PACEAA

Poverty Alleviation through Cleaner Energy from Agro-industries in Africa

Clean electricity from Agro-Industries

Agriculture is the foundation of economic development in most developing countries. Many industries, however, are located in areas where grid electric power is weak or unavailable, and they must generate their own power, usually from costly and polluting diesel generators.

In many parts of East Africa, the main agro-industry is growing and processing tea, which produces significant export income and local employment. Main tea producers are often isolated from reliable electricity supplies, but situated in areas with good hydro electric potential.

Using hydropower simply for tea production is one option, but what if this clean and renewable energy can be brought to these produces in such a way that excess electricity can support the electrification of surrounding villages? Access to electricity could greatly accelerate both education and home-based industries, both of which can help to lift incomes.

Such developments may be desirable, but how would villages pay for a 'mini-grid'? Who would control it, and importantly, how much would people pay to electricity in their homes?

Answering these questions is the basis of a project called PACEAA – Poverty Alleviation through Cleaner Energy in Agro-industries in Africa. With support from the European Commission's COOPENER programme, PACEAA is helping to develop the tools, policies and business infrastructure to provide clean electricity for rural communities in East Africa.

The three-year PACEAA project is being coordinated with two larger initiatives funded by the Global Environment Facility (GEF), and co-implemented by the United Nations Environment Programme (UNEP) and the African Development Bank. The first of these GEF projects focuses on the potential of the tea industry. The East Africa Tea Trade

Also in this issue:

Activities

Association (EATTA), based in Mombasa, Kenya, is the Executing Agency for Greening the Tea Industry in East Africa (GTIEA, **http://greeningtea.unep.org**) that supports the development of small hydropower for the tea factories as a substitute for expensive and unreliable electricity from the grid and diesel backup power.

The other project focuses mainly on the sugar industry. Cogen for Africa (**http://cogen.unep.org**) is helping to transform the market for cogeneration in Eastern and Southern Africa by strengthening the capacity of cogeneration project developers, technical service providers, and local manufacturers to deliver profitable cogeneration projects, principally from sugar cane bagasse. The project is executed by AFREPREN/FWD, based in Nairobi, Kenya.

PACEAA's activities are designed to develop:

- An institutional framework that removes policy, commercial and regulatory barriers restricting rural electrification from cogeneration and renewable energy systems that power agricultural industries in East and Southern Africa;
- Detailed policy and regulatory guidelines and financial incentives to involve the agriculture sector in rural electrification for selected countries;
- Methodologies and tools to develop rural electrification plans for regions with agro-industries interested in cleaner energy project development; and
- Enhanced local, national and regional capacity to electrify rural areas through cogeneration and small hydro projects led by neighbouring agro-industries.

PACEAA builds on the strong cooperation and coordination between three projects. While GTIEA and Cogen for Africa, both sponsored by GEF, are focused on the generation of green energy for agro-industries (supply side), the PACEAA project concentrates on the use of green energy for rural electrification (demand side), including electricity for households, social services and small productive activities.

Cooperation between GTIEA, Cogen for Africa and PACEAA is facilitated by the main subcontractors of PACEAA, AFREPREN/FWD and EATTA, which are also the implementing agencies for GTIEA and Cogen for Africa. Expertise on the supply side aspects of small-hydro and cogeneration will be available to PACEAA through the consultants sub-contracted by EATTA and AFREPREN/FWD under the two GEF projects.

PACEAA will not act as an investor in rural electrification projects, but will instead develop the necessary plans and policies to attract external investors. PACEAA will explore regulatory and financial models that encourage the involvement of agro-industries in rural electrification through public private partnerships, training target groups for the adaptation of these models to each specific context, and disseminating the results to a wide group from the entire African continent.

PACEAA Link

An Organisational First

PACEAA's start was delayed to September 2007 to run in parallel with GTIEA and Cogen for Africa. The three-project complex is the first time that an EC project has been coordinated and co-financed with GEF projects. The links between PACEAA and GTIEA and Cogen for Africa, means that PACEAA also contributes co-finance to the two GEF projects. While the links between the three projects present some accounting challenges, the collaboration is showing how European Commission and GEF projects can work together.

The two GEF projects were launched officially at a ceremony in Nairobi on 9 November 2007 – see http://www.afrepren.org/launch/about.htm .

