



WWF

FACTSHEET

MWIOPO

OCTOBER
2013

SUSTAINABLE ENERGY ACCESS PROGRAMME

“Access to sustainable energy, a positive environmental tool for socio-economic development”

Context

Over the years, thermal energy has become the primary source of power production in Madagascar. Heavily dependent on oil imports and handicapped by decaying infrastructure, the electricity power supply is nowadays inadequate and expensive; it is a hindrance to the development of communities and the economy, and a factor of social crisis. In addition, oil is the sole fuel for transportation to date. Renewable energy represents only 1% of the country's energy offer today.

As for wood, it provides 99% of the population's energy needs for cooking; due to lack of sustainable management, forest resources are becoming scarcer leading to dramatic ecological imbalance, particularly in the South West of the country.

The current energy crisis springs from these longstanding choices and practices. Changes towards development and sustainable management of existing natural resources (biomass, wind, solar, water) are required for the country's energy independence and its sustainable socio-economic development.

They must be undertaken in the world context of combating global warming.

WWF MWIOPO has therefore taken a position of promoting such changes through the development of its Sustainable Access program.

The main goal

The Energy Program has the objective of helping reduce environmental degradation by supporting the population's access to sustainable energy services. It also aims at improving the country's energy situation which must take into account domestic and global environmental stakes.

The main activities

The Energy Program includes three strategic lines:

1. Meeting the population's domestic energy needs while preserving natural forests. Activities are focused on the Ala Maiky eco-region, for sustainable management of the wood fuel production chain for supplying the town of Toliara in the South West region.
2. Rely on electrification by renewable energy to improve the living conditions of basic communities near or inside priority landscape and seascape.
3. Support development of the Energy sector so that access to clean, sustainable, and affordable renewable energy is fully integrated in the country national framework and lead to scaled results.

Fuelwood and Alternatives

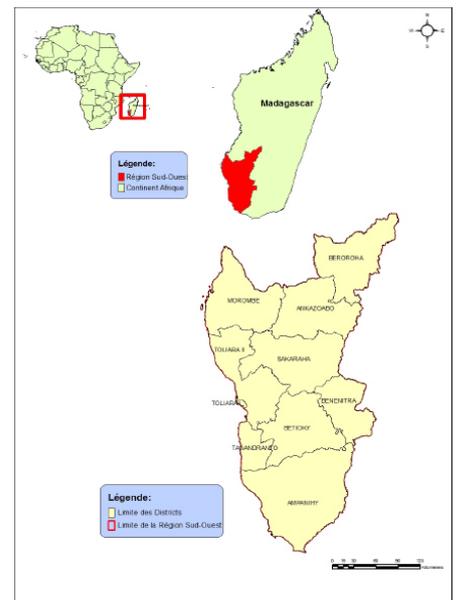
“...Sustainable management of the fuelwood chain for clean, affordable and renewable cooking energy...”

Context

Fuelwood remains the most demanded domestic fuel by Malagasy households. In the study conducted in 2012 within the “Diagnosis of the Energy Sector”, fuelwood represents 92% of the energy supply in Madagascar. Fuelwood, particularly firewood and charcoal has the advantage of being available, easy to store and to use and has a lower price compared to other cooking energy sources such as cooking gas or electricity.

For the particular case of the southwestern region of the Island, where forest formations are vulnerable to any cutting due to the arid climate, charcoal consumption reached 30.000 t or the equivalent of 278 258 tons of dry wood in 2007 (ABETOL1 , 2007). The used wood come from limestone forests and red sand xerophyte thickets, all part of the spiny forest ecoregion, which is known worldwide for its unique biodiversity and its very high level of endemism; these forest ecosystems are part of the priority landscapes of « Manombo-Fiherenana » and « Mahafaly ». At least 15 000 acres/year of forests are used for Fuelwood; the forests close to the city of Toliara are the most threatened by exploitation.

To face the situation, addressing the fuelwood issue and mitigating its impacts on forest loss is part of WWF MWIOP0’s priority challenges.



Main goal

WWF contributes to the implementation of a sustainable management of the fuelwood chain of custody in the South West region of Madagascar, thus influencing the national policy and regulatory framework for a clean, affordable, and renewable energy for cooking for the majority of the Malagasy people.



