

F. TANZANIA

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1. INTRODUCTION

This chapter is divided into six sections, the first focusing on Tanzania's energy sector in general and the relevance and potential of bioenergy in Tanzania. Thereafter the influence of international legal instruments on the national legal framework for bioenergy in Tanzania is reviewed. This is followed by a discussion of the domestic policy, legal and institutional frameworks relevant to bioenergy. The final section highlights certain regulatory features of the bioenergy framework and offers some conclusions.

1.1 Bioenergy utilization in Tanzania

Bioenergy plays an important role in Tanzania. Tanzania's energy balance is dominated by biomass-based fuels, particularly fuel-wood (charcoal and firewood) which is the main source of energy for both urban and rural areas. Biomass-based fuel thus accounts for more than 90 percent of Tanzania's primary energy supply. Imported petroleum and hydro electricity account for approximately 8 percent and 1.2 percent of the primary energy consumption respectively. The share of solar and wind energy is about 0.8 percent. Development of natural gas for electricity is also ongoing. The dissemination of renewable energy technologies has been thus far limited to the promotion of improved stoves, improved charcoal production techniques, solar, biogas and windmills and to a lesser extent photovoltaic sources.

A study on Liquid Biofuels for Transportation in Tanzania by the German Agency for Technical Cooperation (GTZ) in 2005, indicated that the use of liquid biofuels from energy crops is almost non-existent.¹⁶² In rural areas where jatropha is planted, jatropha oil is used in small lamps and for making soap with the help of local non-governmental organizations. The study also revealed that the price of jatropha oil was US\$ 2 per litre, which is more expensive than diesel fuel; thus there is no economic incentive for using jatropha oil as a substitute for diesel. With regard to other types of biofuels, the GTZ study indicates that Tanzania has the potential to produce biofuels from other sources, including starch crops such as grains, maize and tubers like cassava, sugar plants such as sugar cane, cellulose plants (agricultural residue) and other oil seeds such as cotton, moringa and pongenia.

¹⁶² GTZ. 2005.

1.2 Potential for bioenergy and concerns

Tanzania is frequently cited as a country with the potential to become a significant biofuels producer from energy crops.¹⁶³ This is due to its favourable geographical location: having borders with eight countries and access to the Indian Ocean, Tanzania offers a good gateway for biofuels to external and internal markets. It may also be linked to Tanzania's ideal agro-climatic conditions for growing a wide range of suitable crops, including sugar cane, palm oil, jatropha, soy and cotton. Another reason is the availability of land: Tanzania has over 88 million hectares of suitable agricultural land of which less than ten per cent is currently utilized. Furthermore, most of this land is not virgin forest or otherwise environmentally sensitive. Tanzania is also endowed with three of the world's ten largest lakes, has a large network of rivers, all of which comprise significant irrigation sources. Furthermore, the availability of local expertise and institutions created through the support of international development partners as well as the National Biofuels Task Force provides the opportunity to harness this bioenergy potential.

In addition, there are a number of local entrepreneurs and corporate groups who have expressed interest in investing in biofuels. The government, through the Tanzania Investment Centre, has also identified the energy sector as a priority sector. This means that a number of incentives available for investments in the energy sector can be extended to biofuels, such as zero percent import duty on capital goods, Value Added Tax (VAT) deferment, land rent reduction as well as zero-rated VAT on exports.¹⁶⁴

The current move towards biofuel production in Tanzania is necessitated by a number of factors, which are analogous to the concerns in the rest of the world. Notably, being dependent on oil imports, Tanzania has been affected by price increases of petroleum products on the world market. A study indicated that the value of Tanzania's oil imports rose from US\$ 1 661.4 million in 2002 to US\$ 2 145.4 million in 2003. In 2006, the import of petroleum accounted for 40 percent of all imports with 40 percent of this figure going towards the transport sector alone. The continuous increase in oil prices is a heavy burden for the country and by reducing its oil imports, Tanzania would make savings in foreign exchange and thus improve its balance of payments. Other reasons supporting the production and use of

¹⁶³ Keamey, A.T. 2006.

¹⁶⁴ For more information, see www.tic.co.tz.

biofuels in Tanzania include the need to diversify energy sources and technologies and to improve energy security. This could also promote the development of new agricultural markets and income generation in rural areas, as well as reduce greenhouse gas emissions and air pollution from carbon dioxide, sulphur dioxide and particulate matter.¹⁶⁵

There is a growing interest in the production of biofuels from both local communities and international actors, especially investor-multinationals fuelled by the growing national and international political will and support. Potential markets for biofuels are found at all levels – in households, and the industry and transport sectors. Tanzania has also ratified the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) and could benefit from the Clean Development Mechanism.¹⁶⁶

Some concerns have been voiced worldwide and echoed in Tanzania regarding the impact of the increasing commercial production of biofuels. In most cases the concerns have been raised by members of Parliament and observer organizations through workshops and articles in the media. The perception of many is that the commercial pressure to maximize crop yields could force food production off the best land to make way for biofuels, thus leading to competition between the production of biofuels and other productive uses of land.¹⁶⁷ Tanzania is not producing biofuels for export yet. However, the move towards biofuel production has been criticized due to concerns relating to human rights abuses, such as land conflicts, land grabbing and eviction, and indecent working conditions on plantations.¹⁶⁸

As a developing country, Tanzania lacks the necessary technology for the production of biofuels and capital investment. This being the case, the country currently encourages foreign investment in biofuels and the likelihood of foreign investors dominating the industry should not be underestimated.¹⁶⁹ It is, however believed that this issue has been given due consideration by the National Biofuels Task Force (discussed in section 5.1 below) while formulating the Draft Guidelines for Biofuels Development in Tanzania; in part as a result of the multi-sector composition of the Task Force.

¹⁶⁵ Janssen, R. 2006.

¹⁶⁶ Sawe, E.N. 2008.

¹⁶⁷ Bailey, R. 2008.

¹⁶⁸ For more information see www.oxfamint.org.in.

¹⁶⁹ Ibid.

1.3 Bioenergy operating companies

With the exception of very few biofuel projects recently registered with the Tanzania Investment Centre geared towards large-scale commercial production, the biofuel industry in Tanzania relies on smallhold farming on the basis of contracts.¹⁷⁰ The industry is characterized by contract-farming or agreements with farmers whereby seeds and other agriculture inputs are provided by companies who can then purchase the crops produced by the farmers.

Different actors are at various stages of developing and promoting the production of biofuels.¹⁷¹ For example, one group is working on the production of bioethanol from sugarcane; foreign companies are producing jatropha in Mpanda–Rukwa, in Biharamulo and Kagera, in Arusha and Dar es Salaam. Other foreign companies are dealing with oil palm in Kigoma, and foreign and local firms are dealing in jartopha oil.

2. INTERNATIONAL INITIATIVES RELEVANT TO BIOENERGY

2.1 International legal framework

Tanzania is party to the United Nations Framework Convention on Climate Change (UNFCCC) (ratified on 17 April 1996) and its Kyoto Protocol (ratified on 26 August 2002); the Convention to Combat Desertification (UNCCD) (ratified in 1997); and the Convention on Biological Diversity (CBD) (ratified on 8 March 1996). Tanzania has also been a member of the World Trade Organization (WTO) since 1995. At regional level, Tanzania is a party to two important regional blocks, namely the Southern African Development Community (SADC) and the East African Community (EAC).

