Norad Report 20/2008 Discussion

Norad

Review of the Embassy's Development Assistance Portfolio: Environment and Climate Change

"Greening and Climate Proofing of the Portfolio"

The Royal Norwegian Embassy,

Maputo, Mozambique

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FINAL REPORT

The Royal Norwegian Embassy,
Maputo, Mozambique

Review of the Embassy's Development Assistance Portfolio:

Environment and Climate Change

"Greening and Climate Proofing of the Portfolio"

By

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Jan Eriksen

3. November 2008

Norad

PREAMBLE

The Royal Norwegian Embassy in Maputo (the Embassy) has requested the assistance from Norad to undertake a Review of the Embassy's portfolio to identify possible ways and means of addressing/integrating appropriate climate change and environmental concerns in existing bilateral programs and projects supported by Norway. The Review was commissioned in response to the increased priority given to environment and climate change in Norwegian development cooperation policy. This Review is intended to contribute to "climate proofing" and a "greening" of the Embassy's portfolio.

The rationale for Norwegian development cooperation with Mozambique is to increase the welfare for the poorest segments of the population, consolidate the peace and support a democratic development. This will be done through supporting the fight against poverty and by promoting human rights and good governance. The Embassy has made preparations for an increased support within the prioritized areas which are good governance and budget support; management of natural resources with an emphasis on improving the revenue policy and the revenue administration from these resources; fishery; petroleum, hydropower and other energy-related areas; climate and environment; and strengthening of women's rights.

In addition to undertaking the Review the Review Team, through an internal seminar, provided the Embassy updated information on the implementation of the Norwegian Action Plan for Environment in Development Cooperation, as well as provided updated information on how to undertake "climate proofing" of development cooperation activities.

The Review has been undertaken through desk studies, discussions with representatives of the Embassy and from implementing institutions in Mozambique in the period 27 August – 3 September 2008 and discussions with Norad staff members who are actively supporting the Embassy. A draft report was submitted to the Embassy upon the Team's departure from Maputo (dated 3. September 2008). The Embassy's comments to the draft report dated 9. September 2008 have been incorporated and addressed in the Final Report.

The Review Team appreciates the fruitful and open discussions with institutions in Mozambique. The Embassy participated actively in the discussions the Team had with partners in Mozambique and the Embassy's insights in the situation in Mozambique were of key importance to the work of the Team.

The Review Team has provided its' independent recommendations and this does not indicate any commitment on behalf of the Embassy to provide additional funding.

The Review Team comprised of Hans Olav Ibrekk and Jan Eriksen.

3. November 2008

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List of Abbreviations

AD	Appropriation Document
AKF	Aga Khan Foundation
CAP	Conselho Administrativo de Pescas
CDM	Clean Development Mechanism
CLUSA	Co-operative League of United States
CONDES	National Council for Sustainable Development (Conselho Nacional para o Desenvolvimento Sustentável)
CPAE	Self-Employment Training Centre
CRSP	Coastal Rural Support Project
CSR	Corporate Social Responsibility
DAC	Department of Aquaculture
DNA	Designated National Authority
DNAP	Direção Nacional da Administração Pesqueira (National Directorate of Fisheries Administration)
EDM	Electricidade de Moçambique (Electricity of Mozambique)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FAO	Food and Agriculture Organization of the UN
FDC	Fundação para o Desenvolvimento da Comunidade
FUNAE	Fundo de Energia (National Electricity Fund)
GDP	Gross Domestic Product
GHGs	Greenhouse gases
GMO	Genetically modified organism
GoM	Government of Mozambique
IDDPE	Institute for Development of Small-scale (Artisanal)
IFAD	International Fund for Agriculture and Development
IIP	Instituto de Investigação Pesqueira (Institute of Fisheries Research)
INE	Instituto Nacional de Estatística
INHAINA	Institute for Hydrographic Surveying
INP	National Petroleum Institute
IMR	Institute of Marine Research, Norway
IPCC	Inter-Governmental Panel of Climate Change
IUU	Illegal, Unregulated and Unreported (fishing)
LED	Light-emitting diode
LPG	Liquefied Petroleum Gas
MADER	Ministério da Agricultura e Desenvolvimento Rural (Ministry of Agriculture and Rural Development)
MA	Ministério da Agricultura (Ministry of Agriculture)
MCS	Monitoring, Control and Surveillance
MDG	Millennium Development Goals
ME	Ministry of Energy
MFA	Norwegian Ministry of Foreign Affairs
MINED	Ministerio de Educaçao (Ministry of Education)
MICOA	Ministério da Coordenação Para Acção Ambiental (Ministry for Environmental Coordination)
MIREM	Ministerio dos Recursos Minerais (Ministry of Mineral Resources)
MISAU	Ministério da Saúde (Ministry of Health)
MOF	Ministry of Fisheries
MOPH	Ministério das Obras Publicas e Habitação (Ministry of Public Works and Housing)
MPA	Marine protected area
MPD	Ministério da Planificação e Desenvolvimento (Ministry of Planning and Development)

MPF	Ministério do Plano e Finanças (Ministry of Planning and Finance)
MTR	Mid-Term Review
NGO	Non-Government Organization
NPD	Norwegian Petroleum Directorate
NPOA	National Plan of Action (IUU)
NRM	Natural Resources Management
NAPA	National Adaptation Programme of Action
Norad	Norwegian Agency for Development Cooperation
ODA	Overseas Development Assistance
OfD	Oil for Development
O&M	Operation and Maintenance
PARPA	Programa do Governo Para a Redução da Pobreza Absoluta (GoM's Programme for Reduction of Poverty)
PD	Project Document
PDSP	Plano de Desenvolvimento do Sector das Pescas 2002-06
PRSP	Poverty Reduction Strategy Paper
PSA	Norwegian Petroleum Safety Authority
PV	Photo voltaic
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
TA	Technical assistance
TOR	Terms of Reference
UN	United Nations
UNFCCC	United Nations Framework Convention for Climate Change

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The Royal Norwegian Embassy in Maputo (the Embassy) has requested Norad to undertake a review of the Embassy's portfolio to identify ways and means of addressing and integrating climate change and environmental concerns in the current agreements within present framework and budgets, and for possible future phases of the various programs and project. This review contributes to "climate proofing" and a "greening" of the Embassy's portfolio.

The review has included programs and projects primarily within the following sectors: fisheries, energy, petroleum, natural resources management through non-governmental organizations, agriculture (private sector) and governance (environmental statistics). For each of the reviewed activities recommendations on how to strengthen the environmental dimension (e.g. "greening") and how to address climate change (.e.g. "climate proofing") have been provided.

In the **fisheries** sector catch is declining and the economic importance of the sector is decreasing. However, from a livelihood perspective the artisanal fishing activities are important. A new agreement is planned to be entered into next year. For the Embassy this juncture offers a possibility to explore whether a new approach to the cooperation could be developed. From an environmental and climate change point of view the main challenge in the development of the fisheries sector seems to be aquaculture. Potentially, aquaculture development could have a number of environmental impacts that need to be addressed. It is suggested to focus future cooperation in the fisheries sector on aquaculture through developing the whole required value chain. Ensuring environmental sustainability of the sector should be the focus. Within the two reviewed programs there is scope to focus more specifically on environment-related issues, e.g. addressing impacts of road building and the use of fishing gears and fishing methods. Furthermore, there is a need to address the risk of natural disasters in a more concerted manner and possible conflicts with other user interests in the coastal zone.

Support to the **energy** sector has focused on taking advantage of the large volume and low-cost hydropower available from Cahora Bassa, leading to national transmission and then localized networks expansion. The Norwegian support has contributed to increased access to electricity and reduction in use of diesel fuel and kerosene, as it has displaced the use of diesel generators at the local level and kerosene lights at the household level. The further support to the energy sector should also more proactively take into account key cross-cutting dimensions that are important to Norway politically – climate change, environment, gender, good governance, anti-corruption and promotion of private sector. With the current focus on primarily grid-based electricity access the large majority of the population will not get access to modern energy within a reasonable time frame. Increased use of other renewables and off-grid solutions need to be seriously promoted. A key question is how Norway and other donors can help to establish an enabling framework for the increased use of renewable energy in Mozambique and how the existing institutions can be equipped to scale up their activities. Going to scale should be a key priority.

Within the energy sector the climate change impacts of Norwegian supported activities need to be quantified. Of key concern is to estimate the expected CO2-benefits of electrification projects. The Embassy should assess how it can contribute to strengthen the use of and effectiveness of environmental assessments (SEA and EIA) within the energy sector.

Climate change issues are given limited attention in the **petroleum** sector in Mozambique. The potential for reducing CO2-emissions from the sector should be assessed further based on the recommendations provided by Norwegian Oil for Development's (OfD) working group on climate change. According to the legislation EIAs are mandatory for all new develop-

ments within the petroleum sector. The possibility of supporting the strengthening of the technical capacity to assess and follow up the EIA and SEA system within the framework of ongoing petroleum cooperation program should be considered.

Co-existence between fisheries, sea-transport, petroleum and gas search and exploration plus conservation and protection of marine areas is a big challenge. One could draw on experiences from Norway regarding cooperation between ministries, facilitated through the OfD. It could also be considered to build on IMPACTO's civil society course. The mobilization of the civil society is important for en effective implementation of laws and regulations.

The **private sector** is poorly developed in Mozambique and the policy framework is not conducive. The climate-energy-environment nexus offers new possibilities for more actively promoting private sector development (PSD) in service delivery. The Embassy should consider how it can more actively support the development of clean development mechanism (CDM) projects in Mozambique based on the outcome of the planned consultancy. The energy sector offers possibilities for the development of small-scale businesses. Developing a LPG-chain with required infrastructure could be explored. Similarly, PSD opportunities exist within the fishing sector, especially within the aquaculture sector. By aligning the PSD support to the key sectors, Norway would get a clearer strategic profile in its development cooperation with Mozambique. Even NGO cooperation could be aligned around these priorities. Currently, the NGO activity is oriented towards **integrated rural development**. Support to NGOs could also be considered to be aligned with the key sectoral priorities of Norwegian development cooperation with Mozambique and the activities of the various NGOs should be complementary. Alternatively, the Embassy should further explore the possibility of supporting NGOs working in the energy and aquaculture sectors thereby supporting theses sector through a more bottom-up approach. NGOs can play a key role in raising awareness on climate change and building resilience of local communities to cope with natural disasters.

The Government of Mozambique (GoM) has taken a number of steps to develop the required framework to address natural disasters and climate change. As part of the dialogue with Mozambique and other donors the Embassy could focus on:

- **Current climatic variability needs to be addressed**. The failure to effectively address increasingly severe weather patterns and climate variability in strategies and programs is a major threat to economic development and poverty alleviation. Floods and droughts already cause severe consequences in parts of Mozambique and the emergency preparedness system is not able to cope with the existing climate variability. The reduction of vulnerability to current climatic hazards and the prevention of recurrent disasters are the cornerstone for building future resilience.
- **Focus on natural disasters.** Even though Mozambique has made considerable progress in strengthening it's response to natural disasters there is a need to convince key ministries to investment in climate change adaptation and disaster risk reduction.
- **The cost of environmental degradation**. The macro-economic impacts of the deterioration of the environment and associated losses are difficult to estimate precisely; however, within the context of the budget support the issue could be addressed.

Environment, natural disasters and climate change should be a topic on the agenda for dialogue meetings with partners, especially in relation to budget support. Adapting to the current climatic variability and natural disasters should be a point of departure for this dialogue. The Embassy is well-positioned to take on a more proactive role in the development of the energy sector in a more environmentally and socially manner. Finally, the Embassy is well positioned to act as a facilitator/broker between key sectors of great importance for Mozambique's future development, i.e. energy, petroleum, fisheries and environment.

1. MAINSTREAMING OF ENVIRONMENT AND CLIMATE PROOFING – APPROACH AND METHODOLOGY

1.1 Introduction

The Norwegian Action Plan for Environment in Development Cooperation was presented in June 2006. The Government's aim is for Norway to play a leading role in making environmental concerns an integral part of all development cooperation. The ultimate goal of Norway's efforts is for developing countries to acquire the capacity and competence necessary to safeguard their right to a clean environment and the ability to manage their natural resources in a sustainable manner. The action plan sets the direction for Norway's efforts for the next ten years.