¹ Study on the Wood Energy supply for Toliara



The main activities

At the level of the South West region:

- ☑ Support the South West Regional Energy-Forest Committee in coordinating the regional fuelwood strategy implementation ;
- ☑ Mobilise the South Western region's authorities and strengthen the capacities of administrative services in adopting and enforcing a fuelwood chain of custody regulatory framework, including improved forest management, energy efficiency in charcoal production, traceability, taxation and control measures ;
- ☑ Support communities for fuelwood oriented reforestation and promote private sector reforestation involvement ;
- ☑ Support community-based forest management for fuelwood supply ;
- ☑ Develop partnership for saving fuelwood stoves spreading to Toliara households;
- ☑ Develop fuelwood alternatives initiatives ;

At the national level:

- ☑ Share with stakeholders, civil society, private sector and public institutions the capitalized experience of the South West region for inspiration and replication in other regions, and as inputs for national consideration ;
- ☑ Promote the establishment of a national fuelwood sector regulatory framework as well as a national strategy ;
- ☑ Promote partnership through local NGOs for actions to promote of efficient cookstoves in priority landscapes MWIOPO.

Achievements (until September 2013)

Fuelwood legal regulatory framework

- ☑ A southwestern regional decree regulating the Fuelwood sector was enacted in 2010; it was developed in a participative way with all stakeholders concerned ;
- ☑ Administrative agents at regional, municipal and village levels have the ability to enforce the regulatory system, and are convinced of the interest of enforcing it in an efficient way throughout the Region ;
- ☑ The Fuelwood regulation is operational in six (6) municipalities in the district of Toliara II (Andranohinaly, Ambohimahavelona, Belanda, Ankilimalinika, Tsianisiha and Marofoty) where forest resources are heavily exploited for Fuelwood ;
- ☑ Five (5) forest areas managed by local communities for sustainable fuelwood production are established in the district of Betioky. It represents 22,000 ha of forests with a potential of 4100 tons of charcoal per year
- ☑ A monitoring methodology of regulatory framework enforcement is being developed with the regional forestry administration. A project of legal text for fuelwood taxation system has been proposed to South West regional authorities, for the financial sustainability of the fuelwood chain of custody control ; .

Fuelwood reforestation

- ☑ In partnership with the regional Forest Administration and 3 associations, 900 ha of reforested plots are set up with 1 000 000 trees (native species, Eucalyptus sp, Acacia sp), in 3 municipalities (Andranovory, Andrano-hinaly, Analamisampy
- ☑ Associations of tree planters and the local authorities have a better mastery of the reforestation routes as well as the organizational aspects, social mobilization and fundraising process. The reforestation project will continue for the 2013/2014 campaign in order to establish at least 250 ha of new viable plots, and to enable tree planters to gain autonomy in the implementation and management of reforestation activities.

Saving stoves and fuelwood alternatives promotion

- ☑ Research studies for an improved solar cookers have been conducted ; the conclusion is that solar cookers has still long way to run before being the solution for majority of Malagasy people ;
- ☑ 3 100 efficient cookstoves and 100 solar cooker were distributed in 2013, in partnership with ADES, in 16 neighborhoods of the city of Tulear. A saving stoves adoption and impacts monitoring system is actually being developed



Perspectives and future actions

- ☑ By June 2014, the monitoring of fuelwood legal framework enforcement in the South West is operational, with regional forest administration leadership;
- ☑ By December 2014, a legal text on fuelwood chain of custody tax system is adopted by south west regional authorities and enforced
- ☑ By December 2014, at least 250 ha of new viable plots are established by communities, and tree planters gain the necessary autonomy to pursue management of reforestation project;
- ☑ By June 2014, conditions to involve private sector in reforestation for fuelwood purpose in the south west are defined
- ☑ By June 2014, 5000 additional efficient stoves are adopted by households of the city of Toliara, and by June 2015 the efficient stoves adoption rate reach at least 50% in Toliara
- ☑ By June 2014, a prefeasibility of developing biogas for Toliara town is available
- ☑ By December 2014, national energy policy and strategy integrate clear orientations about fuelwood and alternative

Projects and donors

Energy Environment Synergy in the South West	496,000 Eur	2008 / 2011	European Union / Energy Facility , WWF Switzerland, FFEM
Community and individual reforestation for fuelwood	122,000 Eur	2010/ 2011 2013/2014	Tany Meva Foundation
Regulation of the fuelwood sector	130,000 USD	2012	EU ACP FLEGT / FAO, NORAD, WWF Switzerland
Reboisement à vocation Bois Energie	65,564 CHF	2011/2013	WWF Sweden
Coordination/Policy work	64,500 CHF	Continue	WWF Switzerland /WWF Norway

