite of the fact that some training activities were undertaken under the USCSP; and

(e) Problems faced by African non-Annex I Parties in preparing their National Communication are generally similar. It would be desirable to have a model National Communication for African countries built on the experience of those Parties that have completed.

13. The average rating for the whole project on the scale 1 - 5 is 1.4. Most of the scores for all the elements: attainment of outputs, completion of activities, keeping the project execution within budget, and the impact created by the project are very good, having an average of 1.5. Timeliness is the only element with a mark of 3.

14. >From the foregoing, it can be reasonably concluded that,
on
the whole, the project was successful. It attained the objective
of producing the Initial National Communication with inventories
of greenhouse gas (GHG) emissions by sources and their removal
through sinks. National programmes for mitigating climate change
and their associated strategies were well enunciated. Finally, a
comprehensive National Action Plan was developed.

I. MAURITIUS EVALUATION

A. Background to environmental concerns in Mauritius

1. The Mauritius Government has, since the early seventies taken environmental issues seriously as is shown by Mauritius' active participation in both the 1972 United Nations Conference on the Human Environment in Stockholm as well as the 1992 Conference on Environment and Development, Rio at which it signed UNFCCC and ratified it the same year.
2. Mauritius, a small developing island, was the first country to ratify the United Nations Framework Convention on Climate Change in September 1992 and thus became a Party to the Convention after its entry into force in March 1994. Mauritius took climate initiatives seriously even before the Rio Earth Summit in June 1992. This is supported by the formation of the National Climate Committee(NCC), a multidisciplinary and multisectoral organ which involves institutions with interests in climate change.
3. NCC was formally established in June 1991 under the chairmanship of the Prime Minister's Office with the Director of Mauritius Meteorological Services as the co-chair. NCC initially established four working groups to evaluate the potential impact of climate change on the following sectors: agriculture, coastal zones, energy and water resources, and human health and air quality. A fifth working group was established in 1995 and was charged with the special task of preparing greenhouse gas (GHG) inventories.
4. The economy of Mauritius is driven by three main activities, namely: textile manufacturing, agriculture and tourism. About half the land area is under agriculture, principally sugar cane growing. Focus on textile manufacturing and tourism is a recent development, a deliberate attempt to diversify the economy. All these economic activities are in one way or another linked to climate change, especially the agricultural ones.

B. Climate change studies before the GEF Enabling Activity

5. Mauritius had been involved in some climate change activities through the United States Country Studies Programme (USCSP) before the GEF Enabling Activity. Mauritius was one of the 15 African countries that took part in USCSP in 1995. The objectives of USCSP was mainly to enhance capacity-building in the area of GHG inventory preparation on the basis of the 1990 data as well as the conducting of vulnerability and adaptation studies. The studies on USCSP were carried out under the auspices of NCC using its working groups under the guidance of both the Ministry of Environment and Quality of Air, and the Meteorological Services of Mauritius. This programme conducted some thematic training workshops in Hawaii, Washington and Indonesia. After this training, the inventory part of USCSP was completed in 1996.
6. This programme also conducted preliminary studies

on vulnerability and adaptation and impact assessment with respect to the following sectors:

Table 2
Sectors studied

SECTOR	INSTITUTION
Coastal Zone	Mauritius Meteorological Services
Agriculture	Sugar Industry Research Institute
Water Resources	Ministry of Water Resources
Forestry	Ministry of Agriculture and Natural Resources, Forestry Department
Infrastructure	Ministry of Public Infrastructure

7. This part of USCSP was completed in August 1997. The report for the entire study was released in December 1998. Later, this study provided support to the GEF Enabling Activities Study on the Initial National Communication. Towards their completion, the two studies were running almost parallel.

8. A study on the Economics of Greenhouse Gas Limitation, Phase I: Establishment of a Methodological Framework of Climate Change was sponsored by UNEP/RISO. This study dealt with mitigation analysis and options focussing on:

- (a) Macroeconomics;
- (b) Land-use change and forestry;
- (c) Transport; and
- (d) Energy.

Like USCSP, this study was also a capacity-building exercise during which training was done in Denmark and Mauritius.