2.1.1 Clean Development Mechanism in Tanzania

The Vice President's Office, Division of Environment, acts as Tanzania's Designated National Authority (DNA) for the Clean Development

¹⁷⁰ Malema, B.A. and Mfugal, E.O. 2008.

¹⁷¹ Bioenergy Policies for Sustainable Development in Africa. Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems – Africa. 25-27 November 2008, Bamako, Mali.

Mechanism (CDM).¹⁷² According to national CDM guidelines, in order for a project to be approved, it has to be in line with the National Strategy for Growth and Reduction of Poverty (NSGRP) and aim at poverty alleviation by generating employment and improving the standard of living. Another requirement is that the proposed CDM project needs to be consistent with the Tanzanian Development Vision 2020. The project must be consistent with the Environmental Management Act (2004) and the related Environmental Impact Assessment Regulation (2005). This means that issues relating to resource sustainability, resource degradation, impact on biodiversity and other environmental issues must be accounted for. In addition, CDM project activity should lead to transfer of environmentally sound technology.¹⁷³

The only CDM project registered in Tanzania thus far is the landfill gas recovery for electricity generation project at the Mtoni Dumpsite, Dar es Salaam (ref. 908). Other projects in the pipeline include: Tanzania Planting Company of Moshi for biogas cogeneration; the 200 MW Singida Wind Farm, a project relating to power production from sisal waste biogas and a biomass cogeneration project (17.5 MW).¹⁷⁴

Capacity building initiatives for the CDM

Owing to the fact that CDM projects are primarily implemented by the private sector and other non-governmental actors, the Tanzanian Government is expected to continue to provide an enabling environment for stimulating CDM projects.¹⁷⁵ Tanzania has undertaken some capacity building activities under the UNFCCC and the Kyoto Protocol. It prepared the National Adaptation Programme of Action (NAPA) and conducted an in-depth analysis of climate change impacts in the agriculture, health and water sectors. Tanzania has also prepared guidelines for the implementation of the CDM and a handbook for CDM project activities in Tanzania.

In order to help Tanzania in implementing CDM projects that are in line with the national sustainable developments goals, particularly projects in the energy sector, the UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC) launched a project on Capacity Development for the

¹⁷² For more information see www.cdm.or.tz.

¹⁷³ Tanzania Clean Development Mechanism Implementation Guide. 2007.

¹⁷⁴ For more information see www.cdm.or.tz.

¹⁷⁵ Mfugale, D. 2008.

Clean Development Mechanism (CD4CDM) in Tanzania in 2007. The project, which operates with financial support from the Dutch Government, is being implemented jointly by the Centre for Energy, Environment, Science and Technology (CEEST Foundation) and the Environment Protection and Management Services (EPMS). The CD4CDM seeks, among other things, to improve Tanzania's institutional preparedness for hosting CDM projects, including enabling the Designated National Authority to efficiently approve CDM projects in line with the country's sustainable development priorities. The project also aims to build the capacity of local experts in key sectors in the identification, design and implementation of CDM projects. The capacity of relevant institutions in appraising, funding, and promoting the CDM and carbon offset investments is also targeted. Finally, the project supports mechanisms to promote Tanzania as a CDM investment destination.

2.1.2 United Nations Convention to Combat Desertification (UNCCD)

For Tanzania, efforts to combat desertification and land degradation are part and parcel of the national efforts to address poverty and ensure sustainable development. The relevance of these issues to bioenergy is that they will ensure the protection of land upon which bioenergy crops can be planted. Tanzania boosted its efforts to ensure sustainable land management and to combat desertification after the Rio Conference in 1992. Some major milestones include: the 1994 National Environment Action Plan (NEAP), designed to undertake analyses at the national level and to provide a framework for incorporating environmental considerations in government decision-making processes; the 1997 National Environmental Policy (NEP), formulated to define national goals and strategic objectives in the environmental sector; the 1999 National Action Programme (NAP) to combat desertification; and the 2002 Institutional Framework for Environmental Management (ILFEMP) in Tanzania.

The National Strategy for Growth and Reduction of Poverty (NSGRP) of 2005 highlights the close relationship between poverty reduction and the sustainability of the productive sectors, particularly agriculture. This sector accounts for 45 percent of the Gross Domestic Product and about 60 percent of the export earnings, as well as providing a livelihood for over 80 percent of the population. The NSGRP also views energy as critical for the attainment of the Strategy and Millennium Development Goals.

In order to address challenges of land degradation and desertification, Tanzania enacted the National Environmental Management Act (EMA) in 2004 as a framework environmental law to ensure coherent environmental management which includes sustainable land management principles. More importantly in March 2006, the government adopted a National Strategy for Sustainable Land Management and Protection of Water Catchments Areas. This is a comprehensive five-year programme, intending to address twelve identified challenges. The Strategy promotes renewable energy as well as alternative sources of energy, particularly in the dryland areas, as a way of addressing the chronic problem of deforestation for energy needs.

2.1.3 Convention on Biological Diversity

Before the ratification of the CBD, most Tanzanian laws on natural resources were termed 'resource exploitation statutes' because they did not address the conservation or sustainable management of natural resources. Also underlying most of Tanzania's secondary legislation was the notion that natural resources are a source of revenue and exploitation rather than as a source of sustainable income; this is evidenced by the focus of by-laws on revenue collection.¹⁷⁶

In order to fulfil its obligations under the CBD, Tanzania enacted its first environmental policy in 1997. Among other things, the policy aims at sustainable, secure and equitable use of resources for meeting the basic needs of the present and future generations, without degrading the environment or risking health or safety. With this policy in place, the Vice President's Office launched the Institutional and Legal Framework for Environmental Management Project (ILFEMP) in 1998. The overall objectives were to establish an analytical basis for a future framework for environmental management and to draft a framework Environmental Management Bill which gave birth to the present Environmental Management Act (EMA) of 2004.

In essence, the EMA follows closely the CBD, covering issues such as *in-situ* and *ex-situ*, conservation, and mandates environmental impact assessments. It also enshrines the precautionary principle and the polluter pays principle, among others. The Forest Policy (1998) and the Forest Act (2002) were promulgated to introduce principles of sustainable utilization of forest resources in furtherance of the CBD commitments. All these policies and

¹⁷⁶ Options for an institutional framework for environmental management. Final Report Vol. 1. 2003. Vice-President's Office, Division for the Environment.

legal instruments are naturally relevant for the sustainable use of Tanzania's resources for bioenergy purposes. The Second National Report on the Implementation of the Convention on Biological Diversity provides greater detail for activities and projects implemented by the government to meet its international obligations.¹⁷⁷

3. NATIONAL POLICIES RELEVANT TO BIOENERGY

At present, there is no specific policy on biofuels. This section examines national policies that are nevertheless relevant to bioenergy in Tanzania. Primarily, these include Tanzania's policies on energy, agriculture, forestry, trade, land, environment, employment, science and technology, and investment promotion. In this respect, special consideration should be given to the fact that in Tanzania, biofuels production is either from plants (crops) or wood. All these policies are relevant for bioenergy in Tanzania because it is believed that biofuels production could have various effects such as boosting employment, science and technology as well as tax revenues.