Sustainable Electricity services for rural poor

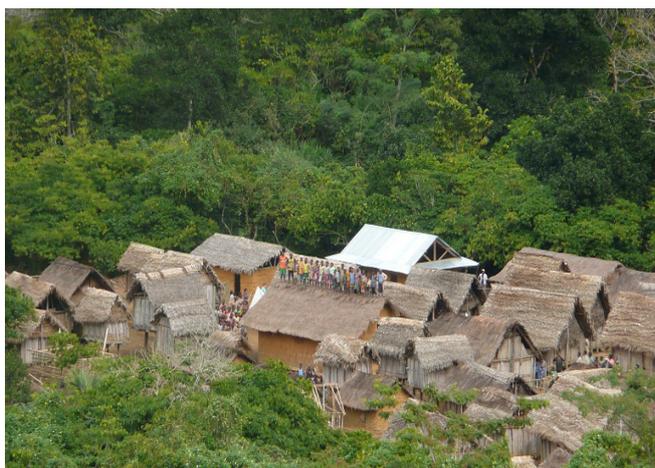
“...for improvement of communities living conditions in priority landscape and seascape...”

Context

In Madagascar, around 70% of the population lives in rural area; 4.8% have access to electricity. The low population density characterizing the country, the isolation of many communities and low technological development in economic activities significantly impede electrification in rural areas where the extension of the existing grid and diesel power plants are hardly viable, profitable and sustainable. The need to ensure 100% of the power supply in rural areas from renewable energy by 2030 is part of the recommendations of National Energy Diagnosis. Madagascar ranks among the richest countries in renewable energy potential (water, solar, wind, biomass), but for now, only 1% has been exploited.

Communities working daily with WWF in priority landscape and seascape are rural and belong to the most vulnerable population layer. Rural villages are landlocked. Households live in “slums” using rustic means to ensure their energy comfort: oil lamps for lighting, batteries to power a radio set or a flashlight. This leads to high expenses taken from their small monthly budget, in addition to health problem due to high indoor pollution and hazardous waste from batteries. The low level of education does not help the communities in the management of natural resources which must comply with some methodological rules and control, for which read, write and count can help to be more efficient. Small farmers or fishermen live on the exploitation of natural resources, short of anything better; opportunities to develop alternatives are not sufficient, even though high birth rate results in the population increase. This is the case in almost priority landscapes and seascapes. In addition, the chronic quantitative and qualitative water scarcity and salinity in the littoral zone of the south-western region of Madagascar, exacerbated by temperature increase and rainfall decrease, is a fundamental constraint for communities’ socio economic development in Mahafaly seascape and is one major factor that increases threats on biodiversity. Daily, people walk up to 18 km to buy “clean and sweet” water at CHF 0.30 for 20 liters. As it is expensive, people also dig water holes in the sand to complement their water needs even if the groundwater is salty. Thus, most people in the area are suffering from various water-related diseases.

At global level, in 2012, WWF and Barefoot College entered into an international partnership to increase access to renewable energy services for rural poor. Madagascar was the first country chosen to implement the partnership. The partnership relies on the spreading of solar technology for rural electrification, put forward by target village communities for the benefit of village communities. By training village women in solar engineering, the approach contribute to access to electricity by very remote communities from a renewable source at an affordable price.



The main goal

Contribute to living conditions improvement of communities near or inside priority landscape and seascape through support to access to sustainable electricity services.

Main achievements

- ☑ A feasibility study to install a hydroelectricity power plant of 46kW for two villages near the Nosy Hara Marine protected area, in Ambre seascape, is available; beside electricity, the valorization of the hydro resource should permit to pump water, and improve incomes through sustainable fisheries activities and sustainable tourism development. Implementation is waiting for interested funders;
- ☑ Two villages (Ambondro and Analapatsy) are electrified with wind turbines and solar panels, in Deep South of Madagascar, in Mandrare landscape. The infrastructures are managed by local association and help to develop incomes generating activities for communities. Around 150 households are benefiting the electricity service as well as public health center and other administrative services;
- ☑ Around 400 households are benefiting from clean water supply from a solar desalinization unit in Beheloke, a coastal village of Mahafaly seascape. The water service is managed by local association working closely with MWIOPO for conservation of marine natural resources;
- ☑ Seven (7) grandmothers coming from two villages totalizing around 400 households, along the forest corridor of Fandriana – Vondrozo, have been trained during six months at Barefoot College in India to learn solar technology. They are actually back in their village, becoming leaders of change for sustainable development, and ready to electrify each household with solar systems.