C. Objectives of the GEF Enabling Activity

9. The next set of climate change studies was the GEF Enabling

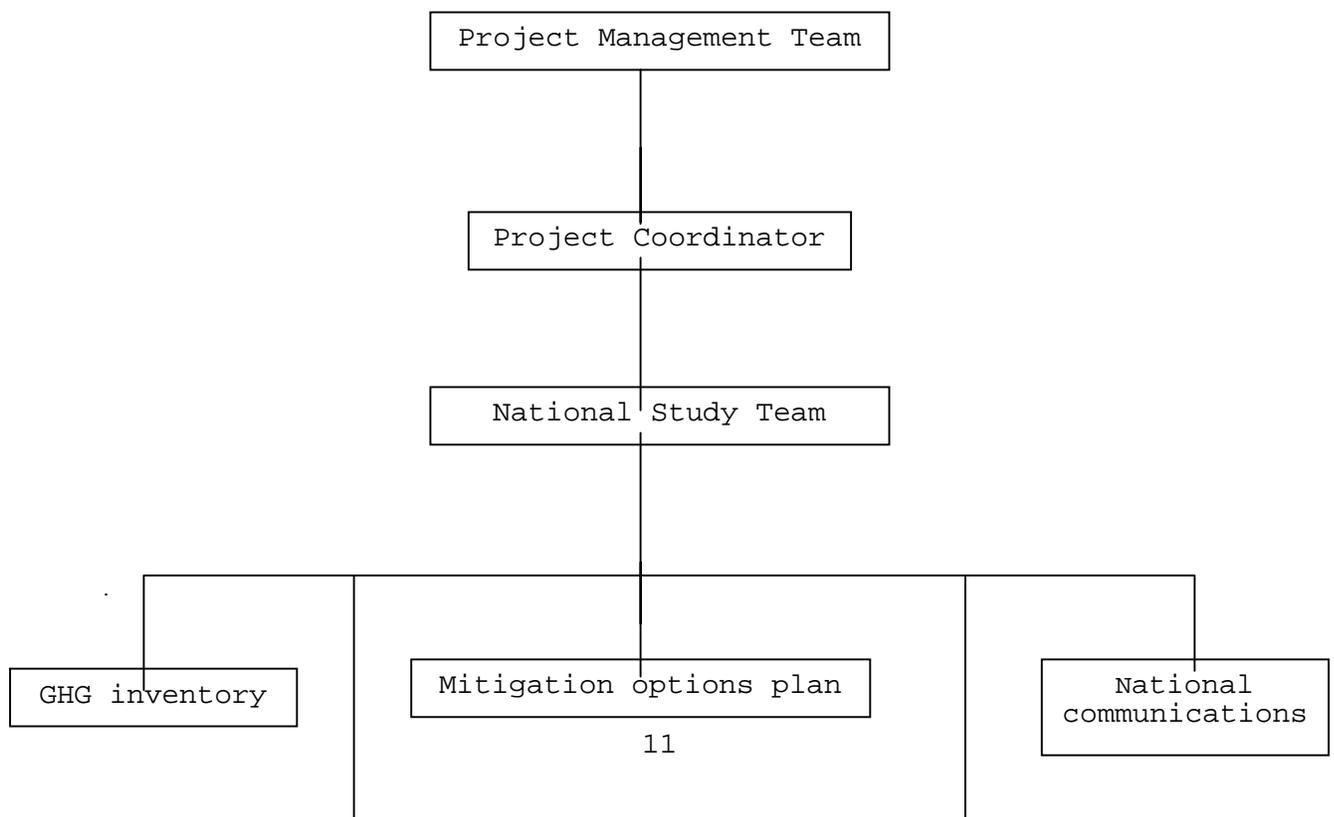
Activity Studies. The objective for this study was to enable the Republic of Mauritius to fulfil its obligations under the UNFCCC as required by Articles 4.1 and 12.4 of the Convention, especially the preparation of the Initial National Communication on the basis of the recommended second session of the Conference of the Parties guidelines. The funds for this project were obtained under the GEF Operational Guidelines for Expedited Financing of Initial Communication for non-Annex I Parties (February 1997).

10. The Convention entered into force in March 1994 and Mauritius was scheduled to meet this particular commitment in 1997. However, the provision of funds was delayed and Mauritius inevitably could not meet their scheduled date of submission. The Initial National Communication was eventually submitted to UNFCCC secretariat in June 1999. Thus, the Mauritius Government fulfilled its commitments and obligations as required by the Convention.

D. Institutional arrangements for execution of the study

11. The following organogram illustrates the operational dynamics of the project. The structure consisted of four hierarchical levels that are illustrated below. The project was executed by the Mauritius Meteorological Services in collaboration with NCC which provided technical guidance. However, for policy decisions, the Meteorological Services relied upon the Prime Minister's Office.

GEF Enabling Activity to support the preparation of Initial National Communication for UNFCCC management structure



Public awareness,
training and education

Vulnerability
assessment/adaptation

Team Leader,
Department of
Environment

Team Leader,
MEPD

Team Leader,
Meteo

Team Leader,
Meteo

Activities
1&2

Activities
6&7

Activity
3

Activities
4&5

Activities
8&9

12. NCC guided the implementation of the project by providing the overall technical and policy advice. As mentioned earlier, the mandate of NCC was to improve knowledge on climate change and its social, economic and environmental impact. It is chaired by a representative from the Prime Minister's Office and co-chaired by the Director of the Meteorological Services. It played a key role in the execution of the Initial National Communication. The list of members of NCC is shown in Annex II.

E. Background literature and experience

13. Background literature used for conducting the associated climate change studies was drawn from several sources. Apart from the standard Intergovernmental Panel on Climate Change (IPCC) guidelines for non-Annex I Parties for the preparation of the initial National Communication, the 1996 IPCC guidelines for determining emissions from CO₂, CH₄, CO and NO₂ were also used.

14. References were also made from National Communication submitted to UNFCCC secretariat by Annex I Parties, Organization for Economic Cooperation and Development (OECD) guidelines as well as USCSP guidelines for vulnerability and adaptation studies. The extensive international exposure to climate change issues which both the Project Co-ordinator and the Director benefited from before and during the execution proved to be an asset during this exercise.

F. Project execution

15. The execution of the project was strategically divided into nine groups of activities whose output was subsequently synthesized to produce the Initial National Communication. These activities were carried out with appropriate sequencing in terms of project execution requirements. Established guidelines and methodologies, including lessons from past and contemporary studies, formed the basis of the studies. These activities and their significance in the whole project are described in the following sections.