3.1 National Energy Policy (2003)

The first energy policy for Tanzania was formulated in April 1992. Since then, the energy sector has undergone a number of changes, necessitating adjustments to this initial policy. These changes include changes in the role of the government from a service provider to a facilitator, liberalization of the market and encouragement of private sector investment. The overall objective of the National Energy Policy of 2003 is to contribute to the development process by establishing efficient energy production, procurement, transportation, distribution and end-user systems in an environmentally sound manner and with due regard to gender issues.

The Energy Policy takes into consideration the need to enhance the development and utilization of indigenous and renewable energy sources and technologies. It mentions renewable energies in general but does not specifically discuss biofuels. It identifies the need to establish norms, codes of practice, guidelines and standards for renewable energy technologies and the need to facilitate the creation of an enabling environment for the sustainable development of renewable energy sources in Tanzania. The

¹⁷⁷ Second National Report on the implementation of the Convention on Biological Diversity. 2004.

current renewable technologies in use in Tanzania include improved wood-fuel stoves and charcoal production practices, biogas, windmills, and solar thermal and photovoltaic (PV) technologies. The renewable energy sources cited in the policy as having the most potential are micro-hydro, geothermal, wind and solar energy. The policy provides that the government would support the research and development of renewable energy technologies. However, no resources have been allocated for this purpose in the budgets for the periods from 2006–2007 and 2007–2008.

The Energy Policy recognizes the implications of certain types of energy consumption on the environment. In recognition of the effect of fossil fuels as a source of greenhouse gas emissions, pollutants and particulate matter, the policy promotes cleaner production of energy. It emphasizes the 'polluter pays' principle and the need to strengthen cooperation through national, regional and international energy programmes that seek to mitigate the environmental impacts of energy. It explicitly promotes the development of alternative energy sources to protect forests

The policy encourages public and private sector partnerships to invest in the provision of energy services. It also seeks to promote private initiatives at all levels and stresses the need to make local and foreign investors aware of the potential of the Tanzanian energy sector.

3.2 Trade Policy for a Competitive Economy and Export-led Growth (2003)

The Trade Policy for a Competitive Economy and Export-led Growth of 2003 emphasizes the need for the government to enable a business environment and utilize the private sector as the engine driving economic activities and growth. The policy intends to transform the economy from one characterized by supply constraints into a competitive, export-led system that is responsive to enhanced domestic integration and at the same time participates in the global economy as a result of national trade liberalization.

The trade policy encourages export primarily by reducing export taxes. It seeks to stimulate investment flows into export-oriented sectors in which Tanzania has a comparative advantage, and thereby encourage the introduction of technology and innovation into production systems as the basis for economic competitiveness. Further, the trade policy stresses the need to achieve and maintain a long-term current account balance and

balance of payment. Policy instruments available to facilitate import and export trade include tariffs, duty draw-back scheme and export taxes. The government uses these instruments to encourage export of value-added goods and to discourage export of unprocessed products such as cashew nuts and oilseed among others.

3.3 National Environmental Policy (1997)

The National Environmental Policy of 1997 emphasizes that environmental issues should never be treated in isolation. This is due to the fact that the lives of all Tanzanians are intimately connected to the natural environment, even more so in consideration of the fact that a majority of the population is reliant on the agricultural sector for their livelihood. Therefore the policy emphasizes the need to integrate environmental issues in all sectors of the economy and in decision-making, planning and implementation activities.

The Environmental Policy is guided by the principles of the Rio Declaration on Environment and Development. The major concepts included in the policy which have implications for biofuels include: polluter pays principle, precautionary principle, environmental impact assessment and economic instruments for protection of environment. Any biofuel production enterprise will be therefore subjected to emission control measures, environmental impact assessment, environmental audits and inventory for pollution control.

The Environmental Policy recommends the use of improved production systems through technologies and processes that utilize resources more efficiently and that at the same time generate less waste, recycle and re-use by-products. It also supports the use of clean technologies and the production of increasingly safe and non-toxic products.

3.4 Agricultural and Livestock Policy (1997)

The main objective of the Agricultural and Livestock Policy of 1997 is to ensure basic food security and to improve national standards of nutrition by increasing output, quality and availability of food commodities. The policy advocates increased agricultural productivity and area expansion. It also underscores different ways to enhance income generation and thus improve living standards in rural areas. The policy also seeks to encourage greater foreign exchange earning by stimulating production and exportation of cash

crops such as coffee and cotton. It also aims at producing and supplying raw materials including industrial crops. 'Raw material' in these cases can also be feedstock that is used for biofuel industries, and therefore has evident implications for food security. The Agriculture and Livestock Policy categorizes various crops and notes different objectives according to these classifications. The crops addressed in the policy include oil seeds, maize and sugar among others. With regard to oilseeds, the policy draws a distinction between edible and industrial oilseed (castor seed is the only industrial oilseed referred to in the policy). Again the participation of the private sector is underscored in the policy by supporting the development of these crops into a dependable source of foreign exchange earnings. As with other policies, the role of the government will be limited to facilitating private sector investment and regulating activities to the minimum extent necessary. Maize, which can be used for ethanol production, is also the main food crop in Tanzania, and therefore exportation is possible only when there is surplus production. Similarly, sugar (which is used to produce bioethanol) is a regulated crop considering its consumption for food purposes.

Concerning land utilization, the Agriculture and Livestock Policy stipulates that special areas will be created and set aside for investors. Land will be allocated to investors according to their ability to develop the land appropriately.

3.5 Employment Policy (1997)

Among the objectives of the Employment Policy of 1997 is the identification of potential sectors for employment and establishing strategies to utilize such sectors to create employment opportunities. It also seeks to make more attractive and lucrative, employment in key sectors such as agriculture. In this regard, the policy emphasizes the way in which science and technology can promote employment. In the agriculture sector, the Employment Policy encourages the investment in and improvement of basic infrastructure such as roads, water supply and electricity to augment agricultural productivity. Again, the government sees its role as providing a conducive environment for project implementation. The policy therefore provides a good ground for pushing forward the biofuel industry which could offer new employment opportunities and be in line with the stated objective of making the agriculture sector attractive in terms of employment prospects. The Employment Policy further recognizes the need to provide tax relief for the industry and trade sector and provide incentives for investors.

3.6 Forest Policy (1998)

The goals of Tanzania's Forest Policy of 1998 are to enhance the contribution of the forest sector to sustainable development in Tanzania as well as the conservation and management of the natural resources for the benefit of present and future generations. The Forest Policy mentions bioenergy as the main source of fuel in rural areas, accounting for 90 percent of the total energy consumption. It also states that the contribution of the forest sector to the national Gross Domestic Product has been underestimated because of the uncontrolled consumption of woodfuels.

The Forest Policy promotes increased employment and foreign exchange earnings through sustainable forestry-based industrial development and trade. To fulfil this, the government encourages establishment of private woodlands and plantations for wood fuel production and provides support through research, extension services and financial incentives.

3.7 Investment Policy (1996)

The 1996 Investment Policy highlights the necessary elements to create an enabling environment for investment. It calls for tax incentives, private investment guarantees, and zero taxation for the importation of capital goods. As regards the energy sector, the policy encourages investment in commercial and alternative sources of energy, emphasizing the utilization of domestic resources with the aim of ensuring security and continuity of supply, and reducing dependence on biomass fuels.