All Norwegian Embassies are requested to increase their efforts on addressing climate change. Reporting on national developments will be an important task, as well as assessing continuously how Norway can assist in achieving set climate change targets and objectives. The role each partner country can play in climate change negotiations and providing support to activities that can move partner countries towards accepting long-term commitments will be of key importance.

The Ministry of Foreign Affairs (MFA) has instructed all Embassies to increase efforts to ensure mainstreaming of environment, climate change and gender and measures to combat corruption. Increased reporting on these issues is expected. Furthermore, impacts of climate change and 'climate proofing' should constitute an element of the overall policy dialogue with Mozambique, including in the dialogue with multilateral organizations and non-governmental organizations (NGOs). According to the draft Annual Letter to the Embassy climate proofing of the development cooperation portfolio entails that all energy-related programs should not increase emissions of greenhouse gases (GHGs) and that adaptation should be considered as part of all development cooperation activities.

1.2 Environmental Mainstreaming in the Context of the Embassy's Portfolio

Addressing/integrating environment implies 'mainstreaming' of environment in the Embassy's portfolio. **Environmental mainstreaming** refers to the integration of environmental policy considerations into core institutional thinking. Mainstreaming can help align policies, programs and operations with the long-term requirements of sustainable development, help modernize development policy content and procedures, and promote a pro-active approach rather than responding to impacts as they unfold. Mainstreaming covers both assessing scope for benefiting from environmental opportunities and avoiding negative impacts on the environment.

For the Embassy the integration of environment during programming serves two objectives:

1. To identify and avoid harmful direct and indirect environmental impacts of cooperation programs in the different sectors which can undermine sustainability and counteract achieving the development co-operation objectives of the program – "**do no harm**";
2. To recognize and realize opportunities for enhancing environmental conditions, thereby bringing additional benefits to development and economic activities and advancing environmental issues – "**do good**"; and
3. Combined this will contribute to a "**greening**" of the Embassy's portfolio.

In the Norwegian-supported development efforts the Embassy should actively promote "**do good**", in addition to "**do no harm**". This will be an effective contribution to Norway's commitment to ensure that people and the environment are not harmed as a result of its financing, reduces and manages risk - saves money and time, improves performance and ultimately reduces risks to the Embassy's reputation.

1.3 Climate Proofing

To address climate change, the design criteria must be based on probable future climate scenarios and expected impacts. Screening for climate risks represents a first step towards "**climate-proofing**" of development programs. The screening will help to identify not only programs at risk of climate change but also those that are not climate sensitive and do not, therefore, require further risk analysis.

The following questions will be considered as a starting point:

- How does current climate variability affect the program area? What are the impacts of this variability (floods, droughts)? What are the existing coping strategies used to deal with these impacts?
- What is the country's vulnerability and risks from climate change and extreme weather?; and
- What are the anticipated impacts of climate change in the program area?

Based on the questions above development programs will be classified into three categories:

- **Category 1 - High risk** – Full climate risk assessment required
    - Sensitive sectors: agriculture, water resources, energy, coastal development and management and other infrastructure (e.g. roads).
    - Development programs in high risk areas, e.g. coastal, river bank, dry land areas.
- **Category 2 – Partial or moderate risk** – Selective climate risk assessment required:
    - Development programs with strong components related to water and in risk areas (e.g. integrated rural development, agriculture, fisheries, water supply and sanitation).
- **Category 3 - Low/no risk** – No assessment required.
    - Includes development programs that are not affected in any significant way by climate, and not affecting external vulnerabilities, e.g. within health, education.
    - It should, however, be noted that these sector can be affected by indirect impacts of climate change (socio-economic change, migration, reduced food production, vector-borne diseases etc.) and can be used to enhance capacity and raise awareness on climate change.

1.4 Policy Context – Mozambique

Environmental Management

In terms of the Mozambican law control over natural resource use is exercised through key sectoral legislation (fisheries, agriculture, forestry and water laws), while environmental impacts of other sources (e.g. from the transportation and energy sectors) is controlled though legislation developed by the Ministry of Environmental Coordination (MICOA). Mining is an exception here, in that it has its own suite of regulations governing environmental management.

The National Council for Sustainable Development (CONDES) is Cabinet's consultative body on environmental issues. It is subordinated to the Prime Minister's Office and is constituted by Ministers and Vice-ministers from relevant sectors (agriculture, tourism, energy, mineral resources, planning and development, health, etc.) and chaired by the Minister of Environment. CONDES is at the top of the GoM's environmental management hierarchy. But the general perception is that it has failed to position itself and play its role effectively. Its political leverage and technical capacity are, reportedly, very weak. Therefore, and despite its institutional position, CONDES does not have a strong presence in environment policy debate or sectoral coordination.

Comprehensive legislation has been promulgated for managing environmental impacts in Mozambique but there are some problems with the implementation thereof principally relating to lack of cooperation and coordination between ministries, limited human resources and institutional capacity for implementation, and lack of clarity and overlap of environmental management roles and responsibilities.

The Framework Environmental Act (Act 20 of 1997) and the EIA regulations (Decree no 76 of 1998) provide the basic framework for managing impacts of developments on the environment in Mozambique. In terms of the Act, licensing of any activities liable to cause significant environmental damage are required, the issuance of the environmental license being contingent on the appropriate level of EIA being completed and accepted by MICOA. EIA regulations prescribe the range of development projects that require an EIA, the process to be followed in conducting an EIA, and the content of an EIA report. While on paper these follow the internationally accepted process of screening, scoping, consultation, assessment of impacts, review and monitoring and evaluation, in practice there are numerous problems which limit the effectiveness of the process including:

- Inconsistencies in substance and style across ministries and departments regarding environmental management because roles, responsibilities and modes of cooperation have not been properly defined;
- Limited human resources and institutional capacity;
- Lack of clarity and overlap of environmental management roles and responsibilities among government sector;
- The absence of a culture of communication, information sharing, and cooperation between institutions; and
- A shortage of technical expertise for evaluating environmental impacts in Mozambique.

Mozambique has ratified most of the major international environmental conventions.

Climate Change and Mozambique

Mozambique is a small contributor to climate change. CO2-emissions per capita and per unit of GDP are considerably smaller than other Sub-Saharan countries, see Annex III. In 1994 the total direct greenhouse gases (GHGs) emissions were approximately 9 265 Gg of CO2.

Mozambique has an extensive coastline, constituting the western limit of the cyclone and tropical storms active zone. Therefore, it is regularly affected by tropical cyclones. Furthermore, the country has many international rivers flowing into the Indian Ocean and is regularly affected by floods and droughts, resulting in severe economic impacts and halting of development.

A decreasing trend in rainfall has been observed in the East Africa region as a whole over the last four decades, while the occurrence of droughts has been steadily increasing. High variability in rainfall associated with tropical cyclones and the El Nino/La Nina phenomenon compound this problem, resulting in extreme floods and droughts from time to time.

The impacts of climate change are particularly serious for Mozambique. The following consequences are expected:

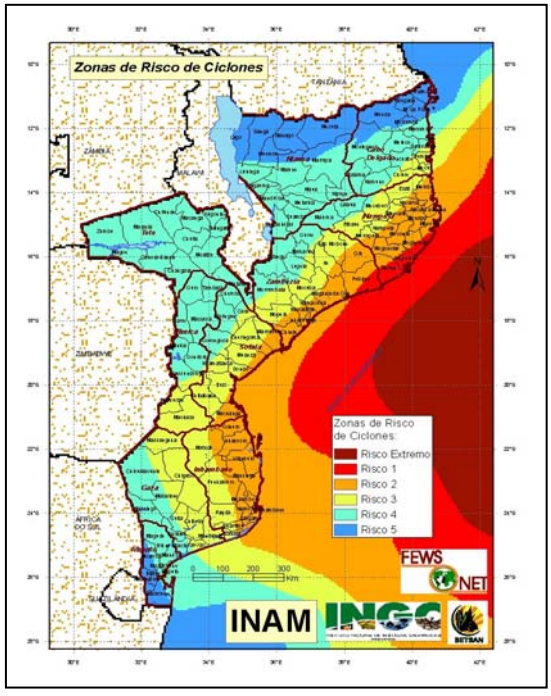
- The increase of the mean air temperature by between 1.8 and 3.2 ºC;
- Reduction of rainfall by 2 to 9%;
- Increase of the solar radiation from 2 to 3%, and;
- Increase of the evapotranspiration by between 9 to 13%.

Computer simulations already indicate that the coastal area resources, water resources, agriculture and forests would be negatively impacted. According to the communication to UNFCCC (April 2003) the main sectors that are likely to be or are being impacted by climate change are: agriculture; forests and pastures; livestock; water resource; coastal areas and resources; infrastructure; health; and fishing.

The impacts of climate change are likely to be greatest where they co-occur with a range of other stresses – e.g. population growth, unequal access to resources, inadequate access to water and sanitation, food insecurity, poor health systems. These stresses and climate change will increase the vulnerabilities of many people in Mozambique. Declining agricultural yields are likely due to droughts and land degradation, especially in marginal areas. Current water stress in Mozambique is likely to increase

Mozambique's Response to Climate Change Risks

Mozambique signed the United Nations Framework Convention on Climate Change (UNFCCC) on 12 June 1992, ratified it on 25 August 1995 and ratified the Kyoto Protocol on 18 January 2005. MICOA is the national focal point of UNFCCC. MICOA has conducted a thorough vulnerability assessment of climate change impacts, concluding that future climate change and increased variability are likely to adversely affect a number of sectors.



Mozambique submitted its first national communication to the UNFCCC in April 2003 and MICOA has prepared a National Adaptation Programme of Action (NAPA) which was approved by the Council of Ministers 4 December 2007. In the NAPA the most vulnerable areas are identified – see map of cyclone affected areas.

The Designated National Authority (DNA) for the

Clean Development Mechanism (CDM) in Mozambique is placed under MICOA. According to the UNFCCC no CDM project has been approved in Mozambique. The Matola Gas Company has now submitted their first CDM project for UN approval, and the Mozambican oil company Petromoc has come far in developing CDM project schemes.

A number of studies, projects and other activities have been conducted in Mozambique on climate change impacts and related issues[1].

The capacity to systematically observe the parameters of the climate system is still poor as a result of the recent history. This weakness is directly reflected in the lack of information of the key parameters of the climate system. This also brings about uncertainties in climate studies that can be conducted in the country. In addition to that, the capacity to conduct relevant research is still poor. These two factors jointly, make the understanding of the cause-effect mechanisms, as well as the magnitude and time of impact of the occurrence of climate change in Mozambique, uncertain. The development of human and institutional skills necessary for the efficient use of these data in scientific, technological and socio-economic research is equally necessary and urgent.

1.5 Approach and Methodology

The approach to the Review is clearly set out in the terms of reference (TOR), see Annex I.

The Embassy identified specific programs/projects as focus for the review. These programs represent a cross-section of the Embassy's portfolio and cover the bulk of the overall cooperation program. The Review Team did not have any objections to the selection of projects.

The Embassy provided copies of relevant documents and communications for all programs to the Team. Based on a desk review the Team identified key issues that were subsequently discussed with Embassy staff and with representatives of cooperation partners in Mozambique (In Annex II a detailed list of persons met is given). During these meetings additional information on the programs were collected, updated information on the status of project implementation was given and preliminary findings of the review discussed. Through these discussions the scope for 'do good', 'do no harm' and climate change was discussed. The 'do no harm' discussions were based on Mozambique's legal framework and the obligation to ensure that assessments of environmental and social impacts are carried out in connection with the use of Norwegian development cooperation funds. The 'do good' and climate change discussions were mainly based on the Team's broad environmental knowledge and competence and ideas provided by representatives of cooperation partners.

The Embassy participated actively in all discussions with development partners and the broad knowledge and insights of the Embassy representatives were extremely valuable. The preliminary findings of the Team were presented to the Embassy in a seminar with all staff presented. The Embassy staff provided initial comments and the findings were discussed. Based on these discussions the Team prepared its draft report which was submitted to the Embassy for consideration upon departure from Maputo.

[1] A comprehensive overview of these is presented in a Danida-report entitled "Climate Check in Mozambique. Country Report" prepared by UNEP Risoe Centre (dated 28 August 2006).