1. Activity 1: Establishment of the Project Management and National Study Teams

16. These teams were established on the basis of available existing scientific and technical expertise in Mauritius. They were officially known as the Project Management Team (PMT) and the National Study Team (NST). NCC provided technical guidance and advice to both teams during the execution of the project. The two teams mentioned above were established under the auspices of the Mauritius Meteorological Services, which in turn relied upon NCC for technical guidance.

17. NST consisted of four main working groups:

- (a) GHG inventory;
- (b) Mitigation options;
- (c) Vulnerability/impacts assessment and adaptation; and
- (d) The National Communication.

18. Each working group was composed of a number of experts drawn from different government ministries and the private sector. The Project Co-ordinator, the Project Director, and the team leaders of each working group together formed PMT. This team was provided with adequate and appropriate computing and telecommunication facilities, as well as a part-time secretary.

19. The major output of Activity 1 was to get this organizational structure operating with minimal hitches.

2. Activity 2: Preparation of GHG inventories

20. Following new COP2 guidelines for non-Annex I Parties, the working group on Activity 2 focussed on CO₂, CH₄, CO and NO₂ emissions from:

- (a) All energy sources;
- (b) Industrial processes;
- (c) Agricultural processes;
- (d) Land-use change and forestry; and
- (e) Waste.

21. Activity data for these GHG emissions were collected from the following sectors:

- (a) Power generation, industries and transportation;
- (b) Wood fuel and charcoal harvesting;
- (c) Landfill/illegal waste dumps areas;
- (d) Agriculture and related activities; and

- (e) Land-use change, and industry and domestic wastewater.

These GHG inventories were prepared on the basis of 1995 as the baseline year. 1995 provided a better baseline year than 1994 (IPCC recommended) from the point of view of availability of data.

22. Since Mauritius has not yet determined its own emission factors, IPCC default values were used in all the calculations using the 1996 IPCC guidelines. However, the team was aware that these default values might not be appropriate for certain local situations in Mauritius. But for the time being there was no other recourse for reasons stated above. However, it was important that these GHG inventories be scientifically sound because they would be used as the basis for selection of mitigation options for Activity 3.

23. The major output for Activity 2 was the production of the GHG inventories. All these results were presented in a form of a workshop report.

3. Activity 3: Programme to address climate change and its adverse impact, including abatement and sink enhancement

24. The working group on Activity 3 focussed on identifying, analyzing and assessing a range of potential mitigation options upon which a national strategy and related measures would later be based in ameliorating the pace of climate change. This group also looked at sink enhancement possibilities. The results of the UNEP/RISO Project on Economics of GHG Limitation - Phase I: Establishment of a Methodological Framework of Climate Change were the main reference document in the determination of mitigation options.

25. Expected major outputs from this group were as follows:

- (a) Identification and assessment of mitigation options;
- (b) Production of national mitigation strategies for inclusion in the Initial National Communication; and
- (c) Mitigation strategies workshop report.

4. Activity 4: Policy options for monitoring systems and response strategies

26. This working group focussed on developing policy options for adequate monitoring of systems and response strategies for climate change. These policy options were based on the quantitative analysis of vulnerability impact assessment using IPCC technical guidelines. Some work on vulnerability and climate change was also done under USCSP. The working group focussed on those areas that were not covered under previous programmes. Such areas include human health, natural ecosystems and socio-economic aspects.

27. The major outputs from this segment of the study were as follows:

- (a) Baseline data necessary for the assessment of vulnerability/impact assessment and adaptation options;
- (b) Comprehensive assessments for various sectors;
- (c) Policy options and response strategies for climate change impact on terrestrial and marine ecosystems; and
- (d) A workshop report.

5. Activity 5: Policy framework for implementing adaptation measures and response strategies

28. Using results from Activity 4, the working group assessed a range of potential adaptation options so that a national strategy to minimize climate change impact could be developed. Activity 5 was charged with developing a policy framework for implementing adaptation measures and response strategies in the context of coastal management, disaster preparedness, agriculture, fisheries, and forestry with a view to integrating climate change information into planning and decision-making processes.

29. Major outputs were:

- (a) Identification and assessment of adaptation options;
- (b) Laying a basis for a policy framework for implementing adaptation measures and response strategies; and
- (c) A workshop report.

6. Activity 6: Capacity-building for integration of climate change concerns into planning

30. There was need to build or strengthen national capacity to integrate climate change concerns into medium and long-term planning. This was designed to include education and training for national development planners as well as policy and decision makers.

31. The main output was an enhanced capacity for national development planners and policy and decision makers to integrate climate change concerns into planning.

7. Activity 7: Programmes related to sustainable development, research, public awareness, etc

32. This activity was designed to identify and develop programme in climate change which are related to sustainable development, research and systematic observations, education and public awareness. Furthermore, this activity was designed to develop a cost-effective public awareness programme throughout the project cycle so that information campaigns could reach all levels of the society in the country. Both the public and private media, including television, radio and newspapers were used to assist in creating and enhancing public awareness in all aspects of climate change.

33. The main output was the creation of information packages, video aids and other relevant publications which would enhance

public awareness at all levels and in all districts of the country.