4. NATIONAL LEGISLATION RELEVANT TO BIOENERGY

The legal framework relating to biofuel production, promotion and use in Tanzania is still a work in progress. At the moment, there is no umbrella legislation specifically governing the production of biofuels from energy crops, but various laws and regulations contain provisions which may be applicable to biofuels. These laws govern different aspects which are important to biofuel production from any source, including land ownership and land use planning, food security, environmental protection, social guarantees as well as trade and investment. This section contains an overview of relevant laws and subsidiary regulations.

4.1 Petroleum Supply Act

The Petroleum Supply Act (2008) governs the importation, exportation, transportation, storage, wholesale and retail distribution of petroleum and petroleum products, and repeals the Petroleum Conservation Act of 1984 (CAP 392). Formulation of this new law was necessitated by policy changes and challenges encountered in the regulation of Tanzania's petroleum sub-sector. The relevance of this Act for bioenergy is that it contains some provisions regarding the licensing, importation, transportation, storage and distribution of biofuels, as the latter is included under the definition of petroleum products. The Act does not however, address any aspect relating to the production of biofuels.

There is no definition of biofuels in the law but the definition of petroleum products in section 3 stipulates that for the purposes of the law, the latter includes:

"organic compounds, pure or blended, which are derived from the refining or processing of petroleum crude oils, biofuels or synthetic fuels and includes biodiesel, bioethanol products and blended finished oils among others."

Section 7 requires those responsible of petroleum supply operations to obtain a licence. Section 3 defines petroleum supply operations as "all operations and activities for, or in connection with the importation, landing, loading, transformation, transportation, storage, distribution, wholesale or retail of petroleum and petroleum products." Section 13 obliges persons intending to construct petroleum installation to obtain prior approval from the Energy and Water Utilities Regulatory Authority. Part VIII makes further provisions regarding pricing of petroleum products, which includes biofuels, and other regulations on petroleum supply operations. All these tasks fall under the responsibility of the Authority.

Section 4(c) of the Act applies to standards, technical specifications and quality control norms for petroleum products and is relevant for the blending of biofuels. Section 42(1) authorizes the formulation of specifications for petroleum products and the blending of biofuel and synthetic fuels and lubricants. These standards are to be approved by the Energy Ministry following consultation with the Tanzania Bureau of Standards (TBS) and shall be published by order in the *Official Gazette*. TBS is

responsible for formulating standards and specifications for imported or locally produced goods and its activities are governed by the Tanzania Bureau of Standards Act of 1975 (Cap 130).

The Act contains provisions relating to construction approvals and operating license (as well as the procedures for license applications).¹⁷⁸ The construction of pipelines, refineries and bulk liquefied petroleum gas facilities are governed by Part IV of the Act. Significantly, the Act provides clauses on public health and safety and the environment, creating cross-linkages with the primary laws regulating these spheres which are looked at in detail below (sections 4.2 and 4.5). Part VII of the law also outlines pricing mechanisms for petroleum and petroleum products and the determination of prices in the supply chain. The Act allows for a certain degree of economic regulation by the state and contains provisions for the monitoring of consumer prices in certain situations.¹⁷⁹

The National Biofuels Task Force is currently developing guidelines on biofuels and has plans to draft a Biofuel Act. However, given that the Petroleum Supply Act brings biofuels under a distinct legislative framework and empowers the minister responsible for energy to make regulations on blending of biofuels, it can be said to provide a basis for certain (production related) activities in the sector.

4.2 Environmental legislation

Several environmental problems can be associated with the use and production of bioenergy from energy crops in particular where sustainable agricultural practices have not been followed. Land degradation, depletion of vegetation cover and biodiversity loss are some possible environmental problems that may be associated with the cultivation of crops. Tanzania has an umbrella law (the Environmental Management Act (2004)) as well as sectoral laws regulating different aspects of environmental protection (the most relevant to bioenergy are the Forest Act (2002) and the Water Utilization (Control and Regulation) Act (1974)). In the absence of laws specifically targeting biofuels production, these laws provide the primary regulatory context for bioenergy feedstock cultivation, use and promotion.

¹⁷⁸ See www.parliament.go.tz.

¹⁷⁹ Ibid.

4.2.1 Environmental Management Act

The Environmental Management Act of 2004 (CAP 131) is a comprehensive environmental law aimed at providing a coherent approach to environmental management. It advocates the right to a clean, healthy and safe environment, buttressed by provisions enabling all persons whose rights are threatened to bring actions to the courts. It enshrines various principles of international environmental law, including the precautionary principle, the polluter pays principle, the principle of ecosystem integrity and public participation in environmental planning and management. Environmental protection, which is at the core of the statute, is effected through mechanisms such as environmental restoration orders which require persons to, *inter alia*: take action to prevent the commencement or continuation of pollution and the restoration of land, including the replacement of soil, replanting of trees and other flora. Similarly, conservation orders can also be issued to preserve flora and fauna, and to prevent or restrict the scope of any agricultural activity on land which is subject to an environmental easement (section 161). The latter refers to an obligation in respect of the use of that land.

A direct nexus with energy is created through section 64, which directs the minister, in consultation with the Ministries for Forestry and Energy, to promote the use of renewable sources of energy by promoting research, creating incentives and taking measures to encourage the planting of trees and woodlots by individual users, institutions and community groups. Furthermore, the Commissioner for Energy is a member of the National Environmental Advisory Committee established under section 3(1) of the Act.

Section 81 of the Environmental Management Act (EMA) requires persons or enterprises proposing a project to conduct environmental impact assessments (EIA) for projects that may adversely affect the environment. The Third Schedule (made under section 81) of the Act lists the types of projects which require environmental impact assessments. These include major land use changes but also forestry-related activities, agriculture, processing and manufacturing industries and waste disposal. The First Schedule of the Environmental Impact Assessment and Audit Regulations (2005) provides a more specific list of the type of projects requiring an EIA. Those of relevance to bioenergy include:

- the development of large-scale renewable and non-renewable sources of energy (section 7(v));

- agricultural projects necessitating resettlement of communities (section 1(v)) ;
- large scale mono-culture (section 1(iii)); and
- other forestry-related activities such as commercial charcoal, firewood and other forest harvest operations (section 3(vii)).

In accordance with these provisions, the large-scale production and storage of biofuels will be subjected to EIA, regardless of whether they are derived from energy crops or wood.

Part IX of the EMA contains provisions regulating separately the disposal of solid, liquid and gaseous waste which necessarily affect the production of bioenergy from municipal wastes and industrial by-products. Local authorities are empowered to manage waste disposal, and to issue guidelines for the treatment and disposal of industrial liquid and gaseous waste. Part X of EMA empowers the Environment Minister to adopt regulations on environmental quality standards developed by the National Environmental Standards Committee (under the Bureau of Standards Act (1975)). Such standards can relate to soil quality, quality for discharge of effluent in water sources, air quality, control of noise and vibration, and control of noxious smells, *inter alia*. To date, the minister responsible for the environment has promulgated a set of standards for water, air and soil quality.¹⁸⁰ The discharge of effluent (defined as deriving from agricultural and industrial sources, *inter alia*) into water warrant specific standards that shall be formulated by the National Environmental Standards Committee. These include measures for the treatment of effluent before their final discharge into sewage systems, and prescribing requirements for the operator of any plant or undertaking to carry out necessary works for the treatment of effluent before it is finally discharged. The standards are also applicable to the biofuel industry in that they provide specific limits on the amount of permissible pollution and lay down specific qualitative measures to be achieved for the purpose of environment protection.

