



***ENERGIA International Network
on Gender and Sustainable Energy***



BUILDING CAPACITY FOR GENDER MAINSTREAMING OF ENERGY SECTOR COOPERATION IN MOZAMBIQUE

GENDER AND ENERGY ASSESSMENT REPORT

Consortium: ETC/ENERGIA in association
Nord/Sør-konsulentene

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ACRONYMS AND ABBREVIATIONS

CBOs	Community Based Organisations
CDM	Clean Development Mechanism
CED	Clean Energy for Development
CNAM	The National Council for the Advancement of Women
CSOs	Civil Society Organisations
CSR	Corporate Social Responsibility
DIPREME	Provincial Directorate for Mineral Resources and Energy
DNAIA	National Directorate of Impact Assessment
DNGA	National Directorate for Environmental Management
DSM	Demand Side Management
EdM	Electricidade de Mozambique
EIS	Environmental Impact Study
ENH	Empresa Nacional de Hidrocarbonetos
ESIA	Environmental and Social Impact Assessment
ESU	Environmental and Social Unit (EdM)
FUNAE	Fundo De Energia
GFP	Gender Focal Point
GoM	Government of Mozambique
INE	Instituto Nacional de Estatistica
INP	Instituto Nacional de Petróleo
LPG	Liquified Petroleum Gas
MDG	Millennium Development Goals
MICOA	Ministry for Coordination of Environmental Affairs
MIREME	Ministry of Mineral Resources
MMAS	Ministry of Women and Social Action
MoE	Ministry of Energy
MPD	Ministry of Planning and Development
NGOs	Non-Government Organisations
OfD	Oil for Development
PARP	Action Plan for Reducing Poverty
Petromoc	Petróleos de Moçambique, Sarl
PGEI	The National Gender Policy and its Implementation Strategy.
PNAM	The National Plan for the Advancement of Women
PQG	Government of Mozambique's Five-Year Plan
SADC	Southern African Development Community
SAPP	Southern Africa Power Pool
SIA	Social Impact Assessment
ToR	Terms of Reference
WB	World Bank
WWF	World Wildlife Foundation

EXECUTIVE SUMMARY

The Norwegian Embassy in Maputo has asked ETC/ENERGIA, the international network on gender and sustainable energy, to develop a targeted and practical gender mainstreaming programme that will guide the Embassy in implementing Norway's 2007 Action Plan for Women's Rights and Gender Equality in its energy sector development cooperation.

Mozambique has well-developed constitutional and legal rights and institutional frameworks regarding gender equality. For the most part, however, government directives to promote gender equality are interpreted in terms of employment issues. Most Ministries and government agencies have not considered gender issues within the services they provide, and where they have, gender policies and strategies have not been implemented. Gender is construed to mean "women" and the emphasis has been placed on separate projects that address the needs of women, rather than mainstreaming them into core development work or addressing the needs of female employees.

Mozambican women continue to live and work at a disadvantage under a strong patriarchal culture, with heavier domestic responsibilities, inferior employment and lower income, inferior access to land, and lower levels of education and health than men. Two thirds of the population lives in rural areas, depending for the most part on subsistence agriculture, with women making up 62 percent of agricultural farmers and workers.

1. Norway's Partners in Clean Energy

Norway provides support and technical assistance to the Ministry of Energy and Electricidade de Moçambique for institutional capacity development and rural electrification. It is also considering support to FUNAE, the agency responsible for alternative technologies and biomass energy use.

a) The Ministry of Energy

The Ministry of Energy has primary responsibility for the energy sector, including electricity, biomass energy use, alternative technologies and downstream petroleum distribution and use, that is, all energy sources except upstream petroleum.

b) Electricidade de Moçambique (EdM)

The national power utility, EdM, has responsibility for the national grid network under the supervision of the Ministry of Energy. Rural household connections to the grid are very limited mainly because community members do not fully understand the benefits and affordability of electricity. As long as rural women are not aware of the benefits of electricity, access will remain low, the benefits of electrification will not reach the intended beneficiaries, and EdM's infrastructure will remain underutilized.

c) Fundo de Energia (FUNAE)

FUNAE is Mozambique's main agency responsible for the dissemination and promotion of alternative energy technologies in rural areas unserved by the grid. It is a public institution with administrative and financial autonomy, under the jurisdiction of the Minister of Energy. FUNAE's solar systems providing lighting, solar pumping and electricity for income generation have very important benefits for women. Their data collection methods and tools can be strengthened to incorporate gender information and analysis, which can then be used to mainstream gender.

1.1. Challenges in gender mainstreaming:

- Emphasis on developing infrastructure without sufficient attention to community applications, users' needs and potential productive uses: energy as an end in itself;
- Inability of technicians to reach women through lack of local language capability;
- Relevant gender policies have been developed but not implemented. Implementation

requires appropriate capacity at lower levels in national, provincial, district and local offices.

- Women are under-represented in the energy sector, especially in technical areas and at decision-making levels.

1.2. Opportunities for gender mainstreaming support:

- Need for mechanisms to consider and address users' energy needs and gender issues in energy provision and use and to include more users.
- Need for local-level market analyses to identify and increase productive uses of electricity for women's small businesses;
- Promotion of women as energy entrepreneurs in sales and servicing of home energy systems and appliances.
- Support the Ministry of Energy's Directorate of Fuels on gender aspects of petroleum product availability and use in the downstream industry, especially LPG for cooking.
- Support for managers, Directorates, Gender Units and Gender Focal Points to develop understanding of and capacity for gender mainstreaming in core work areas.
- Promotion of women's entry into technical education and training programmes.
- Identify needs of women employees and provide support for their full participation in training programs and career advancement.

2. Norway's Partners in Oil for Development (OfD)

Norway is assisting Mozambique to develop its domestic upstream oil and gas industry through the upstream industry regulator, the Instituto Nacional de Petróleo (INP, the National Petroleum Institute), and Empresa Nacional de Hidrocarbonetos (ENH), Mozambique's national oil company.

The upstream industry includes exploration for and extraction of crude oil and natural gas, while the downstream industry deals with the transportation, distribution and retailing of oil and gas products. Norway's OfD partners are in the upstream sector.

Gender issues in the upstream industry are at present mostly defined in terms of women's employment. Downstream regulation and impacts, where more direct gender linkages can be made, fall under the jurisdiction of the Ministry of Energy, and outside the scope of Norway's current development assistance.

2.1. Challenges in gender mainstreaming:

- Lack of clear gender connections in the upstream industry;
- Lack of information on gender issues and impacts of petroleum operations and of the use of social support funds;
- Inactive Gender Focal Points;
- Under-representation of women in decision-making positions.

2.2. Opportunities for gender mainstreaming support:

- Support OfD partners to develop their understanding of gender issues in the regulation and management of community impacts and in promoting women's participation in the oil and gas industry;
- Assist MIREME to formulate a gender strategy for the Ministry, as requested.
- Identify measures to support and encourage women to enter the oil and gas industry and to reach their full potential within their organizations;
- Provide information on gender issues in the upstream petroleum industry to civil society groups and journalists.

The Embassy can rely on the World Bank Petroleum Governance Initiative Study for information on gender issues in the area of local site effects of petroleum exploration and

production, at least until results are available for Mozambique.

3. Biomass energy use

Biomass, specifically wood-fuel, charcoal, and agro/animal wastes, accounts for nearly all the energy consumed in rural communities, and for 80 percent of the energy consumed by households nationally. Women are responsible for most of the collection of biomass fuels and their use and forest resources are being depleted to meet household energy requirements.

Energy for cooking is thus the primary gender and energy issue in Mozambique, in terms of its scale and impact in relation to health (eg. illnesses related to indoor air pollution and skeletal damage due to a lifetime of headloading wood), to the opportunity costs of women's efforts collecting, processing and using inefficient fuels, and to the depletion of forest resources.

Electricity is not the solution at present, since it is too expensive to use for cooking. Electricity, whether grid or off-grid, provides other major benefits for women, such as lighting, water pumping, and food processing and storage.

Liquefied petroleum gas (LPG) should be developed as a major alternative to cooking with bio-fuels. It is being used in some cities and has been marked as a priority in the national Energy Strategy. Both natural gas and LPG are superior fuels for cooking and can transform women's food preparation work, at the same time reducing the negative environmental impact of unsustainable wood-fuel and charcoal use.

3.1. Opportunities for gender mainstreaming support:

- Explore possibilities for promoting improved fuels and devices that will address women's energy needs for cooking.
- Support FUNAE in considering the gender aspects of improved stoves programmes.
- Develop the capacity of civil society organizations to work on women's energy needs.

Energy should no longer be treated as an end in itself, but rather as a key input into all human activities and the overall development of the country. Similarly, efforts and activities directed at gender mainstreaming should aim at gender equality and overall development goals.

1. INTRODUCTION

In 2007 Norway launched an Action Plan for Women's Rights and Gender Equality in Development Cooperation, which emphasised the importance of gender sensitivity in all five priority areas of Norwegian development cooperation. It states that Norway will “mainstream the gender perspective in institution building, administration and service provision in the public and private sectors, by ensuring equal participation of women and men at all levels of political and economic decision-making, and ensuring that public services equally benefit and are tailored to the needs of both sexes”¹.

The Action Plan set out Norway’s gender and energy commitments as follows.

“In its oil and energy cooperation, Norway will:

- seek to ensure the participation and safeguard interests of both women and men in connection with the implementation of the *Oil for Development* programme;
- be at the forefront of efforts to ensure that both women and men participate at all levels in the management of natural resources in partner countries;
- take a proactive role in promoting the responsible and equitable distribution of revenues from oil and energy production so that these resources benefit all population groups, and both women’s and men’s needs and priorities are taken into consideration in the management of these revenues;
- contribute to the creation of jobs and livelihoods for both women and men in connection with the oil industry and in the production and distribution of clean energy;
- support sustainable, safe energy solutions that ease women’s burden of work and improve their access to health services and education;
- support the development and use of clean energy solutions, such as solar energy, that reduce indoor air pollution;
- promote the active participation of women in decision-making and implementation processes relating to the supply of water and energy to workplaces and households.”

The Norwegian Embassy in Maputo is a pilot embassy for the implementation of this Action Plan. A gender assessment of the Embassy’s development portfolio in Mozambique conducted in 2009 focused on support to fisheries and soya bean production, and did not cover the Embassy’s energy sector support.

The Embassy has asked ETC/ENERGIA, the international network on gender and sustainable energy, to develop a targeted and practical gender mainstreaming programme that will guide the Embassy in implementing the Action Plan within one or both of the key priority energy areas for Norwegian development cooperation in Mozambique: clean energy for development (CED) and oil for development (OfD).

The purpose of the assignment is “to assess the needs and possibilities for strengthening gender mainstreaming within the Norwegian Clean Energy and/or Oil for Development cooperation in Mozambique and to propose a targeted programme of support, argued in relation to Norwegian energy and/or petroleum sector cooperation in Mozambique and the Action Plan for Women's Rights and Gender Equality in Development Cooperation”.

Gender mainstreaming is the systematic integration of the respective needs, interests and priorities of women and men in all policies and activities of an institution. It requires:

- a) Continuous assessment of the implications and effects of energy-related projects and policies on women and men.
- b) Designing and implementing strategies and actions that aim to better address the needs of women and men, improve their well-being, and facilitate their participation in the development process.
- c) A mechanism for ensuring this is done and for reporting to managers.

¹ <http://www.regjeringen.no/upload/UD/Vedlegg/Utvikling/ActionPlanwomensRights.pdf> p.30

A three-member ETC/ENERGIA team² spent February 14 to 18, 2011 in Maputo to assess the context and to scope the assignment. They returned for a second mission from April 4 to 15 to complete a gender and energy assessment, during which they spent April 7-10 visiting communities affected by an electrical line extension in Niassa province. This document is the report of that second mission and the gender and energy assessment.

The following section summarizes the socio-economic context and the situation of women in Mozambique, with a description of the national gender policy and institutional framework. Section 3 identifies gender and energy issues in energy supply and consumption by subsector and major institutions. Section 4 identifies gender-related issues in Norway's current energy sector programming, with challenges and opportunities. The next steps required to complete the proposal for a gender mainstreaming programme of support are set out in Section 5.

² Dorothy Lele, The Human Dimension, Canada, Chandirekera Mutubuki-Makuyana, Practical Action Southern Africa, Domingos Neto, Kwaedza Simukai Manica Association, Mozambique

2. SOCIO-ECONOMIC AND GENDER CONTEXT

2.1. Poverty and Gender Context

Mozambique has had almost 20 years of reconstruction and economic recovery since its devastating civil war ended in 1992, but it is still struggling against high levels of poverty throughout the country, and especially in Maputo, Zambezia and Gaza provinces. The 2010 UN Human Development Index ranked Mozambique at 165 out of 169 countries. Almost 55 percent of the population of 21.2 million lived below the national poverty line in 2010 and only 42 percent of them have access to improved water sources.³

In spite of the Government's emphasis since Independence on gender equality and women's empowerment, women continue to live and work at a disadvantage under a strong patriarchal culture. They "still have heavier domestic responsibilities, inferior employment and lower income, inferior access to land and lower agricultural production, and lower levels of education and health than men"⁴. More families headed by women still fall below the poverty line (57.8 percent) than those headed by men (53.9 percent), although the difference decreased between 2003 and 2009.⁵

Table 1 Development Indicators 2007/08⁶

	Male	Female	Total
Population size (millions)	10.2	10.9	21.2
Proportion of population living below the national poverty line (%)	53.9	57.8	54.7
Ratio of employed people to total population (%)	72.2	77.6	74.6
Life expectancy at birth (years)	49.8	54.3	51.3
Adult literacy rate (15 years and above, %)	65.5	35.9	49.7
Estimated earned income (PPP US\$)	848	759	HDR

Source: INE, MICS 2008

Two thirds of the population lives in rural areas, depending for the most part on subsistence agriculture, with women making up 62 percent of agricultural farmers and workers, compared with 38 percent of men. 80 percent of the labour force works in agriculture, but agricultural production contributes only 25-30 percent of the GDP⁷.

The third Poverty Assessment presents evidence of significant progress in a number of non-monetary poverty indicators both nationally and regionally, including major improvements in access to education (both primary and secondary), improved access to health services, particularly in rural areas, increases in household ownership of durable goods, and improvements in the quality of housing. These results show significant positive trends of long-term development, as well as success in achieving strategic government priorities. It should be noted that although the trends are positive, the levels remain low⁸.

Poverty levels and trends vary significantly throughout the country. Southern areas (both rural and urban) show the largest increases in the use of electricity for lighting and access

³ Republic of Mozambique, *Report on the Millennium Development Goals 2010*, p.8.