8. Activity 8: Provision of other information

34. This activity encompassed all sorts of information related to the fulfilment of UNFCCC obligations. The activity identified technical and financial needs associated with proposed projects (National Action Plan) and response measures under Article 4. It also covered needs and constraints associated with further improvement of National Communication, including the reduction of the margin of uncertainty in emissions and removal of variables through appropriate institutional and capacity- building.

9. Activity 9: Preparation of National Communication

35. The National Communication was based on outputs from Activities 2-8 described above. It was a synthesis of the respective output of the different working groups of the Project Management Team and the National Study Team. The draft National Communication was presented to key stakeholders for review before it was presented to the Government. The Government asked technical local institutions to further review the document before it gave its consent for submission to UNFCCC secretariat. This end product was then submitted to UNFCCC secretariat in June 1999.

G. Monitoring the progress of the project

36. The first disbursement of the GEF Enabling Activity funds was received in September 1997 after which the first workshop was held in October to allocate tasks to different working groups. Soon after this first workshop different working groups held weekly meetings with their team leaders. At this early stage of project implementation this was necessary in order to effectively monitor the progress of the project.

37. At a higher level, fortnightly meetings were held between the Project Director and the team leaders from each working group. The intervals between these meetings were increased to a month when the project was running relatively smoothly.

38. At the apex, monthly meetings were held between the Project Coordinator, Director and the team leaders to discuss the project's operations. The frequency for these high level meetings was later reduced to bi-monthly when it was found that it was no longer necessary to hold them too frequently since, by then, the project had taken off. At all stages of the project execution, the Project Management Team (the Permanent Secretary in the Prime Minister's Office, the Project Coordinator, and the Project Director) held quarterly meetings to review the project's operations at all levels. This was found necessary at these early stages so as to deal with any teething problems that could have derailed the project.

39. Draft summaries of the project's progress were sent to UNEP, the GEF implementing agency, on a three to four month

basis. In response, UNEP took advantage of modern technology and communicated its views largely through e-mail, a cost-effective and speedy channel. However, there were no serious criticisms from UNEP apart from some constructive comments on the final draft in which the drafting team was asked to expand the section on national circumstances. This is supported by the fact that Mauritius got all the funds from UNEP without any delays, a situation which favourably facilitated the pace of the implementation of the project.

H. Workshops

40. Between August 1997 and January 1999, six workshops and two seminars were held to discuss the progress of the project. The first four workshops were technical, i.e. they were designed to review the progress made by the different teams. These included checking for consistency across the different tasks, preparation of GHG inventories; mitigation options; vulnerability and adaptation; public awareness, education and training; and finally the synthesis of all these segments in the Initial National Communication. At the end, two special workshops were held to discuss the first and second drafts of the project.

41. The project finalization workshop was held in August 1998. Its objectives were to put final touches to the project before submission to the government for approval. This workshop was planned by both UNEP and the Government of Mauritius, though the dates of the workshop were decided by the later. Unfortunately, UNEP could not attend the workshop because of prior commitments on the dates it was being held.

I. Policy makers' view on the project results

42. Policy makers in the Government of Mauritius were adequately kept abreast on the project progress. This was done through the Permanent Secretary in the Prime Minister's Office who is a member of the Project Management Team, as well as the Project Coordinator and the Project Director who are senior officials in the Mauritius Meteorological Services, an institution that falls under the Prime Minister's Office in the hierarchical chain of command.

43. The main concern regarding the project results was what would happen after the Initial National Communication was submitted to UNFCCC secretariat. In the case of Mauritius the Government adopted the National Action Plan (chapter 7 of the Initial National Communication) as a basis for future climate change projects.

44. Some elements of this National Action Plan had been discussed under the USCSP as well as the UNEP/RISO study on the "Economics of Limitation of Greenhouse Gases." The completion of the Initial National Communication led to the concretization of the National Action Plans upon which a one-day brainstorming session was held on the 23rd of June 1999.

45. The objective of the session was meant to chart the way forward in the whole arena of climate change in Mauritius. This session identified four economic sectors i.e. agriculture; water resources; coastal zone and tourism; energy-industry-transport

and health infrastructure as well as economic development from which project proposals would be drafted.

46. The session also identified appropriate institutions to write these project proposals and then submit them to the Ministry of Economic Development for vetting before submission to international donors for funding. The time-frame for these activities is as follows:

(a) End of January 2000 - Project write-up and submission for approval;

(b) April 2000 - Finalization of project write-up; and

(c) June 2000 - Submission to international donors.

47. One of the proposed climate change projects, for instance, is to experimentally determine the exact balance between the CO₂ emitted during the burning of the sugar cane remains vis-à-vis that which is absorbed during photosynthesis. There is a strong feeling among Mauritius scientists that sugar cane plantations absorb more CO₂ during their growth than what is emitted during biomass burning. Currently, the assumption is that the amount absorbed is equal to the amount emitted. This assumption needs experimental verification and Mauritius would require financial and technical assistance to carry out such a scientific project.

48. Such considerations and planning show that policy makers have developed a vision for the way forward on the basis of the National Action Plan produced through the GEF/UNEP Enabling Activity.

49. Apart from these National Action Plan, some members of the private sector in Mauritius now take climate change into consideration when implementing major projects. For example, climate change information was used on the construction of the Midlands Dam as well as the Mass Transport System Project. It is encouraging to note that the initial National Communication project has aroused a lot of interest in climate change.

