



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

“Climate Proofing and Greening of the Portfolio”

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FINAL REPORT

**The Royal Norwegian Embassy,
Luanda, Angola**

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

“Climate Proofing and Greening of the Portfolio”

By

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27. February 2008



PREAMBLE

The Royal Norwegian Embassy in Luanda (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.

Environment is not among the priority areas for Norwegian development support to Angola. The primary aim of development cooperation in the period 2006–2010 is to promote good governance, respect for human rights, and responsible resource and revenue management through institutional and organizational capacity building. Due to the rapidly increasing Angolan revenues (GDP/cap is expected to be over USD 5.500 in 2010) the guidelines for the development cooperation between Norway and Angola foresees the closure of traditional aid cooperation after 2010. Although financially rich Angola remains in many crucial dimensions a least developed country.

The rapidly growing gap between a very fast growing natural resource based economy (21% in 2007) and the low competence and a weak management capacity particularly in civil society and public administration results in imminent threat of environmental degradation. The Norwegian Cooperation is likely to gradually move towards cooperation centered on competence building through institutional contacts between Norwegian institutions and organizations similar to the cooperation relations Norway have with China, South Africa and India.

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, climate change, and clean energy, as well as provided updated information on how to undertake "climate proofing" of development cooperation activities.

The Review has been undertaken through desk studies and discussions with representatives from implementing institutions in Angola in the period 28 January – 2 February 2008. A draft report was submitted to the Embassy upon the Team's departure from Luanda (dated 4. February 2008). The Embassy's comments to the draft report have been incorporated and addressed in the Final Report.

The Review Team appreciates the fruitful and open discussions with institutions in Angola and the assistance provided by the Embassy. The Embassy participated actively in the discussions the Team had with partners in Angola and the Embassy's insights in the situation in Angola was of key importance to the work of the Team.

The Review Team comprised of Hans Olav Ibrenk and Morten Svelle.

27. February 2008

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SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

The Royal Norwegian Embassy in Luanda (the Embassy) has requested Norad to undertake a review of the Embassy's portfolio to identify possible ways and means of addressing and integrating appropriate 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. This report addresses possibilities to integrate environmental and climate change concerns in existing agreements by:

1. Identifying and avoiding harmful direct and indirect environmental impacts of programs in the different sectors which can undermine sustainability and counteract achieving the development co-operation objectives of the program – **"do no harm"**;
2. Recognizing and realizing opportunities for enhancing environmental conditions, thereby bringing additional benefits to development and economic activities and advancing environmental issues that are a priority for Norway – **"do good"**; and
3. Undertaking climate change risk assessment of programs and providing recommendations on how the Embassy can integrate climate change aspects in programs and projects, as well as in its policy dialogue with the Government of Angola (GoA) and cooperation partners – i.e. **"climate proofing"** of the portfolio.

Conclusions and Recommendations:

1. Climate change and environment is emerging on the agenda in Angola. Climate change and environment is currently not high on the political or civil society agenda in Angola. This is in large parts attributed to the post-conflict situation, limited institutional capacity and primary focus on reconstruction and development. However, recently the Government has taken steps which indicate a more proactive focus on environment and climate change, manifested through the President's speech in the UN General Assembly, ratification of UNFCCC and active participation at the Bali meeting. Angola, due to its position as one of Africa's key petroleum producing countries, has an important role to play, both within OPEC and within Africa. Angola could play a key role in developing Africa's position on the future international climate change regime. The Embassy should therefore follow closely the development of Angola's climate change policy and the country's position in international climate change negotiations (as requested in the Annual Letter), building on support to the energy and petroleum sector. The Embassy needs to proactively include climate change and environment in policy and program dialogues.

2. The EIA system in Angola is dysfunctional. The environmental institutions and the required legal framework is by and large in place, however, the capacity is extremely weak and enforcement is generally lacking. Most of the legal framework for environmental impact assessment (EIA) is in place, several specific decrees have been enacted, however, coordination among involved entities and enforcement seem overall to be weak. The Embassy is well-positioned to assist Angola in strengthening the EIA system in certain areas through the support to the fisheries, petroleum and energy sectors.

3. Growing civil society awareness, albeit from a low level. Strengthening civil society and research and education could be effective mechanisms to raise awareness and enhance knowledge on climate change in Angola. Furthermore, NGOs play a key role in identifying local coping and adaptation strategies, especially in rural areas. Strengthening the research capacity and ensuring that issues related to climate change are addressed in schools could also be effective long-term mechanisms. Through several of the Norwegian supported development programs, for example through the broad civil society support program operated by the Norwegian Peoples Aid (NPA), a platform for dialogue and exchange of views

has been established, most notably within the petroleum and fisheries sector. The Embassy is well positioned to facilitate and broker a dialogue between key ministries – petroleum (MINPET), environment (MINUA) and fisheries (MINP).

4. A five pronged strategy to climate change is being prepared. The GoA is now developing a five-pronged climate change strategy which will form the basis for future actions. This includes preparation of the first national communication to UNFCCC, a National Adaptation Plan of Action (NAPA), preparation of a national action plan, establishment of a National Designated Authority (NDA) and a national carbon fund.

5. Promote active use of the Clean Development Mechanism (CDM). Angola has a potential for attracting CDM finance for a number of the new energy projects as well as projects within the petroleum sector, either under the current CDM scheme up to 2012, or under a potential new “CDM scheme” past 2012. The main bottleneck for CDM financing in Angola is the establishment of the NDA. Through the planned support to the power and petroleum sector, Norway could make a significant contribution to developing the CDM mechanism in Angola. The possibility for investment by the Norwegian Ministry of Finance (CarbonNeutral Norway) should also be followed up and explored by the Embassy.

6. Comprehensive environmental monitoring is lacking. Angola lacks a reliable comprehensive environmental monitoring network, including a basic hydro meteorological observation system. Norway is supporting the establishment of a marine monitoring program with a main focus on assessing environmental impacts of the petroleum industry. Through the “Dr. Fr. Nansen program” relevant environmental and climate data have been collected. However, these data have not been comprehensively analyzed. Norway could support an effort to analyze existing data with a view to developing a baseline for future monitoring of climate change in the region. This could also form the basis for establishing closer cooperation between the member countries of the Benguela and Guinea Currents Commissions on issues related to climate change and changes in the marine environment, including on fisheries.

7. Current climatic variability needs to be addressed through concerted actions. Floods and droughts already cause severe consequences in parts of Angola and the emergency preparedness system is not able to cope with the existing climate variability. Norway has previously provided support through UNDP to establish civil defense, however more support is required. The situation in Luanda clearly demonstrates that local authorities and the people are not equipped to even deal with normal rainfalls. Therefore Angola needs to take action to reduce the risk, exposure and vulnerability of people to climatic events, both in urban and rural areas.

8. Current portfolio – scope to “do good”. There are environmental elements in several of the projects supported and there is scope to increase efforts to “do good”. The review has suggested a menu of options to strengthen the environmental and climate change issues in the reviewed projects and programs.

9. “Do no harm” adequately addressed. The review has not found that any project or program in the portfolio should have been subject to an EIA. However, the Embassy should report more clearly in the Appropriation Documents (AD) on environmental issues.

10. The Embassy is likely to play a key role in the Norwegian Forest (Carbon) Initiative. The Embassy due to its regional role covering DRC, Congo Brazzaville and Gabon may play a key role in the Norwegian forest initiative. Such an engagement would require a substantial reinforcement of the Embassy’s staff resources. Also the Embassy would have to establish close cooperation with Norad and with other embassies in the region.

Overall, the review has demonstrated that there is scope to address/integrate appropriate environmental concerns in the current agreements within present framework and budgets, and for possible future phases of the various programs. There is scope to increase climate change and environment-related development cooperation with Angola without developing a specific environment sector program through more active integration of climate change and environment in the various phases of the program management cycle.

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.

Angola is a priority country within the Oil for Development (OfD) program. The Embassy is requested to prioritize environment and climate change issues within the OfD-cooperation. Strengthening the climate change perspectives within the OfD program should be given priority.

Furthermore, impacts of climate change and 'climate proofing' should constitute an element of the overall policy dialogue with Angola, including in the dialogue with multilateral institutions 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. The MFA should clarify what this requirement entails, especially the comment related to support to the energy sector.

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 together with other policies and related activities, as well as with coordination and harmonization, to ensure policy coherence. In this way, 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, reduce and manage risk - save money and time, improve performance and ultimately reduce risks to the Embassy’s reputation. The development objectives of projects and programs are enhanced by integrating social and environmental considerations. Environmental issues should not be looked at as a problem to be solved, but as an opportunity to enhance the quality and sustainability of Norwegian-supported development assistance programs.

1.3 Climate Proofing

Development cooperation programs and projects are designed with explicit or implicit assumptions about the climate in which they will function. The conventional way is to assume that the climate of the past is a reliable guide to the climate of the future. This is no longer a sufficient assumption. To address climate change, the design criteria must be based on probable future climate scenarios and expected impacts.

The sector level is where investment decisions are made. It is therefore key for planning and implementing adaptation responses. This requires an integrated approach and not just a focus on proper design of individual projects. While national and project level are crucial for integrating adaptation into development planning and into specific development activities, vulnerability and response options are highly sector- and location –specific. Similarly, adaptation tools and methods vary significantly between sectors. Therefore, important steps and decisions on adaptation have to be made at the sectoral level.

Screening for climate risks represents a first step towards **“climate-proofing”** of development programs. The portfolio of activities to be implemented under a development program should be screened in order to identify not only activities at risk of climate change but also those that are not climate sensitive and do not, therefore, require further risk analysis. The point of departure for this is the following question:

- What is the country’s (including the specific area where the development program will be implemented) vulnerability and risks from climate change and extreme weather (e.g. coastal areas, river deltas, fragile ecosystems, snow capped mountains, and dependency on agriculture, forestry, and fisheries)?
 - This is admittedly a difficult task since climate projections are not certain and detailed enough to allow a straightforward application in development planning. Moreover, climate models have severe limitations when it comes to generating the type of information required.
 - Climate risks are specific with regard to country, location and sector.

Based on the information obtained on expected changes a “climate lens” could be applied to the process of analyzing a development cooperation program with a view to identifying:

- the extent to which climate change risks have been taken into consideration in the preparation of the program;
- the extent to which the program, including policy or strategy, is potentially vulnerable to climate change;
- the extent to which the program could lead to increased vulnerability and, therefore, maladaptation;
- potential impacts on GHG emissions; and
- what amendments might be warranted in order to “climate proof” the program.

Based on the preliminary information obtained through applying the “climate lens” development programs should be classified into three risk categories:

- **Category 1 - High risk** – full climate risk assessment required
 - Development programs with diverse and significant relationship to climate within:
 - Agriculture; Water resources; Energy; Natural resources management (forestry, fisheries, land use management); Health; Coastal development and management and other Infrastructure (e.g. roads).
- **Category 2 – Partial or moderate risk** – selective climate risk assessment required:
 - Includes development programs at moderate risk:
 - Activities which may have some specific climate vulnerabilities, especially in the sectors mentioned under Category 1.
 - Activities which potentially increase vulnerabilities external to the project.
- **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:
 - Education; Good governance; Human rights

In order to take climate change into consideration, the environmental assessment of development cooperation programs and projects will have to address not only the effects of development cooperation on the environment, but also the impacts that imminent climate-related environmental and socio-economic changes have on development cooperation. Therefore, climate change will be addressed in Norwegian development cooperation along with economic, social, and environmental risk factors and be included as part of ‘environment’ as a cross-cutting issue. Investments, including those supported through Norwegian development cooperation, must be ‘climate proof’, i.e. must be protected from negative impacts of climate change, climate variability, and extreme weather events. Potential impacts on greenhouse gas emissions (GHG) should also be considered.