⁴ See the Chr. Michelsen Institute's studies on gender and feminisation for a comprehensive analysis of gender inequalities and regional differences: Inge Tvedten, Margarido Paulo, Georgina Montserrat, *Gender Policies and Feminisation of Poverty in Mozambique*, CMI Report, 2008.

⁵ "In the 2008/09 period there was an increase in the incidence of poverty in the families headed by men (from 52% in 2002/3 to 53.9% in 2008/9) and a reduction in the incidence of poverty in the families headed by women, from 62.5% to 57.8%." Republic of Mozambique, *Report on the Millennium Development Goals 2010*, p.11.

⁶ Republic of Mozambique, *Report on the Millennium Development Goals 2010*, p.8.

⁷ Value added in 2009 as % of GDP: Agriculture 29 %; Industry 24%; Services 47%. World Development Report 2011, p.313.

⁸ Republic of Mozambique, *Action Plan for Reduction of Poverty 2011-2014*, Draft March 2011, p.6.

to a toilet or latrine inside the house. The central and northern rural areas, on the other hand, indicate much slower progress, with considerable regional variation in part linked to the poor roads networks. In general, people in urban areas have better access to education and health services than the population in rural areas. Women, children, the elderly, the disabled and the chronically ill are more vulnerable than the rest of the population.

The life situation and condition of women is most severe in rural areas, particularly in the Northern provinces⁹. Female-headed households in rural Mozambique are the most marginalised and excluded, with lack of secure rights to land, housing and other key resources.¹⁰

More women are economically active than men but the vast majority of them work in unskilled and low-paid jobs. "As many as 95.3 percent of the working women in Mozambique are either unskilled agricultural labourers or unskilled non-agricultural labourers", which means that they work in the informal economy where wages are considerably lower than in formal sector skilled jobs.¹¹

"The informal economy in retail, service and production is becoming an important alternative source of subsistence and income for women, particularly in urban areas... The structural changes of urbanisation and commodification have opened up new space for women in a context where 30 percent of the Mozambican population live in towns and cities. Having said this, as many as 40 percent of urban households continue to be involved in agriculture in one way or another..., either through urban-based production or by 'splitting' households in an urban and a rural unit on a temporary or semi-permanent basis."¹²

In spite of these continuing gender inequalities, Mozambique scored the highest position of low income countries on the World Economic Forum's Gender Gap Index, at 0.7329 out of a possible score of 1, ranking 22nd out of 134 countries. "Amongst low income countries, Mozambique comes top, while among African countries it is in third position, beaten only by Lesotho and South Africa."¹³ Mozambique's high scores on such indices are mainly due to the high number of women in politics (mostly Parliament) and equality of men and women before the law.

2.2. The Action Plan for Reducing Poverty (PARP)

The Government's Five-Year Plan (PQG) 2010-2014 provides the country's general policy framework, objectives and areas of priority action. The complementary Action Plan for Reducing Poverty (PARP) 2011–2014, is the Government's medium-term strategy aimed at operationalizing the Five Year Programme 2010-2014 in order to achieve inclusive economic growth and reduce poverty and vulnerability in Mozambique.

The PARP is a successor to the Action Plan for the Reduction of Absolute Poverty 2006–2009 (PARPA II) and defines the Government's strategic vision for the reduction of poverty, the main objectives and the key activities to be implemented, and guides the preparation of annual budgets, programmes and policies.

The Draft PARP for 2011 to 2015 has three main aims:

1. Increase productivity in agriculture and fishery
2. Job creation and income generation
3. Human and social development

⁹ Tvedten et al, 2008, p.15

¹⁰ Tvedten et al, *Gender and Poverty in Northern Mozambique*, 2009, p. 39

¹¹ Tvedten et al, *CMI Report*, 2008, p.17-18.

¹² Ibid, p.18-19

¹³ allAfrica.com, Oct.12 2010, <http://allafrica.com/stories/201010121031.html> The index measures the gap between men and women, using indicators of economic participation and opportunity, educational attainment, health and survival and political empowerment. Mozambique's UN Gender Inequality Index (GDI) for 2010 was 0.718, ranking 111 of 137 countries. *Human Development Report 2010*, p.159

The energy aspects of development have a specific chapter in the PARP but are also addressed as an underlying requirement, especially for the first two priorities of increasing productivity and job creation.

Under 1. Increase productivity, the focus is set on access to infrastructure for productive uses of which energy is a basic requirement.

Under 3. Human and social development, the focus is set on access to energy in rural schools and health centres.

In general the new PARP gives priority to the agricultural and fisheries sectors, as they are pillars of the country's economy, contributing over 25 percent of the Gross Domestic Product and between 7 and 11 percent of the growth rate of the economy over the past five years. The most important actors in the agricultural sector are small rural households responsible for the use of 95 percent of total cultivated land, many of them headed by women.

It is not yet clear how gender differences and issues will be integrated and mainstreamed into the new PARP.

2.3. Gender Policy and Institutional Framework

2.3.1. Constitutional Guarantees

The Constitution of the Republic of Mozambique (November 16, 2004) guarantees that “men and women shall be equal before the law in all spheres of political, economic, social and cultural life” (Article 36). Mozambique has well developed constitutional and legal rights regarding gender equality and is a signatory to all relevant international instruments.

2.3.2. The National Council for the Advancement of Women

The first National Plan for the Advancement of Women (PNAM 2002-2006) was formulated in 2002. The National Council for the Advancement of Women (CNAM) was created in 2004 as a consultative body through which the Ministry for Women and Social Action carries out intersectoral coordination, with the main goal of promoting and monitoring the implementation of the government's gender policies in all Government plans and programmes (PQG, PARP), including the National Plan for the Advancement of Women and the Gender Policy and its Implementation Strategy.

The Minister of Women and Social Action heads the CNAM, which is comprised of: seven Government Ministers¹⁴; two NGOs (Fórum Mulher and the Community Development Foundation); two representatives from religious groups (the Christian Council of Mozambique and the Catholic Church); a representative from the union (the Mozambican Workers Organisation, OTM) and a representative from the private sector (Confederation of Economic Associations, CTA).¹⁵

The CNAM is made up of two bodies: the Executive Secretariat, responsible for the management and implementation of activities, and the Technical Council, which is made up of the Gender Focal Points from the Ministries with Gender Units¹⁶ and representatives from other public institutions.

¹⁴ The Minister of Finance as Vice-President, Minister of Health, Minister of Education and Culture, Minister of Agriculture and Rural Development, Minister of State Administration, Minister of Youth and Sports, Minister of Labour.

¹⁵ Tvedten et al, *CMI Report*, 2008, p.39

¹⁶ Ministries with gender units include: the Ministries of Education and Culture; Health; Agriculture; Women and Social Action; Youth and Sports; Defence; Interior; Mineral Resources; Science and *Technology*; *Fisheries and Foreign Affairs*.

2.3.3. The Gender Coordination Group

In 1998, a joint initiative of the United Nations agencies and bilateral donors created the Donor Gender Group, with the objective of creating mechanisms for the coordination and exchange of information on activities in the promotion of gender equality (Collier, 2006:16). Later on, this group was transformed into the current Gender Coordination Group (GCG), which includes government and civil society representatives, as well as multilateral and bilateral donors.

“The objectives of the Gender Coordination Group (GCG) are to: (i) strengthen the coordination and ensure in depth political dialogue between the Government and the other stakeholders regarding gender issues; (ii) support the effective operation and monitoring of policies aimed at promoting equity in the gender relations included in the PARPA and PGEI, including legal reform; (iii) contribute to the analysis and research of policy-related gender issues, focusing on the PARPA and PGEI; (iv) support coordination mechanisms targeting gender issues at provincial level; and (v) strengthen the capacity of its members and other stakeholders to analyse gender issues and advocacy strategies.”¹⁷

2.3.4. National Gender Policy and Strategies

The Government approved its Gender Policy and Implementation Strategy (PGEI) in May 2007, with the goal of promoting and improving the effective participation of women and men in the country’s development process and guaranteeing women’s empowerment and the elevation of their status. It is guided by seven general principles, including gender mainstreaming and is aimed at five major fields of action: political, economic, juridical socio-cultural, and defense and security. Although energy is relevant to many of the strategic actions, especially economic, it is not mentioned.

Several Ministries have produced gender strategies which have been approved by the Council of Ministers including Health, Environment, Agriculture, Public Works and Education, but not as yet the Ministry of Energy. The National Council for the Advancement of Women reports once a year to the Council of Ministers on progress on these gender strategies.

Once a gender strategy is approved, it has legal force, which is why it is important to have the Gender Strategy of the Ministry of Energy approved.

2.3.5. Women’s presence and representation

Mozambique’s statement to the UN General Assembly in 2009 reported high levels of women’s representation at all levels of government for the period 2005-2009: 37 percent of Parliamentarians, 24 percent of Cabinet Members, 26 percent of ministerial Permanent Secretaries, and at local levels 36 percent of 11 provincial Permanent Secretaries and 30 percent of 790 Municipal Members.¹⁸

The presence of women in local administration decreases from the central to the provincial and district levels, “with the participation of women at the lowest level of district administrators and heads of administrative posts, which are most visible and directly involved with the local populations, still being very weak”¹⁹.

¹⁷ Tvedten et al, *CMI Report*, 2008, p.44

¹⁸ <http://www.un.org/womenwatch/daw/documents/ga64/14/Mozambique.pdf>

¹⁹ *CMI Report*, p.34

2.3.6. Gender Mainstreaming

The fourth United Nations World Conference on Women in Beijing in 1995 adopted a mainstreaming strategy in its Action Platform, “where it was specified that governments and other stakeholders should promote an active and visible policy for the cross-cutting integration of gender in all public policies and programmes.”²⁰

The Government of Mozambique began a gender mainstreaming process immediately following the adoption of this Action Platform by creating different institutional mechanisms such as gender units and gender focal points, which are now present in most government Ministries.

Gender mainstreaming

The integration of gender issues in all development policies and interventions was established as a global strategy for the promotion of gender equality in the Action Platform adopted at the United Nations Fourth International Conference on Women, held in Beijing in 1995. In July 1997, the UN Economic and Social Council defined the concept of *gender mainstreaming* as:

‘Mainstreaming a gender perspective is the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women’s as well as men’s concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal of mainstreaming is to achieve gender equality.’

“In those Ministries considered particularly relevant to gender issues, such as education, health and agriculture, there are Gender Units responsible for coordinating the focal points at each of the Ministry’s national directorates, as well as at the provincial directorates. The role of these Gender Units is to influence the planning and budgeting processes and to act as catalysts, by placing gender issues on the agenda of the sector programmes. In this sense, the Gender Units are the key to gender mainstreaming within their respective ministries and directorates.”²¹ In practice, however, Gender Units have been very weak and there are serious discrepancies between policies and practice: commitments are not translated into action, allocation of funds or human resources. In most cases, documents describe broad intentions but without any operational plan for implementation.

Responsibilities for gender and HIV/AIDS are often combined in the same Focal Point.

The Government introduced a major decentralization program in 2006 through the District Decentralization Programme, with Community-Based Plans and allocation of funds to all Districts. Gender focal points have been introduced at district level.

The percentage of women in formal employment is about 5.5 percent. Various projects have been funded by several organisations to build the capacity of women for improved employment. The UNDP, UNFPA and UN Women have partnered with MMAS to undertake projects that promote women’s empowerment in Mozambique. The ILO has funded a project to integrate gender in the Ministries of Labour, Industry and Commerce, Police and Home Affairs.

2.4. Civil society

There is no known non-governmental organization that focuses on energy issues active in Mozambique, including ETC/ENERGIA, but there are several working on gender equality and women’s issues.

2.4.1. Forum Mulher

Forum Mulher is a network of organizations working on women’s rights, including community-based organizations, national and international NGOs, women’s leagues from

²⁰ CMI Report, p.38

²¹ CMI Report, 2008, p.41

trade unions and political parties, university research agencies and Gender Units of Government Ministries.

Forum Mulher is one of Norway's partners, funded directly, as well as through two projects in the area of sexual health and politics.

The national office based in Maputo is a Secretariat with 12 technical staff and 6 support staff. Forum Mulher's five programme areas are:

- Gender-based violence;
- Gender and economy;
- Sexual and reproductive rights;
- Political participation; and
- Capacity building.

Their main goal is gender equality and improving the status of women. Advocacy is their core business as well as government planning and budgeting. They participate in different working groups and dissemination of information. Some of their activities involve training of trainers and participation in forums including the National Council for the Advancement of Women and the National Council for Economic Empowerment. At the regional level, they partner with other organisations such as the Commission for the Status of Women.

Forum Mulher does not have provincial branches and instead strengthens the capacities of network members to develop their own local networks. There are about 40 implementation partners. In Niassa, Zambezia and Tete provinces there are affiliate offices. The network in Zambezia is called NAFEZA (Nucleus of Feminine Association of Zambezia) which started in 1997 and took off in 2007. NAFEZA is now a member of Forum Mulher. The network for Tete is called NAFETE and that of Niassa is called FOFEN. Another network is starting in Inhambane.

Forum Mulher has a strong commitment to community participation and their approach is to reach people by raising awareness and training. They disseminate information through training of trainers, believing that only when people have knowledge about an issue, can they be enabled to lobby for the rights of women. They value and involve community leadership, particularly political leadership, and use local people for translation, since a lot of women do not speak Portuguese.

The network and its partners have no knowledge or experience in energy sector issues but are well-grounded in initiatives for gender equality. There are good possibilities for combining training and community organization mechanisms with specific energy technologies through this network.

2.4.2. The Foundation for Community Development (FDC)

The Foundation for Community Development is a leader in the area of HIV and AIDS and the Norwegian Embassy is one of their largest donors. A programme replacing old kerosene refrigerators with gas cylinders (LPG) for health clinics was included as part of a Vaccination Programme for women and children aged 0 – 5 years.

This NGO operates throughout the country and focuses on health, education, food security, nutrition, water and sanitation and rural women.

FDC is a member of Forum Mulher. They work through local partner organisations for implementation, one of which is an organisation called FOMMUR that deals with rural women.

FDC would be interested in including energy initiatives within their programme areas.

3. GENDER AND ENERGY ISSUES IN ENERGY SUPPLY AND CONSUMPTION

3.1. Government responsibility for gender equality in the energy sector

The energy industry is focused on the supply of energy services: building and maintaining infrastructure and delivery systems. That is its purpose. It is the Government that directs its larger purpose – as a means to the larger end of promoting socio-economic development. Energy suppliers see energy users as customers, for payment and repairs, whereas the Government is concerned about how users can improve their lives and incomes through improved energy services. The major energy suppliers in Mozambique have a wider development mandate than private companies, through their government mandates.