2. ASSESSMENT OF THE EMBASSY'S PORTFOLIO

2.1 Introduction

The Embassy identified the following programs and projects to be reviewed, as presented in the Table below:

PTA number and name	Agreement and implementing partner
MOZ-00/300 Fisheries sector support	Ministry of Fisheries
MOZ-01/328 Sofala Bank Artisanal Fisheries Project	Institute for Development of Small-scale (Artisanal) Fisheries (IDPPE)
MOZ-07/020 Institutional support INP	National Petroleum Institute
MOZ-08/004 Technical Assistance to EDM in Mozambique	Electricidade de Moçambique E.P. (EDM)
MOZ-04/286 Cabo-Delgado Electrification Project	Electricidade de Moçambique E.P. (EDM)
MOZ-3066 Rural Electrification in Niassa Province (Mecanhelas and Marrupa	Electricidade de Moçambique E.P. (EDM)
MOZ-06/053 Institutional support to INE 2007-2012	Instituto Nacional de Estatistica
MOZ-06/052 Soya bean production and marketing in Northern Mozambique	Co-operative League of United States (CLUSA)
MOZ-3040 Coastal rural support Cabo Delgado	Aga Khan Foundation
MOZ-3057 FDC Integrated Development	Fundação para o Desenvolvimento da Comunidade (FDC)
MOZ-06/027 PROGRESSO II Development Program 2006-2008	Associação PROGRESSO

In the following, the main findings of the review of the various projects and programs are presented. For each program a short description of goals and activities are presented for information, existing climate change and environment-related activities included in the project are presented, assessment of climate change and environmental issues is undertaken and finally specific recommendations to the Embassy are provided.

It should be noted that the Review Team offers a menu of possible actions that the Embassy should consider strengthening the climate change and environmental component of the supported projects and programs. The Embassy needs to carefully review the suggestions and decide on the appropriate course of action. Some of the recommendations can be easily addressed without major resource implications. Other recommendations will have resource implications for the Embassy and need to be carefully assessed in the Embassy's follow-up plan to the Review.

2.2 Support to the Fisheries Sector

2.2.1 General Comments and Suggestions

In the fisheries sector catch is declining and the economic importance of the sector is decreasing. However, from a livelihood perspective the artisanal fishing activities are important. Norway has supported the sector for more than thirty years. A new agreement is planned to be entered into next year, offering the potential of developing a sector-wide approach in close cooperation with other donors (19 donors involved in the sector). This requires that the Ministry of Fisheries must take the lead.

For the Embassy this juncture offers a possibility to explore whether a new approach to the cooperation could be developed. A Mid-Term Review (MTR) (April 2008) of the support to

the fisheries sector has been undertaken and this review has offered a number of suggestions for elements in the future cooperation.

From an environmental and climate change point of view the main challenge in the development of the fisheries sector seems to be aquaculture. Potentially, aquaculture development could have a number of environmental impacts that need to be addressed. Through planning and sound management this can be overcome providing an important contribution to food security, livelihood and private sector development. Therefore it is suggested to focus future cooperation in the fisheries sector on aquaculture through developing the whole required value chain involving amongst other production of fingerlings, feed, establishment of fish farms, plans for siting of plants, fish health, use of chemicals, marketing and distribution of products etc. Ensuring environmental sustainability of the sector should be the focus.

2.2.2 MOZ-00/300 Fisheries Sector Support

Goals and Activities

The development objective of the program implemented by the Ministry of Fisheries (MoF) is: ”Government institutions with capacity and competence for research based fisheries management in order to achieve sustainable aquatic resource utilization and viable economic growth of the private sector, thus contributing towards improved food security, reduced unemployment, and direct and indirect poverty alleviation.”

The specific objectives of the program are to contribute, directly or indirectly, to development on three levels:

- The level of national poverty alleviation as expressed in the Action Plan for the Reduction of Absolute poverty (PARPA);
- The sector level as expressed in the 5-year plan *Plano de Desenvolvimento do Sector das Pescas 2002-06* (PDSP 02-06). Here the goals are the same as in the original Master Plan: increase export income, increase internal food supplies through increased catches of fish, increase the standard of living in the fishing communities, that is, through higher incomes and increased employment; and
- The level of the fisheries administration. Here the program aims at contributing within five main activity areas:
    - Fisheries administration and management;
    - Fisheries research and fish stock assessment;
    - Aquaculture development;
    - Developing fisheries enterprises and improving living conditions in fishing communities; and
    - Establishing an Artisanal Fisheries Museum.

Climate Change and Environmental Issues Addressed in the Program/Project

The program itself has important outputs that should improve Mozambique’s management of its natural resources. This includes improving the fisheries research and monitoring, improving the fisheries administration, including MCS (Monitoring, Control and Surveillance), national action plan of Illegal, Unregulated and Unreported fishing (NPOA on IUU), implementation of a management plan on shrimp and line fishing, etc.. MoF’s subordinate agency the Fisheries Research Institute (IIP) has furthermore had a consultancy funded by the program to look into the environmental aspects of the sector in general.

Environment is identified as a cross-cutting issue in the Project Document (PD). Issues mentioned are delicate eco-systems (mangrove areas) and the need to balance development with other ministries. In order to secure the fishery resources, the establishment of a MCS program has been high on the agenda. There is a strong focus on IUU and MCS in the cur-

rent program. MoF has been trying to address by-catch, regulations are in place, however, implementation and enforcement is a challenge. Dumping of fish is not allowed, however, enforcement is difficult. Also increased focus on the marine ecosystem, through surveys of the R/V "Dr Fridtjof Nansen" has been part of the collaboration. One of the immediate objectives has been to establish an aquatic environmental database with a GIS-system.

Regarding aquaculture development several issues have been addressed:

- New legislation;
- Developing site selection tool, i.e. biodiversity and issues related to food ingredients and GMO;
- Roles regarding state and private sector; and
- Area planning and management, including conflicting interests.

Strategic plan for aquaculture has been approved. However, there is a delay in developing norms. EIA is necessary for the development of aquaculture. When the MoF is developing new regulations, normally environmental issues are covered. These are first discussed in the *Conselho Administrativo de Pescas* (CAP).

Assessment of Climate Change Issues

MoF does not have the resources or capacity to implement actions identified in the NAPA, and there is need for additional funds. There is also a need for awareness rising, and to develop advisory services.

According to the IIP, data over 10 years show there are climate change impacts, i.e. shrimps are disappearing from Inhasorro. This is also in line with perceptions from fishermen. IIP needs to undertake further studies before proposing follow up actions.

Overall, it seems as if the MoF/IIP is aware of the need to focus on consequences of climate change. As capacity is scarce, there is a need for support in the process of assessing consequences, and how to address these. This could focus on assessing changes in marine conditions, impact on fish and shrimps, and conditions for aquaculture and ponds. In the further development of aquaculture, measures should be taken to mitigate for deteriorating weather conditions. This could preferably be facilitated through south-south cooperation.

There is scope to use data from R/V Nansen, INHAINA and the Sofala Bank project to identify long-term impacts of climate changes. Norway is considering supporting such a project in Angola, Namibia and South Africa through the Institute for Marine Research (IMR).

Climate Risk Assessment: 2 - Partial

Assessment of Environmental Issues

The MTR concludes that the MCS activities are generally scoring the best, while the planning and policy components are seriously delayed. The MTR has discussed environmental issues, and find that these have been addressed in the collaboration. The strong emphasis on MSC/IUU is important in order to secure sustainability of marine resources. The MTR suggests that environment is maintained on the same level as before in a new program. Other specific suggestions are support to area planning regarding conflicting sector interests and to continue research on relationship between environmental parameters and exploitable resources with specific emphasis on the potential effects of global warming.

R/V Nansen has carried out surveys at the end of the 1970s and 2007. There is a need to carry out such surveys more regularly, but this requires funding. The last survey did identify some new species, but did not uncover much new potential within marine resources. There

is a lot of survey-data to analyze. This can possibly be done through the use of students' thesis. CAP is discussing the survey-findings for use in fishery management. Fishermen are also interested in these data, and they are disseminated though seminars, reports and pamphlets. Data from Sofala (10 yrs) contain climate data (temperature, salinity, etc.). INHAINA has relevant data that can be used. IIP is working with University of Bergen to establish an aquatic database (not operational yet).

MoF wish to set aside areas for aquaculture. There is no comprehensive development plan for aquaculture. Aquaculture should be a key focus in further fishery collaboration. This is an identified area which is important as potential for food security and commercial activities. This is also suggested for further emphasis in the MTR. There are a number of environmental issues that need to be addressed when developing aquaculture, including siting, possible destruction of mangroves and nursing areas, feed, pollution, use of chemicals etc. , as demonstrated through the development of aquaculture in other regions, e.g. Asia. An EIA would be required for new developments and the MoF/DAQ (Department of Aquaculture) should work closely with MICOA to ensure that EIA regulations are enforced.

Potential conflict associated with the Oil-Fish-Tourism-Environment nexus is identified as an important area, as there are potential conflicts which need to be resolved when developing the fisheries and aquaculture sectors. There is a need to develop comprehensive management plans for the marine areas allocating areas to the various user interests. Currently, the scope of the petroleum activities is rather limited. However, there is potential for increased activities and thereby increased user conflicts. Marine Protected Areas (MPAs) have also been established without active participation from the fisheries sector. A report discussing the impact of MPAs on fisheries in Mozambique shows that existing, planned and potential MPAs could cover 57 percent of artisanal fishery areas.

The fish stocks along the coast of Mozambique can only be effectively managed through regional cooperation. Mozambique is a member of the South West Indian Fisheries Commission and the Indian Ocean Commission. A new phase of the fisheries cooperation should also address the regional dimension.

Conclusions and Recommendations

- *The support to the fisheries sector is considered highly relevant and some of the activities included support the implementation of the environmental action plan. The Embassy has considerable opportunities to engage in an active dialogue through the new phase of the cooperation and through the AMs. ;*
- *It is recommended that the Embassy follows the MTR's recommendation to continue cooperation on environmental issues. To ensure that environmental and climate change issues are addressed in the next phases of the fisheries cooperation the following activities identified in the MTR should be given priority:*
    - *Continue research on relationship between environmental parameters and exploitable resources with special emphasis on the potential effects of global warming;*
    - *Identify biological indicators of relevance for an ecosystem approach to fisheries management;*
    - *Support to the development of plans for aquaculture, including addressing key environmental concerns associated with the development of aquaculture; and*
    - *Support to area planning regarding conflicting sector interests (fisheries, aquaculture, oil, tourism, MPAs).*
- *It is recommended that the future fisheries cooperation focuses to a larger extent on aquaculture, both small-scale and commercial aquaculture. This is an emerging area with environmental challenges;*

- *The Embassy should consider to develop activities in the Oil – Fish - Tourism - Environment nexus focusing on strengthening cooperation between relevant ministries, private sector and the active involvement of NGOs, possibly based on the course developed by IMPACTO. This could also include following up recommendations through MoF regarding MPAs;*
- *The Embassy should follow the implementation of the use of data from R/V Nansen to establish a baseline for detecting long-term impacts of climate change in Angola, Namibia and South Africa closely with a view to funding similar projects along the coast of Mozambique; and*
- *The Embassy should consider how it could support a more active participation from Mozambique in regional fisheries commissions.*

2.2.3 MOZ-01/328 Sofala Bank Artisanal Fisheries Project

Goals and Activities

The goal of the project is to achieve sustained improvement in social and economic conditions of artisanal fishing communities, numbering about 26,000 fishing households and 130,000 people, in the Sofala Bank area.

The project, implemented by the Institute for Development of Small-scale (Artisanal) Fisheries (IDPPE), has the following components:

- Community development, including co-management, social infrastructure and health care;
- Fisheries development, including resource management, product diversification and post-harvest utilization;
- Market support and access roads;
- Financial services, including group savings and loans and formal credit; and
- Policy, legislative and institutional support, including project management.

Climate Change and Environmental Issues Addressed in the Program/Project

There are few specific environmental issues included in the current program. The relevant documents reviewed (AD and MTRs) do not address issues linked specifically to environment. However, due to the impacts of the March 2008 cyclone which devastated the coastal areas of Nampula Province, the issue of disasters preparedness and recovery has been addressed in the MTR.

The project deals with natural resources management through co-management of fisheries resources, resource management in general and development of water supply and sanitation services to fishing communities.

The project includes construction of physical infrastructure which might have environmental impacts, especially associated with the relatively large road building component. No assessment of environmental impacts of the road building program or any of the other activities included in the project, has been undertaken.