1.4 Policy Context – Angola

The African continent is particularly vulnerable to the impacts of climate change because of factors such as widespread poverty, recurrent droughts, inequitable land distribution, and overdependence on rain-fed agriculture. Although adaptation options, including traditional coping strategies, theoretically are available, in practice the human, infrastructural, and economic response capacity to effect timely response actions may well be beyond the economic means of some countries. Most countries are not even equipped to address the current climatic variability in Africa.

Africa has a highly variable and unpredictable climate, which is poorly understood by climatologists. Rainfall may vary for the region as a whole, over short distances, from year to year, and within single seasons. It is difficult to model the African climate, due to a complex topography, feedbacks from surface cover, and the influence of ocean basins. Baseline data on African climate, which is essential to drive models of future climate, is sketchy at present.

Making predictions of future climate change in Africa is problematic as a result of Africa's complex climate and the lack of data on the current climate to feed into models. This reduces confidence in projections of future change. Specific predictions at the level of one country or its sub-regions, or in the short-term, are particularly uncertain.

The knowledge base is further constrained due to lack of observation network (hydrological and meteorological) and existing time series are often disrupted. Significant gaps are apparent in the surface network in key parts of Africa, including Angola and in the Congo basin. Knowledge of changes in extreme weather is sparse, especially in Africa, and most climate change scenarios do not cover Angola and the Congo Basin due to lack of data.

Climate change and Angola

A network of meteorological stations was set up in Angola in the colonial period. With the beginning of the civil war in 1974 these stations were one by one abandoned and data ceased being collected and published. It is planned to gradually re-open the network of meteorological stations over the next few years, in part supported by UNDP's natural disaster management program.

The possible effects for Angola in scenarios generated by climate models on a time-scale of 50 to 100 years are:

- more extreme weather events (drought, storms);
- extension of arid and semi-arid areas in southern Angola;
- less reliable rainfall in Lubango – Huambo – Malanje axis of Angola;
- more rainfall in northern Angola;
- changes in ocean currents (for example the Benguela Current);
- rises in sea-level, leading to changes in erosion and sedimentation patterns (coast and rivers near coasts);
- changes in river flows, leading to changes in erosion and sedimentation patterns; and
- changes in the temperature of sea and lakes.

Although there are differences between models in the amount and extent of climate change, all indicate that there will be a reduction in the length of the agricultural growing period across the south of Angola along the border with Botswana and Namibia and in the coastal regions of Angola extending into the more humid highland areas behind the coast. Some areas in northern Angola that have two growing seasons may reduce to one and there is likely to be an overall increase in the number of failed agricultural growing seasons. Increased drought is predicted by most models for the Kalahari and Namib deserts.

According to the Human Development Report 2008/09 Angola had total CO₂-emissions of 7.9 Mt CO₂ in 2004. Emissions have been increasing by 5% p.a and average emissions are 0.7 tones of CO₂ per person. These reported emission levels are below those of Sub-Saharan Africa. Due to the increasing oil activity and economic development emissions are expected to increase considerably. It should be noted that these figures are uncertain. The Team was informed that studies have reported an increase in average temperature in Luanda of 0.3°C over a period of 30 years.

Angola's response to climate change risks

While the economy of Angola is strongly dominated by the petroleum sector, the livelihoods of a substantial number of people are linked to the natural environment. Poverty is widespread and there is acute vulnerability. Poor people's ability to cope may be overwhelmed by the extent of changes and by other pressures on their livelihoods.

Angola ratified the UNFCCC (United Nations Framework Convention on Climate Change) 17. May 2000 and the National Assembly ratified the Government's decision to adhere to the Kyoto Protocol of the UNFCCC on 8. May 2007. The protocol subsequently went into force 6. August 2007. Work will begin in 2008 towards a national response to climate change, namely a National Climate Change Adaptation Strategy, though as yet awareness is low about adaptation issues and about incorporating climate change into development policies.

Angola is a member of OPEC and OPEC has expressed willingness to help develop ways to cut emissions from the petroleum sector. As an OPEC member and major petroleum producing country carbon capture and storage (CCS) will potentially be relevant in Angola. Angola is developing a Liquefied Natural Gas (LNG) project, which will drastically reduce the on-going flaring of associated gas when it starts to operate in 2012.

The GoA is now formulating a five-pronged strategy to climate change:

1. Preparation of the first national communication to the UNFCCC. A 3-years program supported by GEF/UNEP will commence in March 08;
2. Preparation of a National Adaptation Plan of Action (NAPA). Proposal submitted to GEF/UNEP (CEO endorsed). GoA will also provide funding;
3. Preparation of a climate change action plan covering actions to be taken the next three years;
4. Establishment of the National Designated Authority (NDA), as mandated by the Clean Development Mechanism (CDM); and
5. Establishment of a national Carbon Fund. An inter-ministerial team has been appointed to set up the fund.

The strategy is expected to be approved by the Council of Ministers in February 2008. The Ministry of Urban Development and Environment (MINUA) is the focal point for the UNFCCC in Angola.

1.5 Approach and Methodology

The approach to the Review is clearly set out in the TOR, see Annex I.

The Embassy identified eight 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. It is crucial to be aware that the review was not an audit, in which case the Team should have selected the programs to be assessed. This was a review to assist the Embassy in its own effort to assessing climate change and environmental factors related to its' portfolio.

The Embassy provided copies of relevant documents and communications for all eight 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 Angola. During these meetings additional information on the eight programs were collected, updated information on the status of project implementation was given and preliminary findings of the review discussed. Through these discussions scope for 'do good', 'do no harm' and climate change was discussed. The 'do no harm' discussions were based on Angola'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.

All representatives of cooperation partners met were actively involved in project implementation. In Annex II a detailed list of persons met is given.

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 Luanda.

2. ASSESSMENT OF THE EMBASSY'S PORTFOLIO

2.1 Introduction

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

PTA number and name	Agreement and implementing partner
AGO 0012: Support to Petroleum Management	Ministry of Petroleum
AGO 2515: UNICEF Emergency Water Management	UNICEF
AGO 2529: ADPP Support to Teachers Training	ADPP
AGO 2542: Support to CEIC including CMI Co-operation	CMI and CEIC
AGO 2555: Support to Civil Society NPA Partnership	Norwegian Peoples Aid and their national partners Development Workshop and ADRA
Fisheries Sector Development Angola	NORAD, Norwegian Marine Research Institute and Ministry of Fisheries
Energy Support	NORAD/SIDA/ECON
Support to the Implementation of the National Biodiversity Strategy and Action Plan	Ministry of Urban Affairs and Environment (MINUA)

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 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 to strengthen 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.

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

2.2 AGO 0012: Support to Petroleum Management

Goals and Activities

The main goal of the Program is to promote improved management of Angola's petroleum resources as a tool for sustainable economic and social development in Angola. The purpose of the Program is improved capability to exercise regulatory control and to develop policies and strategies to ensure better administration of the Angolan petroleum resources.

The Program will work in five areas of cooperation:

- Regulating structure;
- Responsibilities and organization of Ministry of Petroleum (MINPET);
- Data management and information systems;
- Multi-sector activities; and
- Angolization and general training.

The eleven outputs to be produced through this Program are:

1. Increased control of activities of oil companies in the execution of petroleum industry operations as regards protection of the environment, safety and health;
2. Capacities built in different MINPET departments in policy formulation and information management;
3. Petroleum Resource Database established and operating;
4. Administrative IT system improved;
5. Project Proposal on Multi-sector Institutional Support to Oil, Fish and Environment prepared;
6. Sharing of relevant experiences at a regional level;
7. Revised Decree 20/82 on Angolization prepared;
8. Report on how benefits of petroleum exploration in Angola can contribute for improvement of scientific knowledge;
9. Petroleum technology seminars held;
10. Research and academic training supported in Angolan institutions;
11. Assistance in preparation of the claim for the UN Continental Shelf Commission provided; and
12. Agostinho Neto University provided with scientific knowledge and equipment to provide oil-oriented academic courses and research projects.

Climate Change and Environmental Issues Addressed in the Program/Project

The program has a component specifically dedicated to environment, aiming at implementation of a management system for the marine environment, fisheries, and petroleum resources through an integrated participation from all participants in the management of these resources. Success will depend on MINPET's ability to develop the dialogue and level of co-operation with the Ministry of Fisheries (MINP) and MINUA.

The AD addresses environment as a cross-cutting issue.

Climate change issues are not reflected in the program documents.

Not included in the program, but highly relevant to climate change and environmental aspects of the cooperation between Angola and Norway, is the development of the master degree in Energy Management at the Catholic University of Angola (*Universidade Católica de Angola* (UCAN)) in cooperation with University of Texas with financial support from USAID.

Assessment of Climate Change Issues

Climate change issues are given limited attention in the petroleum sector in Angola.

The OfD Steering Group has established a working group mandated to assess possible measures to reduce GHG emissions from petroleum production and indications of associated costs, overview of relevant competence, and in general how climate change issues should be included in OfD. The report from the Working Group will constitute a basis for an

assessment of possible strengthening of climate change issues in the petroleum cooperation with Angola.

Climate change and environment could be given stronger emphasis in the bilateral petroleum cooperation with an extension of the program to include support to the master study at the Catholic University with regard to supporting teachers from Norwegian Universities and research cooperation between the same institutions. Funding could be sought from StatoilHydro and the OfD/NOMA component. The present NOMA master program co-supported by StatoilHydro, is a joint venture with the State *Universidade Agostinho Neto*.

Climate Risk Assessment: 1 – high risk

Assessment of Environmental Issues

Pollution from offshore petroleum activities are covered in the Environmental Act from 1998. Further regulation of petroleum activities are regulated in the Decree on Oil and Environment from 2000. Environmental Impact Assessment (EIA) is regulated by the EIA Decree. Furthermore MINPET has established regulations on e.g. petroleum operations, discharges of polluting substances, disposal of oil based sludge, ballast water and waste from oil production.

According to the legislation EIAs are mandatory for all new developments within the petroleum sector. The Team has however noticed severe limitations with the follow-up. Firstly, the capacity to assess the EIAs in the ministries are very limited, this seems in particular to be the case in MINUA, but also in MINPET. Secondly, the time allocated (according to the Petroleum Law) to perform the assessments are limited - 5 days in MINPET before forwarding the EIA to MINUA and MINUA have 30 days to respond. This does not give sufficient time for a full assessment. Amendments in the legislation will take long time, but the assessment capacity can be increased on a shorter term. 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.

Cooperation on monitoring of the effects of off-shore petroleum activities has been established within the framework of the fisheries cooperation (oil-fish-environment). The cooperation has been successful and led to the first comprehensive monitoring of sediments in transects around production platforms in Angola. Work is under way to extend this to the National Environmental Monitoring Plan for the petroleum sector. 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 Angolan stakeholders, namely the involved Ministries, in their effort to clarify their roles and responsibilities. Although the monitoring plan currently is limited to focus on the petroleum sector, the scope should be to expanded to develop the monitoring activities into a comprehensive national monitoring program for Angola's marine waters.

The mobilization of the civil society is important for an effective implementation of sound environmental laws and regulations. Environmental NGOs seems to be few and weak in Angola. Within the framework of OfD, there is established a dedicated funding mechanism for support to NGOs, in particular NGOs which have cooperation with Norwegian environmental NGOs. This instrument should be considered for use in Angola. It should be noted that there are high expectations among NGOs in Angola that support will be forthcoming through this mechanism based on the signals given at the Stavanger Conference.