Energy by itself is of little value, but modern and cost-efficient forms of energy are an indispensable factor in improving the productive capacity of individuals (male and female), communities and the society. Efficient energy use requires not only access to operating and investment capital, but also to skills, market access, more complete information, and transportation and communications systems. This is why more support is needed than a particular energy service (eg. electricity, gas products).

Mozambique has substantial energy resources, ranging from fossil fuels (natural gas and coal) to renewable energy sources (biomass, solar, hydro, wind, geothermal and tidal sources of power), which are now in various stages of development. It is a vast country, however, with the majority of its population living in small, dispersed rural communities, unconnected to the grid and with a poor road network. Access to modern sources of energy is very low, to a large extent due to the high cost of providing grid-based electricity (due to the scale and terrain) and alternative technologies in scattered and relatively low-demand areas.

Maputo City has by far the highest electricity consumption and about 25 percent of Maputo residents use liquified petroleum gas (LPG) for cooking.²² In most provinces, paraffin (kerosene) is the main lighting fuel. Over the last few years, solar photovoltaic energy has been gradually adopted in schools and health centres, and in telecommunications and other businesses in rural areas.

Total primary energy supply 2006 Mozambique
Share of fossil fuels:
• natural gas 0.3 %
• oil 6.6 %
Share of renewable energy:
• hydro, solar, wind and geothermal 14.4 %
• biomass and waste 81.6 %
• no nuclear
Electricity consumption per capita: 461 kilowatt-hours
Source: <i>World Development Report 2010</i> p.365

The country's main energy issues on the demand side are the availability, accessibility and quality of energy services, especially in rural and peri-urban areas, and their affordability to poor households and businesses. Considering that over half of the population falls under the poverty line, it is very difficult to supply modern energy services to households at affordable prices, but there is great potential for benefits to the poor of community services such as clinics, mills and schools.

Gender issues intersect these energy issues in three main ways: the responsibility of women for household management and operations, including energy, rising levels of poverty among women (especially in female-headed households), and women's lower access to information, opportunities and new services. These realities have important negative consequences in low productivity and the family's health, nutrition and general wellbeing.

²² IISD, *Energy Security in Mozambique*, p.13

Women are responsible for most of the energy use in households, especially in rural areas, and for the collection of biomass fuels for cooking and lighting. Biomass, specifically woodfuel, charcoal, and agro/animal wastes, accounts for nearly all the energy consumed in rural communities, and for 80 percent of the energy consumed by households nationally²³. As a result, it is estimated that 16,000,000 m³ of forest resources are burnt every year to meet household energy requirements.”²⁴

Energy for cooking is thus the primary gender and energy issue in Mozambique, in terms of its scale and impact in relation to health (eg. illnesses related to indoor air pollution and skeletal damage due to a lifetime of headloading wood), to the opportunity costs of women’s efforts collecting, processing and using inefficient fuels and to the impact on forest resources.

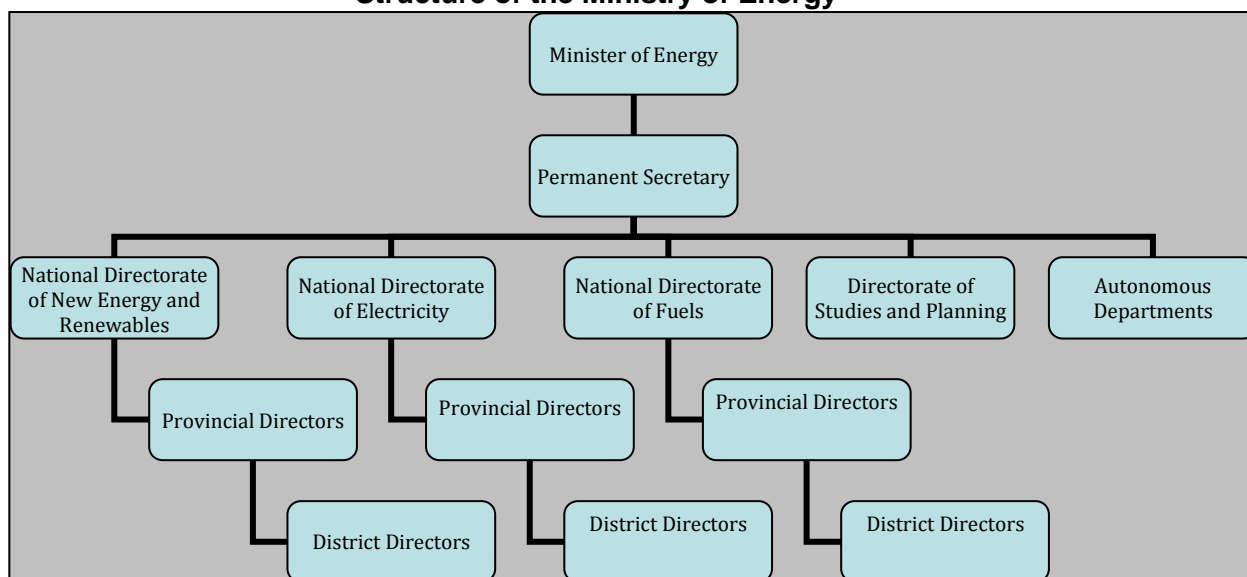
The Government of Mozambique requires all Ministries to promote gender equality. This directive is mainly interpreted in terms of employment issues. For the most part, the Ministries and agencies we met have not yet identified or considered gender issues within their services.

3.2. The Ministry of Energy

The Ministry of Energy has primary responsibility for the energy sector, including electricity, biomass energy use, alternative technologies and downstream natural gas distribution and use. It is a new Ministry, separated from the Ministry of Mineral Resources and Energy in 2005, and is organized into the following Directorates and Departments:

- 1) National Directorate of New and Renewable Energy – FUNAE is the implementation agency for this Directorate. This directorate deals with biomass energy and alternative energy, including wind, solar and small hydropower.
- 2) National Directorate of Electricity
- 3) National Directorate of Fuels
- 4) Directorate of Studies and Planning – The Environmental Unit is part of this Directorate.
- 5) Autonomous Departments: Administration and Finance, Human Resources, International Relations, and IT.²⁵

Structure of the Ministry of Energy



²³ Ministry of Energy, *Energy Strategy 2009-2013*, p.2

²⁴ Ibid, p.6

²⁵ Ministry of Energy, *Institutional Capacity Development of the Ministry of Energy – Mozambique, Feb 2010*

The Ministry has responsibility for developing all energy sources except upstream petroleum. The Ministry's Energy Strategy 2009-2013 (approved in 2008) "is aligned with the Government's vision to reduce poverty, PARPA, as well as Government policies to promote economic development" and aims "to prepare the country for transition to a future of sustainable energy, expanding the energy supply matrix, prioritizing local energy sources and safeguarding access to modern forms of energy for ever growing groups of the population".²⁶

The Energy Strategy sets out targets and strategies for the development of all energy sources: LPG production, natural gas distribution, coal, hydropower, wind power, geothermal energy, biomass energy, biofuels and solar power. Section 8.5 on Gender recommends strengthening of the Ministry's Gender Unit, training in gender analysis, improving women's participation in the sector and monitoring gender issues²⁷. The Ministry intends to set up pilot projects for clean energy for families through FUNAE, including Energy Community Centres, lighting systems, biofuels, multipurpose platforms, pumping water, commercial biodiesel projects, and agroforestry.

The Ministry has a Gender Strategy for the Energy Sector, a Gender Unit and Gender Focal Points, which is directed towards increasing women's access to various types of energy services and technologies. The thinking is to develop separate, specific projects and initiatives to benefit women, but the Strategy has not yet begun implementation. The Ministry of Energy plans to involve the Ministry of Women and Social Action (MMAS) to assist them in developing a list of priority activities for investors to support under their Social Responsibility programs.

The Minister of Women and Social Action sees energy services as very important in contributing to government efforts in reducing women's poverty and increasing their employment. Electrification programs, both EdM grid power and FUNAE's off-grid power, make enormous differences in women's education, training and health, through lighting, water pumping and refrigeration in schools and health centres.

The Minister of Energy points to major increases since 2004 in the numbers of people benefiting from solar lighting and water pumping. More information is needed on the impacts for women at District and local levels of Ministry efforts.

The Gender Strategy states that in 2007 the Ministry had 120 workers at central level, of whom 47 (39.12%) were women compared with 73 (60.8%) men. There were 10 women in decision-making positions, compared with 19 men. Petromoc, the national gas retailer, employed 552 employees at that time, of whom 98 (17.7%) were women. Of these, 15 occupied decision-making positions, as against 19 men.

The Government recognizes the need to bring more women into the labour force and at decision-making levels in all energy institutions and to recruit young women to enter engineering and technical streams.

Gender mainstreaming was discussed at a joint meeting of the MoE and the MMAS, and it was agreed to arrange a gender mainstreaming workshop for MoE Directors during the next ETC/ENERGIA mission, in which MMAS will participate. The ETC/ENERGIA Team was asked to assist the Ministry by presenting an action plan as an example of what is needed.

²⁶ Ministry of Energy, *Energy Strategy 2009-2013*, p.1-2

²⁷ *Ibid.* p.48

3.3. The National Power Grid: Electricidade de Moçambique (EdM)

Most of Mozambique's electricity is generated from hydropower plants and is supplied through three types of systems: the national grid, mini grids and independent systems. The national power utility, Electricidade de Moçambique (EdM), has responsibility for the national grid network under the supervision of the Ministry of Energy (MoE). The MoE is responsible for mini grids through its provincial directorates of energy.

EdM also operates numerous off-grid and back-up generators. All provincial capitals are connected and EdM is now in the process of connecting all district capitals, a very expensive undertaking.

EdM has great difficulty in reconciling its objectives of economic viability with subsidized power provision to dispersed low-income communities. Electricity from the main grid reaches 736,085 customers, about 15 percent of the population, mostly in urban areas. The vast majority of these connections are for domestic customers, most of whom pay the social tariff rate.

Table 2 EdM Customers 2009

Customer Category	Number of Customers	Percentage
Domestic	680583	92.5
Commercial	51460	7
Agricultural	35	Less than .01
L.V.B.C.	2028	0.27
Medium and High Voltage	1979	0.27
Total	736085	100 +

Source: EdM, *Annual Report 2009*, p.14

Baseline studies for rural electrification programs in Cabo Delgado, Niassa, Nampula and Zambezia Provinces have pointed to major difficulties in connecting enough customers to pay the cost of extending the grid to dispersed settlements with small populations.²⁸ The problem is very few large customers, very low incomes of the majority of the population, and insufficient understanding of the advantages that electric power can bring. "The connection and metering costs for domestic and small businesses make it clear that the investment cost for the extension of the national grid will not be recoverable from the revenue of domestic power sales."²⁹

EdM would like to promote electricity for cooking, but it is too expensive for most households to use for all their cooking needs. "On the other hand, as grid electricity is cheaper than any other form of supply, women will benefit from it in many other ways."³⁰

Low-income households qualify for the social tariff, which costs Mt875 as a contract (connection) fee, and provides 2-5 kWh/month at Mt.97/kWh (half the regular rate). Customers are given a 'Ready Board', a self-contained board holding a meter, light and two plugs. A random check on bills for rural families visited near Lichinga, Niassa, indicated that a household on social tariff is billed a minimum of Mt12 per month, whereas a family on the domestic tariff is billed a minimum of Mt180 to Mt 200/month. Since low-income rural families are spending a minimum of Mt30 per month on paraffin for lighting, they can afford the rate that EdM charges, but often have difficulty paying regular monthly charges.

On our community visits in Niassa, we found a general lack of knowledge among unconnected households of the level of monthly costs for electricity, and widespread fear

²⁸ Scanteam and EconPolicy, *Final Report: Baseline Study for Rural Electrification of Cabo Delgado Province*, 14 August 2010; EDM and SIDA, *Socio-Economic Baseline Studies on Rural Electrification Projects in Niassa, Cabo Delgado, Nampula and Zambezia Provinces, Mozambique*, Final Report, April 2009.

²⁹ *Baseline Study for Rural Electrification of Cabo Delgado Province*, p.45

³⁰ *Ibid*, p.46

that they would not be able to pay monthly bills. We also found a couple of cases of bills that fluctuated widely from month to month for no apparent reason, which is causing great concern.

EdM used to have a Gender Focal Point, but not at present.

Gender issues in electrification consist of:

1. Gender differences in access and affordability

- Responsibility of EdM Commercial Directorate

Some possibilities emerged from our visit to rural electrified communities for increasing the number of households connected to grid line extensions. Household members, both women and men, need additional information to understand that the social tariff rate would cost them less than they are currently paying for lighting with paraffin, candles or batteries (see Annex 3 for more details). Access to modern energy services would make enormous differences in women's household work and in taking the step from small-scale informal traders to larger entrepreneurship.

This situation is similar to rural areas of the United States and the Netherlands 60 to 70 years ago. At that time, the electric utility in the Northern (more rural) part of the Netherlands had a "consumption development department" with the purpose of making potential customers aware of the benefits of electric appliances, including electric cooking utensils, and to increase demand. To that end, women's groups were established in various regions of the province and woman employees of the utility led the meetings in the local language.³¹

2. Gender differences in community relations and customer services

- Responsibility of EdM Commercial Directorate

We found that women and female-headed households are limited in their access to information by their lack of understanding of Portuguese, which most EdM staff use. They need additional information and market analyses to understand the potential of electricity for both productive and domestic purposes. There may be additional measures that EdM can take to reach female customers, such as women speaking local languages demonstrating the use of electrical appliances. There are some indications that higher numbers of female-headed households disconnect.

3. Employment equity in energy supply institutions

- Responsibility of EdM Human Resources Directorate

Women made up 17.5 percent of EdM's workforce in 2009³². According to the Director of the Electrification and Project Directorate, 99 percent of these women work in administration. For women to take up technical careers, it would be important to promote these possibilities in the technical schools, which are the source of 80 percent of EdM's workforce.

4. Local effects and impacts of energy development

- Responsibility of Environment and Social Unit

There are several gender issues within the local effects and impacts of energy development projects, including:

1. population displacements and resettlement: women often suffer more from the loss of their household assets and social support networks;
2. disruptions in natural ecosystems from flooding, reduced water flows or the clearing of forests, with differing impacts on men's and women's livelihoods;
3. economic changes: new roads, businesses and communications systems, in-migration of large numbers of men for jobs can disrupt women's traditional livelihoods, if mitigation measures are not taken;

³¹ Comments from Dr. Ad Zomers, Peer Reviewer, June 13, 2011

³² EDM, *Annual Report 2009*, p.32

4. social changes and conflicts resulting from resettlement and disruptions in community structures and networks, with possible negative consequences for women's status and resources available to them.