Assessment of Climate Change Issues

The project is implemented in areas highly susceptible to natural disasters according to the NAPA. The current weather variability is therefore a critical risk factor to the sustainability of the services supported by the project, as well as to the livelihood of artisanal fishermen. There are a number of dispersed artisanal fishing centers located in areas vulnerable to natural disasters.

There seems to be a need to start integrating crisis preventive measures in infrastructure design (roads, school building and health clinics), review current design standards used and to strengthen the overall resilience of fishing communities to withstand chocks caused by natural hazards. Poor artisanal fishermen have few assets to draw on in a recovery process. Reconstruction of destroyed facilities should be based on the build-back-better principle.

The project has supported the construction of 465 km of roads, i.e. this is a major rural road building program. Physical targets have been achieved; however, there are indications of severe maintenance problems and serious deterioration of roads have occurred, partly because of poor quality foundation, lack of suitable gravel and inadequate numbers of culverts and drains. The road building program therefore needs to be "weather-proofed".

Artisanal fishermen use their local knowledge about weather and do not rely on metrological information to a large extent. The question is whether this local knowledge, based on the historical climate, will be a good guide to the future climate.

Climate Risk Assessment: 2 – Partial assessment

Assessment of Environmental Issues

The project involves construction of about 200 water points serving about 94,000 people. Water committees have been established to manage the water wells. The issue of long-term O&M should be addressed as well as issues linked to the sustainability of the water sources, salt water intrusion, inclusion of sanitation and provision of hygiene education. A number of schools and health clinics are also being built, bringing up the question whether water and sanitation (with separate facilities for boys and girls at schools) are included.

There are other issues related to the environment which the current project has not addressed. The issue of use of mosquito nets for fishing and illegal fishing practices, e.g. dynamite fishing, have not been addressed in the project. Furthermore, there are issues related to possible destruction of mangroves and nursing areas in the coastal zone that warrant further investigation, especially since the number of people in the coastal areas is increasing and an increasing number of development activities are being undertaken, e.g. tourism-related.

Development of aquaculture is a possible long-term threat to the coastal environment which should be put on the agenda together with issues linked to the nexus of artisanal fisheries, oil, tourism and environment.

Conclusions and Recommendations

- *The project includes a number of activities which fall outside the responsibility of IDPPE bringing up the question of coordination with line agencies, availability of resources for O&M and staffing, and sustainability. The multi-sector approach reduces the possibility of effectively integrating environment and addressing climate change issues since there is no dialogue through the project with line ministries and agencies. In further discussions with IDPPE and IFAD the Embassy should address the objective structure of the project;*
- *IFAD has raised the issue of natural disasters preparedness and recovery. This should be translated into relevant design requirements for the construction of infrastructure (if these components are continued) taking climate change into account. Support to reconstruction should be based on the build-back-better principle. The problems associated with the road building program, partly related to water, indicate a need to revisit the design standards. This might require dialogue with the relevant line ministries;*

- *The issue of long-term O&M of the water supply and sanitation component should be addressed as well as issues linked to the sustainability of the water sources, salt water intrusion, inclusion of sanitation and provision of hygiene education;*
- *Environmental impacts of the use of fishing gear and fishing methods should be addressed. Furthermore, the key importance of protecting mangroves and other nursing areas should be addressed; and*
- *Possible environmental impacts of the road building component should also be addressed. Normally, an environmental management plan for this component should have been developed since it involves major construction activities. The Team is of the opinion that a partial EIA should have been prepared for the road building component.*

2.3 Support to the Petroleum Sector

2.3.1 General Comments and Suggestions

Cooperation within the petroleum sector is undertaken within the framework of the Norwegian Oil for Development (OfD) initiative. The Embassy is well positioned to take on a larger role in facilitating/brokering cooperation between the petroleum, fisheries and environment sectors. Through CONDES potential conflicts between development interests and environment should be resolved. Currently, CONDES and MICOA are poorly equipped to take on a coordinating and conflict resolution role. Through the cooperation in the petroleum and fisheries sectors the Embassy has the opportunity to facilitate a dialogue how petroleum, fisheries and environmental interests could be better coordinated and to raise awareness among stakeholders on key issues. One possibility could be to consider how a comprehensive environmental monitoring program for the coastal areas could be developed.

2.3.2 MOZ-07/020 Institutional Support INP

Goals and Activities

The overall objective of the capacity building program is assistance to the development of the petroleum sector in Mozambique, and further the institutional development of the National Petroleum Institute (INP) as a regulatory authority, to enable it to perform its functions in a sustainable and competent way to provide good governance of the petroleum resources in Mozambique.

The program tasks for 2006 – 2010 comprises of eight sub-projects:

- Legal and regulatory framework;
- Policy and strategy development;
- Monitoring and supervision;
- Promotion of exploration acreage;
- Negotiations of agreements authorizing petroleum operations;
- Assessments of petroleum resources;
- Management of national petroleum data; and
- Administration, human resources and finance.

Climate Change and Environmental Issues Addressed in the Program/Project

The project includes support to preparing environmental regulations specifically for the petroleum sector. INP leads this process, with MICOA in a coordinating role. A rough draft has been prepared and a consultation draft is expected to be ready by the end of the year. Environmental regulations will be based on international standards and a zero-discharge (theo-

retically) policy has been adopted in Mozambique. The regulations will also clarify roles and responsibilities within the sector.

All activities in the petroleum sector are subject to EIA. A Strategic Environmental Assessment (SEA) will also be developed for the area around Bazaruto National Park. According to INP the EIA systems and environmental audit system works reasonably well. The Norwegian Petroleum Directorate (NPD) and the Norwegian Petroleum Safety Authority (PSA) are advising INP also on environmental and safety matters. MICOA staff receives training under this cooperation.

The domestic gas consumption is increasing in Mozambique and demand is nearly outstripping supply. Fuel switching programs are on-going, amongst other at a cement factory (which will be the largest consumer of natural gas).

Assessment of Climate Change Issues

Climate change issues are given limited attention in the petroleum sector in Mozambique. The potential for reducing CO2-emissions from the sector should be assessed further. Flaring is occurring from the central processing facility for the gas pipeline. Flaring is prohibited; however, there is a need to develop a production line for the use of condensate, e.g. LPG, before flaring can be stopped. According to the INP the amount of flaring is considerable taking the production volume into account.

There is scope for increased use of gas in Mozambique and steps have already been taken to establish local gas distribution systems, as well as introducing CNG (compressed natural gas) as fuel for vehicles. The development of a future LPG chain through the use of unutilized condensate is a promising area, both for export and domestic purposes. Currently, the demand for LPG is not high enough to warrant such investments, however, the feasibility of establishing a LPG value is being explored by INP.

A working group within the Norwegian OfD has in general assessed the possibilities for providing climate change support within the framework of the OfD. The key recommendations are:

- Include climate change issues in all OfD-discussions and training;
- Offer support to assess the climate change mitigation potential within the sector and to determine the associated costs. Measures with positive impacts on environment and development should be given priority. Reductions in CO2-emissions of mitigation should be quantified;
- Provide advice on appropriate regulatory and economic instruments and their effectiveness;
- Encourage partner countries to develop a regulatory framework based on international best practice;
- Assess the potential for developing CDM projects within the sector; and
- Assess the need for adaptation within the sector and to include adaptation issues in relevant training activities.

The Embassy and the OfD should review and discuss these recommendations with INP as a basis for further action.

Climate Risk Assessment: 1 – high risk (applies to the whole sector mainly from a mitigation point of view).

Assessment of Environmental Issues

According to the legislation EIAs are mandatory for all new developments within the petroleum sector. The possibility of supporting the strengthening of the technical capacity to assess and follow up the EIA system within the framework of ongoing petroleum cooperation program should be considered. Furthermore, there is a need to develop capacity to prepare SEAs for the sector based on the experiences gained through the Bazaruto SEA.

Co-existing between fisheries, sea-transport, petroleum and gas search and exploration plus conservation and protection of marine areas is a big challenge. Possible conflicts between different sectors (petroleum-fisheries-environment-tourism) should in principle be raised through CONDES. As CONDES has limited capacity, the Embassy could continue discussions with MoF and MIREM/INP on possible efforts to facilitate coordination and reduce conflicts. In turn this could strengthen the processes within CONDES. One could draw on experiences from Norway in this regard facilitated through the OfD. It could also be considered to build on IMPACTO's course for civil society regarding possible conflicts.

One possible area for future (long-term) cooperation is in the area of monitoring of the effects of off-shore petroleum activities. This should also be done in close cooperation with fisheries and environment. This could eventually pave the way for the establishment of a National Environmental Monitoring Plan for the marine areas in Mozambique. Norway can play an important role in supporting this development, both when it comes to technical support, as well as regards the cooperation between the Mozambican stakeholders in their effort to clarify their roles and responsibilities.

The mobilization of the civil society is important for en effective implementation of sound environmental laws and regulations. Within the framework of OfD, there is established a dedicated funding mechanism for support to NGOs which have cooperation with Norwegian environmental NGOs. This instrument should be considered for use in Mozambique. Furthermore, the course provided by IMPACTO should be continued.

Corporate Social Responsibility (CSR) is high on the corporate policy agenda for most oil companies. There is scope for enhancing the dialogue with, e.g. StatoilHydro and DNO on the CSR agenda and encourage the companies to take an even more active role in the technical and political discourse in Mozambique on environmental standards for the petroleum industry and the development of a comprehensive monitoring system for the marine waters.

Conclusions and Recommendations

- *The support to the petroleum sector is relevant when it comes to environment and climate change in Mozambique. The program is a good basis for increased support to environment and climate change issues, within the framework of the existing agreements;*
- *Potential support from OfD to address climate change issues within the petroleum sector in Mozambique should be assessed with a basis on the recommendations of the OfD Working Group on Climate Change. Achieved reductions in CO2-emissions should be quantified;*
- *The Embassy in liaison with NORAD/OfD should enter into a dialogue with INP on how Norway could provide support to enhance the capacity on assessment and follow up of EIAs, including the preparation of SEAs;*
- *Norway should closely follow the efforts to support the establishment of a LPG value chain in Mozambique through the close involvement of business partners, e.g. Sasol, ENH, Engas, PetroMoc, MocGas, with a view to assessing potential contributions;*
- *The Embassy could consider initiating a process of facilitating cooperation around precautionary work to reduce conflicts between development interests in the marine*

environment. Furthermore, cooperation to develop a comprehensive environmental monitoring system for the marine environment in Mozambique, building on experiences from the fisheries and petroleum sectors, could be considered (Oil-Fish-Environment). This could subsequently form the basis for a future national environmental monitoring system for the marine environment;

- *Norway should consider providing support to environmental NGOs to act as watchdogs in Mozambique to ensure that the oil and gas sector adheres to international best practice. OfD has set up a dedicated funding instrument for this and support can be provided to NGOs which have a working relationship with Norwegian environmental NGOs; and*
- *The possibility of research cooperation between the universities in Mozambique and Norwegian universities on petroleum related issues, with focus on environment and climate change, should be explored. A first step could be a fact finding mission to Mozambique from the relevant Norwegian institutions (BI, University of Rogaland, NTNU).*

2.4 Support to the Energy Sector

2.4.1 General Comments and Suggestions

Support to the energy sector has focused on taking advantage of the large volume and low-cost hydropower available from Cahora Bassa, leading to national transmission and then localized networks expansion. The priority has been on rehabilitation and expansion of transmission and distribution to support economic growth. The Norwegian support has contributed to increased access to electricity and reduction in use of diesel fuel and kerosene, as it has displaced the use of diesel generators at the local level and kerosene lights at the household level with positive health impacts depending on the cooking method used.

Increased investment in low-carbon technology, improved energy efficiency and increased use of renewable energy are of key importance in addressing the climate and energy access nexus. Energy is essential for both social and economic development. Providing better access to reliable energy services at prices that are affordable to poor people is crucial to achieving the Millennium Development Goals (MDGs). Simple, decentralized solutions will play an important role.

In the area of energy the Norwegian environmental action plan gives priority to:

- providing assistance for energy resource mapping, analyses of energy use, development of regulatory frameworks and system design with respect to the most promising renewable sources of energy;
- supporting development and use of renewable energy, including biomass, wind and solar energy; reflecting recent technological developments;
- supporting development of small power plants in conjunction with solutions that address water supplies, flood mitigation and agricultural irrigation;
- supporting measures designed to improve energy efficiency; and
- supporting measures to reduce the negative health effects resulting from the use of biomass for household energy purposes.