Corporate Social Responsibility (CSR) is high on the corporate policy agenda for StatoilHydro, as well as for other companies operating in Angola, and one should expect the company to be a driver for environment and social responsibility within their core business. The

Team would therefore believe that there is scope for enhancing the dialogue with StatoilHydro on the CSR agenda and encourage the company to take an even more active role in the technical and political discourse in Angola on environmental standards for the petroleum industry and the development of a comprehensive monitoring system for the marine waters.

The Catholic University of Angola (UCAN), where Norway is supporting the research Institute CEIC, which operates among other activities a biodiversity project, and research cooperation with CMI, is currently preparing an energy management master program, including safety related issues to oil, gas and power. The Team believes that this program presently supported by the University of Texas/USAID, is of interest to Norwegian actors operating in Angola. As part of the CSR commitments of StatoilHydro, they should be encouraged to support education of petroleum managers with good skills in environmental issues, and co-operation and funding of research on petroleum and environment in order to increase the domestic capacity for such issues within Angola. One has to consider this proposal related to the ongoing cooperation with the Agostinho Neto University in order to avoid overlapping.

The Interim Guinea Current Commission is an important organization for cooperation in the area of cross border, transboundary, environmental issues, and is in need of support to develop further. There is extensive experience from the development of similar marine commissions for several decades in other marine areas, i.e. in the North East Atlantic, the North Sea and the Baltic Sea, as well as from other large marine ecosystems (LMEs), both regards to fisheries management, protection of the marine environment and pollution. One should explore ways in which to transfer such experiences by, e.g. technical assistance or institutional cooperation, with the aim of learning from experiences and speeding up progress in the Angolan context.

A possible new industry for Angola may be extraction of diamonds from the sea bed (there is considerable activity already in Namibia). Such extraction might be a challenge with regard to environment and possible conflict with fisheries, but experiences from Namibia has demonstrated that such extraction can be operated under strict national control within acceptable environmental frames.

Conclusions and Recommendations

- *The support to the petroleum sector is very relevant when it comes to environment and climate change in Angola. The program is a good basis for increased support to Angola on environment and climate change issues, within the framework of the existing agreements.*
- *The Embassy in liaison with NORAD/OfD should enter into a dialogue with MINPET and MINUA on how Norway could provide support to enhance the capacity on assessment and follow up of EIAs within MINPET and MINUA.*
- *The Embassy should encourage and support the further development of a National Environmental Monitoring Plan for the petroleum sector into a comprehensive monitoring program, including sediments and biology in the water column. The National Environmental Monitoring Plan for the petroleum sector should be fully funded by the petroleum industry, in accordance with the Polluter Pays Principle, and all data and results should be open to the public. The Embassy should encourage a design of the monitoring program in a way that creates the ground for an extension of the program into a comprehensive marine environmental monitoring program for Angola as a next step.*
- *The key partners in Angola, Ministries of Environment, Fisheries and Petroleum should define their responsibilities and roles when it comes to marine monitoring activities. The Embassy and Norwegian institutions involved may play a role as convening and facilitating partner in these deliberations.*

- *The Embassy should support the development of the National Institute of Fisheries Research (INIP) into an internationally accredited laboratory. (This is closely related to the proposal under the fisheries program in this study to analyze data from the cruises with Dr. Fr. Nansen with regard to climate change.)*
- *Norway should consider providing support to environmental NGOs to act as watchdogs in Angola to ensure that the oil sector adheres to international best practice, general approved limits for discharges etc.. OfD has set up a dedicated funding instrument for this and support can be provided to NGOs, preferably to NGOs which have a working relationship with Norwegian environmental NGOs. The existing strategic partnership between the Embassy and the NPA on support to Angolan Civil Society might be used here as well.*
- *The possibility to arrange for cooperation with BI, NTNU and the University of Rogaland for the provision of teachers for the energy management master degree at the Catholic University, with focus on environment and climate change, should be explored, ensuring coordination with the support provided to the Agostinho Neto University.*
- *The possibility of research cooperation between the universities in Angola 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 Angola from the relevant Norwegian institutions (BI, University of Rogaland, NTNU).*
- *The Embassy should engage in a dialogue with StatoilHydro on a possible cooperation with the Catholic University and/or other universities on the financing of Norwegian teachers for the master study and/or research cooperation on petroleum related environmental and climate change issues. The Embassy should further and increase the dialogue with StatoilHydro on CSR issues related to their core business: strengthened environmental standards, monitoring of marine waters, support and funding for education, research and capacity building on issues related to petroleum and environment.*
- *The Embassy should encourage and consider supporting the Interim Guinea Current Commission to develop and extend its activities on environmental issues in the direction of cross border ecosystem management and environmental regulations both with regard to petroleum activities and to fisheries.*
- *The Embassy should, in cooperation with OfD, follow up the recommendations from the working group on integration of climate issues in OfD.*

2.3 Fisheries Sector Development Angola

Goals and Activities

The overall project objective is to strengthen technical, managerial and scientific capacity in prioritized areas in order to promote ecological and environmental sustainable aquatic resource utilization and viable economic fisheries sector development in Angola.

The project has a number of activities, amongst others:

- Strengthen the management and efficiency of established artisanal fisheries development centers;
- Increase competence levels in the fisheries management;
- Develop fisheries management plan for the main fisheries and action plans for specified management areas;
- Develop a format for reporting of research findings and management advice suitable for presentation to the fisheries management board;
- Identify and introduce new fish products for consumption;
- Improve capacity and competence for evaluating EIAs;
- Build competence and capacity by training of fisheries inspection personnel;

- Establish contact and facilitate communication between Angolan and Norwegian industry representatives for identification of possible areas of industrial co-operation;
- Preparation of project activities, implementation and co-ordination of project activities, on-the-job training in project management and administration and reporting; and
- Oil, fish and environment.

The program is implemented by the Institute of Marine Research, Centre for Fisheries Development Co-operation (IMR) in co-operation with the Ministry of Fisheries (MINP) and the National Institute of Fisheries Research (INIP). The program is funded by Norad.

Climate Change and Environmental Issues Addressed in the Program/Project

The project aims to develop capacity for governance in research and natural resource management and sustainable use of fisheries resources. Capacity building in conducting EIA studies related to the fisheries and petroleum sector is an important component of the project. Furthermore, there are potential environment-related activities within several components of the project, most notably in:

- Develop fisheries management plan for the main fisheries and action plans for specified management areas;
- Improve capacity and competence for evaluating EIA's; and
- Oil, fish and environment.

Assessment of Climate Change Issues

Climate change has the potential to seriously affect fisheries mainly through changes in ocean temperatures, productivity and currents. The knowledge about future changes is limited. A project idea entitled "Effects of climate change on marine biodiversity, fisheries management in tropical waters, and community livelihoods" has been presented. Based on data collected through the "Nansen programme" and other available and relevant data – the project aims to analyze and clarify possible trends in ocean climate and corresponding changes in marine biodiversity in tropical waters and design of future monitoring systems, with a first focus on the Benguela Region. The consequences for fisheries management and livelihoods of the coastal communities are the long term objectives of this study, which may indicate risks involved in the impact of climate change.

Angola is an active partner in the Benguela Current Commission and in the Interim Guinea Current Commission and is therefore centrally placed to take the lead in putting climate change on the agenda to fisheries and environmental management entities. In the Benguela region, the combined oceanographic and biodiversity database collected through the Nansen programme is potentially the main source of local data covering climate change and its effect on marine resources in the last 30 years. However, its contributions to the understanding of climate change effects on the Benguela ecosystem are rather limited so far. This dataset therefore offers a great opportunity to assess to what extent long-term climatic and oceanographic changes have occurred and could form a baseline for future monitoring efforts.

The Embassy, supported by Norad, could offer to co-host a joint seminar involving representatives from key research and government institutions within the Benguela and Guinea Currents with a view to establishing a common platform for a joint undertaking of a comprehensive research program addressing impacts of climate change on the marine environment based on the data collected through the Nansen program. FAO needs to be actively involved in the preparation of a possible seminar (FAO is now the responsible entity for the Nansen program).

Climate Risk Assessment: 2 – Partial Risk

Assessment of Environmental Issues

Oil exploration and fishing are main players in exploring the marine waters and the coastal areas of Angola. Today the majority of the Angolan economy is concentrated on the coastal areas exerting pressure on, and not always adopting to, coastal environmental conditions.

The coexistence of fisheries, future diamond mining, sea transport and the petroleum sector constitutes great challenges related to sustainable utilization of marine living resources and protection of the marine environment. The project will address the Norwegian experience from multi-sector cooperation between fisheries, environment and the petroleum industry. The component is considered highly relevant for sustainable natural resource management and should be flexibly implemented in order to facilitate interdepartmental cooperation between the MINPET, MINUA and MINP. This is potentially one of the most important long-term outcomes of the proposed program. The program can effectively serve as a facilitator and broker between various entities of the Angolan government and other stakeholders in the environmental and fisheries area.

The program is important from a capacity building point of view and helps to raise awareness in an area of high priority and where the partnership is very well suited to have a productive interaction. Joint evaluation of pending EIAs is seen as an extension of the productive hands-on capacity building approach in the Nansen program.

The AD addresses cross-cutting issues. Capacity building in conducting environmental impact assessment studies related to the fisheries and petroleum sector is an important component of the project. However, no activity has so far been recorded under this component. The parties should be encouraged to put more emphasis on this component to ensure that the planned activities are undertaken. This should be addressed more in detailed through the oil, fish and environment cooperation.

Offshore diamond mining is a potential new threat to the marine environment in Angola. Current no guidelines exist to address environmental impacts associated with diamond mining. There is a need to raise awareness among key stakeholders and to initiate a discussion on how diamond mining should be addressed. Through the cooperation program developed within the oil-fish-environment nexus there is scope to start addressing issues related to marine diamond mining. There is a need to develop specific guidelines for this activity building on experiences from neighboring countries, e.g. Namibia.

Conclusions and Recommendations

- *The current fisheries cooperation is considered highly relevant in making an important contribution to developing and strengthening the fisheries sector in Angola. Future efforts can be built on the long-term cooperation between Angola and Norway, however, fisheries is not a prioritized sector in the development cooperation program with Angola.*
- *The current arrangement with Norad as the key source of funding for fisheries cooperation should continue due to the difficulties with entering into bilateral agreements..*
- *The EIA component of the cooperation program should be given more emphasis to ensure that the planned outcomes are achieved.*
- *The Embassy should support the development of the National Institute of Fisheries Research (INIP) into an internationally accredited laboratory.*
- *Norad and the Embassy should initiate a dialogue with IMR to develop a full proposal on the use of existing marine data to assess possible impacts of climate change. The proposed program needs agreement with the respective countries on the use of data.*

The Embassy in Luanda together with other embassies in the region should assist in this process, if required. FAO needs to be involved in the development of the research program.

- *It is essential to secure a strong ownership in the region. Therefore the research co-operation should preferably be led and coordinated by an institution in the region. INIP could potentially be the key collaborating partner in Angola building on the long-term cooperation with IMR. IMR could play a key role in developing and facilitating the suggested research cooperation. Appropriate implementation arrangements for a regional research program needs to be carefully considered by the Embassy and Norad.*
- *The Embassy and Norad should, if there is interest, consider to co-host a seminar involving representatives from all (most) Benguela and Guinea Currents marine research institutions and government to develop a common platform to address climate change and the marine environment.*
- *The proposed (tentative) budget is rather extensive considering the limited involvement of institutions in the south.*
- *The Embassy and Norad should encourage the parties involved in this project and in the oil-fisheries-environment nexus to also consider how environmental impacts of offshore diamond mining should be addressed.*
- *This project should be classified as a project with policy marker environment code 1: Significant objective.*

2.4 AGO 2515: UNICEF Emergency Water Management

Goals and Activities

Cholera is endemic in many parts of Angola, and in order to reduce outbreaks of diarrhea disease and to contribute to the sustainable reduction of cholera and save lives, UNICEF in close collaboration with the National Cholera Task Force (Ministry of Health, Ministry of Energy and Water, Ministry of Education, WHO and NGOs, CBOs and FBOs), has developed the Emergency Water Management Program with the following objectives:

- Develop sustainable safe water and sanitation systems for vulnerable communities, to reduce water borne diseases; and
- Reduce the national number of cholera cases through provision of water and sanitation, social mobilization and treatment.