3.3.1 Possibilities for gender mainstreaming support:

The newly established Environment and Social Unit is responsible for preparing Environmental Impact Assessments for EdM projects and is interested in support for gender mainstreaming in their work.

3.4. Alternative Technologies and Biofuels

3.4.1 Fundo de Energia (FUNAE)

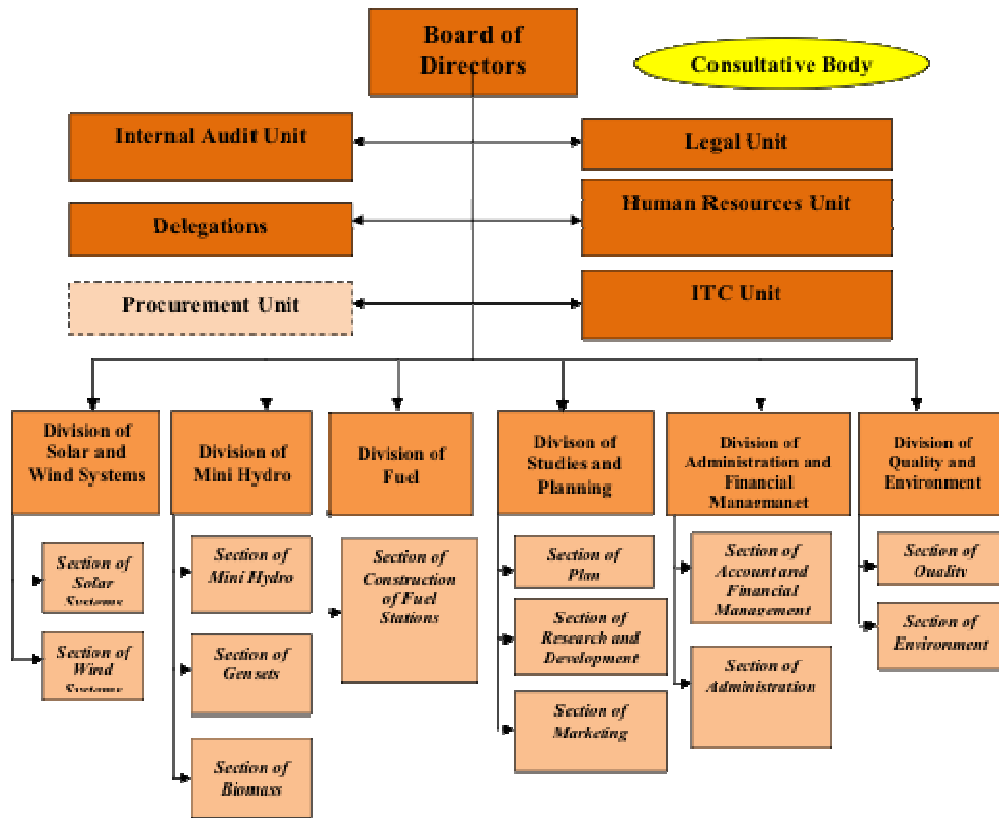
FUNAE is Mozambique's main agency responsible for the dissemination and promotion of alternative energy technologies in rural areas unserved by the grid. It is a public institution with administrative and financial autonomy, under the jurisdiction of the Ministry of Energy.

It currently has a staff of 112 with 3 decentralized delegations (offices): one in Sofala that serves Sofala and Zambezia, one in Tete that serves Tete and Manica, and one in Nampula serving Nampula, Cabo Delgado and Niassa. There is also a representative based in Niassa under the Nampula delegation and FUNAE is in the process of placing another representative in Manica. Delegations work with DIPREME (the Provincial Directorate for Mineral Resources and Energy) in each province. At the district level, FUNAE works with local government, which assists in identifying locations for projects. Each project has a project manager, supported by several specialists, including a socio-economist (sociologist) at head office.

FUNAE's solar systems provide crucial energy services to rural women, as well as men. From 30 to 50 percent of students in electrified schools are girls and often all the patients using health clinics are women. The impacts of lighting, solar pumping and electricity for income generation are very important for women. Gender disaggregated data would provide useful information on gender differences in needs and benefits.



ORGCHART OF FUNAE



FUNAE's approach is as follows:

1. FUNAE assesses needs in each project site and develops tender documents,
2. FUNAE contracts a private company to provide and install the systems;
3. FUNAE contracts an independent Inspector to check on implementation;
4. FUNAE returns to each site to monitor it.

FUNAE's Approach

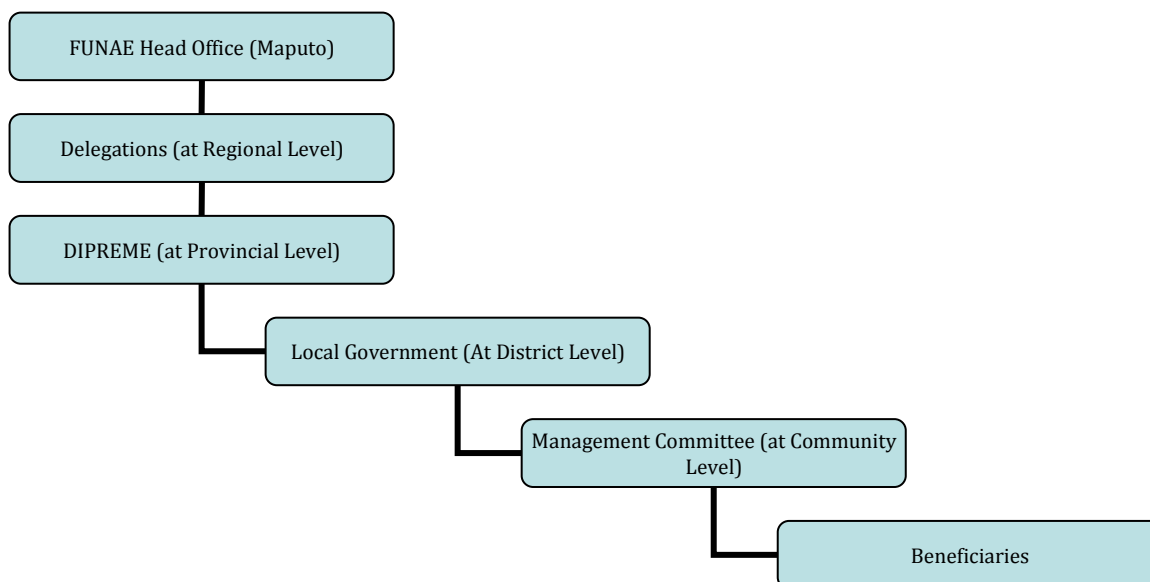


Table 3 Personnel Gender Balance at FUNAE

	Officers		Division Heads	
Men	79	69.9%	11	61.1%
Women	34	30.1%	7	38.9%
Total	113	100	18	100

The Board of Directors is comprised of four members, the President, Vice-President and two Administrators, two of whom are women.

FUNAE works through local Management Committees, which include local leadership, civil servants and community representatives, usually with equal representation of men and women, according to FUNAE's request. They are responsible for the collection of payments and the operation and management of the decentralised schemes that FUNAE set up. Difficulties in the collection of service fees must be resolved for the sustainability of the services.

The ETC/ENERGIA Team reviewed assessment and tender documents and monitoring and inspection reports for sample biomass, microhydro, and solar photovoltaic projects. This review showed that FUNAE uses a community needs assessment approach. Male and female community members are interviewed to assess their needs and interest in a range of predetermined products. It is possible that this could be a limitation if the technologies offered do not suit local needs and conditions.

We noted that most of the respondents listed in the woodstove assessment were men. Since the main users of the improved cookstoves being offered are women, there is a risk that the men interviewed may have different preferences than women, perhaps based on cost rather than utility. A woman may have preferred a wood stove, while her husband chose a charcoal stove. Different reasons for preferences will influence the ultimate adoption rate and use of the products.

We therefore suggest that women should be consulted separately from men during the survey and questionnaire process, under conditions that free them to speak openly – such as women’s focus groups led by women in the local language. Local conditions of cooking, housing, types and sizes of pots used, placement of stoves and priorities for the women should be identified before presenting specific stove options. Suitable options should be chosen to match the conditions identified.

In addition, it will be important for increasing the coverage of improved stoves, to understand the reasons why some households did not order a stove. Is it mainly a financial issue, or would they require more information, or do they not see the advantage of improved stoves? Data should be collected for each family in the community, recording the sex of the person ordering the stove, in addition to the data already collected, and a reason given for the lack of interest from those families who did not place an order.

3.4.2 Possibility for gender mainstreaming support:

The gender issues for FUNAE are the same as for grid electrification. FUNAE has a Gender Focal Point but has not yet developed a gender strategy. It would like assistance in analyzing and using sex-disaggregated data in planning and decision-making.

3.5. ProBEC improved stoves programme

ProBEC was a regional programme in 10 SADC countries at its peak in 2008. It began in 1999 in Malawi, funded by the German Government, with contributions later on from the Netherlands, Austria and Norway. ProBEC activities began in Mozambique in 2005, in Manica and Sofala, funded by the Dutch. The project developed training groups for artisans, about 95 percent women, to produce improved stoves. The programme was meant to finish in 2009 but was extended by one year.

The components of the programme in 2008-09 were:

- 1) Policy development: improving the social and political framework (engagement of forestry, energy and environment sectors).
- 2) Improved cooking devices (stoves, solar cookers, solar bags, heat-retained cookers also known as thermal bags).
- 3) Biofuels. The project engaged small farmers producing biofuels such as jatropha and sunflowers and investigated ways in which biofuels could be produced sustainably without hindering food security and environment.
- 4) Carbon markets and clean development mechanisms. Two Probec CDM projects have been registered and the process involves a robust monitoring and verification system.

The funding for the project in Mozambique was:

2007–08	Euro 400,000
2009	Euro 700,000 to 800,000
2010	Euro 150,000

The three local organisations that ProBEC supported are still working on woodstoves: ADEL (Sofala), Kulima (Inhambane and Maputo), and Carbon Checkers of Southern Africa (Manica). The project developed and pioneered a new stove, the POCA stove, that could be produced industrially. A factory was established in Maputo, called Ceramica Termica, which is still producing 3000 POCA stoves a month at a retail price of 300Mt each. The lifespan of the stove is about three years and it is distributed through Petromoc filling stations.

The Project Director, Antonio Malalane, pointed out that a great deal of the work on improved stoves is about awareness raising and marketing, changing people’s thinking. 85 percent of thermal energy in the country comes from wood and women use most of it for cooking, which makes it the largest gender and energy issue by far. This will not change much in the next 30 to 40 years. Where there is plenty of wood, people are not

ready to change to improved wood stoves, but once they switch, they seldom go back to using their old three-stone stoves. Because of the low incomes of their constituencies, ProBEC allowed payments in kind for new stoves.

There is need for 5-6 million stoves, with replacements every 3 years. FUNAE alone cannot deal with this level of demand, and is not equipped to provide the marketing required. The only organizations producing stoves now are the ProBEC-initiated factory and NGOs. The NGOs will probably not continue their stoves programmes without support.

The World Bank assessed the ProBEC Programme in 2009 and decided to fund FUNAE to provide a woodstove programme for three years. FUNAE took over ProBEC with a much broader mandate and in 2010 all ProBEC assets and equipment were transferred to FUNAE, but not the expertise.

ProBEC ended in 2010.³³ At the end of the project about 50,000 stoves were being used in Mozambique. FUNAE will need an implementation partner, especially to develop a market for the stoves. They have assessed demand for four types of stoves in 5 districts in Manica, and intend to contract out the manufacture and delivery of these stoves. The question is whether these stoves will be as successful as the ProBEC stoves, without local manufacturing and without women-targeted marketing.

Gender issues regarding energy for cooking consist of:

1. Women's major responsibility for cooking

- Women's need for improved cooking fuels and devices to reduce fuel requirements and to improve conditions of use;
- Health issues: illnesses related to indoor air pollution and skeletal damage due to a lifetime of headloading wood;
- The opportunity costs of women's efforts collecting, processing and using inefficient fuels.

2. Suitable approaches for working with women

- Including women's needs and preferences in the technical design of new stoves.
- Training women in the manufacture and repair of improved stoves
- Ensuring that women speaking local languages are engaged to market stoves.
- Target women and men (men usually make decisions about purchases) with appropriate messages.

3.6. The Petroleum Sector

3.6.1 Overview

The petroleum or oil and gas industry is usually divided into three major components: upstream, midstream and downstream. Midstream operations are often included in the downstream category. The upstream industry refers to the search for and production of crude oil and natural gas, and is also known as the exploration and production (E&P) sector. The midstream industry processes, stores, markets and transports commodities such as crude oil, natural gas, and liquefied natural gas (mainly ethane, propane and butane). The downstream sector commonly refers to the sale and distribution of natural gas and products derived from crude oil, including liquified petroleum gas (LPG), gasoline or petrol, jet fuel, diesel oil, and asphalt. The downstream sector includes oil refineries, petrochemical plants, petroleum product distribution, retail outlets and natural gas distribution companies.³⁴

Natural gas resources were found in Mozambique in the sixties in Inhambane Province,

³³ For more details see Charles Tamai Chidamba, *Report on the Impact Assessment of the POCA (POupa CArvão) Charcoal Stove*, ProBEC, October 2010.

http://www.probec.org/fileuploads/fl12082010071702_Moz_POCA_Charcoal_Stove_IA_report_Oct_2010.pdf

³⁴ [http://en.wikipedia.org/wiki/Upstream_\(petroleum_industry\)](http://en.wikipedia.org/wiki/Upstream_(petroleum_industry))

but at that time gas was of limited commercial interest. After independence, Mozambique received support from Russia for development of the petroleum sector and from Norway since 1983³⁵. There have now been four successful gas discoveries and one oil discovery.

Most petroleum exploration activities are offshore in the Rovuma basin off the northeastern coast of Cabo Delgado. Most of the affected communities are those surrounding supply bases.

The only operating gas field is the Pande/Temane field in Inhambane Province, operated by the South African company SASOL. Gas and condensate production began in 2004. The government has a 30-year contract with SASOL, beginning in 2004, which will eventually return the resource to the government to be managed domestically. 95 percent of the natural gas produced from this field is exported to South Africa through a pipeline linking Temane to Secunda in Gauteng Province in South Africa.

Legal and policy framework

Mozambique's Petroleum Law (February 2001) addresses the upstream industry. It sets out general requirements for the right to conduct petroleum operations in Mozambique. In Chapter IV, it requires petroleum development companies to compensate "persons relocated" and the users of land and other assets that are damaged by their activities³⁶. It obliges operators to ensure that there is no ecological damage caused by their operations, "but where unavoidable, ensure that measures for protection of the environment are in accordance with internationally acceptable standards".³⁷

Detailed Regulations for Petroleum Operations were also issued in August 2004³⁸, which cover contract conditions, operational practices including resource management, safety, health and environmental protection, the submission of plans, reports, data, samples, information and accounts and the utilisation of oil and gas pipeline systems.