J. Strategic distribution of the Initial National Communication

50. A total of 500 copies of the Initial National Communication were produced. In view of this limited number of copies, it became important that the report should be distributed only selectively. Thus the following strategic distribution policy was adopted:

(a) Two hundred copies were given to the COP Subsidiary Bodies Meeting for onward distribution to interested parties;

(b) The remaining three hundred copies were distributed to UNFCCC secretariat, the major United Nations and other international organizations such as FAO, UNDP, UNIDO, World Bank, etc; various relevant departments of the Mauritius Government; the private sector; and various non-governmental organizations.

51. In the evaluator's view, this selective distribution of the

report was quite strategic in the sense that Mauritius still needs assistance not only for the second National Communication but also for the implementation of its National Action Plan in climate change. Furthermore, this early submission of the Initial National Communication by a developing small island nation is expected to be a source of inspiration to other non-Annex I Parties, particularly similar small island states.

K. Sustainability of methodological issues and institutions

52. The need to sustain institutional capacity to participate in future climate change studies is emphasized in paragraphs 26 and 27 of the project document. In consonant with this assertion, attempts are now being made by the Project Director to organize a workshop both for capacity-building and awareness raising for CSO. At this workshop, CSO staff will be trained in the preparation of GHG inventories to enable for them carry out the exercise on an annual basis.

53. The realization of such an arrangement should obviate the need to train staff again in the event of the preparation of the second National Communication. It is envisaged that data on GHG emissions will be forthcoming from the CSO who will be preparing these emissions on a routinely basis. The balance of the funds on the GEF Enabling Activity are intended to be used to support this workshop following discussion and agreement with UNEP.

54. Furthermore, the implementation of the National Action Plan from the Initial National Communication by identified institutions discussed earlier should keep the institutional memory active as far as methodological issues in conducting climate change studies are concerned.

L. Quality of expertise

55. The number of professional staff working on the different aspects of the project was adequate. The Project Coordinator and the Project Director were in charge of the organisational aspects of the project. Both of them, being employees of the Mauritius Meteorological Services, discharged the responsibilities with distinction. It is commendable that there were no external consultants involved in the whole study though there was a consultant under USCSP to compile the work done by the Mauritius experts after they underwent some training.

56. However, having said that, the different teams could have produced an equally good end product, if not better, in a shorter time had they had prior exposure to various issues related to climate change. The only exposure some of them had was their association with USCSP and UNEP/RISO study on the economics of GHG limitation.

M. Training

57. A unique feature of this project is that no capacity-building activities in terms of training took place though they had been indicated in the project document (paragraphs 61-63). The tacit assumption was that the project would operate on a "training-of-trainers-basis", i.e. team leaders, most of whom

received some training from USCSP and UNEP/RISO, would in turn train fellow team members in their working groups.

58. In other words, there was a symbiotic relationship between these studies which were running parallel. All of them were completed within one or two years of each other. The co-existence of these climate change projects produced good results though some training in targeted workshops would have done more good than harm.

N. Views of the Project Director

59. The evaluator asked the Project Director if there was anything which he would have liked to be done differently in the way the project was executed. His response was that there was nothing, though he felt that the pace at which the project was implemented was slower than planned. In future, it would be better to have more realistic time-frames.

60. The Project Director expressed his gratitude to both GEF and UNEP for providing the funds to carry out this important project. The Project would have been difficult to implement without the technical support from UNEP, particularly at the project formulation stage in May 1997.

61. The Director further observed that non-Annex I Parties working on their National Communication now may have an advantage in the sense that apart from getting technical assistance from the implementing agency (UNEP or UNDP) they can also get this support from the National Communication Support Programme in New York. This should make the work of these Parties easier in view of this additional source of technical support that is now available.

O. Special needs

62. Apart from attaining the main goal of submitting the Initial National Communication to UNFCCC secretariat and the consolidation of National Action Plan, the study has assisted Mauritius in enunciating its needs in the climate change area in more specific terms. The general needs include conducting of further research and analysis in climate change issues as well as technical training and transfer of environmentally friendly technologies.

63. Specific areas that need further attention and capacity-building include:

(a) More sophisticated equipment to monitor coastal zone management activities;

(b) Training in climate change modelling, including storm surges as well as integrated assessment tools, which include economic and meteorological data;

(c) The need to switch to renewable sources of energy such as photo voltaic solar energy (installation, maintenance, trouble shooting and repair);

(d) Conducting of further research on optimal varieties of sugar, including development, dissemination and experimentation to determine which ones will adapt to predicted climate changes;

(e) In order to monitor climate change there is an urgent need to augment the research and systematic observations. Data collection and management need to be reviewed so as to improve on-going studies and to enable more comprehensive research and analysis to be carried out. Capacity-building in the relevant areas of expertise should be intensified in order to ensure continuity in climate change studies;

(f) Tools for climate change awareness raising should be augmented. These tools include formal and informal education. Informal education consists of discussions, debates, public talks and research seminars. Posters, pamphlets, newsletters and technical papers should be distributed at such seminars; and

(g) Special consideration should be given to gender issues since women are focal players in the educational process, i.e. they look after future generations. This is supported by the adage "when you educate a man, you educate an individual, but when you educate a woman, you educate a family."