To reduce outbreaks of diarrhea disease and save lives between April 2007 and March 2009, the most vulnerable families in Luanda, Benguela, Huila and Uige will be provided with safe water, sanitation and hygiene. The program has the following key activities:

1. Construction/rehabilitation of water points for vulnerable communities;
2. Peri-urban sanitation; and
3. Cholera Control Activities in 2006/2007.

The program supports local communities as well as schools and the implementation is progressing well.

Climate Change and Environmental Issues Addressed in the Program/Project

All activities in the program can be considered environment-related. According to the Environmental Action Plan key priorities within the water and sanitation sector are: focus attention on the importance of sanitation and hygiene, reducing contamination of water resources; support the improvement of water supply and sanitary conditions by supporting the installation of satisfactory water supplies and sanitary and hygiene facilities in schools; rainwater

harvesting; and work to secure all people the right to water and promote acceptance of the principle that water resources are a common good. The key activities covered by this project falls squarely within these priorities.

The Appropriation Document (AD) does not address cross-cutting issues explicitly. Norad's assessment did not include an assessment of environment or gender-related issues.

Based on the proposed activities there is no need to undertake an environmental assessment of the program. However, some of the included construction activities include civil work and there is a potential for environmental impacts, albeit small. Proper handling of medical waste is another potential issue related to health centers supported.

Assessment of Climate Change Issues

Since the focus of the project is on addressing the critical short term cholera situation there is little need for or scope for addressing long-term climate change issues. The long-term solution to Angola's water supply problems will require a careful analysis of the future water situation in the country taking climate change impacts into account. The availability of water, both surface and groundwater, will be affected by future climate change.

Angola has been faced with increased incidences of floods and recurring droughts in parts of the country, increasing the need for emergency support.

Climate Risk Assessment: 3 – no risk

Assessment of Environmental Issues

A long term solution to address Angola's cholera problem requires addressing cramped living conditions, poor sanitary conditions, inappropriate hygiene practices, and inadequate access to safe drinking water, particularly in peri-urban areas, as well as potential impacts of climate change on available water resources. The Norwegian-supported program is an emergency intervention and as such these underlying causes are not directly addressed in a comprehensive manner.

Environmental sanitation is a key component of the program and includes; support the construction of Household Toilets (HHT) and school toilets for effective sanitation to reach 16,500 people. Sanitation and water provision are very limited in most peri-urban areas of Angola affected by cholera, making the utilization of waterborne sanitation an unrealistic option. In order to overcome this UNICEF is working with Government and other implementing partners to pilot sustainable sanitation models in areas heavily affected by cholera. Based on gained experiences with hygiene training and promotion of sanitation it should be possible to scale up the activities and to reach out to other areas. The work should preferably be based on experiences from other countries, e.g. Brazil (Ceara Province), Lesotho and Ethiopia where UNICEF has facilitated an effective scaling up of access to sanitation.

UNICEF is working closely with the Ministry of Energy and Water (MINEA) which is responsible for quality water provision, and MINUA which is responsible for sanitation. There were positive policy statements and actions from these Ministries in 2007 toward sustainable interventions in the sector, with MINEA announcing the strategy to achieve Water for All, and MINUA assuming the responsibility for sanitation issues, which previously rested with no specific ministry. MINUA's adoption of the responsibility for sanitation came out of the National Sanitation workshop co-organized by MINUA and UNICEF in 2007.

Conclusions and Recommendations

- *The project addresses an emergency situation and gives vulnerable groups access to safe water supply and sanitation. This will alleviate an emergency situation, and also be a contribution to reaching the MDG targets for water supply and sanitation. The Embassy should be prepared to provide additional support if and when a new humanitarian, e.g. cholera outbreaks, emergency situation occurs.*
- *The Embassy should support UNICEF's focus on sanitation and hygiene in its dialogue with the GoA. This is in line with the priorities in the Environmental Action Plan.*
- *The Embassy should also advocate a rights-based approach to water supply and sanitation.*
- *Long-term solutions. The GoA needs to develop a long-term action plan for the water supply and sanitation sector. UNICEF could be a key player in assisting the GoA. This long-term plan should focus on expected impacts of climate change and the consequences for access to safe water supply.*
- *The Embassy should address the issue of proper handling of medical waste at the Annual Meeting with UNICEF.*
- *The Embassy should ask to what extent UNICEF has adequate procedures to assess potential environmental impacts of their projects and programs – "Do no harm".*
- *The Embassy should update the MFA on its experiences with working with UNICEF.*
- *This project should be classified as a project with policy marker environment code 2: Main objective.*

2.5 AGO 2529: ADPP Support to Teachers Training

Goals and Activities

In July 2005 a contract between the Embassy and *Ajuda de Desenvolvimento de Povo para Povo em Angola* (ADPP) was signed regarding establishment and implementation of the School for the Teachers of the Future (EPF) in Bié province. The goal of the project is to:

- improve the availability of teachers, including female teachers, and to heighten the quality of primary school teaching in the province over time.

Specific expected outputs are:

- An initial baseline study and an impact study by the of the project period;
- Establishment of EPF Bié;
- Annual average of 125 graduates;
- Four female teacher trainers employed. 50% female students;
- Renewal of study material;
- Special two year program for students with teaching experience;
- In-service training for teachers with grade 8 and lower; and
- Permanent Pedagogical Workshop.

The program is implemented by ADPP, an Angolan non-governmental organization (NGO). It has a worldwide network and belongs to the international movement Humana people to people. The organization has among others; projects directed to children, to vocational training and to combat HIV/Aids in addition to the teacher pre-service education, EPF (School for the Teachers of the Future).

Climate Change and Environmental Issues Addressed in the Program/Project

ADPP already supports a range of environment-related activities. This includes establishment of an environment centre in Tombwa (Namibe Province), establishment of a bird hide

where schools classes can visit, several tree planning efforts, e.g. Forest for the Future, Trees for the Future, development of an environmental school program for grade 5-8, water and sanitation programs in 350 schools, and a range of smaller environmental activities connected with the various schools ADPP supports. ADPP has taken environmental issues seriously in all its activities.

Assessment of Climate Change Issues

In the teacher training curriculum climate change issues should be included. The National Teacher Training Master Plan (TTMP) offers a potential to ensure that climate change is addressed. This could effectively help to increase awareness and knowledge since teachers are role models to students and key agents of change in local communities. Teacher training should include issues related to the overall expected changes in climate, global climate change issues and the current policy dialogue among countries, local climatic changes, potential impacts on local communities and people, adaptation and coping strategies, etc. ADPP should seek the guidance from MINUA on the elaboration of a teaching curriculum.

Climate Risk Assessment: 3 – no risk

Assessment of Environmental Issues

The training provided by ADPP combines theory and practice, modern teaching methods including active learning, and training of teachers who are able to work and live in rural communities. The intention is also to train them to become community agents. Therefore teachers can be important role models in local communities. Providing teachers with high-quality hygiene education helps to give them the basis for a healthy and productive life, creates future demand for safe water and sanitation facilities and, where integrated with a community program, can help to turn children into change agents for the whole community.

Every girl and boy has the right--and responsibility--to drink safe water, use clean toilets and practice personal hygiene, including washing hands with soap. Teachers should help to facilitate this. Providing children with safe, clean and reliable school water supply and sanitation facilities helps to make the learning environment pleasant and healthy. The high drop out ratio for girls in Angola could be partly attributed to lack of adequate sanitation facilities at schools. Experience from other parts of the world indicates that without separate facilities this is a key reason that girls drop out of school. ADPP should in its dialogue with the GoA address the issue of the need for construction of adequate water supply and sanitation facilities at all schools in Angola. UNICEF would be a key supporter.

Currently there is an important work going on regarding the elaboration of a National Teacher Training Master Plan (TTMP). ADPP should be encouraged to assess the possibility of integrating environment, including water supply, sanitation and hygiene, and climate change issues in the master plan. The quality of the environment-related education material and textbooks in teachers' training has not been possible to ascertain.

ADPP has a number of suggestions for expansion of their environment related activities which includes; establishment of environment centers in connection with all the Schools of Teachers in Angola; strengthened environment education linked with environment activities in the areas where the Schools for Teachers operate; establishment of farmers close to train farmers, increase their farming production and using better farm methods; community development project; and vocational training of youth in environment, new technologies in agriculture, tree planning etc. These suggested activities will be a valuable addition to the existing environment activities implemented by ADPP.

Conclusions and Recommendations

- *Inclusion of environmental and climate change issues in teacher training can be an important element in increasing environmental awareness and knowledge in Angola. Currently, there is very little focus on environment among civil society. Teachers and students can be important actors of change. The support to ADPP is considered highly relevant as a tool to strengthen and enhance capacity and to raise awareness on environmental issues.*
- *The Embassy should encourage ADPP to assess whether the National Teacher Training Master Plan (TTMP) includes climate change and environment-related modules and to bring up these issues in its dialogue with the GoA since ADPP participates in national meetings discussing the TTMP.*
- *Lack of access to adequate safe water and sanitation facilities at schools could be a key factor behind the high drop out rate among girls in Angola and to the problems of recruiting female teachers. The Embassy could request ADPP to focus on this issue in its dialogue with the government and to highlight this issue. UNICEF is another key actor working to ensure that all schools are equipped with water and sanitation facilities, preferably separate facilities for boys and girls and teachers.*
- *The Embassy could consider facilitating the launch of a campaign similar to the Norwegian “Blekkulf” campaign in Angola to increase focus on environmental issues in schools. The ‘Environmental Agent/Detective’ program developed by a Norwegian environmental NGO could also be a program idea that could be considered. The Embassy could also cooperate with ADPP in awarding an annual “Green Award” to schools that have made a particular effort to address environmental issues.*

2.6 AGO 2542: Support to CEIC – including CMI Co-operation

Goals and Activities

The Norwegian support to *Centro de Estudos e Investigação Científica* (CEIC) at the *Universidade Católica de Angola* (UCAN) consists of two components, a) general core financial support to CEIC and b) a research and capacity building cooperation program with CMI.

Through the direct financial support to CEIC Norway contributes to a biodiversity/conservation project aiming at saving the national animal of Angola the Giant Sable (*Hippotragus niger variani*) or Palanca Negra Gigante, as it is called in Angola.

The three year program for cooperation on capacity building and research to be implemented by the Chr. Michelsen Institute (CMI) and the CEIC was approved by the Embassy in January 2008. The key objectives of the program is to support policy research and build capacity that may contribute to the avoidance of the so called ‘resource curse’ in Angola. To make this contribution the two institutes has set two important immediate objectives:

- Improve the extent and quality of research and dissemination of policy oriented studies that can contribute to policy analysis and policy debate in Angola, particularly on ‘resource curse’ related issues; and
- Administrative and research capacity building at CEIC.

The project is based on a number of capacity building and research projects, amongst others: Social science studies; Augmenting teaching resources at UCAN; ICT capacity; Economic and judicial incentives for peace; Effects of Angola’s 1992 Election Experience on the upcoming Elections; Political Parties in Angola; Macro Modeling; Analysis of the Budget System and Public Expenditure; Participation, Representation and Taxation in Local Governance; Health, Poverty and Public Expenditure; Angolan Infrastructure in a Regional Per-

spective; Land and Legal Plurality in Angola; and Micro Credit for Sustainable Development in Angola.