The Law and Regulations include social impacts as part of environmental impact, according to international standards and practice. This means that effects on people are for the most part treated indirectly as part of effects on biophysical resources.³⁹ As is usual in such documents, there is no reference to gender differences. The disadvantage of this approach is that men and women's potential involvement in changes to their communities is limited to public consultations on the environmental assessment and management plans.

Specific Environmental Regulations for Petroleum Operations (Decree no.56/ 2010 of 22 November) were developed with Norway's support. They set out three levels of environmental studies and assessments according to the type and level of petroleum activity. Social or community impacts are mostly assumed under "environmental impacts" or referred to as the "socio-economic environment", as in "description of the biophysical and socio-economic environment affected"⁴⁰.

A separate section is devoted to public participation, "the process aimed at informing and seeking the views of the parties, direct or indirectly interested and affected by the Petroleum Operations and which is carried out during the EIA process"⁴¹. The proponent is required to send the proposal of the Environmental Impact Assessment or the Simplified Environmental Study to "interested and affected parties" and to hold a public consultation

³⁵ Norad, *Evaluation of the Norwegian Petroleum-Related Assistance: Case Studies Regarding Mozambique, Bangladesh, East Timor and Angola*, Oslo, Norway, 2007

³⁶ Petroleum Law Feb 21, 2011, p.14

³⁷ Petroleum Law, p.15

³⁸ Republic of Mozambique, Ministry of Mineral Resources, National Petroleum Institute, *Petroleum Operations Regulations*, non-certified English Translation, Decree No.24/2004 of Aug.20 2004,p.41

³⁹ For example "6. The Operator shall take remedial measures and repair damage to the environment when the Petroleum Operations it carried out endanger the physical safety of persons or property, or cause pollution or other environmental damage harmful to persons, animals, marine life, monuments or vegetation."

⁴⁰ Environmental Regulations for Petroleum Operations, Decree no.56/2010 of Nov.22 2010, p.6

⁴¹ Article I Definitions, p.2

of “the natural and legal persons, public or private, directly or indirectly interested and affected by the conduct of the Petroleum Operations”⁴².

1. In order to assure broad dissemination and participation of all interested and affected parties, the reports produced under the scope of the EIA or the SES, as well as all the support material which is relevant shall be available at the offices of the Ministry which oversees the Environmental area and published in the Internet.

Considering that 34.5 percent of men and 64 percent of women in Mozambique are illiterate (Table 1), with higher levels in rural areas, additional efforts may be needed to inform communities on the potential impacts on their lives, to record their concerns and to monitor the effects of mitigation efforts.

Norway is assisting the government to develop their own domestic industry and capacity through the upstream industry regulator, the Instituto Nacional de Petróleo (INP, the National Petroleum Institute), and Empresa Nacional de Hidrocarbonetos (ENH, Mozambique’s national oil company). This support is aimed at developing the upstream industry, a highly demanding technical and commercial venture.

Gender issues in the upstream industry are at present mostly defined in terms of women’s employment. Downstream regulation and impacts, where more direct gender linkages can be made, fall under the jurisdiction of the Ministry of Energy, and outside the scope of Norway’s current development assistance.

3.6.2 Ministerio dos Recursos Minerais (MIREME) Ministry of Mineral Resources

The Ministry of Mineral Resources directs and implements government policies for geological research and the inventory and exploitation of mineral resources, including coal and the hydrocarbons. It includes the following directorates:

- 1) National Directorate of Mining
- 2) National Directorate of Geology
- 3) National Directorate of Planning and Development
- 4) National Directorate of National Museum
- 5) National Institute of Petroleum (INP), the upstream petroleum regulator.

Environmental impacts:

The Ministry for Coordination of Environmental Affairs (MICOA) sets environmental policy and guides the process of environmental regulation of the biophysical and social effects of petroleum operations. Petroleum operators are required to prepare an Environmental Impact Assessment of their activities, an Environmental Management Plan to mitigate negative impacts, and to apply to MICOA for an environmental license.

MIREME has been responsible for monitoring and inspecting petroleum operations, but INP’s Environment Unit will be taking over this responsibility in the future. Generally a representative from MIREME stays with the company in the base camp and reports to INP on activities. The operating company produces a report and submits it to INP.

There has only been one case of an accident when a pipe burst in Mouma in Nampula. MICOA and MIREME attended to the accident and warned villagers about the potential dangers and how to protect themselves, using the local language.

EITI membership

Mozambique has applied for membership in the Extractive Industry Transparency Initiative (EITI) and has until 14 May 2011 to complete the validation process⁴³. The Ministry of Minerals Resources (MIREME) is the lead agency in a Government team also including the Ministry of Planning and Development (MPD) and the Ministry of Finance (MOF). With the Deputy Minister of Mineral Resources as the leader, the Government has established

⁴² Section III, p.11

⁴³ <http://eiti.org/Mozambique>

a multi-stakeholder group of representatives of the Government, private companies, and civil society, who are working together to implement the EITI in Mozambique. Norway is assisting this process through support to the World Bank managed EITI Trust Fund and support for the civil society coalition and participation under CIP leadership and coordination. The Centre for Public Integrity (CIP)⁴⁴ is also planning to monitor petroleum development impacts beginning at the end of 2011. This will be closely coordinated with WWF and the Norwegian supported project “Promoting Civil Society Participation in Oil and Gas Developments in Mozambique”.

Social support funds

There is a Commission on Social Funds for the Petroleum Sector, which administers the social support funds that operating companies pay annually for various public infrastructure, such as water supply, hospitals and schools in affected communities. The companies also have their own Corporate Social Responsibility (CSR) policies, under which they invest in additional community support projects.

The Permanent Secretary of MIREME heads this Commission, and INP and the Ministry of Planning and Development are represented on it. Its objective is to develop projects that will benefit the local population in the locations where the company works. The Local Government identifies and proposes projects and the Commission, in consultation with the Provincial Directorate, prioritizes and chooses them. Drinking water systems were rehabilitated in Kisanga, Cabo Delgado. Radio communication was extended in the northern part of Pemba and a vocational training centre is being considered in Cabo Delgado.

Gender Policy and Focal Points

The National Gender Policy is implemented at MIREME through eleven Gender Focal Points, who meet every month. The National Council for the Advancement of Women gives directives to them. The Ministry benefits from the guidance of their female Minister, who encourages gender mainstreaming and ensures that a Gender Focal Point attends Board Meetings. There is no gender strategy.

The mining sector is older and fairly advanced so it has developed more initiatives to encourage women to participate at the entrepreneurial level, especially in small scale mining. Support was given to the Association de Ceremica for women to produce different types of ceramic products, enabling them to earn an income and look after their children and families.

The petroleum sector is fairly new and the emphasis at the moment is on the employment and training of women so that they are employable, not so much on entrepreneurship.

MIREME requested the ETC/ENERGIA Team to provide assistance in formulating a gender strategy for the Ministry.

3.6.3 Instituto Nacional de Petróleo (INP) the National Petroleum Institute

INP is the upstream petroleum regulatory authority, under the Ministry of Mineral Resources. It has responsibility for policy, licensing, resource assessment and management, data management, and monitoring of petroleum exploration and operations in the upstream industry up to high-pressure transmission. The Ministry of Energy regulates the industry from there downstream (sales and distribution).

INP's mission is to ascertain that petroleum operations are conducted in accordance with laws, regulations and international best practices, with special emphasis on optimal resource management, health, safety and the protection of the environment.

Gender issues are taken seriously in government institutions, mostly in terms of women's employment. One of INP's three Board members is a woman. Women are well

⁴⁴ <http://www.cip.org.mz/index.asp?lang=en&sub=about>

represented in INP and well qualified. During recruitment, where two candidates score the same mark, preference is usually given to the woman if available.

INP has a Gender Focal Point who meets with the other Gender Focal Points at MIREME once a month.

Table 4 Gender balance at INP

Academic level	Women	Men	Total	Women as % of total
High	8	19	27	29.6
Medium	5	4	9	55.5
Primary	1	4	5	20
Total	14	27	41	34

The INP Director emphasized that ensuring more women get opportunities for training in the petroleum sector is crucial so that the country can create a critical mass of well trained women available for employment in the industry.

3.6.4 Empresa Nacional de Hidrocarbonetos (ENH)

Empresa Nacional de Hidrocarbonetos is Mozambique’s national upstream petroleum development company, under the jurisdiction of the Ministry of Mineral Resources. Norwegian assistance is supporting ENH in becoming a fully commercial company.

ENH has a 25 percent share of the investment and of the gas produced in the Pande Temane field. ENH has established two subsidiary companies, Companhia Moçambicana de Hidrocarbonetos (CMH) and Companhia Moçambicana de Gasoducto (CMG), to borrow the necessary funds, operate the pipeline and supply gas to some industries in and around Maputo.

CMH is responsible for Mozambique’s ownership share in the development of the Pande Temane gas field, in partnership with SASOL and IFC, which provided 5 percent equity financing. IFC conducts an annual audit on compliance with IFC environmental and social standards.

CMG manages Mozambican ownership in the transportation of gas through the pipeline from Pande-Temane to Sakunda in South Africa. Along the pipeline, there are five tap points for gas, one of which delivers to the Matola Gas Company on the outskirts of Maputo. CMG outsources the “maintenance of the integrity of the pipeline” and its Corporate Social Responsibility activities to a Sasol affiliate. CMG provides guidelines for community consultations and the development of local projects and implements them together with Sasol and IGas.

The Matola Gas Company (MGC) has a concession to distribute gas in the Matola area. Their largest customer is Mozal, an aluminium smelting company. As part of their Social Corporate Responsibility, Matola Gas Company constructed a Community Kitchen and supplies gas for the local community to use. Women from the community are using it, but unfortunately the pump provided for water supply was stolen so there is no water in the kitchen and laundry sinks.

There is also a national downstream petroleum retail company, Petromoc, which imports and sells oil and gas products under the jurisdiction of the Ministry of Energy. Petromoc owns and operates warehouse facilities and pipelines in all Mozambican ports and markets fuels, oils, grease and lubricants throughout the country.

A pilot project was implemented in Vilanculos in the early 1990s to demonstrate the use of natural gas for electricity generation as well as for household and commercial use. Houses and commercial enterprises have been connected without charge to the main pipeline with gas at subsidized prices. This project is not making a profit.

ENH is responsible for developing community projects from the social support funds allocated from their activities. They are thinking of contracting out this work to NGOs. They would be interested in assistance from the Ministry of Women and Social Action on choosing and designing projects.

Table 4 Gender balance at ENH

	Women	Men	Total	Women as % of total
Board members	1	3	4	25%
Department Heads	4	6	10	40%
Finance Department	6	5	11	55%
Internal Administration Dept	6	16	22	27%
Total workforce	32	93	125	26%

The government's gender policy and strategy applies to ENH. It has a Gender Focal Point concerned with the treatment of women. The same person is the HIV/AIDS Focal Point.

3.6.5 The DNO experience (a Norwegian oil and gas company)

DNO has been conducting exploratory drilling in Inhaminga, north of Beira, which finished at the end of March 2011. Although we could not visit the site, we had an interesting discussion with Mr. Jarl Aagedal, Mozambique Country Manager, on DNO efforts to implement its equal opportunity policies in employing women as far as possible.

Mr Aagedal sees Mozambique's Petroleum Law as "the best in the world", but implementation and enforcement are lacking. The focus is on control and penalties; permits for the drilling operation were required from fifteen different entities. The Labour Law enacted three years ago allows only a 90-day visa for non-resident workers, which presents a serious restriction on completing exploratory drilling operations and the development of the industry. The time period for drilling each year is very limited: onshore drilling cannot be done during rainy periods, because the roads do not allow movement of heavy vehicles; offshore operations are also seasonal because of restrictions to protect fish and other species.

Operating companies generally employ foreign-based drilling companies to carry out the work, since there is not yet enough local expertise. In this case, the drilling site was managed by a Chinese drilling contractor with Chinese employees. Some local workers are also employed, mostly unskilled men.

An experienced Environmental and Communications Officer was responsible for managing relations with the local community around the drilling site, which consisted of one village with a population of about 1000 people.

DNO works with the local administration office for hiring local workers. Since there are so many unemployed young men and since men are seen as the principal wage earners, no women were recommended for the available jobs. It was hoped that some women could be employed as "flagmen", whose responsibility it is to wave flags at the drivers of heavy trucks to reduce their speed and to blow whistles to warn villagers to stay out of the way. 24 flagmen were hired from the local area but only one of them was a woman.

Not to be defeated, DNO created a special road maintenance project and hired 30 women to improve the condition and maintain a 20 km stretch of road leading up to the drilling rig. The women were given rakes and spades, worked for two months and did a good job in maintaining the road. Out of the 30 women, only one could write her name – the rest signed their contacts with a fingerprint.

A major issue for the drilling contractor in hiring women as specialist workers on the rig is that accommodation facilities are very limited. In the case of the drilling rig that DNO used,

six workers were sharing a bunk room. Accommodating women who need privacy and security is seen as an extra expense.

3.6.6 Gender issues in the petroleum sector

Gender issues in the petroleum sector consist of:

I. Petroleum revenues and transparency

Membership in the Extractive Industry Transparency Initiative and Norway's support for the participation of civil society is crucial for transparency of the benefits of petroleum development to all citizens (men, women, girls and boys).

II. Employment equity

There are more women in Mozambique's petroleum industry than in most other countries, at 34 percent of the workforce in INP. We were not able to collect information on the gender balance at ENH. Women's employment in the oil and gas industry can be explored with MIREME's Gender Focal Points.

III. Local site effects of petroleum exploration and production

Norway has been assisting the Ministry of Coordination of Environmental Affairs (MICOA), which is responsible for the environmental regulation of biophysical and social site effects and impacts, in developing regulations for the environmental impacts of petroleum operations.

Operating companies pay an annual fee or tax into a social support fund, that INP manages, to develop various public infrastructure, such as water supply, hospitals and schools in affected communities. The companies also have their own Corporate Social Responsibility (CSR) policies, under which they invest in additional community support projects.

Generally a representative from MIREME stays with the company in the base camp and reports to INP on activities. The proponent company produces a report, which is submitted to INP. INP also regulates and monitors health and safety issues in the industry.

Communities in the vicinity of petroleum operations can be affected in the following areas⁴⁵:

- a. Disruption of natural ecosystems (fish, crops, animals, drinking water) and livelihoods depending on them;
- b. Economic changes: employment opportunities, new roads, businesses and communications systems, in-migration of large numbers of men for jobs; high cash inflows;
- c. Social changes in authority structures, increasing "social vices" (alcohol, gambling, prostitution), changes in women's status and available resources.