Pilot Sites

Four pilot sites have been selected by EATTA on the basis of pre-feasibility studies carried out by IED. These sites have potential for developing small hydro potential to power both a tea factory and the surrounding communities.

Kenya
Today, tea is Kenya's main export crop and represents 80% of total tea production in East Africa, with industry revenues approaching US$500 million. The PACEAA project will focus on one potential small-hydro site, called Kipchoria, in the Nandi Hills The Nandi Hills are located in the West of Rift Valley and can be characterized by gentle rolling hills with varying altitudes of 1,800 and 2,200 metres above sea level.

Malawi
Tea has been grown commercially in Malawi since the 1880s and is the second most important export earner for the country, with an estimated 42,000 employees supporting an estimated 300,000 people.
The area of interest for PACEAA is the Mulanje tea growing area in the Southeastern part of Malawi along the border with Mozambique. The area includes the 2000m Mulanje Mountain on the Lichenya plateau. The Ruo Upstream hydro site has been identified as having the potential to meet the demand for power over an area of about 200 km2 covering four tea factories that are members of EATTA.

Rwanda
The Nyabihu and Rubaya Tea Factories are located in the western and northern parts of Rwanda on the hilly slopes along the edges of Gishwati natural forest whose highest point is 3000 metres above sea level. Since 1980, tea has been grown both on the bases of large valleys and on the slopes of surrounding hills. Nyabihu tea plantation belongs partly to one cooperative of 150 tea growers having together 30 hectares and partly to the industrial bloc covering 628 hectares. Rubaya, located close to Gaseke, 15 km from Nyabihu, has more than 1000 hectares of tea crops. More than 4000 workers are employed during the peak season. PACEAA will focus on a potential hydro site close to both tea factories, known as Giciye.

Tanzania
The area of interest for PACEAA includes the Katumba Tea Factory, the upcoming Mwakaleli Tea Factory and the Suma hydro site, all located in Mbeya region in the South Western Corner of the Southern Highlands of Tanzania. The region lies at an altitude of 475 metres above sea level with high peaks rising to 3000 m. at Rungwe. The topography is characterised by large plateaus surrounding high peaks and ridges, bounded on all sides by escarpments or deeply dissected hill.
Mbeya region is one of the most important areas in Tanzania for cash crops and responsible for 35 % of tea produced in the whole country. About 5 500 ha are under tea production, and population densities are among the highest in Tanzania at more than 130 people per square kilometre.

PACEAA Partners

UNEP Risoe Centre
www.uneprisoe.org
The UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC) supports the United Nations Environment Programme (UNEP) in its aim to incorporate environmental aspects into energy planning and policy worldwide, with a special emphasis to assist developing countries.

Innovation Energie Développement (IED)
www.ied-sa.fr
IED an independent engineering and consultancy firm based in France and providing technical, economic, financial, regulatory and social services on power sector issues, rural services, renewable sources of energy and energy efficiency, the Kyoto protocol and sustainable development.

United Nations Environment Programme (UNEP)
www.unep.org
UNEP coordinates United Nations environmental activities, assisting developing countries in implementing environmentally sound policies and encourages sustainable development through sound environmental practices. The PACEAA project involves both the Paris-based Division of Technology, Industry and Economics (DTIE) www.unep.fr and the Nairobi-based Division of GEF Coordination (DGEF) dgef.unep.org which is responsible for the two GEF projects GTIEA and Cogen for Africa.

East African Tea Trade Association (EATTA)
www.eatta.com
The East African Tea Trade Association is a voluntary organization of tea producers, buyers (exporters), brokers, packers and warehouses, affording them a disciplined environment in which to interact commercially, and to promote the best interests of the trade in Africa. EATTA is the Executing Agency for the GEF project Greening the Tea Industry in East Africa (GTIEA) co-implemented by UNEP and the African Development Bank.

AFREPREN/FWD
www.afrepren.org
The Energy, Environment and Development Network for Africa AFREPREN/FWD is a NGO based in Kenya, bringing together more than 300 African energy researchers and policy makers from Africa who have a long-term interest in energy research and the attendant policy-making process. AFREPREN/FWD is the Executing Agency of the GEF project Cogen for Africa, co-implemented by UNEP and the African Development Bank.

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