P. Results of the GEF Enabling Activity Study

1. Climate change vulnerability

64. Both USCSP and the Initial National Communication projects revealed that the two most vulnerable sectors are the coastal zone and agriculture. Accelerated sea level rise is expected to result in land loss, beach erosion, damages to coastal infrastructure, degradation of coral reefs, and loss of wetlands. Agricultural production in general will be affected through higher climate variability resulting in changes in crop development and phenology, and higher incidences of crop diseases. Coastal agriculture in particular will be affected by land degradation.

65. The risk of intrusion of salt water in coastal aquifers could be high. Increased sea surface temperatures, changes in nutrient availability, weather patterns, thermocline depth and warming of ocean basins will affect the fisheries industry. Some negative effects on the health and well-being of the population could also be expected. Some biodiversity might be lost through the extinction of various species.

66. Though these studies give an idea of the degree of vulnerability due to climate change, Mauritius, a small island nation, does not have the resources to effect the envisaged preventive or adaptation measures. The cost of some of these measures is too prohibitive for its small economy.

67. Nevertheless, some simple measures of adaptation, in certain sectors, could be effected under the present economic situation. These could include some aspects of agriculture and water resources. Biodiversity losses could be avoided through closer monitoring.

2. Response measures

68. Analysis from the climate change vulnerability studies in Mauritius shows that response measures can be approached through a targeted portfolio of activities. The following are the three classes of activities:

(a) Capacity-building to empower subject matter specialists to build better models that will enable them to predict national and regional climate changes;

(b) Responses that reduce emissions could be considered as mitigation options. Many of the strategies recommended in the transport and energy sectors are "no regret" measures which would be beneficial to both the national economy and the environment; and

(c) Adaptation –it is assumed that many of the simulated scenarios are inevitable and will come to pass, so that people will have to accommodate the new situation and adjust their lifestyles and practices.

3. Mitigation options

69. Mitigation options to reduce GHG emissions have been identified. Some of these have already been partially implemented depending upon the existing natural, social and economic context, while others have not been implemented at all because of financial constraints. Some elements of the National Action Plan can only be implemented with external financial support since the country has no resources to meet such costs. The following table illustrates some identified mitigation options.

Table 3

Some options for Mauritius to mitigate climate change

OPTION	CONSTRAINTS
(a) Energy Decrease dependency on fossil fuels while increasing use of renewable energy alternatives;	Mauritius has potential to utilize sources of energy, like: biofuels (sugar cane); photo-voltaic (solar); wind power; ocean wave power, and ocean thermal conversions. Most would require heavy capital investments;
(b) Transport (i) Introduce rapid public transport system using electric powered vehicles; ii) Research possibilities for economical fuel switching;	Funding will be crucial for effecting engineering works as well as purchasing of equipment; The most promising option is the local production of ethanol from sugar cane by-products; LPG technology is a long-term future possibility;
(c) Coastal Zone	This exercise is expensive. It would

Funding of regular aerial photography of coastline, or aerial video vulnerability assessments;	require external funding. Rodrigues and the outer Atolls would be included under such a programme;
(d) Agriculture Study of the length of growing seasons and optimal time to harvest sugar and other agricultural products.	This could be undertaken by the Mauritius Sugar Industry Research Institute although it requires substantial funding.

Q. Recommendations

1. Time-frames

70. When deciding on time-frames for project implementation, it would be useful in future to state that what is referred to in the project document is the technical time-frame as opposed to the political time-frame. The political time-frame starts from the time the project is launched to the time it is accepted by the Government. The latter is usually longer than the former, subject as it is, on the pace of the Government machinery. It is therefore logical to use the technical time-frame as a benchmark when rating projects for timeliness. In any case, political time-frames are difficult to predict. In Mauritius' case the political time-frame was much longer than the technical time-frame. This explains why the Mauritius' Initial National Communication was submitted to UNFCCC secretariat almost a year after its completion.

2. National Action Plan

71. Chapter seven of the Mauritius' Initial National Communication outlines an excellent National Action Plan based on the results of this GEF Enabling Activity Study. The international community interested in climate change issues should seize on this opportunity and assist Mauritius to implement some of the projects in the National Action Plan. Mauritius is not in a position to implement the whole range of issues in the National Action Plan, yet it is of global interest that some of these ideas should be implemented now without loss of momentum.

3. Interim GEF finance

72. It was encouraging to learn at COP5 that, in the interim, GEF intends to release \$100000 to those non-Annex I Parties that have completed and submitted their Initial National Communication to UNFCCC secretariat. These funds are meant for capacity-building in those areas that need strengthening. This is a very commendable gesture on the part of GEF. Apart from serving the intended purpose, these funds will maintain the momentum of climate change activities whilst decisions are being taken at

both GEF and COP levels to finance the second generation of National Communication of non-Annex I Parties.

73. Mauritius should approach UNEP as soon as possible and inquire how these funds can be accessed. Accession to this bridging finance will help to fulfil Activity 2 of the Project Document (paragraph 27).

4. GHG database

74. One of the objectives in the Project Document (paragraph 26) was to see to the establishment of data collection and management system whose inventory could be updated regularly. This is a very good idea and is the practice in most Annex I Parties - updating of GHG databases annually.

75. Such a routine exercise will obviate the need to train people on GHG inventories when preparing future national communications, as was the case in Mauritius' Initial National Communication. However, for CSO to add such a routine to their normal duties, some enabling finance will be required for purchasing of hardware and software equipment, and training.