If local effects are not well regulated, managed and monitored, the impacts on communities and on women can be negative and serious.

The World Bank is conducting a study called the Petroleum Governance Initiative (PGI) examining gender aspects of oil and gas operations in several countries, including Mozambique. It will study 2-3 communities and is meant to capture the different risks experienced by men and women residents, as well as the gendered dimensions of benefits (employment, remittances, community development support).

The research is intended to provide a basis for policy recommendations, and specifically to propose improvements to i) benefit-sharing models for companies ii) regulatory and compliance regimes for Governments iii) planning and decision-

⁴⁵ Eftimie et al, *Mainstreaming Gender into Extractive Industries Projects*, World Bank: Guidance Note for Task Team Leaders, Extractive Industries and Development Series #9, August 2009

making in development interventions carried out by a range of key stakeholders, including civil society. It is expected to be completed by the end of 2011.

We are collaborating with the study team for possible synergies and will rely on this study for information on gender issues in the area of the local site effects of petroleum exploration and production.

IV. Downstream: product availability and consumption

The government has various plans for developing the market for natural gas, which is tapped from the existing pipeline at five points to supply industries in Maputo and Matola, such as an aluminum smelter and a cement factory. ENH is planning to begin developing the infrastructure (mainly pipelines) for natural gas supply in Maputo by 2014 and has asked SASOL to develop a facility for extracting LPG. Both natural gas and LPG are superior fuels for cooking and can transform women's food preparation work, at the same time reducing the negative environmental impact of unsustainable woodfuel and charcoal use.

Gender issues in gas distribution will be explored with the Directorate of Fuels under the Ministry of Energy during the next Mission.

4. NORWEGIAN EMBASSY PROJECTS AND OPPORTUNITIES

4.1. Clean Energy Support

4.1.1 Institutional Capacity Building in the Ministry of Energy

Norway provides technical assistance for strengthening the Ministry of Energy's institutional capacity in planning and regulatory functions and in developing legal and regulatory frameworks.

Project period: 2007–2011, likely to be continued for 3 more years

Total budget: NOK 30 million.

Objectives:

- Increase the impact of national energy policies by pro-actively guiding the sector.
- Enhance the planning and regulatory functions for the power, down-stream hydrocarbon and overall bio-fuel sectors as well as for the renewable energy sector, increase processing capacity, and also create the legal and socioeconomic framework to enable the sector to grow.
- Strengthen the ability to plan for larger investments and negotiate with investors.
- Enhance the efficiency and effectiveness of the Ministry in performing its ancillary internal functions.

The outputs of the support programme included “an effective Gender Unit appropriately placed in the management structure, proactively mainstreaming energy-related gender issues”. The Gender Unit and Gender Focal Point are not currently active.

The Ministry has overall responsibility for developing all energy sources except upstream petroleum. Its mandate and work aims at energy provision in terms of infrastructure and technologies as an end in themselves and is divided by energy subsector (electricity, liquid fuels, biomass). Gender differences and issues are involved in policies, planning and energy development, specifically a) in terms of energy use and users' needs, b) consultation and relations with users, and c) employment.

The gender section of the Ministry's Energy Strategy pointed out the need to strengthen the Gender Unit through: “training of gender contact persons; improved mechanisms of spreading information about gender issues; improved communication and experience exchanges among gender focal points; and monitoring of gender issues implemented in the energy sector”. It also recommended improving women's participation in the sector and monitoring gender issue.

Challenges in gender mainstreaming:

- The technology orientation of the Ministry: energy as an end in itself;
- Lack of a community development perspective and attention to diversity in users' needs and perspectives;
- Lack of mechanisms for considering gender issues in energy provision and use;
- Lack of support for the women working in the sector.

Opportunities for gender mainstreaming support:

- Examine and address users' energy needs (male and female) to identify the most efficient and cost-effective means of meeting them and of including more users.
- Develop each Directorate's understanding of gender issues, needs and potential in their areas of responsibility.
- Operationalize and implement the MoE's Gender Strategy.
- Develop plans to support women working in energy institutions.
- Work with the Directorate of Fuels to identify and develop the gender aspects of petroleum product availability and use in the downstream industry. This will allow more direct gender connections to be made with Norway's support for the upstream industry.

4.1.2 Technical Assistance to Electricidade de Moçambique (EdM)

Norway's Technical Assistance provides support on legal matters, contract negotiations, loan agreements, project documents and regional power market assessments. This support is intended to contribute to economic growth and social wellbeing through effective and sustainable development of energy resources, in line with the goals of the PARPA II.

The main objective of the technical assistance is to strengthen EdM's business capability in development, structuring, financing, and implementation of large power generation and transmission projects.

Project period: 2008–2010, no-cost extension to mid-2012

Total budget: NOK 13 million.

Gender issues are seen only in terms of employment of women. There is no Gender Focal Point. The Commercial Directorate deals with customer relations and services.

Challenges in gender mainstreaming:

- Engineering orientation towards expanding the provision of electricity without much attention to users' needs and potential productive uses;
- Lack of attention and mechanisms for considering gender issues in energy provision and use.

Opportunities for gender mainstreaming support:

- Examine and address users' energy needs (male and female), to identify the most efficient and cost-effective means of meeting them, of including more users and potential productive uses;
- Need for local-level market analyses to identify and increase productive uses of electricity for women's small businesses;
- Work with the newly-established Environment and Social Unit on gender mainstreaming within the preparation of Environmental Impact Assessments and Management Plans;
- Work with the EdM Commercial Directorate to identify and develop the gender aspects of customer relations and services and possibilities for gender mainstreaming support;
- Provide suggestions for community outreach in rural electrification programs, with the objective of intensifying connections;
- Develop plans to support women working at EdM.
- Promotion of women's entry into technical education to train for positions as EdM technicians.

4.1.3 Support for Transmission Systems and Rural Electrification

The objective of rural electrification is to contribute to socio-economic development in rural areas by promoting infrastructure improvements and stimulating economic and social activities in districts and local communities.

Cooperating institution: Electricidade de Moçambique

This support will end in 2013.

Cabo Delgado Electrification Project:

Development goal: to contribute to increased economic development and social welfare in Cabo Delgado.

Planned outputs include: 6310 families supplied with electricity, 18 schools and 11 health units connected to the grid, private enterprises supplied with electricity.

Project period: 2006–2013

Total budget: NOK 200 million

Gurue-Cuamba-Lichinga Transmission System (Nampula to Niassa):

Objective: Assist Electricidade de Moçambique with construction and development of the Gurué-Cuamba-Lichinga transmission line, and distribution lines around the same cities.

Co-financing with Sweden

Project period: 2002–2010, completed

Total budget: NOK 189.1 million (Norway)

Marrupa-Cuamba-Mecanhelas Electrification Project (grid extension):

Objective: Enhance economic and social development in Niassa Province, by giving households, enterprises and business increased access to electricity, as well as by improving quality of life in local communities by providing a reliable electric power supply for public administration and services.

Planned outputs include: 950 new domestic consumers, 35 commercial consumers and 20 official consumers (including schools and health clinics) connected, public lighting installed and consumers trained in productive use of electricity.

Co-financing with Sweden who is lead donor.

Project period: 2007–2010, completed

Total budget: NOK 41 million (Norway)

International Development Association support:

Norway has also entered into an agreement with the International Development Association for the establishment of a trust fund to finance transmission projects of regional importance currently being planned. The fund has a budget of NOK 500 million for the period 2008-2013. The overall objective of the fund is to increase the availability and reliability of low cost, environmentally friendly electricity in the region, thereby increasing the competitiveness of industry, fostering economic growth and decreasing poverty.

Total spent to date: NOK 20 million

Challenges in gender mainstreaming:

(see also 2. above: Technical Assistance to EdM)

- Emphasis on developing infrastructure without sufficient attention to developing community applications, users' needs and potential productive uses;
- Inability to reach women through lack of local language capability;
- The World Bank has a gender policy which applies to all funding but may not have been addressed in the regional transmission projects that Norway funds.

Opportunities for gender mainstreaming support:

- Need for mechanisms to consider and address users' energy needs and gender issues in energy provision and use, and to identify means of providing income-generating services and including more users.
- Work with EdM on possibilities for expanding the customer base and including more women.

4.1.4 The Programme for Basic Energy Conservation (ProBEC)

ProBEC was a regional programme supported by several European countries that ended in 2010. The Norwegian contribution was NOK 25 million in the period 2008-2010. The purpose of the programme was to improve the quality of life of poor people in the region through increased access to energy, specifically improved woodstoves. Norway has no other current support for improved stoves. It is considering possibilities for similar support through FUNAE.

Potential for gender mainstreaming:

- The need is enormous: woodstoves address women's major energy need for cooking.

Challenges in gender mainstreaming:

- For successful adoption of improved stoves, local manufacture, women's involvement in design and manufacturing and women-targeted marketing have been identified as crucial components.

Opportunities for gender mainstreaming support:

- Support FUNAE in considering the gender aspects of improved stoves programmes;
- Develop the capacity of civil society organizations to work on women's energy needs.
- Explore possibilities for additional initiatives in improved stoves; develop a program or project with a clear goal and mandate for addressing women's energy needs for cooking.

4.1.5 Proposed Support to FUNAE (Fundo de Energia)

Norway has signed an agreement with FUNAE to fund a diagnostic study and develop a programme document for Norwegian support to clean energy initiatives to be implemented by FUNAE. FUNAE is managing the study, which is expected to be available by October 2011. The World Bank and Belgium have begun major funding support.

Challenges in gender mainstreaming:

- Wide mandate and responsibility of the Agency;
- Focus on technologies rather than users' needs and perspectives;
- Lack of mechanisms for considering gender issues in energy provision and use.

Opportunities for gender mainstreaming support:

- Numerous opportunities for considering and addressing women's energy needs and for involving women in providing suitable technologies and services;
- Assistance in identifying means and mechanisms for mainstreaming gender within proposed Norwegian support to FUNAE;
- Initial support is being provided on disaggregating data by sex for use in gender analysis of users' needs and preferences for woodstoves;
- Initial contact has been established with the Division of Studies and Planning; need to explore possibilities for working with the Biomass Division on improved stoves.

4.2. Oil for Development Support

4.2.1 Support to the National Institute of Petroleum (INP)

Norway has provided support to the petroleum sector in Mozambique for approximately 30 years. Support from 2006 onwards has been provided predominantly through the INP support programme, which had a total budget of NOK 41 million from 2006 to 2010. A second phase of the programme for 2011-2014 is now underway. The new cooperation agreement has a tentative budget frame of NOK 52 million. The overall goal of the new cooperation programme with INP is to enhance development and welfare in Mozambique, through effective and sustainable management of the petroleum sector.

Overall goal: To strengthen the administration of petroleum resources to enhance economic development and welfare in Mozambique.

Objective: to develop INP's administrative and regulatory capacity for efficient petroleum resource management, with emphasis on:

- Policy and strategy
- Resource assessment
- Strengthening local content in the upstream petroleum market
- Emergency preparedness
- Coordination among relevant regulatory institutions
- Information to the public.

INP uses Norwegian support to enter into contracts for the procurement of technical assistance from several partner institutions, including the Norwegian Petroleum Directorate, the Norwegian Petroleum Safety Authority, and Norwegian law and consulting firms.

Challenges in gender mainstreaming:

- Lack of understanding clear gender connections in the upstream industry;
- Lack of information on gender issues and impacts of petroleum operations and of the use of social support funds;
- Inactive Gender Focal Point at INP.

Opportunities for gender mainstreaming support:

- Work with INP and MIREME to develop their understanding of gender issues in the regulation and management of community impacts and in promoting women's participation in the oil and gas industry;
- Identify measures to support and encourage women to enter the oil and gas industry and to develop the women working there;
- Provide information on gender issues in the upstream petroleum industry to civil society groups and journalists;
- Assist MIREME to formulate a gender strategy for the Ministry, as requested.

4.2.2 Capacity building and Institutional Support to Empresa Nacional de Hidrocarbonetos (ENH)

In July 2008 the ENH Capacity Building Program 2008-2010 was initiated, and later extended to December 2010. The total financial support for the period 2008-2010 amounts to NOK 10 260 000. More recently, in the *Request for continued assistance*, ENH requests continued financial and technical assistance from Norway for a 2nd phase of the programme for a period of three years starting in 2011. The proposal has not yet been appraised, but it is quite likely that support will continue to be provided.

Development Goal: to support and supplement Mozambique's development efforts in the petroleum sector, and to enable Mozambique to manage its petroleum resources ensuring the best national interests.

Purpose: to support institutional development and capacity building in ENH, to make ENH able to play the role of a well-functioning oil company nationally and internationally, and to maximize business opportunities tied to the company's share in the various oil and gas concessions granted by the Mozambican Government.

Challenges in gender mainstreaming (as for INP):

- Lack of understanding of clear gender connections in the upstream industry;
- Lack of information on gender issues and impacts of petroleum operations and of the use of social support funds;
- Inactive Gender Focal Point.

Opportunities for gender mainstreaming support:

- Work with ENH to develop its understanding of gender issues in the management of community impacts and in promoting women in the oil and gas industry;
- Connect ENH with MMAS's National Institute for Social Action (INAS) to assist in designing and implementing suitable projects for its social support funding;
- Assist ENH to support and encourage women employees to reach their full potential within the organization.

We recommend that the Embassy cooperates with the World Bank Petroleum Governance Initiative Study on possibilities for sharing information on gender issues in the area of local site effects of petroleum exploration and production, at least until results are available for Mozambique.

Downstream

- Meet with the Ministry of Energy's Directorate of Liquid Fuels to explore possibilities for gender mainstreaming in applications such as paraffin lamps and stoves and LPG for cooking.