Currently, the Embassy's energy portfolio is not well in line with these (environmental) priorities. The portfolio has, however, been developed with focus on achieving other objectives. Aligning the portfolio with the action plan could be based on a four-pronged set of objectives:

- Supporting widening access to energy services as a means of supporting development overall. Improving and extending access to energy services, especially those generated from electricity and household fuels, is one of the most urgent tasks that

lie ahead in Mozambique since less than 10% of the population have access to electricity;

- Enhancing environmental performance of energy supply and consumption and framing energy sector planning in a climate change framework. Adequate, timely measures can reduce the present climate change, environmental and health hazards related to energy supply and use. The Embassy could actively encourage the Ministry of Energy (ME) to set the "Policy for Renewable Energy and Master Plan for Off-Grid Energy" in a climate change context (which it currently is not). This would imply including assessment of the climate change impacts of the use of various energy sources and undertaking cost-benefit analysis as a basis for selection of the most appropriate source of energy;
- Mobilizing financial resources to expand energy investments and services through the active use of the carbon market, e.g. CDM. More efforts could also be considered to actively involve NGOs and private sector in mobilizing resources for investments and providing energy services. There is considerable scope for establishing smaller businesses providing support to increasing the use of solar panels (PV), establishing a LPG chain, improving cooking stoves etc. NGOs could play a critical role in raising awareness and educating people in the use of alternative energy sources; however, there are currently few NGOs in Mozambique with experience from the renewable energy sector. Several Norwegian investors have expressed an interest in investing in the energy sector in developing countries; and
- Linking energy planning to goals and priorities in other sectors and sustaining political commitment to sound energy sector management and governance. This commitment is a prerequisite for a well-performing energy sector equipped to address pressing economic, social and environmental needs.

Aligning the energy portfolio around these objectives would also be in line with the clean energy platform and action plan. By "unbundling" energy needs, including the need to have access to clean cooking, heating and lighting fuels, support to the energy sector in Mozambique could follow a five track approach including:

i. scaled-up programs of household electrification (with increased use of and better integration of mini-grid and off-grid electricity options to complement grid-based approaches) based on the existing grid. The finding that smaller and local-based systems tend to provide greater benefits to the poorer segments needs to be addressed when deciding the focus for assistance, especially in the light of the high cost in some of the electrification projects. This would entail significant subsidies. In most cases grid-based solutions are subsidized while off-grid solutions are not subsidized at the same extent. It should also be considered to subsidize off-grid solutions initially to kick-start the market. This has to be combined with advocacy efforts highlighting the benefits of these solutions and the development of required O&M systems;
ii. development of local and regional generation capacity to serve newly connected households and demand from enterprises, public facilities and other users. The selection of energy source should be based on cost-benefit analysis. Screening of potential hydropower projects to strengthen resilience in project design, as/if necessary, to future climate change should be undertaken;
iii. provision of energy services for key public facilities such as schools and clinics (Norway has previously supported such a program in Mozambique) and administrative posts, e.g. through the use of solar panels, windmills for irrigation, etc.;
iv. provision of stand-alone lighting packages (use of PV systems and LED technology) for households without electricity service. The World Bank Group initiative "Lightning Africa" could offer relevant guidance since its emphasizes market-catalyzing actions rather than give-aways;

v. access to clean cooking, heating and lighting fuels possibly through the development of a LPG chain, which will require considerable efforts in establishing the required infrastructure, and the use of improved cooking stoves.

One key "immediate challenge" from an environmental and health point of view is to eliminate the negative health impacts that inadequate use of biomass fuels imposes on poor people. Switching to kerosene, LPG or biogas and improving cooking stoves will, in many cases, offer a low cost solution to reducing indoor air pollution and in-door health impacts. In addition, there are significant negative environmental consequences of an unsustainable reliance on biomass, the most severe being forest depletion, especially around the larger settlements.

The further support to the energy sector should also more proactively take into account key cross-cutting dimensions that are important to Norway politically – climate change, environment, gender, good governance, anti-corruption and promotion of private sector. These issues have in general tended to be largely overlooked during the planning and implementation of power sector interventions (reference to the "Evaluation of Norwegian Power-Related Assistance").

Developing the energy sector portfolio along the lines indicated here will be by no means easy, however, with the current staffing the Embassy is uniquely positioned to take on a larger and more active role in developing the energy sector in Mozambique. The key challenge is to find a conducive organizational framework for these efforts, e.g. through the Electricity of Mozambique (EDM) and/or FUNAE. A key question is how Norway and other donors can help to establish an enabling framework for the increased use of renewable energy in Mozambique and how the existing institutions can be equipped to scale up their activities. Going to scale should be a key priority. With the current focus on primarily grid-based electricity access the large majority of the population will not get access to modern energy within a reasonable time frame. Increased use of other renewables and off-grid solutions need to be seriously promoted.

2.4.2 MOZ-08/004 Technical Assistance to EDM in Mozambique

Goals and Activities

The main objective of the TA is to provide support to the EDM on legal matters, contract negotiations, loan agreements, project documents and regional power market assessments. Through effective and sustainable development of energy resources the sector will contribute to economic growth and social well being in line with the goals of the PARPA II.

The outcome of this TA is to strengthen EDM's business capability in development, structuring, financing and implementation of large power generation and transmission projects.

Climate Change and Environmental Issues Addressed in the Program/Project

The project includes hiring of an environmental specialist to assist EDM in undertaking environmental assessment of large scale generation and transmission projects.

Assessment of Climate Change Issues

The energy sector is a main source of emissions of GHGs and can also be seriously affected by climate change through reduced rainfall, changes in weather variability, reduced average stream flow, increased floods, increased evapotranspiration, storms and cyclones, etc. Climate change is therefore an issue of key concern to the energy sector and energy sector planning should include the assessment of climate change impacts, both from a mitigation and adaptation point of view.

Climate Risk Assessment: 1/2 – High to Moderate (applies to the sector). This specific project has low risk (3).

Assessment of Environmental Issues

Implementation of large power generation and transmission projects could cause considerable environmental and social impacts that need to be addressed. The primary vehicle for this is through the development of SEA at the sector level and EIA at the project level. The capacity to prepare and implement SEAs and EIAs within the energy sector in Mozambique is limited and should be strengthened.

Conclusions and Recommendations

- *In the further dialogue with EDM the issue of climate change and possible impacts on the energy sector should be put on the agenda. Potential hydropower projects should be screened to strengthen resilience to climate change in project design, as/if necessary;*
- *EDM should be requested to assess the climate change impacts of Norwegian supported activities. Of key concern is to estimate the expected CO2-benefits of electrification projects. In most cases this would imply switching from generators (diesel) and kerosene. For the Embassy it will be important to document these mitigation benefits;*
- *Strengthen reporting routines. Environmental management should be reported as a regular item in all status reporting and be a regular item in all status and annual meetings;*
- *The Embassy should assess how it can contribute to strengthen the use of and effectiveness of SEA and EIA within the energy sector;*
- *The Embassy should clearly document in all power-sector project whether an EIA has been prepared or not and ensure that the environmental management plan (EMP) is followed up adequately; and*
- *Design specifications for the further development of the national grid and distribution systems should take natural disasters into account.*

2.4.3 MOZ-04/286 Cabo-Delgado Electrification Project

Goals and Activities

The project's development goal is to contribute to increased economic development and social welfare in Cabo Delgado. EDM implements the project and the immediate objectives are:

- to connect Cabo Delgado to the national electricity grid from Metoro to Chai, in order to improve access to electric power supplied through the national grid; and
- to rehabilitate and improve electricity networks, thereby expand and improve supply quality, where the networks are old, run down and at the end of their technical life span.

The key planned outputs are:

- detailed survey and design prepared;
- EIA prepared;
- construction and supervision performed;
- installation of the SVC in the 220 kV grid in Nampula;
- 6310 families supplied with electricity;
- 18 schools connected to the grid;
- 11 health units connected to the grid;
- private enterprises supplied with electricity;
- training, tools, equipment and spare parts for the project delivered; and
- a socio-economic baseline study carried out.

The project has not yet started implementation due to high price increases requiring some of the project activities to be scaled back.

Climate Change and Environmental Issues Addressed in the Program/Project

An EIA and socio-economic baseline will be prepared. The appraisal concluded that environmental issues only had been addressed at the scoping level, and a full EIA was required.

The transmission lines run through the Quirimbas National Park, requiring a thorough assessment of environmental issues.

Assessment of Climate Change Issues

The Cabo Delgado province is not characterized as a high risk area for cyclones or other natural hazards. According to EDM the current design specifications take due account of natural disasters, e.g. floods and storms.

Reductions in CO2 emissions associated with the project should be calculated.

Climate Risk Assessment: 3 - Low

Assessment of Environmental Issues

It should be noted that the project has been approved by the Government as well as by Norway before a full EIA has been prepared[2]. It is a clear weakness that a full EIA has not been prepared before the investment decision has been made, especially since the transmission line will run through a National Park. This is an issue that might cause some controversies.

Conclusions and Recommendations

- *The project has been approved and funding committed without the preparation of a full EIA. The AD states that EDM needs to obtain legal permissions regarding right-of ways. There is no specific reference to that the Norwegian support is contingent upon an environmental license;*
- *The transmission line runs through a National Park. The Embassy should closely follow that all environmental requirements are adhered to in the implementation of the project. This is a potential corporate risk to the Embassy;*
- *Strengthen reporting routines. Environmental management should be reported as a regular item in all status reporting and be a regular item in all status and annual meetings; and*
- *Reductions in CO2-emissions associated with the project should be calculated.*

[2] EIA was approved by MICOA 2. September 2008.

2.4.4 MOZ-3066 Rural Electrification in Niassa Province (Mecanhelas and Marrupa)

Goals and Activities

The Purpose is to improve the access to electricity for industrial, commercial, public and domestic consumers in Mecanhelas, Cuamba, Metarica, Maua and Marrupa in Niassa province. The planned 33 KV network is 335 km and will be supplied from a recently commissioned substation in Cuamba. It will follow the road from Mecanhelas in the south to Marrupa in the north and supply the rural centers and villages along the road.

The planned outputs are:

- The grid extension from Mecanhelas to Marrupa, via Cuamba, Metarica and Maua in place:
- 950 new domestic consumers connected;
- 35 commercial consumers connected;
- 20 official consumers, including schools and health clinics, connected;
- Public lighting installed in local centers;
- Operational and maintenance organization established and personnel trained; and
- Consumers trained in productive use of electricity.

The Project is implemented by EDM and Sweden acts on behalf of Norway for monitoring and reporting purposes.

Climate Change and Environmental Issues Addressed in the Program/Project

An Environmental Management Assessment and Plan has been prepared for the project (prepared by consultants). The Norwegian support is based on assessments made by Sweden. The transmission lines will cross 11 major streams and mitigation measures will be taken to secure riparian vegetation and water quality and to avoid river bank erosion.

In the AD the following is stated: “Mozambique is prone to such natural calamities as floods and cyclones and to a lesser degree earth quakes. These calamities, if they occur, may result in delaying the construction period of the project. The likelihood that such events will affect this project area is however quite limited.”

Assessment of Climate Change Issues

The AD has addressed the risk of natural disasters. The Niassa Province is in the NAPA classified as a low risk area for cyclones. Design specifications for transmission lines take account for storms and other natural disasters and if these are followed in construction, the transmission lines should be adequately “weather proofed”.

The potential mitigation effect of the project has not been estimated.

Climate Risk Assessment: 3 – Low risk

Assessment of Environmental Issues

There is a need to ensure that the environmental management plan is being implemented.

Conclusions and Recommendations

- *The Embassy should ensure through its dialogue with Sweden that the environmental management plan for the project is being implemented;*
- *Strengthen reporting routines. Environmental management should be reported as a regular item in all status reporting and be a regular item in all status and annual meetings; and*
- *Reductions in CO2-emissions associated with the project should be calculated.*

2.5 Support to Private Sector Development – Agriculture

Overall, the private sector is poorly developed in Mozambique and the policy framework is not conducive. The Embassy's private sector portfolio is rather limited. The climate-energy-environment nexus offers new possibilities for more actively promoting private sector development (PSD) in service delivery. Several Norwegian companies are exploring opportunities to benefit from the carbon market within the forestry sector. These projects have the potential to benefit from the CDM. However, so far only one forestry project (in China) has been approved by the CDM Executive Board. The rules for the carbon market in the post 2012-Kyoto framework will determine if the carbon market can be used effectively to attract resources to the development of forest plantations.