Climate Change and Environmental Issues Addressed in the Program/Project

None specifically, however, there are indirect links. The Social Science component addresses issues related to land rights and social and cultural rights, as well as issues related to CSR (corporate social responsibility).

The “Angolan infrastructure in a regional perspective” component (Project 14) will address environment issues associated with the development of regional infrastructure.

Assessment of Climate Change Issues

The “Angolan infrastructure in a regional perspective” component (Project 14) should preferably also address climate change issues associated with the development of regional infrastructure. Development of regional energy and transport infrastructure will have implications for climate change emissions (energy sources, transport, construction industry etc.), as well as the need to consider adaptation measures within these sectors to adjust to a changing climate.

Several of the research proposals addresses issues that can be made relevant to climate change. Topics could be:

- Social impacts of climate change. Helping understand and addressing the socio-economic vulnerabilities associated with climate change, addressing economic and social impacts, including impacts on livelihoods and poverty at the household, community and national levels (Project 2);
- Identifying institutional and policy constraints to address vulnerabilities (e.g. decision-making systems, implementation and communications of responses with the public; coordination mechanisms across jurisdictions, participation of key stakeholders in response programs; and
- Social protection and other human development interventions to help vulnerable groups cope with climate changes. Including i) assessing the effectiveness of existing social protection policies and programs in dealing with natural disasters and strengthening complementarities with informal coping strategies; ii) assessing the effectiveness of current policies and programs on safety nets against the new climate risks; and iii) health, nutrition, and food security impacts of climate change and their mitigation (project 12).

Climate Risk Assessment: 3 – no risk

Assessment of Environmental Issues

The Social Science component could be included to cover all aspects of economic, social and cultural rights, including issues related to the right to water. Through Norwegian support the NGO COHRE has developed a manual on the right to water and sanitation (<http://www.cohre.org/manualrtws>) which can form the basis for an introductory course. Environment could be included explicitly in the CSR area, especially since this is also strongly linked to the resource “curse” issue in Angola.

The planned household survey under the “Health, Poverty and Public Expenditure” component (Project 12) should also include questions related to access to safe water and sanitation and use of fuel for cooking. This could potentially be a key variable in explaining differences in the need for health services. Research indicates that the incidence of for instance

diarrhea is strongly correlated with access to safe water and sanitation and incidences of respiratory diseases with indoor air pollution. Adding these questions should be relatively easy to accommodate enhancing the usefulness of the survey. Preferably the household survey should be based on UNICEF's (USAID) standard approach (Multiple Indicator Cluster Surveys (MICS)).

In general there is scope to strengthening the environmental, as well as gender, dimensions in the various research proposals as cross-cutting issues.

Conclusions and Recommendations

- *The cooperation between CEIC and CMI offers and opportunity to strengthen the research community in Angola, especially on issues related to the 'resource curse' and social issues which could form the basis for developing other research programs addressing social impacts of climate change and broader environmental issues.*
- *The Embassy should enter into a dialogue with CMI and CEIC to assess the potential and to discuss ideas for adding or revising the suggested projects to ensure a stronger focus on climate change and environmental issues. CMI should be encouraged to bring in other Norwegian partners as well.*
- *The right to water is key policy area for Norway. The Embassy should bring up the issue in its dialogue with CEIC to assess whether issues linked to right to water and sanitation can be included in some of the suggested rights-based cooperation activities.*
- *Environment, as well as gender, could be strengthened as cross-cutting issues in the various projects. CEIC has staff with environmental background and these could be brought in to strengthen the environment-related components in the proposed research program.*

2.7 AGO 2555: Support to Civil Society: NPA Partnership

Goals and Activities

The Embassy has been supporting a number of NGOs which have been working on various environment-related activities:

- **Norwegian Church Aid (NCA):** The NCA Angola program covers activities that encompass the Norwegian priorities in addressing environmental challenges and management of natural resources. NCA do not have specific environment projects in Angola, even so - much of their advocacy work on good governance, and in particular related to the water supply and sanitation work is relevant in this context;
- **Accao para Desenvolvimento Rural e Ambiental (ADRA):** ADRA has requested support to continue the financial support for a second phase of its institutional support program during the period 2007-2009. ADRA's main goal is to contribute to the reduction of poverty with a focus on reducing rural poverty through rural development. To achieve this ADRA supports community based projects and activities aiming at food security, access to land and land rights, micro and rural finance, improvements of rural education, and formation of local organizations. The approach is rights based and civic educations are a fundamental dimension of ADRA's work;
- **Development Workshop (DW):** DW has extensive technical know-how in human settlements' related fields and experience of innovation for sustainability and adaptation to changing and turbulent contexts, capacity building, water and sanitation, social and environmental assessment, undertaking environmental risk assessments, community mobilization etc.; and
- **Norwegian Peoples Aid (NPA):** Has worked in Angola since 1990 and is mainly implementing a mine action program and through partnership with other organizations

are working on issues related to the right to land and natural resources, democracy and participation and strengthening civil society.

In addition, Norad through the civil society budget line, has been supporting YME's water and sanitation work in Angola. YME operates primarily in the Cabinda province and receives support from the private sector as well (StatoilHydro and AkerKvaerner).

The Embassy has recently established a strategic partnership with NPA for the management of the support to ADRA, DW and two other human rights defending NGOs through this partnership. The Embassy also has a strategic partnership with NCA, which focuses on good governance, HIV/Aids and gender.

Climate Change and Environmental Issues Addressed in the Program/Project

Currently, there are no directly related climate change relevant activities undertaken by NGOs, however, most of them works on issues related to emergencies related to floods and drought and undertake efforts to reduce poor people's vulnerability. All NGOs work on environment-related activities (depending also how environment is classified). A number of activities are related to provision of water supply and sanitation, rural development, food security, access to land and land rights, all of which have environmental related components. All advocate a rights-based approach to development.

Assessment of Climate Change Issues

Rural livelihoods will be affected by long-term climate change. Climate change will 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. In addition to higher average temperatures, other factors—more intense droughts, floods, and greater temperature variability—will result in productivity losses to crops and livestock. In some areas, agriculture will be damaged by flooding and salinization of surface water and groundwater aquifers as sea level rises. Less precipitation will reduce the availability of water for irrigation and livestock production.

The poor will be disproportionately vulnerable to the effects of climate change because of their greater dependence on agriculture and their lower ability to adapt. In areas with severe resource constraints, farmers will not be able to adapt to climate change without outside help. To adapt farmers are already planting different crop varieties, changing planting dates, and adapting practices to a shorter 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. ADRA 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.

Through ADRA's rural development work and its involvement in education it can play a key role on enhancing and strengthening the local understanding of future impacts of climate change. Through ADRA's data collection efforts key information on impacts on rural development of climate change be collected. Furthermore, through this work ADRA 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.

DW has proposed a project entitled "Rapid Community Diagnostic of Perceptions of Climate Change in Angola." The proposal has been submitted to OfD. The project will be a rapid diagnostic of perceptions of climate change in Angola, which will address a number of needs.

It will provide information, in four carefully chosen areas, about local level perceptions of climate variability and climate change over the last 30 years for which 6 of 7 meteorological records are not available. It may provide data that fill the gaps of meteorological data and assist in confirming, or questioning, scenarios for climate change in Angola. It will provide information about how people in these areas have in the past adapted to climate variability and how they adapt at present, as well as about whether adaptation strategies are under stress. This will provide a starting point for planning new adaptation strategies and capacity. The project will also assess institutional awareness about climate change and the issue of adaptation.

DW's project is considered highly relevant and could be key first step in assessing and raising civil society awareness on climate change. Furthermore, it can be useful in assessing local coping strategies which in most cases will be important elements in national adaptation strategies.

Climate Risk Assessment: 2 – moderate risk (relate to the specific rural development activities).

Assessment of Environmental Issues

All NGOs are using a rights-based approach is actively addressing these issues through various means. A key activity for ADRA is access to land and land rights, NCA and YME support the right to water and sanitation and NPA works on right to land and natural resources issues. Their focus on the right to access to water and sanitation support the key priority in the Environmental Action Plan.

Environmental implication of local coping and adaptation strategies should also be considered. ADRA could document experiences and impacts, and provide information on how environmental impacts of rural development could be mitigated. DW has undertaken risk and vulnerability assessments, particularly in rural areas, and is actively engaged in improving conditions for the urban poor.

Non-governmental organizations (NGOs) can play an important role as watchdogs and provider of information vis-à-vis the population and the authorities. Corruption and poor governance make it important to develop broader networks between NGOs in Angola and with relevant NGOs in Norway. The Embassy has engaged in close dialogue and co-operation with NGOs, through strategic partnerships with NPA and NCA with a view to strengthening the role of Angolan civil society. The Norwegian MFA has set up an environmental NGO fund, administered by Norwegian NGOs (WWF, Rainforest Foundation and Development Fund), to provide funding to environmental NGOs in the South. This fund could be a source of additional funding for Angolan NGOs wishing to cooperate with Norwegian environmental NGOs and becoming part of their network.

Environment is not addressed as a cross-cutting issue in the AD.

Conclusions and Recommendations

- *NGOs can play an important role as watchdogs and provider of information on climate change and environmental issues in Angola. Strengthening the civil society contributes to improved governance and enhances transparency. Currently, there are very few environmental NGOs in Angola and their influence is very limited. Therefore the strategic partnership between the Embassy and NPA and NCA could make an important contribution.*
- *NGOs should be encouraged to focus increased efforts on the issue of the right to water and sanitation since this is a priority area in the Norwegian Environmental Ac-*

tion Plan. Through the water supply and sanitation activities the NGOs will provide an important contribution to the achievements of the MDGs.

- *NGOs can play an affective role in identifying local coping and adaptation strategies, especially in rural areas. Through ADRA's rural development work and its involvement in education, it can play a key role on enhancing and strengthening the local understanding of future impacts of climate change if these issues are included in their program of work. The Embassy should bring up these issues in its dialogue with ADRA and other NGOs.*
- *DW's climate perception projects could help to develop a baseline for assessing impacts of climate change in Angola. The project is considered highly relevant.*
- *The Embassy supported by Norad's civil society department (SIVSA) should encourage Norwegian environmental NGOs to develop cooperation with and support Angolan environmental NGOs through the established fund.*

2.8 AGO Energy Support

Goals and Activities

Norway and Angola have had a long-standing development co-operation in the energy sector since 1987. Extensive support has been provided, particularly through a co-operation agreement between the Norwegian Water and Energy Administration (NVE) and the Angolan Ministry of Energy and Water (MINEA). This institutional co-operation has been under phasing out since 2005 and is now being closed.

The SIDA financed support program to MINEA, undertaken by ECON Analys AB, has been important in accelerating and firming up the government's reform agenda by providing support to policy formulation, developing and/or updating necessary sector strategies, including an overall energy sector reform strategy, and a more focused rural electrification strategy and plan, and defining various renewable energy initiatives. Support to the new Electricity Act and guidelines has also been part of the program.

A semiautonomous Reform Implementation Unit (UIR) and the electricity sector regulator IRSE were established during 2006. Phase 2 of the SIDA support program (which commenced December 2006) provides certain external support and capacity building to the UIR, although it is acknowledged that UIR in addition to the SIDA support, also requires at least one full-time external adviser to further facilitate execution of the UIR mandate.

Within the framework of the Swedish support to MINEA, Norway has been requested to fund a resident advisor to the UIR. The objectives of the resident advisor is suggested to be advice on all matters related to the reform master plan and implementation of the reform process, reviewing the implementation, provide hands on assistance to the UIR for capacity development, overseeing the overall reform process and to further improve the efficiency of the Swedish/Norwegian assistance.