4.3 Summary of gender and energy issues, gaps and opportunities

GENDER AND ENERGY ISSUES	GAPS AND OPPORTUNITIES
A. ENERGY FOR COOKING	
1. Women's major responsibility for cooking	<ul style="list-style-type: none"> • Dependence on biofuels for cooking • Women's need for improved cooking fuels and devices to reduce fuel requirements and to improve conditions of use. • Accelerate the development of LPG (bottled gas) as a cooking fuel.
2. Suitable approaches for working with women	<ul style="list-style-type: none"> • Include women's needs and preferences in the technical design of new stoves; train women in the manufacture and repair of improved stoves. • Employ women who speak local languages to market stoves and other technologies.
B. ELECTRIFICATION AND ALTERNATIVE TECHNOLOGIES	
3. Gender differences in access and affordability	<ul style="list-style-type: none"> • Need for improved energy services to support women's household tasks, family welfare and small businesses; possibility of training women as entrepreneurs in retail and servicing; • Provide support (eg. market analyses) to develop productive uses of energy for income generation • Capital costs of connections as a barrier for the poor • Importance for poor women of energy supply for community services: clinics, mills and schools
4. Gender differences in community relations and customer services	<ul style="list-style-type: none"> • Need for a community development approach to reach and include women in poor households and female-headed households, and to mobilize sufficient rural customers to pay more of the cost of supply • Access of women to information, customer services, and concessions for new services (few understand Portuguese) • Participation of women in decision-making processes • Consideration of women's needs and opportunities for increasing productive use

GENDER AND ENERGY ISSUES	GAPS AND OPPORTUNITIES
C. PETROLEUM DEVELOPMENT	
5. Gender differences in product availability and consumption	<ul style="list-style-type: none"> • Increasing the availability of natural gas and LPG for cooking would transform women's food preparation work, and at the same time reduce the environmental damage of unsustainable woodfuel and charcoal use
6. Gender differences in the benefits of petroleum revenues	<ul style="list-style-type: none"> • Norway's support for the participation of civil society in the Extractive Industry Transparency Initiative (EITI) process is crucial for transparency of the benefits of petroleum development to all citizens (men, women, girls and boys) • Provide information on gender and poverty issues to civil society groups and journalists • Ensure women are involved in the selection, design and implementation of projects using social support funding.
C. ALL ENERGY SUBSECTORS	
7. Employment equity in energy supply institutions	<ul style="list-style-type: none"> • Need for institutional analyses of the gender balance at all levels of partner institutions and of gender issues in the workforce
8. Gender integration in the work of energy supply institutions	<ul style="list-style-type: none"> • Use of sex-disaggregated data and gender analysis in the institution's work • Identify responsibilities and activities of assigned Gender Focal Points and needs for support • Need for a gender strategy, or implementation of existing gender strategy
9. Gender differences in the local effects and impacts of energy development	<p>Differential impacts on women and men of:</p> <ul style="list-style-type: none"> • population displacements and resettlement • disruptions in natural ecosystems and livelihoods depending on them; • economic changes and influx of large numbers of men; • social changes and conflicts resulting from disruptions in authority structures and community networks and women's status.

5. FINAL STEPS TOWARDS A PROPOSAL FOR A GENDER MAINSTREAMING SUPPORT PROGRAMME

5.1. Purpose

The overall purpose of this work is to mainstream gender in Norway's energy development cooperation in Mozambique. The output of the current assignment is to propose a targeted programme of support for mainstreaming gender in Norwegian energy sector cooperation in Mozambique. This will be the objective of the next mission.

5.2. Next steps: Third Mission

The ETC/ENERGIA Team proposes a third mission in June to conduct follow-up meetings, workshops and presentations, which will begin the process of explaining gender mainstreaming and will result in a proposal for a support programme.

Mission output: Proposal for the gender mainstreaming programme of support

Proposed mission dates: May 31 to June 10

Activities: We received considerable interest from partners about gender mainstreaming and our offer of support. We propose follow-up meetings, workshops and other activities as follows:

ORGANISATION	DAYS REQUIRED	ACTIVITY	PREPARATION NEEDED	RESPONSIBLE PERSON
Ministry of Energy	Two days	Gender Mainstreaming Techniques and Action Planning Workshop for 5 National Directors and the Permanent Secretary (2-hour workshop followed by 1 hour lunch) Alternatively, meet with Directors as available, without Ambassador's lunch.	Support MMAS to prepare presentation on best case gender mainstreaming in energy	Sra Langa (MMAS)
			Presentation on Techniques for Gender Mainstreaming and Action Planning	ETC/ENERGIA Team
			Lunch hosted by Ambassador	Øystein Botillen; Nina Strøm
			Facilitator	Joy Clancy
EdM	1 day	Orientation session with Environment and Social Unit on gender issues and mainstreaming techniques	Presentations on gender & energy issues and gender mainstreaming tools	Dorothy Lele
		Introductory meeting with the Commercial Director on gender issues in customer relations & services	Assessment of interest & possibilities for support (we have not yet met with Mr. Buque)	Dorothy
FUNAE	Half day	Meeting on how to collect and use gender disaggregated data.	Send by email to ETC/ENERGIA team: Data on Improved Stoves Beneficiaries	Edson (FUNAE)
			Analyse data on Improved Stoves Beneficiaries and circulate for additional comments (before Mission)	Chandi Mutubuki-Makuyana
			Tools for collecting gender disaggregated data	Chandi Mutubuki-Makuyana
	Half day	Meeting with the Head of the Microhydro and Biomass Division, Mr. Batsana (responsible for the woodstoves programme)	Assessment of interest & possibilities for support	Team
MIREME	Half Day	Meeting with 11 gender focal points (including INP Focal Point) to explore: Gender Issues in the Petroleum Sector and how to address them; future support for developing a Gender Strategy and Action Plan (focused on the petroleum sector)	Meeting organization Include Mr. Belengeze (Permanent Secretary)	Odete Martins (MIREME)
			Presentation on gender and petroleum issues	Dorothy Lele

ORGANISATION	DAYS REQUIRED	ACTIVITY	PREPARATION NEEDED	RESPONSIBLE PERSON
MMAS/ Forum Mulher	1 Day	Sensitisation workshop – The Role of Energy in Development; Gender and Energy Issues; Introduction to Renewable Energy Technologies	Presentations – The Role of Energy in Development; Introduction to Renewable Energy Technologies	Chandi Mutubuki-Makuyana and Team
World Bank	Half day	Collaboration on ESMAP, AFREA and PGI initiatives; support for biomass for cooking		Team
Others:		<ul style="list-style-type: none"> • World Wildlife Fund • Women Can Do It 		Team
ETC/ENERGIA Team	2 Days	Development of proposal for support programme		Team

These activities combine:

- a) initial explorations of needs and possibilities for support, with
- b) initial awareness raising and training activities.

The latter (b) are the first steps in a support programme, and will allow us to be more specific in our proposal. We intend to conduct action planning as far as possible, to the extent that circumstances allow, in order to gain partner commitment and to propose support that meets partners' needs. Some partners (MoE) are more ready for action planning than others (MIREME, FUNAE).

There are other possibilities for concrete action, but the activities listed above will allow us to develop the proposal for future targeted support.

Action required:

- Complete the Second Mission Report and circulate to Embassy, Norad and partners.
- Arrange meetings with all partners.
- Prepare presentations.

ANNEX 1: RESOURCES

Government of Mozambique:

Ministry of Energy, *Energy Strategy 2009-2013*

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Ministry of Planning and Development, National Directorate of Studies and Policy Analysis, *Poverty and Wellbeing in Mozambique: Third National Poverty Assessment*, October 2010.

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National Council of Electricity, *Report evaluating EdM's Tariff Methodology (Tariff Report)*, 20 July 2010

Ridgway Capital Projects Limited, *Review of Financial Benefits for GOM from Power Project Concessions and Support in Negotiations of Concession Agreements Final Report*, Prepared for the Ministry of Energy, Government of Mozambique, August 2009.

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Republic of Mozambique, Ministry of Mineral Resources, National Petroleum Institute, *Petroleum Operations Regulations*, non-certified English Translation, Decree No.24/2004 of Aug.20 2004

Republic of Mozambique, *Environmental Regulations for Petroleum Operations*, Decree no.56/2010 of Nov.22 2010

Rural Electrification Baseline Studies:

Scanteam and EconPolicy, *Final Report: Baseline Study for Rural Electrification of Cabo Delgado Province*, 14 August 2010; EdM and SIDA, *Socio-Economic Baseline Studies on Rural Electrification Projects in Niassa, Cabo Delgado, Nampula and Zambezia Provinces, Mozambique*, Final Report, April 2009.

Chr. Michelsen Institute Gender Studies Series:

Inge Tvedten, Margarido Paulo, Georgina Montserrat, *Gender Policies and Feminisation of Poverty in Mozambique*, CMI Report, 2008

Tvedten, Paulo and Tuominen, "If men and women were equal, we would all simply be people" *Gender and Poverty in Northern Mozambique*, 2009

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Chambal, Helder, *Energy Security in Mozambique*, International Institute for Sustainable Development, Series on Trade and Energy Security – Policy report 3, 2010

Chidamba, Charles Tamai, Report on the Impact Assessment of Household Fixed Mud and Portable Clay Stoves, ProBEC Mozambique, September 2010.

Chidamba, Charles Tamai, Report on the Impact Assessment of the POCA (POupa CArvão) Charcoal Stove, ProBEC Mozambique, September 2010.

Cumbe, Fabiao, Deepak Sharma, Carlos Lucas, *The Status of "Clean Cooking Fuels" in Mozambique*, Energy Planning and Policy Program, Faculty of Engineering, University of Technology, Sydney

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Eftimie, Adriana , Katherine Heller, John Strongman, *Mainstreaming Gender into Extractive Industries Projects*, World Bank: Guidance Note for Task Team Leaders, Extractive Industries and Development Series #9, August 2009

Norad, *Evaluation of the Norwegian Petroleum-Related Assistance: Case Studies Regarding Mozambique, Bangladesh, East Timor and Angola*, Oslo, Norway, 2007

Royal Norwegian Embassy, Mozambique, *Women's Rights and Gender Equality: Review of the development portfolio in Mozambique*, August 27, 2009

Hankins, Mark, *Renewable Energy Plan for Mozambique*, September 2009
<http://www.internationalrivers.org/africa/zambezi-river/mphanda-nkuwa-dam-mozambique/building-mozambique's-power-sector-through-investm>

Holvoet, Nathalie and Liesbeth Inberg, *Integrating Gender Responsive Budgeting into the Aid Effectiveness Agenda*, Mozambique Country Report, UNIFEM, 2007

Ribeiro, Natasha and Aniceto Chauque, *Gender and Climate Change: Mozambique Case Study*, Heinrich Boll Stiftung, Southern Africa, 2010

ANNEX 2: MEETINGS

- Apr 4 Norwegian Embassy: Øystein Botillen, Nina Strøm, Hanne Fjeldstad
FUNAE - Nilza Cassamo
DNO- Jarl Aagedal, Mozambique Country Manager
ENH - Pascoal Mucumbi Jr.
- Apr 5 INP - Carlos Zacarias
INE - Instituto Nacional de Estatística
MMAS - Josefa Langa, National Director, Luisa Macuacua and Graciano Langa
- Apr 6 DNO - Jarl Aagedal, Mozambique Country Manager
EdM - Luis Amado, Director, Electrical and Project Directorate
MICOA - Erasmo Nhachungue, Rosa C. Benedito, Tom Durang
- Apr 7 NIASSA - EdM Office
- Apr 8 NIASSA (EdM/FUNAE, COMMUNITY) - Jose A. Centureia, Victor Raul
- Apr 9 NIASSA - Metangula grid, Communities visits
- Apr 11 Ministry of Energy - Marcelina Matavea, Gender Focal Point
Meeting with Embassy: Tove Bruvik Westberg, Øystein Botillen, Nina Strøm, Hanne Fjeldstad, Thor Oftedal
- Apr 12 CMG - Mauricio Malate
CMH - Latifa Rijal Ibraimo
FUNAE - Nilza Cassamo
MIREME - Horacio Belenguez, Permanent Secretary
- Apr 13 EdM - Luis Amado, Director, Electrical and Project Directorate
Norwegian Embassy - Thor Oftedal
ProbEC Project - Mr. Antonio Malalane, past Director
Forum Mulher - Mrs Graca Samo
- Apr 14 FDC - Jacinto Uqueio, Joana Mahumane
MoE and MMAS joint meeting – Nazario Meguigy, Director, Studies and Planning, Marcelina Matavea, Gender Focal Point, Josefa Langa, National Director, MMAS
Wrap-up meeting with the Norwegian Embassy
- Apr 15 PROCREDITO Bank - Sigrum Pahr, Dewi Soputan
World Bank, Jenn Scott, Embassy (Øystein Botillen, Thor Oftedal)
EdM- Mr Jeronimo Marrime and team
Matola Gas Company - Community Kitchen
FUNAE - Edson Uamusse, Nilsa Carimo

ANNEX 3: VISIT TO NIASSA, APRIL 7-10

1. Trip details

- Mr. Centureia, Director, Lichinga Distribution Area assigned an EdM technician to accompany us to visit the line extension from Lichinga to Metangula
- April 8 visited 3 villages halfway to Metangula: 2 connected, 1 unconnected
- April 9 went to Metangula, first to the EdM Metangula office
The Metangula EdM Director took us to see:
 - the estate of the former President of National Assembly
 - the new vocational institute being developed
 - the Lake Niassa tourist resort
 - 1 unconnected household beside the vocational institute
 - Ngongo village: 1 connected household and 1 unconnected female-headed household
- Also interviewed an unconnected household in Maniamba, a large settlement on the way back to Lichinga,

Total of 6 communities visited

- also met the FUNAE provincial Director and the MoE provincial Director

2. Awareness: in general and for women

- Main benefits mentioned: lighting, entertainment/information, grinding mills
- Benefits for unconnected communities & households: grinding mills nearby
- Benefits for unconnected households in connected communities: street lighting – safety at night for women who go to get water
- Not aware of benefits, advantages, possibilities
- Afraid of high costs
- Women left out of information meetings, EdM visits: language issues

Conclusion: high potential for intensification of connections

3. Affordability

- Costs in relation to income and spending patterns
- Connection cost 875 Mt; possible payment in installments
- Seasonal issues
- Bill fluctuations for no reason
- EdM's adjustments – social tariff, low monthly bills, installments for connection costs, 2-3 monthly payments

Conclusion: most households are able to pay, but don't realize it.

4. EdM approach and capacity

- "good manners" no written policy
- Adjusts to community needs – payment – officers go to deliver bills; can combine bill payments over 2-3 months, will be introducing prepaid meters in 2012
- Concerned about problems – fraud: woman collecting payments
- Gender issues:
 - Treat women with children as a priority for connections, pregnant women, older women and men
 - Tried extra lines for women to make bill payment easier, but then the men sent their women to pay. – now they have the same line, women who need it are served first
 - Personnel:
 - 8 of 106 total staff are women
 - 1 of 24 technicians is a woman
 - They will be hiring 14 interns – Maputo has told them 50% women

But women are not meeting the requirements, they avoid the heavy work that is part of the job, so they don't qualify. They don't see themselves as capable. An attitude issue: physical + cultural aspects

Conclusion: they try hard, technically focused, don't have time for awareness raising and community outreach.

5. What can be done

- Intensification of connections
Awareness-raising through demonstrations:
Female staff speaking the local language to give demonstrations to village women – on low-cost electric appliances – water boilers, food processors, fans
- Recruitment of women:
 - need to convince girls of their capabilities, build confidence - attract girls to vocational training centre
 - Recruit women for jobs that suit them – not so heavy – and provide training

Detailed Trip Notes

The project visit was conducted in two and a half days in Lichinga Cidade, Lichinga District and Metangula District. The ETC/ENERGIA Team interviewed 7 households in six communities that have been connected to the grid for 2-3 years under an EdM rural electrification program.