Section 80 of EMA mentions economic incentives and instruments as an option for the protection of the environment. The Directorate of Environment is empowered to prepare proposals on packages of economic instruments and financial incentives to the Minister for Environment. The

¹⁸⁰ Environmental Management Standards on Air, Soil and Water, *Government Gazette* No.s 237–239 of 2007 respectively.

latter will issue regulations following consultation with the Finance Minister. While there are thus far no regulations on such economic instruments, this provision can also be seen as an incentive for the production of biofuels. Some incentives and financial measures for protection of the environment include effluent charges, based on the content and quantity of discharges into the air, water or sewerage system (section 80(2)). Alternatively, the government can use taxation schemes to support environment protection by waiving or imposing lower taxes on environmentally friendly technologies or products; biofuel production and processing that takes into account environmental considerations could fall under such a category. The objectives behind these economic incentives are expounded upon in the Act where the minister may make rules on economic instruments, thereby prescribing (section 80(2)): how best to oblige firms to consider environmental aspects in production and investment decision-making; measures to be adopted to internalize environmental costs without relying on the pricing mechanism; price-based measures, user charges and subsidies to internalise environmental costs and benefits; subsidies, tax deductions and rebates to be paid to advance environmental protection; and special grants for particular programmes.

Similar to arrangements under the Land Act (see section 4.4), under the EMA section 42, each local government authority shall prepare an Environmental Action Plan in accordance with the National Plan. In the formulation of such plans, authorities are required to identify environmental problems prevalent in the area and recommend mitigating measures. This provides a useful safeguard for planning with respect to the cultivation of bioenergy – or indeed any other type of agricultural – crop. The minister is also empowered to make rules prescribing the preparation of periodic environmental plans at sector level. Another parallel with the Land Act can be seen in section 71, where local government authorities are required to take into account environmental land use planning directives when designating areas for industrial, commercial or agricultural purposes.

4.2.2 Water Utilization (Control and Regulation) Act

The Water Utilization (Control and Regulation) Act of 1974 as amended in 1981, may affect the production of biofuels in Tanzania in light of the fact that biofuel crops require irrigation but also considering the significant amount of water use in biofuel processing industries. It should be noted however, that much of Tanzania's agricultural production is rainfed.

Section 8 of the Act vests ownership of water with the United Republic of Tanzania. Utilization of water is regulated by way of permits, licenses and water rights. A Central Water Board is designated as the primary advisory organ in matters relating to the utilization of water, including the apportionment of national water supplies, modification of water rights, and the measures to be taken in case of drought, *inter alia*. Section 15(1) requires those using water in large quantities to make an application to be granted water rights for indefinite or definite periods. Water rights entitle the owner of such right to divert, store, and abstract water from such source or sources as may be specified in the permit. This right is not absolute and can be amended or revised when considered necessary under the statute.

Section 13 of the Act prohibits owners of land (or those who carry out forest activities) from exceeding consumption of 22 700 litres of water per day. Sections 15(a), 17, and 18(b) of the amended 1981 version of the Act includes provisions on standards for the effluent and water discharged from commercial and industrial operations. Schedules to the amended Water Utilization Act provide for effluent standards on temperature, odour, taste and suspended solids among others. These standards are complemented by standards made under the Environment Management Act (EMA). Although many of the EMA's provisions relating to protection of water resources are adequate, the government is in the initial stages of amending the Water Utilization Act because it does not adequately address conservation and sustainable utilization of water, and contains outdated abstraction and user rights principles.

4.2.3 Forest Act (2002)

In view of the significance of woodfuel energy in the overall energy matrix of the country (biomass accounts for 90 percent of energy sources), the comprehensive regulatory provisions of the Forest Act of 2002 assume importance. Although not likely to be a problem in Tanzania given its abundance of arable land that is not locked in forested areas, the provisions of this Act are also relevant to ensure that the cultivation of bioenergy feedstock does not encroach forested areas. The Act contains provisions on the utilization of forests and forest products and contains robust enforcement mechanisms and procedures. A striking feature of the law is its clear procedural guidelines for broad-based decision-making that includes all tiers of government level, particularly local and village authorities. Section 3 of the Act defines forest produce to mean anything which is produced by or

from trees or grows in a forest, or is naturally found in a forest (including *inter alia*, firewood, charcoal, peat, plants and wood oil).

The Forest Act enumerates several objectives pertaining to sustainable management and conservation of forest biodiversity (in section 3). Of particular interest for present purposes, it also aims to ensure the sustainable supply of forest products and services by maintaining sufficient forest area under effective and economical management, and also to enhance the quality and improve the marketability of forest products and regulate their export. A National Committee is established to advise the minister on aspects relating to the management of forest reserves, review of the forest policy, issuance of concessions and attached conditions, and declaration of forest reserve areas.

The Forest Act classifies forests under different categories, namely: national forest reserves, local authority forest reserves, village forests, private forest, and community forest reserves (section 4). The relevance of the Forest Act to biofuels of wood origin is that access to forest produce is influenced by the type of forest. Forest management plans are developed on the basis of these categories (section 11). The Act contains detailed descriptions of the process of formulating such plan including public consultation and participation (section 14). One required element of such plans is a description of the areas of land within the forest reserve in which local user zones are proposed to be established to facilitate local communities to access and obtain benefits from the reserve. The plans are to set out the manner and form of any user rights such local communities may have, including the practices and customs of local communities in relation to the forest which govern their use of the resources therein. The plans must also contain provisions regulating commercial exploitation of the forest resources as well as the conservation and preservation of the same. Finally, the forest plans must include the charges and fees which may be applied for access to (or use of) the forest and forest produce.

Areas designated as national forest reserves may be used for sustainable production of timber and forest products; to protect watersheds and wild plants, and conserve soil; and to protect areas of national significance, biodiversity and genetic resources. These objectives demonstrate a clear equilibrium of environmental and economic imperatives. National forest reserves can be accessed by licenses which are issued subject to conditions stipulated in the act and must comply with the management plans of the reserve (sections 49 and 51). Among the activities requiring permits in forest

reserve areas are: cutting or removing trees; removing wild plants; occupying land; clearing or cultivating; sowing or planting any crops or other vegetation; domestic commercial use; and export of forest produce (section 49(1)). The Act sets out the requirements and procedures for obtaining such permits. Conditions attached to the permits relate to the types of plant protection substances that can be used; volumes and specifications of timber to be felled; and transfer requirements among others. As well as revocation or suspension of permits for breach of rights granted under permits, where the unapproved exercise of a new right consists of "cutting down, felling, damaging, digging up or removing any tree or protected wild plant for purposes of sale, barter or profit or for use in any trade, industry, commercial or research undertaking, the Director [of Forestry] shall issue a mandatory stop order" (section 25(8)). It should be noted that domestic or personal uses are excluded from the purview of this provision.

The Act contains provisions governing applications and decision-making criteria governing concessions (section 20). Accordingly, the minister shall have regard to, *inter alia*, the uses to which the applicant is proposing to put the forest land; the duration of the proposed use; and any economic and social benefits and costs, both national and local, which might flow from the grant of a concession, including the implications for employment in such forest land. Among the types of conditions attached to the concessions are disposal of waste; pollution avoidance; payment of rent, fees, royalties and other imports; and afforestation and reforestation.