Climate Change and Environmental Issues Addressed in the Program/Project

In the request to Norway to fund the new resident advisor there is no reference to climate change or environmental issues. This does probably reflect the strong focus on access to electricity from the Government, as well as the relatively limited awareness of the climate change agenda in Angola.

Assessment of Climate Change Issues

In the long term climate change is expected to be important for hydropower development in Angola. Based on the existing climate change prognosis Angola may face less reliable rain-

fall in Lubango – Huambo – Malanje axis of Angola and more rainfall in northern Angola. Angola plans to invest heavily in dams for hydropower in the next decades. Changes in precipitation and the associated changes in water flow in the rivers, may impact the economy of the projects. Likewise, changes and fluctuations in water flow may impact the flooding pattern in regulated rivers and impact both the environment in and around the rivers as well as people along the rivers. Evapotranspiration from reservoirs will also be affected. It would therefore be appropriate both to improve the prognostic basis for variation in water flows, temperatures and make use of the best available prognosis in the feasibility studies and the EIAs. One vehicle to improve the climate change prognosis and to apply them would be to improve the knowledge base and the capacity in research institutions as well as in the administration on these issues. A role for the resident advisor could be to promote cooperation on research and education on these issues.

In Angola, climate change issues are in principle handled as part of the EIA process. The Review Team has the impression that climate change issues in general, as well as in the energy sector, are not yet sufficiently recognized. Based on the above assessment it would therefore be appropriate to promote MINEA to put more emphasis on climate change issues in feasibility studies and in EIAs.

Angola has a potential for attracting CDM financing for a number of the new hydro power plants being planned for the coming years, either under the current CDM scheme up to 2012, or under a potential new “CDM scheme” past 2012. The main bottleneck for CDM financing in Angola is the establishment of the NDA. NDA is the key institution in each country for the approval of CDM projects and a prerequisite for the international certification of any CDM project. Support for the establishment of NDA would therefore help to speed up CDM project development, and to attract further capital for hydro power development. Internationally, UNDP, UNEP and the World Bank with financing from the Global Environment Facility (GEF) are the key institutions for institutional development of NDAs, however, beyond support to preparation of a NAPA Angola does not seem to be included in current plans to support the establishment of a NDA. UNDP-UNEP has a regional CDM capacity building program in Southern Africa but Angola is not included. The Embassy therefore needs to assess what, if any, role Norway in cooperation with other development partners could play in supporting the establishment of a NDA for Angola.

CDM and support to development of CDM projects in the energy sector is also well addressed and should be further supported within the frame of the SIDA cooperation. When the enabling environment for development of CDM projects in Angola is in place, the possibility for investment by the Norwegian Ministry of Finance (Carbon Neutral Norway) should be followed up and explored by the Embassy.

Climate Risk Assessment: 1 – High Risk (applies to the energy sector in general)

Assessment of Environmental Issues

The Team has been informed that EIAs are undertaken for all energy sector projects in Angola. However, the Team has noticed that there is very limited capacity to assess and to follow up EIAs both in MINUA and in MINEA. It should be included in the TOR for the resident advisor to see how capacity development could be integrated in the program either under the existing agreement or as an addendum to the agreement.

Angola has a rich untapped potential for hydropower, and plans to meet the future demand for power by hydropower, supplemented by thermal energy based on domestic natural gas. There are severe limitations both with regard to generating capacity as well as transmission and distribution. MINEA has a strong focus on meeting these bottlenecks and provide access to electricity for a larger part of the population as well as meeting the increasing de-

mand for power from a rapidly growing industry. ENE, the public power company also promotes and supports local governments in the development of mini hydro in rural areas. A recent inventory has identified more than a hundred potential sites. Meeting Angola's energy access requirements will require due consideration of environmental issues. Therefore the elaboration of specific EIA guidelines for the sector will be important. Currently, Angola does not have appropriate guidelines on how to assess the environmental impact of hydro power development, including transmission lines, when it comes to environmental, climate and social consequences. Providing support to developing appropriate EIA guidelines, based on international best practice, e.g. international financing institutions, should be considered a key task for the proposed advisor.

Angola's future energy sector developments will not take place in a national vacuum. Angola has significant energy resources that could make a major contribution in the broader regional context of the SADC (Southern African Development Community) and the NEPAD initiatives. To this extent consideration is required as to Angola's engagement with the Southern African Power Pool (SAPP) initiatives and the Energy Pool of Central Africa (PEAC). However, at this stage, Angola has no high-voltage transmission interconnections with any of the neighboring countries. The Western Corridor power transmission line from the Inga Falls to South Africa is one of the high priority NEPAD infrastructure projects and will pass Angola. Development of regional energy programs should also be carefully considered from an environmental point of view.

Conclusions and Recommendations

- *Support to the energy sector is highly relevant, and could provide a strengthened framework for further cooperation on environment and climate change. It is recommended that the Embassy/Norad considers co-financing a support program with SIDA with a focus on environment and climate change related issues.*
- *The new resident advisor on energy should take on the task of promoting cooperation on research and education on climate change prognosis for Angola related to hydropower development.*
- *CDM projects should be further promoted as part of the SIDA/Norwegian energy cooperation. Upon request Norway should support feasibility studies and the development of CDM projects, such activities may be financed by Norad's PSD TA fund.*
- *The Embassy should assess what, if any, role Norway in cooperation with other development partners could play in supporting the establishment of a NDA for Angola.*
- *The Embassy should engage in the efforts by the Norwegian Ministry of Finance to identify possible CDM projects for Norwegian investment as soon as the CDM mechanisms are in place in Angola (NDA established).*
- *The capacity to manage and assess EIAs within MINEA and MINUA should be further developed; this should be followed up by the resident advisor. Angola does not have appropriate guidelines on how to assess the environmental impact of hydro power development, including transmission lines, when it comes to environmental and social consequences. Providing support to developing appropriate EIA guidelines, based on international best practice, should be considered as a key task of the proposed advisor. Climate change issues should be included as integral components in EIA guidelines and be given more emphasis.*
- *Improved information flow with the SADC regional energy advisor at the Embassy in Maputo is advised in order to promote a best possible use of renewable energy resources within the region for the substitution of less climate friendly solutions.*
- *The Embassy should update itself on the more detailed status of the establishment of the NDA, and if requested consider to offer more limited TA assistance to establish the unit.*
- *Subject to focus on environmental issues this project should be classified as a project with policy marker environment code 1: Significant objective.*

2.9 Proposal to Support the Implementation of the National Biodiversity Strategy and Action Plan

Goals and Activities

Norway supported through UNDP, the preparation of the "National Biodiversity Strategy and Action Plan 2007 - 2012" (NBSAP). The NBSAP was finalized in May 2006 and approved by the Council of Ministers 31 May 2006. Article 6 of the Convention of Biological Diversity (CBD) obliges all parties to develop national strategies, plans and programs for the conservation and sustainable use of biological diversity. The first objective of the NBSAP is to meet the requirements of the CBD. The overall objective of the NBSAP is:

- to incorporate measures for the conservation and sustainable use of biological diversity and fair and equitable sharing of biological resources into development policies and programs for the benefit of all Angolans.

The NBSAP has eight strategic areas that were defined through a process of public consultation. These include:

- Research and information dissemination;
- Education for sustainable development;
- Biodiversity management in protected areas;
- Sustainable use of biodiversity components;
- The role of communities in biodiversity management;
- Institutional strengthening;
- Legislation and its enforcement; and
- Management, coordination and monitoring.

Within these eight strategic areas 111 specific actions have been included in the Action Plan. These have been prioritized, costed and the major institutions responsible for implementation have been identified.

The NBSAP was prepared under the auspices of MINUA. UNDP has contacted the Embassy regarding possible funding of the implementation of NBSAP.

The Embassy is also supporting through its core financial support to CEIC "The Conservation of the Giant Sable in Angola". The main objective for this Project is to support the protection and recovery of the giant sable populations in Cangandala National Park and Luando Strict Reserve. The Giant Sable (*Hipotragus niger variani*) or Palanca Negra Gigante, as it is known in Angola, was the last of Africa's large mammals to be discovered. The project involves and work with local communities as shepherds for the giant sable. The Giant Sable is Angola's national animal.

Climate Change and Environmental Issues Addressed in the Program/Project

A cursory review of the NBSAP indicates that issues related to potential impacts of climate change on biodiversity has not been considered in the NBSAP.

The overall objective of the proposed program is highly relevant and supports the key priorities of the Norwegian government's environmental action plan for development cooperation. The key issue will UNDP's ability to implement the program and its working relationship with MINUA.

Assessment of Climate Change Issues

Climate change has the potential to severely affect biodiversity. The vision of the strategy is for a period up to fifteen years, however, the Action Plan focuses on short and medium-term actions (3-6 years).

Angola should therefore preferably be advised to start developing the required capacity to assess potential impacts of climate change on biodiversity and the research component of the NBSAP could be expanded to include relevant climate change issues. Local communities play a key role in biodiversity management and local adaptation or coping strategies could be important means to address potential impacts of climate change as well. It is therefore scope to include issues related to climate change within several of the Strategic Areas, being mindful of the current lack of capacity within the country.

Within the NBSAP's Strategic Area "Sustainable Use of Biodiversity Components" there is one objective specifically related to forests, i.e. "Implement measures for the sustainable management of forest resources" (Objective D.2). However, in the Action Plan no actions have been proposed to address this objective. The key role of forests in mitigating climate change could be brought in as an element to encourage GoA to increase its efforts on forests in relation to climate change.

Assessment of Environmental Issues

Angola's high biodiversity is a key asset to the country and MINUA and other institutions involved in protection and sustainable use of the country's biological diversity is ill-equipped to undertake their role and responsibility. Therefore the suggested support program will be of key importance.

Conclusions and Recommendations

- *Providing support to implementation of the NBSAP is considered highly relevant.*
- *Initiate a dialogue with MINUA and UNDP on integrating issues related to impacts on climate change on biodiversity in the implementation of the NBSAP. Of key importance will be to initiate work to strengthen the national research capacity.*
- *The Team does not have adequate information to assess the role of UNDP as cooperation partner.*
- *Forest/Climate initiative – the NBSAP does not give priority to actions targeted at strengthening forest management, except for strengthening the management of national parks. The Embassy could consider raising the issue of increasing the focus on forests and the key role forests play in mitigating climate change.*
- *There is scope for research cooperation between Norwegian and Angolan institutions to support the implementation of the NBSAP. Norad's budget lines for institutional cooperation as well as research and education could be potential sources of funding. Potential Norwegian partners could be NINA/NIKU, Noragric/UMB, University of Oslo, Directorate for Nature Management.*
- *This project should be classified as a project with policy marker environment code 2: Main objective.*
- *The Embassy should continue the dialogue with the CEIC on supporting "The Conservation of the Giant Sable in Angola" project. This will also be an important contribution to implementing the NBSAP as well as strengthening research in Angola.*

2.10 Angola and the Norwegian Forest (Carbon) Initiative

Whereas deforestation, degradation and poor forest management reduce carbon storage in forests, sustainable management, planting, and rehabilitation of forests increases carbon sequestration. Carbon in forest biomass are decreasing in Africa. Better forest management,

through the conservation of existing forests, afforestation and re-forestation are some measures that have potential for carbon sequestration. The overall biomass of forests also act as a 'carbon sink'. For instance, the organic matter in the forest soils, such as the humus produced by the decomposition of dead plant material, also acts as a carbon store. As a result, forests store enormous amounts of carbon.