Findings from interviews:

- Women only get into a conversation when they are specifically asked to give an opinion. Even then they constantly ask the men around for their opinion and so not really express their own personal opinion. Often the team members had to insist that the women answer and got the men to go somewhere so that the women had no choice but to answer in their own right. There was no intimidation on the part of the men – just lack of confidence of women to express their needs on their own. Men therefore act as spokespersons for their families, either the husband or the son.
- Out of a group of five women, only one could speak or communicate in Portuguese. Most spoke vernacular languages, Chichewa (mixed with a bit of Swahili) in Ngongo Village in Lunho; and Jawa in Maniamba. The EdM officers could only speak Portuguese, so could not speak with them.
- The women could not answer questions on what benefits electricity could bring for them. Only those who had had a bit of sensitization or had used electricity before, spoke eloquently of the benefits of electricity – Carolina Mustafa who comes from Maniamba but lives in Zambezia Province spoke of the benefits of how good lighting can help in looking after a small baby. You can feed and clean it better in good light. She also talked of the short period of time it takes to boil water to prepare food for the baby when one has electricity compared to when one does not have electricity. She was knowledgeable of electrical gadgets and what time saving benefits they have, while other women who have been in Maniamba all their lives could not. Only Carolina Mustafa spoke Portuguese fluently and confidently. All the women did not seem to think electricity could do much except give light.
- Men on the other hand had grand ideas for electricity such as welding shops to make stoves; starting shops to sell perishables and cold drinks and beer.
- Women closer to Lichinga had better ideas for electricity benefits. Sra Elsa Yasin who had been using electricity since 2007 had hopes of getting a freezer for a small business to buy and sell fish from the Lake Niassa. At the time of the interview, she advised that she was waiting for a response to an application for a loan from the Mt 7 million facility. Besides that she could articulate benefits associated with exposure from television, videos and radio, as well as improved communication with her husband who works for a forestry company in Lichinga. Sra Alicia Martins brews beer

and attracts customers with electricity powered music from a radio and lighting. Sra Augusta Martins, Alicia's sister also has electricity and has a husband who works in Lichinga at district headquarters as a guard. Both women expressed the hope of being able to cook with electricity one day. Sra Alicia Martins had a cellphone and said openly that she has total control of her income from beer brewing, with which the husband agreed. Other women interviewed did not seem to have so much control of income.

Gender issues in energy consumption

There seems to be a direct correlation between demand for electricity among women and exposure or prior knowledge of the benefits of electricity.

There is also a general lack of knowledge of electricity and energy in general among women in particular. Some for example have never heard of gas and had no inclination of what it was or how it functions.

There is also a general fear among both men and women that electricity is expensive and once connected they will not be able to pay for the usage.

There is general understanding of the amount required by EdM for a household to get connected (ie Mt 875.00 for social customers), but lack of knowledge that this amount is not required up front and that there are options to pay half down then the balance over six months or twelve, depending on negotiations.

EdM has made an effort to reach out to a lot of people in the rural areas as well as attracting them to connect. Some who would have expressed an interest have electricity brought to the vicinity of their homes and are connected once they express interest, but others do not and EdM has had to remove the cables to prevent them being stolen and also to connect households that express an interest and do pay the contract signing amount.

In some cases, communities have not been clear on how EdM bills them and have been frustrated so much that they have requested EdM to disconnect them. One customer complained of his bills varying from month to month from 200 Mt to 500 Mt, without any apparent reason. However, an equal number of new connections has compensated for these disconnections so much that the net effect of disconnections for EdM has been zero.

There is evidence of ability and willingness to pay on the part of households in general, female headed included. What could be an issue however is timing of bills versus when households have income. Most households in the project sites visited are agro-based and therefore their income is seasonal. Billings however are on a monthly basis.

Cost of electricity is affordable and there is evidence of this.

Spending habits of low income communities in urban areas of Lichinga and rural areas in project sites visited indicate that households spend money on energy and commodities on a daily basis. Minute quantities of paraffin, cooking oil, dried fish (kapenta) and charcoal, enough for one meal or a day are bought at a time and are also sold in market places and vending shops. Minimum amount of each miniscule quantity is Mt1.00 up to Mt10.00. Most fall within the Mt2.00 and Mt 5.00 price range which suggests that this is where the majority of customers prefer.

This pattern of spending habits suggests that an energy billing system where payments have to be made in a lumpsum amount at the end of the month will not be favourable to the low income customers. A prepayment billing system where payments can be as little as Mt3.00 and Mt 5.00 may suit this customer type better so that it fits in with their "when I need it and when I can pay for it" spending pattern.

The smallest packet of charcoal for cooking in urban areas costs Mt5.00 in Lichinga and can boil water for tea and cook relish or *chima* for lunch or dinner. At the very minimum, a family needs two of these small packets of charcoal per day to cook a minimum of two

meals. While the next statement is not proven there are strong indications that the limited availability and access to cooking energy may be a direct cause of malnutrition among urban dwellers, since meals are limited to tea (with pao (bread), cassava or sweet potato). The less cooking is done, the less cooking energy is required and purchased and consequently the less money is spent on buying charcoal for cooking. In addition the less demanding on cooking time and energy required a meal, the more preferred it is over those that demand more cooking time and more energy. Beans will not for example be preferred over tea, which needs only for water to boil.

During its most scarce and expensive period, a sack of charcoal costs Mt150.00 in Lichinga Cidade. If a family gets it from the producers and not from the vendors in Lichinga, they would get it at Mt50.00 saving themselves Mt100.00. The same sack would last a family cooking two meals a day about fifty days. In fifty days the same family will have spent Mt250.00 which means they could have saved Mt100.00. On the part of the charcoal vendor, he makes a minimum profit of Mt100.00 per sack if he sells wholesale and a minimum of Mt 200.00 if he vends the charcoal. Apart from being an easy business with quick and reliable profits, the charcoal vending business is lucrative for low income community members because there are easy profits and it a commodity which people require to survive. It will always have a market for the low income customers because it is priced in such a way that it suits the spending habits of the low income people. Any alternative energy source will need to be packaged in such minute /miniature quantities at a minimal price of Mt5.00 to be able to be acceptable in this market niche, which serves more than 85% of the urban populations of Mozambique. Only 15% of urban dwellers in the country use gas for cooking.

The smallest packet of paraffin (about 25ml) costs Mt 2.00 also in Lichinga; and in rural parts there is a smaller packet (between 12ml and 15ml) which costs Mt1.00. A bigger packet (50ml) costs Mt5.00 in Lichinga Cidade but is not available in rural areas, and lasts up to three hours a night. A litre of paraffin from Petromoc (a filling station funded by FUNAE in Metangula) costs Mt31.00. If the same family which buys the 50ml paraffin were to buy this litre, they would last twenty days and also make a saving of Mt69.00. The family that buys the 25ml packet would use the one litre in forty days and make a saving of Mt49.00. The family that uses the 12ml or 15ml packet would use up the one litre bottle in 83 to 66 days and would make savings of between Mt 52.00 and Mt 35.00.

EdM may actually be able to provide electricity to the lowest income families at minimum costs because the lowest income urban family pays on average Mt45.00 on paraffin (if one assumes they only have light for 15 days in a month) and Mt 150.00 to Mt300.00 on charcoal. A low income rural family which uses firewood for cooking spends a minimum of Mt30.00 per month on paraffin. A random check on bills for rural families connected in the project areas indicated that a household on social tariff will most likely be billed a minimum of Mt12.00 per month. A family on a domestic tariff is most likely to be billed a minimum of Mt180.00 to Mt 200.00. When one compares these likely bills with the cost of energy baskets one realizes that communities can actually afford the bills that EdM charges.

There is a general lack of knowledge of what bills are likely to be on the part of households that have not connected and a fear that they will not be able to pay for electricity.

Insufficient understanding of the advantages that electric power can bring

The problem cited by the baseline studies of insufficient understanding of the advantages that electric power can bring is the main reason for difficulties in connecting enough customers to the grid. There is very little demand for electricity at rural household level in Niassa province. Female members of the community have little understanding of the advantages that electric power can bring to families, mainly because they have no exposure to what the power can offer. Only female members of the communities who have had exposure to electric power in urban areas displayed some level of comprehension of benefits electric power can bring.

To the rest of the communities, and indeed women, electric power is mostly for the more affluent members of the society, and solely for providing better lighting. To these people, it is viewed with awe and not something that ANY family can have. In Maniamba, Sra Rosa kept asking why she should think about benefits of electrification when it is something that will never happen. She lives next to poles that EdM put up poles so that households can connect easily. These poles are still at the household, yet EdM ended up disconnecting them because of lack of interest.

From an economic point of view, a product that does not have demand will not survive. People clearly see themselves as fit to use paraffin and charcoal, but not electricity. To them it is a technology which is above them. They do not see themselves with electricity, especially women. To them it's a technology that men can consider but not really worth the time and effort for women.

EdM's staff complement on the ground does not help matters. Out of 24 technicians in the Lichinga office, only one is female and she is not qualified. 14 interns are to be hired this year, with a policy to include 50% women. However this policy cannot be implemented since the women don't pass the qualifying tests. In Metangula, there are three EdM staff members and all are men.

During the project visit, the ETC/ENERGIA team observed that even though the EdM people were very respectful of community members, they were held in awe by male community members; female members did not even show their faces to talk to these officials. The male members of the community referred to EdM officials as 'Chefs' and treated them like such – an elite group of people who are rarely questioned. Only one man, Sr Vito Chade in Nsauca openly demanded to know why his bills were inconsistent and why EDM does not abide by the bulletin method that he knows they advised they would use. This timid attitude seems to be common with people with little or no education levels in the presence of people they regard to have high levels of education.

In general the **women interviewed in the communities had the lowest education levels and could not understand Portuguese. Two EdM officials did not seem to be able to speak local vernacular languages** opting instead to speak slowly in Portuguese when they felt a person being interviewed did not understand the question. In most cases, a local young person who understood Portuguese translated fluently in the local language to which the women responded promptly. In these conversations, women did not display evidence of knowledge of what electricity could do for them. Only when efforts were made to understand what income generating activities the female members of communities did, did the women start suggesting how perhaps electricity could play a part in some of their activities. Sra Rosa is one such example who explained eventually how she would like it if this electricity could improve her production in her bun making business.

If EdM officials really cannot speak local vernacular languages, then they are not able to engage women in conversation to understand the needs of women. This presents a problem of language barriers. In addition, EdM officials are overloaded with work as it is and would not ordinarily have time and effort that is required to get women in the said communities to engage in dialogue about electricity benefits. Assessments are done, and possibly with women in attendance, but the women do not understand enough to contribute meaningfully.

There is a further possible difficulty in trying to explain issues to a community that has never even seen what you are explaining so the full benefits are not felt. The ETC/ENERGIA team suggests that it may be important for EdM to conduct demonstrations of energy use with community members when they do assessments to raise the interest of community members. In particular, a female member of EdM could go with a stove (gas fired and with a cylinder), an electric kettle, a light bulb, a mobile phone and other gadgets that she could use to demonstrate the use of electricity. She could first demonstrate how some gadgets are used, actually boiling water with the kettle while they watch, or cooking a local meal, charging a phone and using a lamp to light dark

areas, then get a group of women to perform the same tasks. For starters such demonstrations provide visual aids to people who are illiterate and who have never seen the gadgets that you are using before. By demonstrating what they can do, the demonstration will cultivate interest in the female members of the community, but also vivid pictures of which gadgets the women will need so that even if the women only send men to buy them, they clearly have a picture of what it is that they want and they can describe them. It also creates confidence in the women and removes the fear of not being able to use the gadgets which in turn speeds up acceptance of the source of energy.

In the excitement, there will be demand that is being generated as women will start putting pressure on their husbands to a) have electricity connected and b) invest in electric gadgets that will improve the burdens of chores that use electricity. In turn this should generate enough demand for electricity at household level.

At business level, in one community, Ngongo Village in Lunho, an elderly woman lamented that if she had “that gadget you talk of that could remove husks from my rice, then please bring it here”. The ETC/ENERGIA team is convinced that the route of demonstrations is also important even in micro businesses that can benefit women. A de-huller for example could be given to a group of female rice growers in the community together with packaging machines which use electric power. Since Ngongo rice is of high quality, the women could start a brand of rice, say “Gogo’s”, which could even get markets nationally or across borders in Malawi, Tanzania, Zimbabwe and South Africa. A small amount could be dedicated to the group of women to travel to one or two countries to market their rice and they could be trained to actually run the business profitably. Similar demonstrations could be done with women groups in various electrified villages where for example women could produce juice from fruits they grow locally, or jam or even coldroom facilities to increase the shelf life of perishables. Once women start seeing how this is possible and what incomes they can get, they will start coming up with more ideas on what they can do with electricity and improve their lives.

Another concept which the Ministry of Energy would like to try is the concept of a “Community Energy Centre” or “Multi Use Platform” concept. With this concept, the services of the energy centre could be more of services for women’s businesses. This will require a detailed study of the businesses that women require, such as selling fish.

The problem is people not seeing themselves having electricity. If demand is created at household and community level, more connections will be requested.

Why focus on women? Focusing on women is important because as much as they do not have control over resources, they influence whether or not a house has electricity. They are household managers of nutrition, hygiene, health and child care. They can also mobilize resources to make investments into gadgets that will ensure that electricity is used more in a community.

Opportunities for more effective approaches for promoting productive use and small businesses for income generation.

The communities grow strawberries, onions, tobacco, potatoes, sweet potatoes and maize. There are also great opportunities for tourism especially in the Lake district which has not been explored at all. Apart from the Lake having beautiful fresh water beaches, there are delicious fresh water fish which tourists would love to have. There are also swarms of mosquitoes that hover on the Lake surface which look like clouds of smoke which locals are reported to catch and roast as relish. On a good day, these mosquitoes are a spectacular sight that can qualify in the Seven Wonders of the World as they really are not malaria causing. The locals also report that there are various species of snakes in the area which also are interesting to tourists with various taste. Lush green mountainous vasts of land are unexplored and have climatic conditions that offer the perfect holiday resort for nationals and international people alike. With a bit of investment and good marketing, the tourism of the area can be explored fully and will bring employment and generally improved lives of people in the area.

It is also important to note that development of market linkages of local products will be essential. Expecting the local communities to buy and sell products from the area is unrealistic since people in the area generally have the same products. Creating market linkages that open the products to a wider national market is crucial to sustain the growth and survival of local businesses.