The Act has also introduced the concept of Joint Forest Management (JFM) in managing central and local forest reserves. This concept enhances community access to biomass and other forest produce. JFM is based on the authority of the national and local government to share management rights and responsibilities and share costs and benefits. In each case, negotiations are held and a JFM agreement is concluded which formalizes a contractual relationship between the relevant government institution and the local communities (Part III).

Access to firewood in villages and private forest reserves is free but depends on land tenure arrangements in place. For example, farmers are allowed to collect wood fuel for their farm or household. Access to village forest land is controlled by village regulations on the harvesting of woodfuel and other forest products. To enhance the conservation of village and private forests the Forest Act allocates powers to district authorities and village governments to enact by-laws for conserving forests (section 37) as

permitted by the Local Government (District Authorities) Act of 1982 that empowers villages to make by-laws for implementing primary legislation.

As regards private forests, rights of occupancy are granted under Part IV of the Act. Section 21 of the Forest Act allows individuals to use private forest for commercial purposes. Holders of rights of occupancy of forests may not use such resources other than for the "growing of good forestry, for the commercial production of forest produce, for water or soil conservation, or for the preservation of wild plants" (section 19). Holders of such rights may be an individual or group of persons, and the right of occupancy may be held in common, or in accordance with customary law, or in accordance with the provisions of the Land Act 1999 and the Village Land Act.

Detailed provisions are set out in the Act concerning the management of village and community forest reserves, the rights and duties of villages and communities in respect of these reserves, and the functions of management entities. Unless a joint management agreement or other arrangement specifically provides otherwise, the law provides villages and communities the right to "enter, occupy, use and harvest the produce of the forest [...], in a sustainable manner in accordance with the terms of any village land forest management plan, by-laws, rules, agreements or customary practices" (sections 41(a) and 47(a)). This is an important provision when considering that communities require firewood for heating, cooking and other energy needs. Some obligations conferred upon villages and communities include the duty not to transfer existing rights exercisable within the community.

Trade in forest produce is also governed by the Act. Restrictions on export are expounded upon in the Act that include compliance with export certificates and other quality certification measures. Internal and foreign trade may be restricted by the minister if it affects the sustainability of forests and the welfare of those obtaining a livelihood therefrom, as well as in order to conform with international agreements, *inter alia* (section 63(2)). Restrictions of tree cutting would be enforced where rights of occupancy could potentially result in interference with natural water supplies, soil erosion, loss of biodiversity, hindrance of the natural regeneration or a general deterioration of the environment (section 66(1)). The Act also contains rules in furtherance of conservation objectives of trees, wild plants and wild animals (Part VIII).

Apart from regulating access to firewood and forest products, the Forest Act also contains the requirement to conduct an environmental impact assessment (EIA) for proposed forest activities. Section 18 of the Act imposes an obligation to undertake an EIA for any development projects in national forest reserves, private forest reserves or in environmentally-sensitive forest areas, including watersheds. A non-exhaustive list of such activities is set out, which includes commercial logging and agricultural development on an area exceeding 5 hectares. Any agricultural activities which occupy more than 5 hectares are also subject to an EIA. In conducting an EIA under the Forest Act, due regard must be given to the guidelines set out by authorities and organizations responsible for the protection of the environment in Tanzania (section 18(3)).

4.3 Investment legislation

4.3.1 Tanzanian Investment Act

The Tanzanian Investment Act of 1997 governs general investment matters in Tanzania and provides favourable conditions for investors. Foreign investors or joint ventures with initial capital of US\$ 3 000 000 or its equivalent in Tanzanian shillings, and Tanzanian investors with capital of not less than US\$ 100 000 can enjoy favourable investment terms under the Investment Act.

Section 4 of the Act establishes as a "one-stop-shop" the Tanzanian Investment Centre (TIC),¹⁸¹ which coordinates the establishment of business enterprises. As provided under section 18 of the Investment Act, the TIC provides assistance with the following: incorporation of businesses; filing of VAT forms; filing of investment registration forms; facilitating the obtaining of necessary licenses, approvals, facilities or services; and filing of immigration forms.

Once an investor meets the minimum capital requirement, the project is eligible for registration with TIC and is entitled to receive a certificate of incentives. A holder of this certificate enjoys benefits such as exemption from import duties and deferment of VAT on project capital goods, favourable investment allowances and deductions on corporate tax (section 16).

¹⁸¹ www.tic.tz.org.

Sections from 20 to 23 of the Act provide other incentives, including investment guarantees, such as the transfer of capital profits, guarantees against expropriation and such additional incentives as the minister responsible for investment may prescribe. Investment in energy falls under infrastructure and development and is categorized as a priority sector. Though there is no special treatment with regard to biofuels, once the minimum capital is met, enterprises seeking to engage in bioenergy activities will benefit from the incentives created thereunder. Most of the multinational companies that are operating in Tanzania at different stages of bioenergy production are registered with the TIC.

4.4 Land use legislation

In general, questions concerning land use are important to bioenergy production for energy crops or forest products. Tanzania is endowed with considerable land resources suitable for the cultivation of energy and other crops. Government estimates place the arable land in current use at 10 percent of the available land for agricultural production.¹⁸² The following sections elucidate that existing Tanzanian legislation goes some way in trying to prevent land grabbing as well as protecting existing land uses that the allocation of land for the cultivation of bioenergy crops will be subject to certain safeguards, thereby minimising the potential for land use conflicts.

4.4.1 Land Act and Village Land Act

As discussed in section 4.2.3 above, access to firewood in Tanzania depends on land tenure. Access to firewood for household purposes in village lands is usually free. For commercial purposes, however, some wood fuel royalties have been introduced by both district councils and central government. In general, issues relating to land acquisition in Tanzania are governed by the Land Act (1999) and the Village Land Act (1999). Their foundation can be found in Tanzania's Constitution (Art. 21(1)) which guarantees the right to own property and prohibits illegal seizure of property without fair compensation.

The Land Act also regulates the allocation of land to investors. Section 4(4) of the Land Act divides land into three categories: general, reserved and village land. Village land is managed by village councils (section 8 of the

¹⁸² Biofuels development in Tanzania. Presented by H.E. Ngemera A.R. URT Ambassador to Germany at the Third German-African Energy Forum (23–25 April 2008).

Village Land Act). Reserved land is land reserved for a particular purpose such as in accordance with the Forest Act. Most protected areas falls under this category and they are managed by a particular designated authority (Land Act, section 6).

Land acquisition for the purpose of investing in bioenergy production would fall under section 20(10) of the Land Act which contains a general rule that foreigners cannot be allocated land for any other purpose except for investment in accordance with the Tanzania Investment Act of 1997. In practice, land for investment purposes is identified, gazetted and allocated to the Tanzania Investment Centre which then creates derivative rights to investors through leases and sublease arrangements (section 20(2)). Section 8(1) of the Village Land Act imposes an obligation to village councils to be governed by principles applicable to a trustee managing property on behalf of the beneficiary. Any allocation of land to a non-village member is subject to village assembly approval.