The Embassy should follow these efforts closely and consider how support, if needed, can be provided. Norad has recently established a dedicated CDM grant support scheme for project developers from Norway and least developed countries. CarbonNeutral Norway is also a potential buyer of CDM credits and the Embassy should consider how it can more actively support the development of CDM projects in Mozambique, enabling these to submit offers to CarbonNeutral Norway. The Embassy and Norad will commission a consultancy to assess the CDM market in Mozambique. The results will be used for guiding the Embassy's work to strengthen national CDM capacities.

The energy sector offers possibilities for the development of small-scale businesses. Developing a LPG-chain with required infrastructure could be explored. This would require an approach considering the whole value chain – from production to consumption – to develop the market. Furthermore, provision of services related to the use of renewable energy offer possibilities, e.g. PV, improved cooking stoves, O&M activities, etc. NGOs and local entrepreneurs could be used to support these activities. Similarly, PSD opportunities exist within the fishing sector, especially within the aquaculture sector. This would also require an approach considering the whole value chain, from development of fingerlings, production and distribution of feed, training in operation of plants, and distribution of products to the market.

The PSD activities supported by the Embassy and Norad could be aligned to the key sectors supported by Norway. This would ensure synergies between the various activities supported by Norway and give Norway a clearer strategic profile in its development cooperation with Mozambique. Even NGO cooperation could be aligned around these priorities.

2.5.1 MOZ-06/052 Soybean Production and Marketing in Northern Mozambique

Goals and Activities

This project, implemented by the Co-operative League of United States (CLUSA), is aimed at supporting the expansion of soybean production mainly through knowledge transfer. The project will help expanding soybean cultivation by medium and smallholders in the Nacala corridor. Building from the lessons learned during previous planting seasons, the production will be concentrated in the areas of Gurue and Lioma (Northern Zambezia Province).

The project is composed of the following components:

- In-put provision to farmers – procurement of locally grown seeds;
- Improved technology - introduce animal traction and conservation farming techniques that will enhance the soil fertility and reduce the time required to prepare the land; and
- Strengthening farmer based private sector extension – development of farmers associations.

The market for soybeans is primarily as chicken feed. Increased buying power gives more demand for chicken meat and eggs. Hence the local market pays more than the price Felleskjøpet has guaranteed (Felleskjøpet has agreed to purchase whatever is not sold on the local market at a fixed floor price).

Climate Change and Environmental Issues Addressed in the Program/Project

In Mozambique there are large areas of fertile land which are not being used. The existing soybean seeds are not yet adapted to the agro-climatic conditions of Northern Mozambique. Therefore there is a need to continue efforts to improve seed variety to achieve higher yields and increase the profitability of soybean production.

Soybean production generally contributes to environmental protection by providing crop rotation, and possibilities of enriching the soil through its nitrogen fixation ability.

Negative weather condition has been identified as a risk and critical factor to the project.

Environment is not directly identified as an element in the program. The use of GMO-varieties was discussed, but as the Norwegian Felleskjøpet could be a customer, this option was not followed up. Felleskjøpet has included in the purchasing contract that GMO-varieties will not be bought.

Assessment of Climate Change Issues

Weather conditions are a risk factor to the project but this has not been followed up with any specific suggestions for action. This is an aspect that should be of increased focus during implementation of the project.

Weather conditions are very important for this project. Too much or too little light can be harmful for the crops. There is still a process in the project to adapt the soybean plants to the climatic conditions. Through the development of new varieties adapted to the local climatic conditions the vulnerability of the soybean production will be decreased. However, future global warming might cause further change in local climate conditions, which in turn might cause a constant need to develop new varieties to adapt to new local climate regimes. (But this would then possibly also be necessary to do for other local crops and varieties.)

Climate Risk Assessment: 2 – Partial (long-term)

Assessment of Environmental Issues

Based on the scope of the project it could be argued that a partial EIA should have been carried out. However, in the early stages of the program, the focus was on small-scale farmers (less than 0.5 ha) and the production was very low (50 t in 2004/05), hence it was considered that an EIA was not required. However, this is not adequately documented in the AD.

Diversification of crops is important to strengthen the resilience of small-scale farmers. Soybeans can be grown in combination with maize and sorghum which are important for nutrition. This also provides income and facilitates organization of cooperatives.

The plan was to provide fertilizers and pesticides to farmers. Due to lack of supply in the target areas, this has not happened.

Conclusions and Recommendations

- *The project has demonstrated the viability of producing soybean as a key source of animal fodder and a local market for the production has been developed. This is a major contribution to strengthening rural livelihood and diversification of agricultural production, thereby increasing the resilience of local communities;*
- *The Embassy should encourage CLUSA to strengthen efforts to implement conservation farming in the target areas;*
- *The Embassy should closely monitor if GMO-varieties of soybean are being introduced; and*
- *The Embassy should also address the issue of the future use of fertilizers and chemicals through the project (issue to be discussed at AM). Possible project with fertilizer through SNV (Selskapet for Norges Vel) and FK. This could have environmental implications that need to be considered.*

2.6 Support to Natural Resources Management through NGOs

The Embassy is now actively supporting three major NGOs operating primarily in the northern provinces of Mozambique. Currently, the activity is oriented towards integrated rural development. The three projects complement each other. There is scope to ensure closer cooperation between the three NGOs and develop a more strategic approach to the cooperation. This can be achieved through entering into a dialogue with the NGOs when developing strategies (the Aga Khan Foundation is currently developing their next five year strategy), presentation of key Norwegian political priorities (e.g. environment, climate, gender, rights, energy, food security, private sector development), encourage the development of strategic programs rather than projects and discuss entering into formal long-term strategic partnerships with some of the NGOs, partly providing core budget support. Support to NGOs could also be considered to be aligned with the key sectoral priorities of Norwegian development cooperation with Mozambique and the activities of the various NGOs should be complementary. Alternatively, the Embassy should further explore the possibility of supporting NGOs working in the energy and aquaculture sectors thereby supporting theses sector through a more bottom-up approach.

2.6.1 MOZ-3040 Aga Khan Foundation - Coastal Rural Support Cabo Delgado

Goals and Activities

The Aga Khan Foundation (AKF) implements a comprehensive Coastal Rural Support Project (CSRP) in Cabo Delgado of which Norway is supporting the education and literacy components, including HIV/Aids awareness and prevention. The overall objective is to contribute to reduction of absolute poverty in Cabo Delgado through primary education and literacy work, including awareness, knowledge and prevention of the spreading of the HIV-virus. This goal translates into five key objectives:

- To support efforts to ensure access to a basic cycle of Education For All;
- To ensure that education provision reaches children marginalized by gender, poverty, remoteness, and religion;
- To enhance the quality of children's learning opportunities and provide support for their overall development
- To strengthen local systems and institutions and build capacity in basic education; and
- To contribute to knowledge creation and dialogue which influences practice and policy.

Climate Change and Environmental Issues Addressed in the Program/Project

The Norwegian-supported components include provision of water and sanitation (with separate facilities for boys and girls) at schools and hygiene education. The CSRP include a build environment initiative which focuses on teaching local communities how to use local resources in construction.

The CSPR is implemented in an area with increasing conflicts between local communities and wildlife.

Assessment of Climate Change Issues

The Cabo Delgado province is not characterized as a high risk area for cyclones or other natural hazards.

In spite of recent efforts in environmental education with particular emphasis on climate change, the level of perception and knowledge of the Mozambican society on these issues is still very limited, particularly in the rural areas. There is a need to introduce environmental issues in the school curricula at all levels. Given that the majority of the Mozambican population is illiterate, without access to formal education institutions, there ought to be a clear policy and programs specifically aimed at raising the climate change awareness of the different communities.

The CSPR includes activities aims at improving farming techniques. Conservation farming and how to address the current climate variability should be considered in these extension programs. The build environment initiative could be a major contribution to increase the resilience of local communities through the construction of stronger housing structures based on locally available material.

Climate Risk Assessment: 3 - Low

Assessment of Environmental Issues

Children are key agents of change in communities, therefore this project could potentially be used more proactively to promote environment-relates issues, e.g. hygiene education, children as role models in communities, mobilization of families to produce learning materials taking natural resources management and food security into account, provide training in environment to farmers' associations, including addressing issues related to current weather variability, use of drought resistant crops, conservation farming etc.

Conclusions and Recommendations

- *The Education for All initiative should include teacher training programs in environment and climate change. Through a dialogue with the Ministry of Education strategies for environmental education encompassing all levels of instruction should be developed;*
- *AKF is preparing a new strategy and the Embassy should encourage the AKF to include disaster risk reduction and preparedness as a cross-cutting element;*
- *The Embassy should follow how the AKF address the issue of conflicts between local communities and wildlife; and*
- *The AKF expressed an interest in discussing further with the OfD how local communities could benefit from oil and gas exploration activities and how NGOs could engage with the initiative.*

2.6.2 MOZ-3057 FDC Integrated Development

Goals and Activities

The overall goal of the project is two-fold: to contribute to an improved quality of life for the population of Ancuabe in Cabo Delgado, and to enhance the status of women, youths and children through focused attention to gender, girls' education and child related issues. The development objective of the project is: to strengthen and develop on-going poverty alleviation initiatives in Ancuabe District within three key areas; education and literacy, health (including water, sanitation and HIV) and food security and nutrition.

The project implemented by *Fundação para o Desenvolvimento da Comunidade* (FDC) has the following outputs:

1. Increased role and impact of the rural community in the school through working school councils, promoting the school as an integrated part of the rural community, girls access to education, improved and drop-out rates of girls (and boys) reduced, literate, numeric, organizational and advocacy skills emphasizing women, youth and community leaders in school councils, local consultative councils and farmers associations improved;
2. Better health and health care for mothers and children through increased access to improved basic services (clean water, mother and child care) and through growing awareness of mothers on making use of the health system and of HIV/AIDS prevention and mitigation;
3. Improved food security and nutrition status of the population, emphasizing vulnerable groups through increased and diversified agricultural production (including crops and husbandry), and networks, access to markets and capacity building in management, marketing, monitoring and evaluation;
4. Effectively and efficiently managed project activities as well as enhanced status of women and through gender awareness training of community leaders, government and project staff.

Climate Change and Environmental Issues Addressed in the Program/Project

There are several environment related activities in the project, e.g. provision of water and sanitation, hygiene education, diversification of agricultural production (which also strengthens the resilience to climate change), use of wood fuel, etc.

Assessment of Climate Change Issues

Rural livelihoods will be affected by long-term climate change. Climate change could have far-reaching consequences for agriculture. Greater numbers of crop failures and livestock deaths will impose economic losses and undermining food security. Effects on crops and livestock are likely to get far more severe as global warming continues. Less precipitation will reduce the availability of water for irrigation and livestock production. To adapt farmers need to plant different crop varieties, changing planting dates, and adapting practices to a changing growing season. Barriers to adaptation vary by area, but for many a key barrier is the lack of credit or savings, and also lack of access to water is a key obstacle to adaptation in some areas. FDC can help to facilitate adaptation through such measures as ensuring focus on crop and livestock insurance, development of social safety nets, and dissemination of information on flood-, heat-, and drought-resistant crops, including conservation of traditional plant varieties with those characteristics.

Traditionally, communities acknowledge the value of natural resources and the need to preserve them. This knowledge is traditionally passed on from generation to generation. Through FDC's key information on impacts on rural development of climate change can be collected. Furthermore, through this work FDC can assist in providing information on local adaptation strategies and to raise the awareness of rural populations about coping and adaptation strategies based on local (indigenous) knowledge.

It should also be acknowledged that women are generally more susceptible to natural disasters. Studies have shown that in some areas more women die in natural disasters than men. Ensuring gender equality is an effective way of ensuring that women can cope equally well with natural disasters.

Climate Risk Assessment: 3 - Low

Assessment of Environmental Issues

Strengthening the links between environment and gender is important. Furthermore, the project is being implemented in an area with increasing conflicts between people and wild animals that need to be addressed. FDC already works with water, sanitation and the use of fuel wood thereby contributing to improving public health. These activities could be expanded through the focus on women and girls and their role as agents of change in local communities.