There is a global consensus that there is a need to stop deforestation and expand the land area covered by forests especially in the tropics, as well as, the need to substitute fossil fuels with bio-fuels such as wood-fuels from responsibly managed forests, in order to reduce carbon emissions. Forests could be better used in combating climate change by preventing their destruction, through afforestation (new planting) and reforestation (replanting of deforested areas) of non-forested lands. There is also need to use more wood in long-lasting products to keep trapped carbon out of the atmosphere for longer periods of time.

In Bali, Prime Minister Stoltenberg announced that Norway is prepared to increase its support for efforts to prevent deforestation and forest degradation in developing countries to around 500 million US dollars – a year. The main purpose of the Norwegian initiative is to stimulate early action in the form of programs that will result in real and significant reductions in CO₂ emissions before a new global agreement can be implemented.

Africa lost over nine per cent of its trees between 1990 and 2005. This represents over half of global forest loss, despite the fact that the continent accounts for just 16 per cent of global forests.

47% of Angola is forested and 6.6% is protected (see Annex III). Angola's closed forests are predominantly lowland, semi-deciduous forests and occur mainly in the north of the country, particularly in the Mayombe forest in the enclave of Cabinda (part of the Congo Basin). Angola's rainforests, located in the north of the country, are most threatened by subsistence agriculture which provides food for almost 90% of the population. Population pressures due to an exceedingly high birth rate are leading to overuse of pasture lands and causing Angolans to look increasingly toward rainforest lands for fuelwood and potential farmland. Deforestation of tropical rain forest, in response to both international demand for tropical timber and to domestic use as fuel is resulting in loss of biodiversity.

The deforestation rate in Angola is estimated to be about 0.2%, one of the highest deforestation rates in southern Africa, with an annual decrease in forest cover of 124,800 ha. Norway could potentially assist the country's efforts to reduce deforestation through the Norwegian Forest (Carbon) Initiative, especially by focusing on forest areas close to the Congo Basin.

There are advanced plans to develop biofuel production in Angola which pose a threat to both forests and agriculture. Old sugar plantations will be turned into biofuel production areas in some parts, e.g. in Benguela province. A number of international actors, including oil companies, are following the development of the biofuel industry closely in the region and Brazilian companies are preparing investment projects

Conclusions and Recommendations

- *The Embassy in Luanda is responsible in addition to Angola for relations with Gabon, Sao Tome e Principe, Congo Brazzaville and DRC. Several of these countries are likely to be partners in the Forest (Carbon) Initiative. Therefore it is essential that the Embassy carefully follows the development of the Initiative and the current situation in the region in this sector.*
- *The Embassy should carefully assess the scope for developing forest projects in Angola and other countries the Embassy represents through the Forest (Carbon) Initia-*

tive. Such an engagement would require a substantial reinforcement of the Embassy's staff resources.

- *China plays a key role in deforestation in Africa. The Embassy should through its development dialogue with China in Angola address these issues, as appropriate.*

3. GENERAL OBSERVATIONS AND RECOMMENDATIONS

3.1 General Observations of the Review on Environmental Issues

Based on the review the following general observations can be provided:

Environment has up to now not been a priority in Angola. Environment is not high on the political or civil society agenda in Angola. This can partly be explained by the focus since 2002 on peace and reconciliation and national reconstruction after three decades of devastating wars and partly a lack of awareness. However, 5 years of peace and a booming economy with huge private and public investments implies that there is a need for a critical push on the environmental agenda to reduce and mitigate the potential negative impacts on the environment. The environmental institutions and the required legal framework is by and large in place, however, the capacity is extremely weak and enforcement is generally lacking. The interest of the strong infrastructure sectors, e.g. petroleum and energy, dominates. There is also reason to question the GoA's ownership to various environmental related activities.

The EIA system in Angola is dysfunctional. Most of the legal framework for environmental impact assessment (EIA) is in place, several specific decrees have been enacted, however, coordination among involved entities and enforcement seems overall to be lacking. The Embassy is well-positioned to assist Angola in strengthening the EIA system in important sectors through the planned support in fisheries, petroleum and energy. In all these sectors activities addressing strengthening of the EIA system have been proposed. These activities should be given priority and the Embassy should take a role in establishing a dialogue and coordination among the entities involved in EIA work through Norwegian support.

Dialogue among stakeholders emerging. Through several of the Norwegian supported development programs a platform for dialogue and exchange of views has been established, most notably within the petroleum and fisheries sector. The Embassy is well positioned to facilitate and broker dialogue between key ministries – MINPET, MINUA and MINP. There are few environmental NGOs in Angola, however, several NGOs have started to take an interest in environmental issues. There is a need to strengthen environmental NGOs to ensure that they can play a more active role as watchdogs, exchange of information and to actively participate in discussions around larger development projects.

Current portfolio – scope to “do good”. The three priority sectors for Norwegian development cooperation are energy, with an emphasis on petroleum, good governance and human rights. There are environmental elements in several of the projects supported and there is scope to increase efforts to “do good”.

“Do no harm”. The review has not found that any project or program in the portfolio should have been subject to an EIA. However, the Embassy should report more clearly in the Appropriation Documents (AD) on environmental issues.

The Embassy will play a key role in the Forest (Carbon) Initiative. Due to its regional role, the Embassy is likely to play a key role in the Norwegian forest initiative. This will strain the Embassy's resources and an active engagement would require a substantial reinforcement of the Embassy's staff resources. The Embassy should establish close cooperation with Norad and with other embassies in the region.

The issue of rights emerging. Several of the NGOs supported by the Embassy are advocating a strong rights based approach.

Include climate change and environment actively in policy and project dialogue with the Government of Angola. The Embassy is in a good position to lift these issues in the dialogue based on the current portfolio. In the Embassy's policy dialogue with Angola issues related to the climate change, poverty – environment nexus should be addressed, being mindful of Angola's development needs.

Overall, the review has demonstrated that there is scope to address/integrate appropriate environmental concerns in the current agreements within present framework and budgets, and for possible future phases of the various programs. There is scope to increase environment-related development cooperation with Angola without developing a specific environment sector program through more active integration of environment in the various phases of the program management cycle.

3.2 General Observations on Climate Change Issues

Climate change is not high on the agenda in Angola, neither among civil society nor the government. There seems to be growing civil society awareness, albeit from a low level, on the key importance of climate change and its impacts on Angola's development. Strengthening civil society and research/education could be effective mechanisms to raise awareness and enhance knowledge on climate change in Angola. Furthermore, NGOs play a key role in identifying local coping and adaptation strategies, especially in rural areas. Strengthening the research capacity and ensuring that issues related to climate change are addressed in schools could also be effective long-term mechanisms.

Emerging focus on climate change. Recently the Government has taken steps which indicate a more proactive focus on environment and climate change, manifested through the President's speech in the UN General Assembly, ratification of UNFCCC and active participation at the Bali meeting. The GoA is now developing a five-pronged climate change strategy which will form the basis for future actions. This includes preparation of a NAPA, establishment of a NDA and a national carbon fund. The Embassy should therefore follow closely the development of Angola's climate change policy and the country's position in international climate change negotiations (as requested in the Annual Letter), building on the support to the energy and petroleum sector.

Clean Development Mechanism offers possibilities. Angola has a potential for attracting CDM financing for a number of the new energy projects as well as projects within the petroleum sector, either under the current CDM scheme up to 2012, or under a potential new "CDM scheme" past 2012. The main bottleneck for CDM financing in Angola is the establishment of the National Designated Authority (NDA). Support for the establishment of NDA would therefore help to speed up CDM project development, and to attract further capital for the development of energy sector projects. Through the planned support to the energy sector (energy advisor) and OfD's support to climate change activities Norway could make a significant contribution to developing required CDM capacity in Angola. The possibility for investments by the Norwegian Ministry of Finance (Carbon Neutral Norway) should also be followed up and explored by the Embassy.

Adaptation Fund. At Bali it was agreed to establish an Adaptation Fund, funded by monetization of certified emission reductions (CER) (2% of all CERs) issued by the Executive Board of the CDM. The Adaptation Fund shall finance concrete adaptation projects and programs that are country driven and are based on the needs, views and priorities of developing countries that are particularly vulnerable to the adverse effects of climate change. Angola's Carbon Fund should work closely with the Adaptation Fund.

A comprehensive environmental monitoring network is needed. Angola, as most developing countries, lacks a reliable comprehensive environmental monitoring network, including

a basic hydro meteorological observation system, as well as a system targeted to monitor long-term impacts of climate change. Norway is supporting the establishment of a marine monitoring program with a main focus on assessing environmental impacts of the petroleum industry. Through the Nansen program relevant environmental and climate data have been collected, however, these data have not been comprehensively analyzed. Norway could support an effort to analyze existing data with a view to developing a baseline for future monitoring of climate change in the region. This could also form the basis for establishing closer cooperating between the member countries of the Benguela and Guinea Currents Commissions on issues related to climate change and changes in the marine environment, including on fisheries.

Scope to address climate change within most activities supported by Norway. The review has clearly demonstrated that there is scope to address climate change within most programs and projects supported by Norway. However, it is important to realize that local environmental problems are considered more important in the short to medium term and therefore the key focus of Norway could be to strengthen civil society and the research and education capacity in Angola as a means to raising awareness and enhancing knowledge.

Current climatic variability needs to be addressed. Finally, the current climatic variability in Angola needs to be addressed through concerted actions. Floods and droughts already cause severe consequences in parts of Angola and the emergency preparedness system is not able to cope with the existing climate variability. Norway has provided support to establish civil defense, however more is required. The situation in Luanda clearly demonstrates that local authorities and the people are not equipped to even deal with normal rainfalls. Therefore Angola needs to take action to reduce the risk, exposure and vulnerability of people to climatic events both in urban and rural areas.

3.3 Final Observations

Finally, the Team offers some final observations primarily on the potential role of the Embassy:

Use Norway's good will effectively. Due to the large involvement of Norway in the petroleum sector and the long-standing institutional cooperation, the Embassy could play a key role in the policy dialogue with the GoA. This position should be used strategically to promote key issues of mutual interest.

Ensure that Norwegian actors use the best available expertise. Norway operates in highly competitive markets and it is important to ensure that Norwegian institutions and companies working on development projects use the best available expertise. The Embassy and Norad should set specific requirements to that effect.

Turn the Embassy into a demonstration building for renewable energy. The Embassy could together with Norwegian private sector consider making the Embassy building and residences into demonstration sites for the use of renewable energy solutions.

Prepare a specific follow-up plan as part of the annual business planning. This review has provided a menu of potential actions to strengthen the focus on climate change and environment. Even though the Embassy participated actively in the discussions with development partners this does not indicate any endorsement of the recommendations of the Review Team. The Embassy is encouraged to prepare a specific follow-up plan for how the recommendations of this review will be addressed as part of the annual business planning exercise (VP-process).

ANNEX I: TERMS OF REFERENCE (TOR)

Royal Norwegian Embassy
Luanda, Angola

January 2007

**Terms of Reference (ToR)
Review of the Embassy's Development Assistance Portfolio:
Climate and Environment**

1. Introduction and Background

According to the guidelines for Norwegian cooperation with Angola 2006-2010 the main focus of the Norwegian co-operation in Angola is to support processes aimed at good governance, peace building and poverty reduction.

Development cooperation with Angola

The primary aim of development cooperation in the period 2006–2010 is to promote good governance, respect for human rights, and responsible resource and revenue management through institutional and organizational capacity building. Norway's development cooperation with Angola will follow the country's existing national priorities, within the framework of Norway's priority areas for cooperation. Norway can offer expertise and, through cooperation with the UN, can help to ensure that Angola benefits from experience and knowledge gathered by other countries. Angola's ability and willingness to implement reforms and develop democratic processes will be important for achieving the desired results. Norway's cooperation will cover the following areas:

- energy, with an emphasis on petroleum;
- good governance and human rights; and
- education.

