

'GREENING' THE TEA INDUSTRY - EAST AFRICAN WAY

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Eight countries in eastern Africa are pursuing the development of at least six small hydro projects. These projects will provide electricity required to power the processes involved in tea production. Among success stories in the Eastern and Southern African region of the world, the tea industry can be regarded as remarkable. The tea industry has steadily contributed to the economies of the countries of East and Southern Africa over the past several decades, providing

stable employment and revenues. In Kenya and Burundi, for instance, tea accounts for 20 percent of total national exports. Tea companies in Kenya, which produce the highest volume of tea in the region, employ approximately 800,000 people and affect the lives of another 3 million. These numbers represent about 10 percent of the country's total population. Kenya's tea industry reached a milestone just a few years ago when the Mombasa Auction in Kenya became the world's largest tea auction.

Needless to say, the tea industry plays a significant role in shaping and sustaining the growing economy of East and Southern Africa. Today, however, the tea sector is embarking on another challenge. This challenge moves the tea companies beyond merely producing tea to also generating the electricity needed to power the tea production process.

Faced with the increasing costs of production in light of rising oil prices in the world market, the tea industry sees itself at the forefront of developing the largely untapped, but tremendous, hydroelectric potential in the region.

The tea companies, working under the umbrella of the East Africa Tea Trade Association (EATTA), and in cooperation with the United Nations Environmental Program (UNEP), conceptualized and implemented a four-year project, "Greening the Tea Industry in East Africa." The project, established with a financial grant from the Global Environmental Facility (GEF), aims to reduce electricity supply production costs and to improve power reliability among tea companies through the development and utilization of small hydropower resources.

Small hydropower is seen as a way to reduce the dependence of tea companies on fossil-fired diesel generating sets and on costly and, at times, unreliable grid-supplied electricity. While the tea sector has not traditionally generated electricity, it is a large consumer of the costly commodity. In many cases, tea companies erect standby diesel generating sets to ensure availability of electricity to run the processes involved in tea production.

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The project was aimed to reduce greenhouse gas emissions – a goal of GEF and UNEP – through increased investments in the development and installation of small hydropower facilities in tea areas where hydro potential is abundant.

Who were involved?

The GTIEA project was co-implemented by the United Nations Environmental Program (UNEP) and the African Development Bank (AfDB), which were both actively involved in environment-related programs on the African continent. The East African Tea Trade Association (EATTA) was the executing agency for the project. EATTA, which is based in Mombasa, Kenya, is a voluntary organization of tea producers, buyers (exporters), brokers, packers, and warehouses. For these groups, EATTA provides a disciplined environment in which to interact commercially as well as a vehicle for promoting the best interests of the trade in Africa. EATTA has been in operation for more than 45 years, representing tea stakeholders from 11 countries: Burundi, the Democratic Republic of Congo, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Rwanda, Tanzania, Uganda, and Zambia. EATTA operates the Tea Auction of Mombasa for all East African tea and is also engaged in tea warehousing and brokerage.

Describing the project objectives

The GTIEA project was officially launched November few years ago, at the UNEP Complex in Nairobi, Kenya, by Kenyan Vice President, Hon. Moody Awori. The Kenyan leader endorsed the project and pledged the support of his administration of the goals and objectives of the GTIEA project. Eight countries in the region – Burundi, Kenya, Malawi, Mozambique, Rwanda Tanzania Uganda, and Zambia – endorsed the project.

As part of the project, ten feasibility studies of potential sites were conducted, and six small hydro demonstration projects in at least four EATTA member countries were implemented. The studies and the demonstration projects were to be used to build confidence and develop the expertise of the tea sector in small hydropower technology. The hope is the studies and demonstration projects also will lead to financial incentives for individual tea processing plants to move into green power generation.

The project was an opportunity for developing an important indigenous resource which will benefit 8 million tea farmers, their families and dependents, and many different sectors in the region, including tea factories, communities, utilities, banking institutions, the manufacturing sector, government and utilities, and development partners.

