

Agro-Energy: A New Function of Agriculture

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A renewed bioenergy strategy, containing Wood Energy and Agro Energy Programmes, is being developed in FAO to capture the new context for energy issues in sustainable agriculture and rural development. Globalisation, climate change considerations and, more importantly, the urgent need to bring development and energy services to the millions of rural poor in the world, are some of the issues guiding this new effort.

This newsletter article describes the approach and strategy adopted by FAO in its revitalized bioenergy activities, particularly for Agro-Energy, the biomass energy derived from agricultural practices, mainly energy crops purposely grown for energy and agricultural and livestock residue (co-products) management and utilization.

FAO is assessing its activities on bioenergy taking into account the new challenges arising from globalisation and privatisation, and the new opportunities offered by climate change negotiations and financial mechanisms. It has defined a new Bioenergy Strategy which is composed of two major programmes: A Wood Energy Programme and an Agro-Energy Programme. This brief note refers only to the latter, which is less understood and has its own complexities related to agronomy, land use, agricultural practices, farming systems, product marketing and, above all, farmers and farmers' organizations.

Access to adequate and affordable modern energy services is indispensable for satisfying basic human needs, improving social welfare and achieving economic development. Reasonable quality of life requires energy either in commercial or in non commercial forms, but sustainable from the points of view or supply, conversion and use. However, energy is also a source of undesirable problems in the form of residues and emissions and hence, energy systems should be adopted without endangering the quality of life of current and future generations and without exceeding the carrying capacity of ecosystems.

The energy consumption in many rural areas of developing countries barely covers the cooking, heating and lighting needs. Present energy consumption and production patterns in these areas rely on biomass, often used in an inefficient manner; the energy consumption in OECD countries is largely based on the use of fossil fuels. Biomass energy, provides 14% of the world's energy (55EJ or 25 M barrels oil equivalent, offsetting 1.1 PgC of net CO₂ emissions annually), both in traditional and modern forms, whilst it can represent over 90% of total energy use in many developing countries and as much of 20% in industrialised ones. The potential role of bioenergy has recently attracted new attention because of global concerns such as environmental pressures, privatisation of the energy sector and concerns with sustainability.

Bioenergy originates from various types of agricultural and forestry residues, however, increasingly, different kinds of energy crops and plantations are expected to contribute substantially. Within the bioenergy context, agro energy refers to the energy obtained from energy crops (plants grown for obtaining energy) and from agricultural and livestock by-products, including food processing and slaughter by-products.

Considering biomass a potential major source of energy in the 21st century requires an understanding that this will have a significant impact on agricultural development.

Agro-Energy refers to the energy function of agriculture. It can make significant contributions to achieving social and environmental sustainability at local, national, regional and global levels. In fact, agricultural and livestock resources are abundant in most parts of the world, and various commercially available conversion technologies could transform current traditional and low-tech uses of these resources to modern energies. If Agro-Energy is produced efficiently and in a sustainable manner, benefits compared to fossil fuels can be achieved including food security, rural development, local self-reliance, sustainable agricultural management, biodiversity conservation and climate change mitigation, whilst offering improved energy supply and security.

Attention should be placed on the trade-offs of Agro-Energy systems. Main concerns include development priorities, environmental impacts, conflicts with other land uses, technological conversion efficiency, high raw material costs and the cost-effectiveness of Agro-Energy technologies. In economic terms, incentives might be necessary at least to put Agro-Energy on a more equal footing with fossil fuels, for which environmental and social costs are not internalised. Increasing attention is focussed on global climate change considerations. Agro-Energy could play a major role in helping meet the limits and mechanisms proposed by the Kyoto Protocol, especially if GEF funding, or an appropriate value for carbon emissions reductions can be obtained through the Clean Development Mechanism, which could be used to support the investment costs.

FAO is striving to develop Agro-Energy for food security, rural development and climate change mitigation through the following 5 objectives:

- Stimulate the integration of agro energy issues into the agricultural sector.
- Promote the potential of agro energy in the energy market.
- Promote sustainable management of energy resources, of energy conversion systems and of end-uses.
- Enhance food security and rural development through the implementation of agro energy systems.
- Contribute to climate change mitigation through the implementation of agro energy systems.

FAO is interested in establishing collaboration with a number of partners at the national and international levels to get bioenergy in general, and agro energy in particular, off the ground for the benefit of Mankind.