Conclusions and Recommendations

- *FDC should in its agricultural-related activities be encouraged to include issues related to climatic variability and take steps to increase the resilience of local farmers by diversification of crops and other support arrangements; and*
- *FDC needs to consider how it can assist local communities in resolving conflicts between wildlife and people;*
- *Women and girls are the most vulnerable groups to natural disasters. Efforts to strengthen gender equality can make an important contribution to reduce the impact of and to increase the resilience of women and girls to natural disasters. FDC could play a key role in this in local communities.*

2.6.3 MOZ-06/027 PROGRESSO II Development Program 2006-2008

Goals and Activities

The general objective is to contribute to the development of grass root communities with particular attention to women and children, aiming at raising the standards of living and increase

management capacity. *Associação PROGRESSO* implements the project and the four major objectives are to:

1. Increase community members' knowledge, skills and capacity for mobilizing resources;
2. Contribute to improving governmental services to the rural communities;
3. Contribute, through the Self-Employment Training Centre (CPAE), to the creation of self-employment opportunities in the provinces of Niassa and Cabo Delgado; and
4. Strengthen the institutional capacity of Progresso and the national associative movement.

Climate Change and Environmental Issues Addressed in the Program/Project

Although not reflected adequately in the reviewed documents Progresso has established nurseries and is providing plants for afforestation and fruit plantations (targeted at schools). Furthermore, activities aimed at raising the awareness of communities of their rights and the current legal framework for land issues, forests and wildlife and family are included. This can help to strengthen the use of the legal framework and the public administrative system by local communities. This is based on the train the trainer's concept.

Assessment of Climate Change Issues

The project is implemented in areas which are not categorized as high risk areas for cyclones and other natural disasters.

Progresso has community outreach and training programs, including the CPAE, which can be used to provide relevant information on natural disasters, climate variability, coping strategies and future climate change. Furthermore, Progresso is supporting agricultural fairs which also can be used for the same purposes.

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Climate Risk Assessment: 3 – Low risk

Assessment of Environmental Issues

Progresso uses domestic species in its tree planting efforts. More information could be provided to rural farmers on conservation farming, drought resistant crops, efficient irrigation, hygiene and other rural development issues of key environmental importance.

The CPAE could also be used more proactively to promote energy efficient technology and to include energy-related technology in the self-employment training thereby helping to pave the way for increased entrepreneurship in the local energy sector.

Conclusions and Recommendations

- *The Embassy should reflect Progresso's environmental related activities more specifically in relevant documentation;*
- *Progresso should consider to use the agricultural fairs more proactively to provide relevant information on and extension services on issues related to natural disasters, conservation farming, sanitation and hygiene etc.; and*
- *The Embassy should consider to encourage Progresso to start working on renewable energy issues and include this is the self-employment training program.*

2.7 Other Programs Reviewed

2.7.1 MOZ-06/053 Institutional support to INE 2007-2012

Goals and Activities

The Phase II of the support to Mozambique's National Statistics Institute (INE) is a continuation of the project implemented in the period 2003-2007. This is a joint Scandinavian support program with the long-term objective of strengthening INE so that it will efficiently generate reliable, relevant and timely statistical information to support the planning, management, monitoring and documentation of Mozambique's economic and social development.

The strategic plan for 2008 – 2012 concentrates on four areas:

1. Responding to data needs;
2. Developing district and municipal statistics;
3. Production and analysis of statistics; and
4. Institutional capacity building.

Climate Change and Environmental Issues Addressed in the Program/Project

INE and MICOA have established an environmental indicator working group which has produced a draft compendium on environmental statistics – State of the environment report. This activity is included in the statistical master plan. MICOA is responsible for collection of primary environmental data, while INE assesses the quality of the data. The draft report contains information on emissions of GHGs. INE is in the process of establishing the methodology for environmental statistics.

Assessment of Climate Change Issues

GHG emission data is included in the state of the environment report and the main data source is MICOA. If possible, future data collection efforts should be based on the need to provide information to relevant bodies, e.g. national communication to the UNFCCC and for preparation of updated NAPAs. Furthermore, there is a need to collect more detailed data on natural disasters.

Climate Risk Assessment: 3 - Low

Assessment of Environmental Issues

Focus should be on establishing a sound baseline for environmental reporting in Mozambique. Through the established cooperation with INE and MICOA the required basis for this seems to be in place. There is a need to consolidate and strengthen ongoing environmental data collection and reporting before venturing into new avenues.

Environmental factors and externalities are not taken into account in Mozambique's budget process. One possible way forward is to introduce Green Budgeting which aims to identify, formulate and introduce appropriate economic instruments to achieve environmental goals and promote sustainable development. Through INE the efficiency of market-based instruments could be explored and the macro-economic impact of the different fiscal interventions could be investigated, if this is considered important. Norway has considerable experience in this regard.

Conclusions and Recommendations

- *The Embassy should consider if there is scope to expand the environmental data and reporting activities at a later stage when the state of the environment report has been finalized;*
- *SSB has significant expertise on issues related to natural resources accounting and green budgeting which, if there is an expressed interest, could be used to develop further cooperation; and*
- *INE requested if the Embassy and the Review Team could assist in identifying relevant information on environmental statistics from other countries.*

3. CLIMATE AND ENVIRONMENT RELATED POLICY ISSUES

The GoM has taken a number of steps to develop the required framework to address natural disasters and climate change, including ratification of UNFCCC, preparation of a NAPA and establishment of a DNA. The country's capacity to effectively address climate change is, however seriously limited. Several important studies have recently been launched by various donors to quantify economic costs associated with natural resources mismanagement, climate variability and change. As part of the dialogue with Mozambique and other donors the Embassy could consider to raise the following issues in the context of the budget support dialogue, as well as in the sector dialogues:

Current climatic variability needs to be addressed. The current climatic variability in Mozambique needs to be addressed through concerted actions. Floods and droughts already cause severe consequences in parts of Mozambique and the emergency preparedness system is not able to cope with the existing climate variability. The reduction of vulnerability to current climate hazards and the prevention of recurrent disasters are the cornerstone for building future resilience. There is a need to ensure mainstreaming of an integrated approach to climate change adaptation and disaster risk reduction into key sectoral policies, such as agriculture, energy, natural resource management and urban development. Mozambique's NAPA is a useful instrument to introduce climate change adaptation into national debates. The link between disaster risk reduction activities and adaptation activities should be strengthened.

Focus on natural disasters. Even though Mozambique has made considerable progress in strengthening it's response to natural disasters there is a need to convince the Ministry of Planning and Finance (MPF) to investment in climate change adaptation and disaster risk reduction. This ministry's and other key ministries' ownership of the disaster risk reduction and adaptation agenda is at the crux of genuine change. Uncertainties remain about the extent of disasters, affected areas and the costs of climate change adaptation. The underlying challenge is to ensure that these uncertainties do not become an excuse for paralysis, but rather a spur for action and learning. Improving the quality of environmental data and statistics is important to underpin this. The current food security crises that are partially climate change induced will reinforce attention on the need for immediate action to reduce poverty.

Adapting to climate change. The Intergovernmental Panel on Climate Change (IPCC) predicts that, "the effects of climate change are expected to be greatest in developing countries in terms of loss of life and relative effects on investment and economy". Estimates as to the expected economic impact vary widely, but the IPCC describes Africa, as "the continent most vulnerable to the impacts of projected change because widespread poverty limits adaptation capabilities". The failure to effectively address increasingly severe weather patterns and climate variability in strategies and programs is a major threat to economic development and poverty alleviation.

The cost of environmental degradation. Economic growth is often constrained by poor environmental health conditions—resulting in illness and consequently lost earnings, and increased medical costs. This economic burden on society placed by poor environmental health can be quantified at the national level as a percentage of Gross Domestic Product (GDP), often ranging in the order of between 2 and 4 percent of GDP, and these costs are felt most severely by the poor. The most important causes contributing to this are inadequate water supply, sanitation, and hygiene; and outdoor and indoor air pollution. According to the World Bank, in some countries in sub-Saharan Africa, when the impacts of environmental health and malnutrition-related linkages are further factored in, these damage costs increase significantly to almost 9 percent of a country's GDP. Diseases and ill-health constrain economic growth and impact the productivity of a country's working population. It has been es-

timated that malaria can reduce economic growth by more than 1 percent a year in highly endemic countries. Data, see Annex III, suggests that Mozambique is experiencing a loss of their national wealth. The macro-economic impacts of the deterioration of the environment and associated losses are difficult to estimate precisely; however, within the context of the budget support the issue could be addressed. The French Development Agency is currently undertaking a study on the costs of environmental degradation. The World Bank is also discussing with CONDES and MICOA to establish a policy dialogue on natural resources, environment and adaptation of climate change.

CDM offers possibilities. Mozambique has a potential for attracting CDM financing for a number of the new energy projects as well as projects within the petroleum sector and forestry, either under the current CDM scheme up to 2012, or under a potential new "CDM scheme" post-2012. A consultancy is under way to assess the CDM market in Mozambique. The results will be used for guiding the Embassy's work to strengthen Mozambique's capacities within CDM. The Embassy could also actively encourage eligible entities to apply for funding from Norad to prepare the required CDM documentation and to develop the required capacity in Mozambique (e.g. the DNA).

It has proven difficult for most sub-Saharan countries to attract CDM financing, partly due to the size of the required investments. Therefore programmatic CDM (pCDM) has been developed which allows project activities under a program of activities to be registered as a single CDM project. Through bundling of numerous small-scale activities, e.g. solar water heating, solar cooking, biogas, cook stove programs, village electrification; these can be registered as a CDM project. This would be an option that could be considered for small-scale energy programs in Mozambique, possibly through FUNAE.

Final Observations. Finally, the Team offers some observations primarily on the potential role of the Embassy:

- The Embassy should carefully review the recommendations provided in this report and prepare a follow-up plan as part of the annual business planning;
- The Embassy should more clearly document the environmental and climate change related issues in projects and programs supported by the Embassy and encourage the Mozambican partners to do the same. There is also a need to clearly document to what extent environmental assessments have been undertaken (EIA) and how these are followed up. Environmental management should be reported as a regular item in all status reporting and be a regular item in all status and annual meetings;
- The Embassy should assess its own carbon and environmental footprints and take actions to reduce emissions (buildings and transport), minimize waste, improve energy efficiency, etc. The Embassy in Washington has prepared such a plan;
- Environment, natural disasters and climate change should be a topic for discussions around budget support, AMs and key dialogue meetings with partners. Adapting to the current climatic variability should be a point of departure for this dialogue;
- The Embassy should actively participate in the donor working group on environment (led by France) and should closely follow the work spearheaded by the World Bank on supporting the policy dialogue on natural resources, environment and climate change in Mozambique;
- The Embassy is well-positioned to take on a more proactive role in the development of the energy sector in a more environmentally and socially manner and to align several of the other activities supported by the Embassy (e.g. NGO, PSD) around the key sectoral priorities; and
- The Embassy is well positioned to act as a facilitator/broker between key sectors of great importance for Mozambique's future development, i.e. energy, petroleum, fisheries and environment.

ANNEX I: TERMS OF REFERENCE (TOR)

Terms of Reference

Mozambique - Review of the Embassy's Development Assistance Portfolio. Climate Change Screening – ('Climate Proofing') and Environment ('Greening of the Portfolio')

1. Purpose of the Climate Change and Environment Review

The overall purpose of the Review of the Embassy's portfolio is to:

- Undertake climate change risk screening of the portfolio in order to identify not only development programs at risk of climate change but also those that are not climate sensitive. The Review should focus on assessing the climate sensitivity and vulnerability of the development programs supported by the Embassy.
- Identify possible ways and means of addressing/integrating appropriate environmental concerns in the current agreements within present framework and budgets, and for possible future phases of the various programs. This should include issues related to 'do no harm' as well as 'do good'.
- **Optional point** - Organize an internal seminar – learning event - for Embassy' staff to provide staff with updated information regarding the implementation of the government's environmental action plan and relevant climate change activities.

It should be noted that a key purpose of the Review is to initiate a process between the Embassy and development partners where issues related to climate change and environment can be put on the agenda and be included in future dialogue.