Perspectives

- ☑ By June 2014, two other littoral villages in Mahafaly seascape have access to clean water thanks to the installation and management of two other desalinization units functioning with solar and wind systems;
- ☑ By 2015, Ifotaka village located in Mandrare landscape will be electrified with solar systems, boosting socio economic development;
- ☑ A program to upscale the Barefoot College approach in Madagascar is developed through innovative partnerships.

Donors

European Union / Energy Facility / Foundation Energy for the World ; The French Environment and Energy Agency (ADEME) ; Solar Spar Foundation ; Climate Friendly ; WWF Switzerland ; WWF Belgium ; Belgium Donator.

Water solar desalinization for rural poor

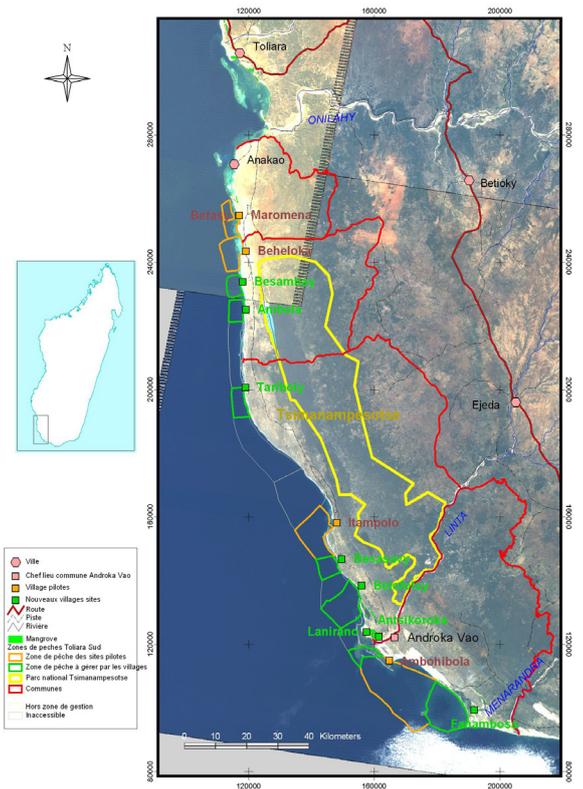
“...for improvement of communities living conditions in pMahafaly seascape...”

Context

The southwestern part of Madagascar is very dry with an annual average rainfall of 30mm. This region is also the poorest in the country. The harsh arid climate makes food difficult to secure and local communities vulnerable to social, economic, and natural crises. Beheloke, Besambay and Tariboly are villages located along the southwestern coast, in the Mahafaly seascape. The three villages have a total of about 5 000 inhabitants living of sea and forest resources, and subsistence agriculture.

Those communities are working daily with WWF to preserve the exceptional marine biodiversity of the littoral south of Toliara. They are well organized with community groups, supported by local authorities and WWF social enablers.

The chronic quantitative and qualitative water scarcity and salinity in the littoral zone, exacerbated by temperature increase and rainfall decrease, is one major factor that increases threats on biodiversity. Clean and non-salty water is expensive and people have to travel long distances to access it; daily, people walk up to 6 km or go by zebu and cart to buy clean water at Ar 500 (CHF 0.30) for 20 liters. As it is expensive, people also dig water holes in the sand to complement their water needs even if the groundwater is salty. Thus, most people in the area are suffering from various water-related diseases. The ground water is contaminated with seawater. When drinking this water, the health consequences are intestinal, teeth, and skin problems, especially among children. Also, lack of non-salty water constrains agricultural activities and increases communities' dependence on natural resources, seeking short term results rather than long term benefits.