At present, there are some 14 biofuel companies in Tanzania operating in different parts of the country, as already mentioned. Given the fact that most of these companies are foreign, they are registered with the Tanzania Investment Centre. For example, one of these companies has been given permission to acquire 9 000 hectares of land in Kisarawe. As village land is administered by the local authorities, the Tanzanian Government could not allocate the requested land to the company directly. It was therefore necessary for the company to negotiate with the respective village authorities. At the time of writing, negotiations were ongoing concerning the payment of compensation to villagers whose land will be taken to let bioenergy investment takes over. The company is expected to employ approximately 1 000 people and invest some US\$ 20 million.¹⁸³

Overall, the Land Act and the Village Land Act seem to provide adequate protection to property rights. It should be noted that the original title to land is vested with the President of Tanzania, who is also empowered to acquire land for public purposes under the Land Acquisition Act (1967). The right to land in Tanzania through the right of occupancy under the Land Act can only be granted for a period not exceeding 99 years after which the title reverts back to the government (section 32). The poverty level of property

¹⁸³ For further information, see www.biopact.com.

holders, especially in rural areas, means they are often in a weaker bargaining position in the negotiations with investors.

4.4.2 Land-Use Planning Act

To administer land for competing uses, the Land Use Planning Act was enacted in 2007 to provide procedures for the preparation, administration and enforcement of land use plans. Section 6(1) establishes the multi-ministerial National Land Use Planning Commission with representatives of the ministries of lands and human settlement; agriculture and livestock; economic planning and development; environment, natural resources, fisheries, tourism and water. The Commission has the overall responsibility for land use plans in Tanzania; all villages, districts and regions are required to have land use plans, which are registered with the Commission.

Section 28(1) of the Land-Use Planning Act requires the designation of zones for cropland, rangeland, forest land, water sources, fisheries, farming, industry, factory and workshop land. The question as to whether or not to set aside land for cultivation of energy crops will depend on the decisions of a particular planning authority over a certain area. In accordance with section 18(1), village councils and district councils are designated as planning authorities. The law is therefore based on a bottom-up approach in decision-making rather than the top-down approach allowing local communities to determine how their land should be utilized. Although this approach is commended, it should be noted that experience with the former Land Planning Commission Act of 1984 shows that preparation of land use plans is quite time- and money-consuming, which may be a challenge in funding-constrained areas.

4.4.3. Land banks

The Tanzanian Investment Centre has also been developing land banks which are depositories of records detailing lands that have been identified as suitable for investment purposes. Any investor who wants land for investment can consult the TIC, who will then direct and identify the requisite land. The investor may choose from a menu of land areas that have been earmarked for this purpose. Where the land in question is classified as village land, the TIC will act as a mediator between the investor and the

village authorities in accordance with the Village Land Act.¹⁸⁴ It should be noted that the implementation of this policy is still a work in progress due to administrative and coordination problems between TIC, the Ministry of Lands and regional commissioners.

4.5 Employment Legislation

4.5.1 Occupational Health and Safety Act

The Occupational Health and Safety Act of 2003 makes provisions for the safety, health and welfare of persons working in factories and other places. It is thus of importance because it provides standards for working in bioenergy processing industries. All workplaces must be registered in accordance with the Act (and therefore meet basic standards relating to the state of machinery, etc.) and provide a minimum number of facilities for employees. For example, the law obliges employers to ensure there is a supply of clean drinking water and sanitary facilities. Furthermore, the law mandates a thorough medical check-up of employees.

The Act provides that workers employed in any factory or workplace, if exposed to any process or harmful substance shall be provided with effective protective equipment (section 62). In addition, according to section 65 of the Act,

Every person who employs persons in agricultural activities shall be under the obligation to ensure that no employee is exposed to:

- (a) hazardous machinery and equipment;
- (b) harmful animals and insects;
- (c) infectious agents, or allergens;
- (d) hazardous chemicals; or
- (e) hazardous environments while doing work as [an] agricultural worker.

¹⁸⁴ Olenasha, W. 2005.

4.5.2 Employment and Labour Relations Act

The breadth of application of the Employment and Labour Relations Act of 2004 covers some social aspects related to bioenergy production as a source of employment either in cultivation of crops or in processing industries. The purpose of the Act is to make provisions for core labour rights, to establish basic employment standards, to provide a framework for collective bargaining, and prevention and settlement of disputes, among others. The Act prohibits child and forced labour; guarantees freedom of association; establishes minimum wages according to sector; regulates working hours and administers different types of leave, such as annual leave, sick leave, and parental leave. It also governs issues of unfair termination of employment and collective bargaining among others.

4.6 Food Security Act

The Food Security Act of 1991 was enacted to establish a governmental body tasked with overseeing the strategic grain reserve and other matters related to food security in Tanzania. Its underlying objective is to establish a system to ensure a secure food supply for all Tanzanians at all times. This Act should be viewed in light of the fact that Tanzania is not currently self-sufficient in sugar and food oil production.¹⁸⁵

Section 3 of the Act establishes a Board of Trustees whose general function is to oversee and coordinate the activities of the government to procure, store and release grain for security purposes and preparedness for any crisis in the country. Section 8(1) of the Act establishes a Department of Food Security as an advisory body to the government on food security policies. Its functions include the collection, preparation and production of data on food security. Of particular relevance to biofuel feedstock production, the department monitors the country's food situation at all stages, encompassing soil preparation, planting, growing, harvesting, storing, distributing and pricing, and also provides early warning services on food security. The department is to recommend to the government, the levels of exports and imports of major cereal staple crops annually and to procure crops for the strategic grain reserve. The department is also required to ensure the availability of relevant information concerning food and agriculture generally. Another of the Board's functions is to provide guidance and support to the

¹⁸⁵ Janssen, R. 2006.

department in its effort to collect, analyse and disseminate information relating to national food security (section 5(ii))

Where any special agricultural product is subject to the provisions of this and any other act, the Food Security Act shall prevail (section 15). This is of significance in the food versus fuel debate, as this provision implies that food security will take precedence over energy security issues when it comes to the production and consumption of crops. Though the Act is not detailed with regard to specific food crops, it seems to provide adequate space for addressing any emerging issue which might affect food security in Tanzania as it empowers the minister to make regulations on any matter for the effective implementation of the Act (section 14). The Food Security Act therefore goes some way in addressing and regulating the relationship between food security and bioenergy production in Tanzania.

5. INSTITUTIONAL FRAMEWORK FOR BIOENERGY

This part examines the role of different institutions with regards to biofuel production in Tanzania. At the time of publishing, there is no umbrella legislation governing biofuels in Tanzania and thus no legal framework for defining institutional responsibilities. However, the government is in the preliminary stage of resource mobilization to start the process of drafting such legislation. In the absence of specific legal amendments however, some key existing institutions already supports the development of the biofuels industry in the country such as the National Biofuels Task Force.

The Energy Policy of Tanzania (2003) indicates that the Ministry of Energy and Minerals will supervise implementation of the energy policy. The Ministry will, *inter alia*, facilitate mobilization of resources into areas where market forces fail to ensure adequate energy services. Furthermore, the policy asserts that the roles and linkages between the Ministry of Energy and different actors, in the sector will be determined by legislation – operators will be licensed; markets and performance will be monitored; and necessary regulatory measures will be applied.

5.1 National Biofuels Task Force

The National Biofuels Task Force was established in March 2006. Its main responsibility is to provide advice and recommendations to the government for the elaboration of suitable policies and regulations on biofuels. To some

extent, the National Biofuels Task Force has been overtaken by events in the sense that there are more than 14 companies which are already in operation.¹⁸⁶ Thus, while the Task Force is in the process of creating an enabling environment for different players to operate, the biofuels industry is already developing.