2. Scope of the Review

The team will focus its Review on a selection of development programs in the Embassy's portfolio. The Embassy has identified the following programs to be reviewed:

PTA number and name	Agreement and implementing partner
MOZ-00/300 Fisheries sector support	Ministry of Fisheries
MOZ-01/328 Sofala Bank Artisanal Fisheries Project	Institute for Development of Small-scale (Artisanal) Fisheries (IDPPE)
MOZ-07/020 Institutional support INP	National Petroleum Institute
MOZ-08/004 Technical Assistance to EDM in Mozambique	Electricidade de Moçambique E.P. (EDM)
MOZ-04/286 Cabo-Delgado Electrification Project	Electricidade de Moçambique E.P. (EDM)
MOZ-3066 Rural Electrification in Niassa Province (Mecanhelas and Marrupa	Electricidade de Moçambique E.P. (EDM)
MOZ-06/053 Institutional support to INE 2007-2012	Instituto Nacional de Estatistica
MOZ-06/052 Soya bean production and marketing in Northern Mozambique	Co-operative League of United States (CLUSA)
MOZ-3040 Coastal rural support Cabo Delgado	Aga Khan Foundation
MOZ-3057 FDC Integrated Development	Fundação para o Desenvolvimento da Comunidade (FDC)
MOZ-06/027 PROGRESSO II Development Program 2006-2008	Associação PROGRESSO

The scope of the Climate Change and Environment Review is as follows:

A. Climate Risk Screening

The initial screening for climate risks represents a first step towards "climate-proofing" development programmes. The screening will help to identify not only programmes at risk of climate change but also those that are not climate sensitive and do not, therefore, require further risk analysis. The following questions will be considered as a starting point:

- How does current climate variability affect the programme area? What are the impacts of this variability (floods, droughts)? What are the existing coping strategies used to deal with these impacts?
- What is the country's vulnerability and risks from climate change and extreme weather (e.g. island states, coastal areas, river deltas, fragile ecosystems, snow capped mountains, and dependency on agriculture, forestry, and fisheries)?
- What are the anticipated impacts of climate change in the programme area?

Based on the questions above development programs will be classified into three categories:

- ***Category 1 - High risk – Full climate risk assessment required***
  - Sensitive sectors: agriculture, water resources, energy, coastal development and management and other infrastructure (e.g. roads).
  - Development programs in high risk areas, e.g. coastal, river bank, dryland areas.
- ***Category 2 – Partial or moderate risk – Selective climate risk assessment required:***
  - Development programs with strong components related to water and in risk areas (e.g. integrated rural development, agriculture, fisheries, water supply and sanitation).
- ***Category 3 - Low/no risk – No assessment required.***
  - Includes development programmes that are not affected in any significant way by climate, and not affecting external vulnerabilities, e.g. within health, education.
  - It should, however, be noted that these sector can be affected by indirect impacts of climate change (socio-economic change, migration, reduced food production, vector-borne diseases etc.) and can be used to enhance capacity and raise awareness on climate change.

If climate change impacts are identified as a critical sustainability element and a possible risk factor then the Review Team will suggest a set of relevant questions that the Embassy could use in the further dialogue with the partner, as well as possible adaptation measures that could be included in the existing development program or in follow-up interventions.

B. Integration of Environment – Moving from 'do no harm' to 'do good'

For the Embassy the integration of environment during programming serves two objectives:

- To identify and avoid harmful direct and indirect environmental impacts of cooperation programs in the different sectors which can undermine sustainability and counteract achieving the development co-operation objectives of poverty reduction – "do no harm".
- To recognize and realize opportunities for enhancing environmental conditions, thereby bringing additional benefits to development and economic activities and advancing environmental issues – "do good".
- Combined this will contribute a "greening" of the Embassy's portfolio.

The Review's starting point is that the Review should focus on identifying environment-related activities that will contribute (directly or indirectly) to the overall development objective(s) of the project/program. The rationale behind this is to avoid a complicated objective structure and thereby hampering implementation.

C. Internal Climate Change and Environment Seminar – Learning Event

The purpose of the internal seminar is to provide an update on the Government's Environmental Action Plan for Development Cooperation (launched in June 2006) and to provide information on relevant climate change and forest related activities.

The seminar will mainly be based on presentations and interactive discussions with Embassy staff. All staff members at the Embassy should preferably attend.

3. Approach to the Review

The suggested approach to the Review is as follows:

1. **Identification of development programs subject to review**. The Embassy identifies a representative selection of the portfolio of development programs to be reviewed covering all key sectors the Embassy is supporting. The selection should be discussed with the Review Team prior to finalization of the ToR for the Review.

2. **Country's vulnerability to climate change**. This assessment will be based on available documents prepared by the government or other donors. The Embassy should provide the Team with relevant information on climate change studies undertaken in the country. This will form the basis for the assessment of vulnerability.

3. **Desk review of available documents**. The Embassy will submit relevant program/project documents to the Review Team. The Review Team will undertake an initial desk study upon the visit to the country. Through the desk review the Team will identify key issues that subsequently should be discussed with Embassy staff and with representatives of cooperation partners in the country. The Review Team should discuss the Review with Norad's country team as well as the other 4K-topics (gender, anti-corruption and conflict sensitivity). The aim of this discussion is to solicit ideas from a wider group on relevant environment and climate change issues to be considered in the various programs and projects subject to the Review.

4. **Kick-off meeting with the Embassy**. The Team meets with the Embassy to assess the need for additional documents, meeting schedule and other practical matters. The Team should also meet with relevant Embassy staff responsible for the development programs subject to the review.

5. **Meetings with key stakeholders in the country**. The Embassy will organize meetings (about 2 hours for each meeting) with key stakeholders for each program/project subject to review. At the meeting the Team will be given information on the key activities in the development program, discuss on-going program/project activities of relevance to climate change and environment and discuss ideas and options for inclusion of new environment-related elements and to assess the climate change sensitivity and vulnerability. A meeting with the key entity responsible for climate change issues in the country should be organized.

   Through these meetings additional information on the selected development programs will be collected, updated information on the status of project implementation will be received and the preliminary findings of the Desk review discussed. Through these discussions the scope for 'do good' and 'do no harm' will be discussed. The 'do no harm' discussions will be based on the country's legal framework and the obligation to ensure that assessments of environmental and social impacts are carried out in connection with the use of Norwegian development cooperation funds. The 'do good' discussions will mainly be based on the Review Team's broad environmental knowledge and competence and ideas provided by representatives of cooperation partners.

   The Embassy should, preferably, participate in these discussions to create ownership, however, it is important to stress that this does not imply that the Embassy endorses ideas and suggestions made by the Review Team during these discussions.

6. **Drafting of report**. The Review Team will prepare a draft report, including a summary of key findings, upon departure. In addition to sections outlining the approach and methodology the report will present each development program subject to Review in the following manner:
   i) brief description of goals and activities;
   ii) climate change risk assessment;
   iii) environment-related activities included;
   iv) assessment of climate change impacts and scope of integration of environment; and
   v) recommendations.

7. **Wrap-up meeting with the Embassy.** The Review Team will meet with the Embassy and present the key findings, conclusions and recommendations. This could preferably be convened in conjunction with the internal seminar.

8. **Optional point - Convene an internal climate and energy seminar for Embassy staff**. The Embassy identifies a suitable time for the seminar to fit with the Review Team's agenda. An extended lunch seminar should be considered as an option. Possible topics include presentation of the "Action Plan for environment in development cooperation" (June 2006), tools and approaches to environmental safeguarding and climate proofing, climate change policy, including the forest initiative, and other topics of interest to the Embassy that the Review Team can address.

9. **Preparation of Final Report.** The Team will forward draft report to the Embassy for approval. Norad will also undertake internal quality assurance of the report. Based on comments from the Embassy and Norad's internal quality review the final report will be prepared by the Team.

10. **Distribution of the Final Report**. The final report should be distributed to cooperation partners in the country, as well as to the Norwegian Ministry of Foreign Affairs.

4. Organization, Timetable, and Reporting

The Review is based on a one-week visit to the country by the Team.

The Review Team will be comprised of experts who have a broad background in climate change and environmental issues, experience in climate proofing and mainstreaming of the environment, familiarity with the Norwegian environmental action plan and natural resources management in general.

The team will submit a final report in English and present a draft report, including a preliminary summary of key findings, conclusions and recommendations, upon departure.

ANNEX II: PERSONS MET

Organization	Name
Norwegian Embassy Maputo	Mette Mast Øystein Botillen Marit Strand Jose Capote Carlos Mate Thor Oftedal Kristian Løkke Hans Terje Ylvisåker Fred Rasmussen Clarisse Barbosa Guri Kjos
Institute for Development of Artisanal Fisheries (IDPPE)	Maria Ribeiro Pinto
Progresso	Elisabeth Sequira Florentino Ferreira
Aga Khan Foundation	Colin Hagans Agostinho Mamado
Institute Nacional de Estatistica	Camilo Amade Delfina Cumbe
Electricidade de Moçambique E.P. (EDM)	Luís Amado Jerónimo Marrime
Fundo de Energia (FUNAE)	Miquelina Menezes Saddamo Aboobakar Mario Batsana
Ministry of Fisheries	Paula Santa Alfonso Lidia Massalana Laurentina Cassa Yvonne Lichuchen
National Petroleum Institute	Carlos Zacarias Isabel Chuvambe
Norad	John Tore Vatnar Rasmus Bakke Leif Tore Trædal Inge Harald Vognild Lene Lothe Rune Castberg

ANNEX III: ENVIRONMENTAL DATA – MOZAMBIQUE

Mozambique

Population (millions)	19.8	Land area (1,000 sq. km)	784.1	GDP ($ billions)	6.6

	Country data	Sub-Saharan Africa group	Low-income group
GNI per capita, *World Bank Atlas* method ($)	310	746	585
Urban population (% of total)	34.5	35.2	30.0
Urban population growth (average annual %, 1990–2005)	5.9	4.0	3.1
Population growth (average annual %, 1990–2005)	2.6	2.5	2.0
Agriculture			
Agricultural land (% of land area)	62	44	45
Irrigated land (% of cropland)	2.6	3.6	24.3
Fertilizer consumption (100 grams/ha arable land)	59	139	668
Population density, rural (people/sq. km of arable land)	294	373	589
Forests and biodiversity			
Forest area (% of land area)	24.6	26.5	23.9
Deforestation (average annual %, 1990–2005)	0.2	0.6	0.5
Nationally protected area (% of land area)	5.8	11.3	10.0
Mammal species, total known	228		
Mammal species, threatened	12		
Bird species, total known	685		
Bird species, threatened	23		
GEF benefits index for biodiversity (0–100, 100=maximum)	8.2		
Energy			
GDP per unit of energy use (2000 PPP $/kg oil equivalent)	2.6	2.8	4.4
Energy use per capita (kg oil equivalent)	441	703	513
Energy from biomass products and waste (% of total)	84.1	55.7	47.8
Electric power consumption per capita (kWh)	367	550	375
Electricity generated using fossil fuel (% of total)	0.3	75.8	74.0
Electricity generated by hydropower (% of total)	99.7	19.5	23.4
Emissions and pollution			
CO_2 emissions per unit of GDP (kg/2000 PPP $ GDP)	0.1	0.4	0.4
CO_2 emissions per capita (metric tons)	0.1	0.8	0.8
CO_2 emissions growth (%, 1990–2003)	36.4	21.4	29.4
Particulate matter (urban-pop.-weighted avg., µg/cu. m)	39	64	77
Passenger cars (per 1,000 people)	..	..	..
Water and sanitation			
Internal freshwater resources per capita (cu. m)	5,068	5,229	3,149
Freshwater withdrawal			
Total (% of internal resources)	0.6	3.1	18.9
Agriculture (% of total freshwater withdrawal)	87	87	89
Access to improved water source (% total population)	43	56	75
Rural (% of rural population)	26	43	70
Urban (% of urban population)	72	80	88
Access to improved sanitation (% of total population)	32	37	38
Rural (% of rural population)	19	28	28
Urban (% of urban population)	53	53	61
Environment and health			
ARI prevalence (% of children under age 5)	10.0		
Diarrhea prevalence (% of children under age 5)	20.7		
Under-five mortality rate (per 1,000 live births)	145	163	114
National accounting aggregates			
Gross savings (% of GNI)	4.7	17.4	28.1
Consumption of fixed capital (% of GNI)	8.6	10.7	9.1
Education expenditure (% of GNI)	1.8	3.8	3.3
Energy depletion (% of GNI)	0.1	15.5	9.8
Mineral depletion (% of GNI)	0.0	0.8	0.7
Net forest depletion (% of GNI)	0.5	0.3	0.6
CO_2 damage (% of GNI)	0.2	0.7	1.1
Particulate emission damage (% of GNI)	0.3	0.5	0.7
Adjusted net savings (% of GNI)	–3.2	–7.3	9.5

Source: 2007. The Green Little Databook. World Bank

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