Required changes towards development and sustainable management of existing natural resources need include access to basic needs, feasible with the support of renewable energy technology for sustainable socio-economic development. Madagascar has on average 2.690 hours of sunlight per year compared with 1.700 hours for Swiss



The main goal

The overall aim of the initiative is to build long-term local capacity for access to clean, non-salty ground water through solar-powered desalinization technology, leading to an improved standard of living through better health, agriculture, and income generation in the long-term

Main activities

- ☑ Promote Malagasy-Swiss knowledge exchange, develop, build on, and strengthen capacity of communities and local authorities in the three villages, as well as of other parties concerned (water administration, regional technicians, WWF team), regarding the technology and its management
- ☑ Install solar ground water desalinization units in Beheloke, Besambay and Tariboly
- ☑ Develop sustainable long-term management, running, and maintenance by local stakeholders of these units
- ☑ Disseminate successes and lessons learned locally, nationally and internationally through communications and promotion activities



Achievements

- ☑ A desalination unit is operational in Beheloke since end 2012. It can provide around 450 liters of drinking water a day. This does not meet all the water needs of the village, but gives each household the chance to have 20 liters of drinking water every two days; this clean water is used for the needs of children and also for cooking
- ☑ A local management Committee has been established in Beheloke, and continuous training and accompaniment is provided for the management of the unit functioning and water service, on financial, technical and administrative aspects. The 20 liters are sold at 250 Ariary. Local technicians have been trained by the Trunz company
- ☑ The Beheloke experience has permitted to take lessons on different aspects. Monitoring of impacts is ongoing. Access to clean water has changed the village life: improvement of women living conditions, development of social initiatives (sanitation, health...), emergence of economic activities (coffee shops...), empowerment of the environmental association, environmental initiatives (coconut trees planting...).
- ☑ Installation of two other units for Tariboly and Besambay is ongoing. High level technicians present in the area have been identified to come in support of local technicians in the three villages when needed. Water regional department is supportive and is willing to promote the approach. Communities are jealous of their clean water recognizing its high quality.

Donors

WWF Switzerland / Solar Spar Foundation / City of Zurich / Cotteriefonds Zurich / Trunz / Carried out in cooperation with ADES.

Sustainable Energy national framework

“... for scaled access to clean, sustainable, and affordable renewable energy for all...”

Context

The world's dependence on fossil fuels cannot go on indefinitely. With a projection of population increase to more than 9 billion over the next 40 years, the “business-as-usual” scenario is not an option. According to the International Energy Agency (IEA), the production from oil and gas reserves will fall by 40-60% by 2030. Yet, the thirst for energy in developed countries is not decreasing while the demand in emerging countries, such as China, India or Brazil, is exploding. Competition for fossil fuel is a source of international tension and even potential conflicts. Energy specialists are looking for ways to fill this gap with unconventional oil and gas sources, such as shale gas, deep water oils or tar sands. This engenders very high economic, climatic, environmental and social costs.

Nearly a quarter of the global population still has no access to reliable electricity, drastically reducing their chances of receiving an education adapted to the present society and to earn a living. With the rise of energy costs, poor populations remain excluded. Simultaneously, more than 2.7 billion people depend on traditional bio fuels (mainly from wood, agricultural residues and animal waste) as cooking and heating fuels. The wood is often collected in a non sustainable way causing soil erosion, increase of flooding risks, threats to biodiversity and increasing greenhouse gas emissions. Traditional cooking equipments also lead to a major health issue: the World Health Organization (WHO) estimates that 2.5 billion women and young children die prematurely each year due to smoke inhalation. While many developing countries are becoming more urbanized, the quality of the air in the cities declines progressively.

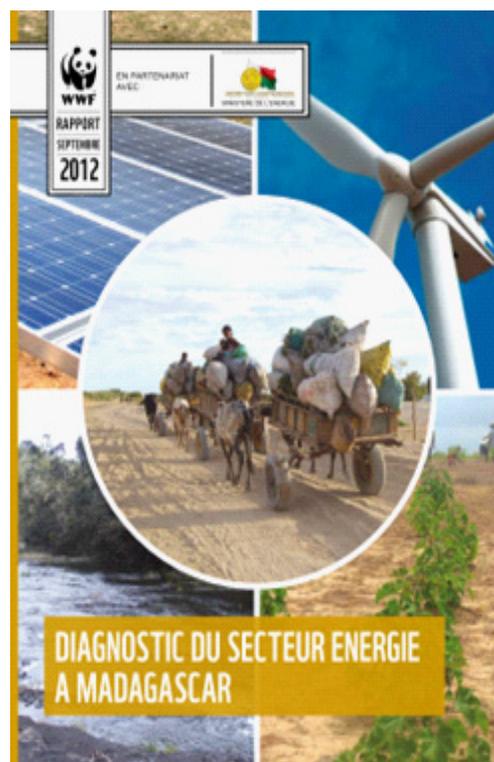
Finite and increasingly expensive sources of fossil fuels are not the solution for developing countries. Renewable energy sources have the potential to transform the quality of people's lives and to improve the economic conditions of billions of people. WWF believes that the world should make a shift towards 100% renewable energies.