In these areas, Norway will have the following priorities;

Energy, with an emphasis on petroleum

- Contribute to a more transparent and sustainable management of energy resources by strengthening national competence and institutional capacity, particularly in the petroleum sector.
- Expand cooperation in the petroleum sector compared to the previous period, in accordance with the principles of the Oil for Development programme.
- Strengthen the ability and opportunities of civil society and non-state actors to review the management of energy resources and revenues.
- Contribute to increased capacity of the national private sector, possibly in partnership with Norwegian businesses.

Good governance and human rights

- Contribute to strengthening democracy, including providing assistance related to elections, with a particular focus on the participation of women.
- Contribute to reform of the justice sector.
- Continue support for decentralized public financial management.
- Contribute to activities assisting Angola in implementing the Universal Declaration of Human Rights with a particular focus on the rights of women.

Education

- Contribute to improvements in the quality of education and in efforts to increase access to education, especially for girls and women, by support to teacher training, and by strengthening the institutional capacity of the education authorities.

Other priority areas and cross-sectoral considerations:

- The gender equality perspective must be safeguarded in all Norwegian supported activities. Particular initiatives to this area can be considered. The HIV/AIDS issue should be integrated into all activities.
- Environmental considerations must be central. These will be particularly relevant in the energy sector and in relation to challenges arising between the fisheries and petroleum industries.
- Norway will continue its support for biodiversity.

Cooperation channels, roles and forms

The channels for Norwegian cooperation will be public institutions, the UN and non governmental organizations (NGO's). In the energy sector, Norway will continue to have, possible more bilateral agreements, and Norwegian institutions will be important partners. Cooperation with NGOs and UN institutions will focus primarily on good governance, human rights and education. Using the Norwegian private sector as a channel for cooperation, may also be considered to the extent that this is appropriate and does not distort competition.

Environment is thus not explicitly among the priority areas for Norwegian development cooperation with Angola. However, in order to strengthen the environmental dimension of the co-operation in the light of the increased priority given to environment and climate issues by the Norwegian Government, the Embassy in 2007 requested NORAD to undertake this review of the Embassy's development assistance portfolio.

2. Purpose of the 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'.
- Organize an internal seminar for Embassy' staff to provide staff with updated information regarding the implementation of the government's environmental action plan with a key focus on mainstreaming and operationalization of the four priority areas in the action plan. This would also include presentations on methods and approaches to undertake climate proofing and providing information on the Government's key activities targeted towards combating climate change.

3. Scope of the Review

The team will focus its Review on the following projects:

PTA number and name	Agreement and implementing partner
AGO 0012 Support to Petroleum Management	Ministry of Petroleum
AGO 2515; UNICEF Emergency Water Management	UNICEF
AGO 2529 ADPP Support to Teachers Training	ADPP
AGO 2542 Support to CEIC incl CMI co-operation	CMI and CEIC
AGO 2555 Support to civil society NPA Partnership	Norwegian Peoples Aid and their national partners Development Workshop and ADRA
Fiskeriprogrammet	NORAD, HI og Min Fisheries
New energyprogram support to energy sector re-	NORAD/SIDAECN

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The Review should focus on the development programs listed above; however, the Review Team is also encouraged to give brief information regarding issues to be aware of for the other agreements in the Embassy's portfolio.

The Embassy has also budgeted NOK 2 million for environmental activities in 2008 not yet defined as a response to the increased priority given to environment. Advice on possible use of these funds from the team to the Embassy based is welcome. The advice should be based on identification of matching Angolan and Norwegian environmental priorities and Norwegian technical and administrative capacities.

The scope of the Review is as follows:

Climate risk screening

Development cooperation programs and projects are designed with explicit or implicit assumptions about the climate in which they will function. The conventional way is to assume that the climate of the past is a reliable guide to the future. This is no longer a sufficient assumption.

The Embassy's portfolio of development programs will be screened in order to identify not only projects at risk of climate change but also those that are not climate sensitive and do not, therefore, require further risk analysis. The point of departure for this is the following question:

What is the country's, including the specific area where the development program will be implemented, vulnerability and risks from climate change and extreme weather (e.g. coastal areas, river deltas, fragile ecosystems, snow capped mountains, and dependency on agriculture, forestry, and fisheries).

This is admittedly a difficult task since climate projections are not certain and detailed enough to allow a straightforward application in development planning. Moreover, climate models have severe limitations when it comes to generating the type of information required.

Climate risks are sector – and country – or (even location) specific.

Relevant information has been sourced from national authorities and other donors.

Based on the information on the question on vulnerability and risks the Embassy's portfolio of development programs will be classified into three risk categories:

- Category 1 - High risk – full climate risk assessment required
 - Development programs with diverse and significant relationship to climate:
 - Activities in sensitive sectors (e.g. agriculture, water, energy) based on country risk profile;
 - Activities in hazard zones (.e.g. coastal zones, floodplains)
 - Activities with long (physical and economic) life
- Category 2 – Partial or moderate risk – selective climate risk assessment required:
 - Includes development programs at moderate risk:
 - Activities which may have some specific climate vulnerabilities
 - Activities which potentially increase vulnerabilities external to the project.
- 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

In addition, this screening process should enable the identification of projects that have the potential to affect the vulnerability of a system (e.g. directly affect the vulnerability of the targeted population, or indirectly, for example, by triggering new settlement in areas at risk of climate change) and increase mal-adaptation.

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.

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.

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, reduce and manage risk - save money and time, improve performance and ultimately reduce risks to the Embassy’s reputation. The development objectives of projects and programs are enhanced by integrating social and environmental considerations. Environmental issues should not be looked as a problem to be solved, but as an opportunity to enhance the quality and sustainability of Norwegian-supported development assistance programs in Angola.

It should be noted that the Review is not an audit of how the Embassy has handled environmental issues. However, the Team will indicate whether there is a need to undertake environmental assessment of development programs and whether the appropriate environmental policy marker has been used. The Team will also assess how environmental issues have been discussed in various key documents, including Appropriation Documents (ADs). This will serve as an input to the Embassy to improve its overall performance on how environmental and climate change issues are addressed.

Based on received documents from the Embassy the Review Team will undertake a desk review to identify key issues that subsequently will be discussed with Embassy staff and with representatives of cooperation partners in Angola. During these meetings additional information on the development programs will be collected, updated information on the status of project implementation will be given and preliminary findings of the 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 Angola’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 Team’s broad environmental knowledge and competence and ideas provided by representatives of cooperation partners.

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.

4. Approach to the Review

The suggested approach to the Review is as follows:

1. **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 Angola. 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 Angola.
2. **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.
3. **Meetings with key stakeholders in Angola.** 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 pro-

gram, 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 Angola should be organized.

4. 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 Angola'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 co-operation 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.
5. 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 option.
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 climate change impacts and scope of integration; 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.
8. **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.

5. Organization, Timetable, and Reporting

The Review Team will visit Angola 1 week from 27th of January to 1st of February 2008. The Review of the portfolio should be combined with a seminar for the Embassy staff on current environmental policy issues and Norwegian priorities and tools to be made use of.

The Review Team should 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 by mid February, and present a draft report, including a preliminary summary of key findings, conclusions and recommendations, upon departure. The Embassy will submit key documents to the team immediately to facilitate an initial desk study.

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Luanda, January 2008
Ambassador

ANNEX II: PERSONS MET

Organization	Name
Norwegian Embassy, Luanda	Arild Øyen Lise Stensrud Lars Ekman Paul Tharaldsen Håvard Hoksnes Åsa Bergman Amadio
ADPP	Rikke Viholm Karen Hesselberg
ADRA	Sergio Zeferino
CEIC/UCAN	Pedro Vaz Pinto Noelma Viegas
Development Workshop	Allan Cain
DnV	Nelza Fortunato
DOF	Jon Klepshvik
Institute of Marine Research	Bjørn Erik Axelsen Hans Erstad
Ministry of Energy and Water (MINEA)	National Director Francisco Talino Munzila Jackson
Ministry of Urban Development and Environment (MINUA)	Special Advisor Vladimir Russo
Norad	Jan Eriksen
Norwegian Church Aid	Berit Strømme
Norwegian Peoples Aid	Åge Skagestad
StatoilHydro	Jon Bakken Erik Holtar
UNICEF, Angola	Geoff Wiffin Dauda Wurie
YME	Taku Koning Tony Congo Sture Troli

ANNEX III: ENVIRONMENTAL DATA – ANGOLA

Angola

Environmental strategy/action plan prepared in ..

	Group data		
	Country data	Sub-Saharan Africa	Lower middle income
Population (millions)	15.5	726	2,442
Urban population (% of total)	36.5	36.4	48.7
GDP (\$ billions)	19.5	523	4,165
GNI per capita, <i>World Bank Atlas</i> method (\$)	930	601	1,686
Agriculture			
Land area (1,000 sq. km)	1,247	23,596	38,470
Agricultural land (% of land area)	46	44	43
Irrigated land (% of cropland)	2.2	3.6	23.1
Fertilizer consumption (100 grams/ha of arable land)	0	136	1,530
Population density, rural (people/sq. km of arable land)	293	355	523
Forests and biodiversity			
Forest area (% of land area)	47.4	26.5	30.7
Annual deforestation (% change, 1990–2005)	0.2	0.6	0.1
Nationally protected areas (% of total land area)	6.6	8.7	7.7
Mammal species, total known	296		
Mammal species, threatened	11		
Bird species, total known	930		
Bird species, threatened	20		
GEF benefits index for biodiversity (0–100)	9.6		
Energy			
GDP per unit of energy use (2000 PPP \$/kg oil equiv)	3.1	2.8	4.6
Energy use per capita (kg oil equiv)	606	681	1,090
Energy from combustible renewables & waste (% of tot.)	66.4	57.4	14.6
Energy imports, net (% of energy use)	–457	–59	–14
Electric power consumption per capita (kWh)	113	513	1,329
Electricity generated by coal (% of total)	..	68.0	49.4
Emissions and pollution			
CO ₂ emissions per unit of GDP (kg/2000 PPP \$ of GDP)	0.3	0.4	0.5
CO ₂ emissions per capita (metric tons)	0.5	0.7	2.6
Particulate matter (urban-pop.-weighted avg., µg/cu. m)	113	73	70
Passenger cars (per 1,000 people)	29
Water and sanitation			
Internal freshwater resources per capita (cu. m)	9,555	5,353	7,295
Freshwater withdrawal			
Total (% of internal resources)	0.2	3.1	7.7
Agriculture (% of total freshwater withdrawal)	60	87	75
Access to improved water source (% of total population)	50	58	81
Rural (% of rural population)	40	45	70
Urban (% of urban population)	70	82	93
Access to improved sanitation (% of total population)	30	36	57
Rural (% of rural population)	16	26	39
Urban (% of urban population)	56	55	78
Environment and health			
ARI prevalence (% of children under age 5)	8.0		
Diarrhea prevalence (% of children under age 5)	..		
Under-five mortality rate (per 1,000 live births)	260	168	40
National accounting aggregates, 2004			
Gross savings (% of GNI)	18.4	17.1	32.1
Consumption of fixed capital (% of GNI)	11.5	10.9	10.8
Education expenditure (% of GNI)	3.1	3.9	2.9
Energy depletion (% of GNI)	45.0	9.8	6.5
Mineral depletion (% of GNI)	0.0	0.4	0.5
Net forest depletion (% of GNI)	0.0	0.6	0.0
CO ₂ damage (% of GNI)	0.3	0.7	1.1
Particulate emission damage (% of GNI)	1.1	0.5	1.0
Adjusted net savings (% of GNI)	–36.3	–1.9	15.1

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