Site studies under way

Initially, pre-feasibility studies of 19 potential small hydropower sites were undertaken in Kenya, Malawi, Rwanda, Tanzania, and Uganda. Ten of these sites were selected for further study. At the end of March 2008, international consulting firm Innovation Energie Developpement (IED) of France finalized comprehensive feasibility studies for two of these ten sites. The studies were supported by a development partner from the European Union, ProInvest Management Unit, on behalf of the European Commission. Feasibility study reports of six more of the sites were expected to be completed by the end of March 2009; completion of the reports for the final two sites was anticipated by July 2009.

Using these ten reports, the best six sites were selected, at which small hydropower stations were constructed as demonstration projects, culminating in the installation of 10 mw of capacity.

Beyond the initial four-year phase, the project is expected to stimulate a total installation of 82 mw of small hydropower capacity.

Project activities

Through the project management office created to oversee the implementation of the GTIEA project, activities were carried out to provide support to small hydropower development and to promote investment. These activities were expected to lead to:

- Investment confidence among investors, project developers, and financing institutions;
- Enhanced technical capacity for designing and constructing small hydropower and for fabricating associated equipment;
- Successful models for private-public participation in rural electrification through small hydropower;
- A regulatory environment conducive to small hydropower and to rural electrification; and
- Establishment of a viable standard power purchase agreement for small hydropower.

Benefits and opportunities

The project offers substantial benefits and opportunities to various sectors. Aside from the projected reduced production costs for tea companies and factories, the reliability and efficiency of operations of small hydropower systems are seen to further benefit the tea sector and the communities at large.

For example, the small hydropower projects will contribute toward the electrification of the communities surrounding the tea estates. This contribution to the region is vital, where as much as 90 percent of the population in some areas have no access to electricity. In addition, when a tea factory or company develops its small hydropower resource, the expensive-to-operate diesel generating sets can be put on standby. This will further reduce costs and minimize greenhouse gas emissions. And, reliable and efficient electricity systems will enable tea companies and factories to maintain steady tea processing operations.

The local generation and distribution utilities can possibly co-invest in the development of viable small hydropower systems, or purchase excess electricity from the tea companies.

Tea companies developing hydropower potential can contribute toward meeting targets set by East African governments of developing additional sources of clean, renewable electricity.

Tea companies in Kenya go green through carbon finance

In Kenya's Nyeri district, several hundred miles north of the capital of Nairobi, energy-intensive tea production employs thousands of farmers and tea-factory workers - and now the industry is beginning to go green.

Four factories managed by the Kenya Tea Development Agency (KTDA) are going green through the 'Gura project', which facilitates the use of clean electricity. Named after the nearby Gura river, the project aims to significantly reduce the factories' carbon footprint while increasing productivity and incomes.

Much of the tea-manufacturing process requires electricity - withering, cutting, and drying tea leaves consume the most. Tea production currently produces high emissions and depends, inefficiently, on the national grid.

“Currently, the factories experience frequent power outages and poor power quality. This project will ensure a smoother production process as the power will be more stable,” said Lucas Maina, General Manager of KTDA.

The crux of the Gura project is the construction of a hydro-power plant, which will use the water of the Gura river to generate power - freeing tea factories from the national grid and reducing emissions by some 38,400 tons of carbon dioxide per year.

Factories will then receive additional returns on their investment in lower emissions through carbon credits, provided by the Clean Development Mechanism, which is part of the United Nations Framework Convention on Climate Change (UNFCCC).

UNDP, through its MDG Carbon programme, provided assistance in helping KTDA register the Gura project with the UNFCCC.

“The Gura project is only one example of our work to help developing countries access the carbon market, which encourages them to invest in green development,” said Christopher Gakahu, team leader of Energy, Environment and Climate Change of UNDP in Kenya.

Not only does the Gura project reduce factories' carbon footprint and improve efficiency, it also helps reduce poverty and empowers the local population in Nyeri - creating jobs and increasing energy access for disadvantaged populations in remote regions.

Conclusion

Development of such projects in Sri Lanka, will result in reduced tea production costs for the tea companies as well as additional revenues from the sale of surplus power. Development of small hydro also will play a significant role in rural electrification for communities surrounding tea estates. Some RPCs are already in this game, but on very small scale and yet to apply for carbon credits.