Madagascar is no exception. The lack of energy, its nature and supply costs are a major inhibiting factor for a sustainable socio economic development. The Malagasy energy context, which is based on wood energy and imported oil products, highlights the social precariousness, slows down economic activities and accelerates forest degradation. In a situation of high vulnerability to climate change, high dependence on natural resources and ecosystems, and population growth, the country should immediately change its course regarding the development of the energy sector, to support an environment friendly economic growth and social welfare.

Over the past four years, initiatives from actors and reflection groups are multiplied to make decision makers aware of the need for an actual pragmatic move towards renewable energies and energy efficiency; WWF is one of these actors.

The main goal

A sustainable energy policy and strategy govern energy sector development in Madagascar, for clean, sustainable, and affordable renewable energy access for all.



Achievements

- ☑ WWF Global Energy Vision for 100% renewables by 2050 has been shared to socioeconomic stakeholders in Madagascar
- ☑ A Madagascar Energy Diagnosis report is available. It inspires and helps thinking of various stakeholders regarding energy development in the country. It has been elaborated under the supervision of a multisectoral Committee including different ministries, and with Ministry of Energy leadership.
- ☑ An Energy Working Group comprising members from administration, civil society, private sector, financial and technical partners, are developing recommendations for the future energy policy and strategy. WWF is actually coordinating this group.
- ☑ A national multi-stakeholder platform is on place (The Sustainable Agrifuel Platform - PAD), lobbying for national framework in favor of sustainable production of agrifuel. An agrifuel strategic development study is available for Madagascar; the PAD position and recommendations of national orientations has been defined. The PAD has also developed a legal text project for the regulation of agrifuel activities along the whole chain of custody.
- ☑ An Environmental impact study Guidelines book is officially available for private sector agrifuel's investment.
- ☑ A 540,000 efficient lights spreading initiative is under implementation, through a strong partnership with institutional and private entities. It's a first step to favor energy efficiency behaviors and measures. The development of a national framework for regulation of the lighting market that favors good quality and affordable efficient lighting for all is underway.



Donors

WWF Switzerland ; WWF Norway ; UNDP

Efficient electric lighting in Madagascar

“... Moving towards low carbon development and a world where 100% of energy needs are satisfied by renewable energy is not possible without energy efficiency measures...”

Context

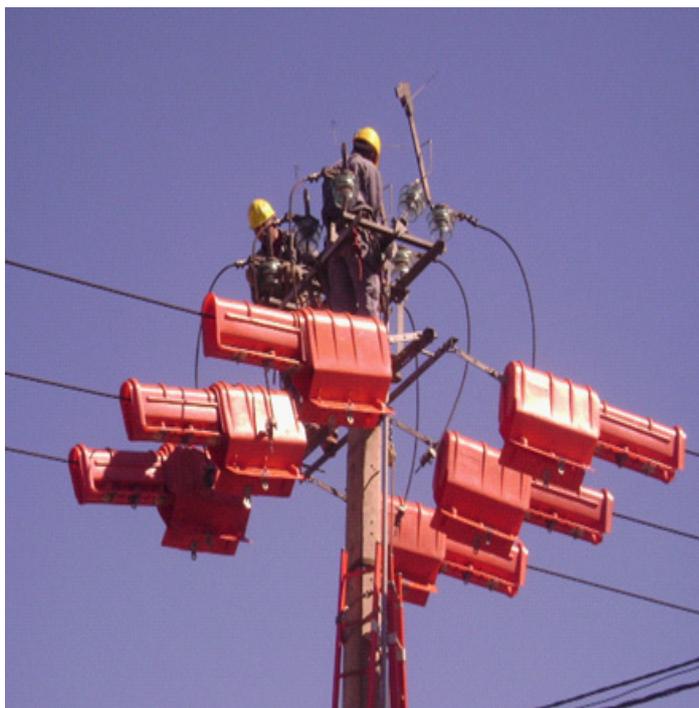
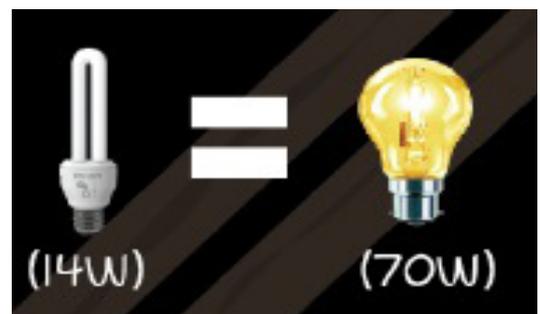
According to the International Energy Agency (Light's labor lost, 2006), the energy consumed for lighting cause impressive greenhouse gas emissions:

1900 Mt of CO₂ per year, equivalent to 70% of the emissions from the world's light passenger vehicles. Since 2009, EU countries have started to phase out incandescent light bulbs and the US planned to do the same in 2012. In 2005, South Africa launched a national campaign to replace 43 million incandescent light bulbs. The lighting sector has greatly evolved thanks to the implementation of policies to ban inefficient bulbs. This can impact dramatically countries where such regulations are not yet adopted; indeed, the massive flow of cheap inefficient bulbs in those countries market could affect the development of the energy sector.

In Madagascar, the electrification rate is around 12% (39% in urban areas and 4.8% in rural areas). Households consume 55% of the total electricity generated by JIRAMA (The national power Company). Besides, lighting accounts for 10% to 20% of households' electricity bill. 46% of the electricity generated comes from thermal power plants which are fueled with heavy fuel and diesel; thereby resulting in high production costs and a high selling price. Each year nearly 100 million USD of fuel are imported.

Incandescent lamps are based on a technology that was developed 130 years ago. Incandescent lightbulbs transform only 5% of the energy consumed into light and the remaining into heat. Indeed, these bulbs are inefficient.

CFLs do exist in the Malagasy market and consume five times less power compared to the equivalent incandescent lamp.



Main goal

WWF wants to favor energy efficiency behaviors and measures, by enabling the emergence of a good quality and affordable efficient lighting market in Madagascar. Thus, the main objectives of the efficient electric lightings initiative are:

- ☑ Stimulation of the market by distributing 540,000 Compact fluorescent lamps (CFL) among 140,000 households in Antananarivo
- ☑ Adoption of a national framework for regulation of the lighting market that favors good quality and affordable efficient lighting for all

Outcomes expected

Economic

- ☑ Reduction of 20 MW of the electricity pic power call;
- ☑ Yearly 6 million USD saving for the national electricity company on fuel and other inputs;
- ☑ More available power : no load shedding, more households having access to electricity;
- ☑ Growth of the good quality lighting market.

Environmental

- ☑ 540,000 incandescent lamps not used anymore;
- ☑ Around 52 000 T of CO₂ emission reduction within 7 years (About 10,000 T of CO₂ emission reduction expected for the first year) certified by GoldStandard
- ☑ Approximately 140,000 households using good quality CFLs
- ☑ At least 7% saving on electricity bills for households;

Situation to date

An MOU have been established between the partners of the initiative: WWF, JIRAMA, and the TELMA Foundation.

The CFLs were purchased by JIRAMA through World Bank Funding. JIRAMA ensures the grid quality, facilitates the distribution and participates in impacts monitoring. The TELMA Foundation is responsible for the logistics and storage of the lamps. WWF's responsibilities include coordination, fund-raising, contracts management and environmental impacts mitigation (recycling).

The Ministry of Energy facilitates tax issues, and work with WWF for the regulation and standardization of the lighting market.

The distribution of CFLs started on September 24th, 2013 and is expected to end by March 2014.

A communication campaign was launched to raise awareness and encourage households to exchange their Incandescent light bulb into high quality CFLs in one of the distribution spots throughout the city. The CFLs can be acquired by the households for a symbolic price of 1,000 Ariary (eq. \$ 0.4).

The monetary participation by the households will be used by JIRAMA for the improvement of grid infrastructure.

The carbon emission reduction will be certified by GoldStandard. The PDD was submitted in August 2013. The VERPA (carbon credit purchase agreement) will be signed in November 2013. The project is currently undergoing the stakeholder feedback round.

Projects and Donors

WWF Switzerland provided 400,000 CHF to cover the distribution, communication and coordination cost of the project. The CFLs were purchased by JIRAMA through World Bank funding.



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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