76. The Project Director intimated to the evaluator that the National Climate Committee is intending to use the balance of the GEF Enabling Activity funds to partly finance this activity. The bridging finance from GEF could also be used to contribute towards this activity.

5. Capacity-building in vulnerability and adaptation

77. Despite the fact that some work on vulnerability was done under USCSP, there is still an urgent need for capacity- building and sustaining of relevant institutions participating in this segment of climate change studies.

78. In the African region, the vulnerability and adaptation segment of climate change studies is the least undertaken. With this in view, this segment will need some urgent strengthening even before the second National Communication. This is important because the Mauritius Government is expected to make climate change decisions on the basis of the Initial National Communication and yet the vulnerability and climate change studies in the report still need some strengthening.

6. National communications model

80. Now that there are at least four initial National Communication (Egypt, Mauritius, Senegal, Zimbabwe) from the African non -Annex I Parties, and with Lesotho expected to submit soon, it might be beneficial to take the best elements from the completed National Communication and make a model Initial National Communication for African countries, so that the vast majority of the African non-Annex I Parties can commence work with a model to guide them.

81. Most of the problems which were faced by the African Parties which completed their National Communications are largely similar. Assuming that the same situation applies for the remaining countries, it might be useful for implementing agencies

to prepare such a model. This evaluator believes that such a move would save money and time for the Parties that are still working on their Initial National Communication. Naturally, it will take time, three to four months, to come up with such a model.

R. Observations and rating

82. The terms of reference of the evaluation require that the success or failure of the project implementation be determined using the elements outlined in Table 4 below. This assessment is on the scale of 1 - 5, where 1 is the highest rating while 5 is the lowest. From the table it is clear that most of the elements indicated had good scores apart from 'Timeliness' which scored low largely as a result of poor project planning.

Table 4

Rating of project implementation success

No.	PARAMETER	RATING	COMMENT
1	Timeliness	1.5	On the basis of the technical time-frame, the completion of the project was delayed by only a few months.
2	Achievement of results/objectives	1.0	The Initial National Communication was produced.
3	Attainment of outputs	1.5	Major outputs were attained, particularly the National Action Plan.
4	Completion of activities	1.5	Adaptation measures were not clearly enunciated.
5	Project executed within budget	1.0	This was achieved.
6	Impact created by the project	1.0	This was excellent.
7	Sustainability	2.0	Though local experts did all the work, Mauritius does not have the financial resources to sustain the activities in the National Action Plan

S. Conclusion

83. It is commendable that the Republic of Mauritius was not only the first small island nation, but also among the first countries in Africa to complete its initial National Communication. Another point in Mauritius' favour is that Mauritius experts did all the work in the initial National Communication with no external experts assisting. This implies that Mauritius' capacity-building needs were minimal.

84. Through the project, Mauritius has been able to prepare its inventory of GHG in accordance with the requirements of the UNFCCC. Mitigation options, together with the degree of vulnerability, have been studied. Due to prohibitive costs, adaptation measures have not been implemented. Through these basic studies, the country is now in a position to enunciate climate change policies that are appropriate for itself.

85. However, a matter of overriding importance is that Mauritius has used the study to produce a National Action Plan upon which future climate change projects will be based. Mauritius has been quick to seize on this opportunity by organizing a one day brainstorming session to consider the way forward on the basis of the results of the project.

86. It is expected that Mauritius will soon come up with a series of climate change projects which will be submitted to the international community for funding. This activity clearly shows how the country has benefited from the execution of the project.

Annex I:

References

1. The Mauritius Initial National Communication. April 1999. Published by the National Climate Committee, Mauritius.
2. Economics of Greenhouse Gas Limitations. August 1999. Prepared by the National Climate Committee, Mauritius.
3. The United States Country Studies Programme (Mauritius). National Inventory of Greenhouse Gases (1990). Prepared by the Mauritius Meteorological Services and the Department of Environment.
4. Report on the one-day Brainstorming Session on Climate Change Action Plan. June 1999. Published by the Mauritius Meteorological Services.
5. Notes on Breakdown of Expenditure for Enabling Activities. Mauritius Meteorological Services.
6. December 1998, List of Members of National Climate Committee of Mauritius.
7. Evaluation of the Preparation Zimbabwe Initial Communication (GEF/UNEP PROJECT GF/2200-97-05) by Dr. M. Zinyowera, December, 1998.
8. Project Document on Mauritius: Enabling Activities for the Preparation of Initial National Communication related to the UNFCCC (GF/2200-97-42)
9. IPCC Worksheets on Greenhouse Gas Inventory.
10. Progress Report on UNEP/GEF Project GF/200-97-42: from R. Vaghee, Director, Mauritius Meteorological Services to UNEP(R. Sharma). 26 January 1998.
11. A fax from S. N. Appadu, Assistant Director, Mauritius Meteorological Services to R. Sharma, Task Manager, (UNEP), 6 October 1998.
12. Personal Communication with Mr. S. N. Sok Appadu, the Deputy Director of the Mauritius Meteorological Services.

Annex II:

Members of the National Climate Committee

Member	Institution	Representative
The Permanent Secretary	Prime Minister's Office	Mrs. K. Begun (Chairperson)
The Director	Meteorological Services	Mr. R. R. Vaghjee (Co-chairperson)
The Permanent Secretary	Ministry of Public Utilities	Mr. R. Bhikoo
The Permanent Secretary	Ministry of Public Utilities, Water Resources Unit	Mr. Ramekha
The Permanent Secretary	Ministry of Social Security and National Solidarity	Representative FLASPLACES
The Permanent Secretary	Ministry of Housing and Lands	Mrs. G. Rosunce
The Permanent Secretary	Ministry of Tourism and Leisure	Mr. P. Gujadhur
The Principal Assistant Secretary	Government Information Service	Mr. Surajbali
The Vice –Chancellor	University of Mauritius	Dr D. Jhurry
The Director	Irrigation Authority	Mr. N. Toolsee
The General Manager	Central Water Authority	Representative
The General Secretary	Mauritius Chamber of Commerce and Industry	Mr. H. Jhumka
The Permanent Secretary	Ministry of Agriculture, Food Technology and Natural Resources	Mrs. S. Ramdence
The Conservator of Forest	Forest Service	Mr. M. Mungloo
The Permanent Secretary	Ministry of Civil Service Affairs and Administrative Reform	R. Dhnany
The Director	Ministry of Economic	Mrs. V. Sannasses

Development, Productivity
and Regional Development

The Permanent Secretary	Ministry of Agriculture, Food Technology and Natural Resources	Mr. Y.K. Dwarka
The General Manager	Central Electricity Board	Mr. K. Soodarchand
The Director	MSIRI	Mr. R. Nayamuth
The Secretary for Foreign Affairs	Ministry of Foreign Affairs and International Trade	Mr. K. Kalasopatan
The Director	Mauritius Sugar Authority	Dr. K. Joggesser
The Director – General	Mauritius Ports Authority	Captain P.G.C Moorghen
The Secretary	National Transport Authority	Mr. N.A. Khadun
The Permanent Secretary	Ministry of Industry and Commerce	Mr. L. Morin
The Director	Central Statistical Office	Mrs. D. Manraj
The Permanent Secretary	Ministry of Health	Dr. Y. Erally
The Permanent Secretary	Ministry of Environment, Human Resources Development and Employment	Mr. J. Ramgolam
The Permanent Secretary	Ministry of Public Infrastructure and Public Safety	R. Callychurn
The Permanent Secretary	Ministry of Education and Scientific Research	B.Ramjeet
The General Secretary	Mauritius Chamber of Agriculture	Mr. Jacques Pougne
The Permanent Secretary	Ministry of Fisheries	Mr. V.Chineah

Annex III:

Time allocation for different activities

Activities 1 and 2: Project management structure

Activities	Man-months
-Continuous assessment of project throughout the six months period	1
-Supervise tasks assigned to team leaders	1/2
-Review reports as and when available	1/2
-Chair meeting of team leaders	1/2
-Administrative work	1/2
Total	3

Activity 3: Greenhouse Gas inventory

Activities	Man-months
-Organize workshop	1/8
-Collect data	1/4
-Filling data gap	1/8
-Prepare inventory of GHG based on 1995 using IPCC Guidelines	1/2
-Set up a collection and management system so that inventory can be updated regularly	1/2
-Prepare final report	1/2
-Attending meetings with Project Coordinator	1/2
Total	3

Activity 4: Mitigation option plan

Activities	Man-months
-Organise a workshop	1/4
-Attend meeting with Project Co ordinator	1/2
-Organise meeting with working group members	1/4
-Reviewing option and strategies	1/2
prepare a report on mitigation strategies	
update the study on greenhouse gas limitation	
-Prepare final draft report to be discussed at the national seminar	1/3
Total	3

Activities 4 & 5: Vulnerability/ impact assessment and adaptation

Activities	Man-Months
-Overall supervision of tasks to be undertaken on the following activities: Coasta; Agriculture;Water resources; and Health	1/2
-Preparation of workshops /meetings	1/8
-Guidelines dissemination	1/8
-Synthesis of reports from various sectors	1/2
-Review of draft report from various sectors	1/2
-Identify, analyse and assess potential adaptation options	1/4
-Develop policy frameworks	1/4
-Organise a workshop to discuss final draft report	1/4

-Review and presentation of final draft report	1/2
Total	3

Activities 4 and 5:

Individual Group Activities	Man Months
-Chair – group meeting	1/8
-Organise workshop	1/8
-Collect data	1/2
-Validate data	1/8
-Prepare draft report	1/2
-Attend meetings with team leader	1/8
-Prepare final draft report	1/2
Total	2

Activities 6 & 7: Public awareness/ training and education

Activities	Man-months
-Continuous liaison with team members	1/2
-Meeting with Project Coordinator	1/2
-Organization of workshop	1/4
I-identify training needs on climate change activities	1
-Workshop/Seminar for planners and decision makers	1/4
-Prepare information packages (video- clips, posters and pamphlets, articles)	2
-Public awareness program at all levels	1
-Prepare report on activities undertaken	1/2
Total	6

Activities 8 And 9: National Action Plan And National Communication

Activities	Man-mMonths
-Liase with all team leaders	1/4
-Co-ordinate and review all reports	1/2
-Identify projects, research activities and training requirements	1/8
-Attend meetings with team leaders and Project coordinator	1/2
-Prepare draft national action plan	1 /2
-Prepare draft national communication	1 /2
-Organise final workshop for review of draft initial communication	1 /8
-Coordination with other organisations such as private sector; non-governmental organizations; and policy- makers to finalise National Communication	1 /2
Total	3