Various ministries are represented in the Task Force.¹⁸⁷ These include the Ministries of Energy and Minerals (Secretary); Agriculture and Food Security; Labour, Employment and Youth Development; Finance; Vice President's Office – Division of Environment; Water and Irrigation; Lands, Housing and Settlement Development; Attorney General's Chambers; Tanzania Investment Center; Tanzania Petroleum Development Corporation; Community Finance Limited; and Tanzania Sugar Producers' Association.

The functions of the Task Force include¹⁸⁸:

- facilitating the ongoing and potential biofuel initiatives in Tanzania such as production of biodiesel from jatropha;
- reviewing the policy and regulatory framework for biofuels;
- developing guidelines for dealing with biofuels as an interim arrangement in Tanzania;
- preparing a coordinated and integrated programme for the development of biofuels in Tanzania; and
- identifying and mapping out zones and suitable areas for biofuels development in Tanzania.

Some of the outputs expected¹⁸⁹ of the Biofuels Taskforce include the Strengths, Weaknesses Opportunities and Threats (SWOT) Analysis and Prioritized Strategic Actions; draft guidelines for biofuels development; comprehensive action plans for the development of biofuels; a preliminary review of relevant policies and legislation; and a project document on "Strengthening the policy, legal, regulatory and institutional framework to support the development of a sustainable biofuels industry in Tanzania."

¹⁸⁶ MEM, 2008.

¹⁸⁷ Ngevera, A.R. 2008.

¹⁸⁸ Ibid.

¹⁸⁹ Ibid.

Key elements of the Biofuels Development Action Plan include reviewing existing policies, and legal regulatory and institutional frameworks and standards (as well as amending or revising policies or as appropriate); finalizing the draft biofuels guideline; drafting a Biofuels Act; capacity-building for government departments and institutions to coordinate biofuels activities and projects; identifying appropriate land for biofuels production; raising public awareness so that the public can benefit from biofuels business including an information, education and communication strategy customized to the needs of different target groups; conducting study tours abroad for the biofuels task force members; and soliciting funds to implement the National Biofuel Programme.

5.2 Energy and Water Utilities Regulatory Authority

The Energy and Water Utilities Regulatory Authority (EWURA) was established under section 4 of the above-mentioned Energy and Water Utilities Authority Act of 2001. It is mandated to regulate dealings in petroleum, electricity and water in Tanzania.

The Petroleum Supply Act designates EWURA with powers to consider and issue licenses for performing petroleum supply operations. These are defined as "all operations and activities for, or in connection with, the importation, landing, loading, transformation, transportation, storage, distribution, wholesale or retail trade of petroleum and petroleum products", where petroleum products include, among others, dealings in biofuels. Section 8(1) of the Act stipulates that individuals must apply for an operational license to EWURA for a permit for one or more activities in the supply chain. This essentially means that instead of creating another institution to deal with bioenergy, the law has empowered EWURA with additional powers to deal with licensing of biofuels – the advantages being maximized use of available resources and harmonized implementation of the different sectors.

5.3 National Environmental Management Council (NEMC)

The National Environmental Management Council (NEMC) was established under section 16 of the above-mentioned Environmental Management Act of 2004. The NEMC is a government agency entrusted with the role of enforcing, reviewing and monitoring environmental impact assessment (EIA) studies. These studies must comply with the requirements contained in the EMA. Some projects requiring EIA which are relevant for bioenergy

can be found in the first schedule of Environmental Impact Assessment and Audit Regulations of 2005. These include: agricultural projects necessitating resettlement of communities; transportation of petroleum products; and the development of large-scale renewable sources of energy.

Sections 27(1) and (2) of the Petroleum Supply Act would oblige EWURA to coordinate with the competent environmental authorities to establish a classification for petroleum supply operations or projects which are to be subjected to an environmental impact assessment as a condition for issuing approval or licence.

5.4 Tanzania Bureau of Standards (TBS)

Sections 26(1) and (2) of the Petroleum Supply Act require EWURA to consult with the Tanzanian Bureau of Standards when developing a programme of gradual adoption of international standards, technical specifications and codes of practice in order to upgrade supply chain infrastructure, quality of petroleum products and services provided.

In essence, the Petroleum Act thus provides a mechanism for inter-institutional cooperation and advocates consultation and cooperation with other institutions like NEMC and TBS. The wording of the two sections imposing the obligation to consult uses the word "shall" which implies that it is mandatory for EWURA to carry out consultations, which promotes synergy and harmonization among the institutions.

5.5 Research and Development

Research and Development (R&D) in the energy sector is characterized by a lack of institutional co-ordination in respect of various on-going research activities. Most companies have R&D departments limited to their needs and some NGOs are also active in this area. The University of Dar es Salaam conducts applied research, process development and provides expert professional services to industry, government and other organizations. With regard to biofuels, it is intending to carry out research on biodiesel production from vegetable oil, and also conduct engine tests on pure biodiesel and blended biodiesel.

6. CONCLUSIONS

This study has been undertaken with the objective of analyzing how the current legal and policy framework supports the promotion, production and use of bioenergy in Tanzania and ensures its sustainability. The current attention placed on Tanzania's bioenergy sector by national authorities focuses on the need to develop an enabling environment for the industry, with a particular emphasis on biofuel from jatropha. As yet, biofuels are not at the forefront of the legislative and policy agendas, although this is quickly changing through the activities of the Biofuels Taskforce.

The Petroleum Supply Act does not address biofuels production but concentrates on trading aspects of biofuels. This gap is significant in light of the fact that Tanzania's potential for bioenergy is its natural resources and large tracts of fertile land suitable for agricultural cultivation. It follows that it is at the production stage where regulatory measures are required which will balance the country's economic and social needs with environmental sustainability. It is likely, however, that this will be included within the remit of the draft biofuels act in preparation by the Biofuels Taskforce.

Despite this existing gap, an overview of other relevant laws goes some way in providing basic environmental, social and investment guarantees, particularly at the stage most crucial to bioenergy development in Tanzania – the feedstock cultivation phase. In view of the fact that woodfuel is the main source of energy for both rural and urban communities in Tanzania, legislation affecting this activity such as the Forest Act does provide a comprehensive regulatory framework governing access to and protection of forest resources. Similar protection mechanisms can be found in the Environmental Management Act (EMA) that incorporates many of the principles of international environmental law, and like the Forest Act, mandates the use of environmental impact assessments as a precondition to the granting of permits for natural resource use. The EMA also governs quality standards for air pollution, water and soil thus offering a good mechanism for pollution control in Tanzania. The EMA further foresees the possibility of using economic instruments, such as pricing, tax relief and subsidies, for advancing environmental objectives. While no economic instruments are currently in place, these incentives made possible by the EMA could promote the sustainable production of biofuels. In addition, under the existing legal framework, areas rich in biodiversity either receive total or partial protection under the law. Areas rich in biodiversity are

declared protected areas where human activities such as crop cultivation are prohibited. These provisions are therefore in line with EC Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources, which requires a guarantee that biofuels exported to the European Union, do not originate from land with a high biodiversity value.

The Food Security Act of 1991 provides a basis for addressing issues related to food security in Tanzania. This Act also provides that food security issues will take precedence over other issues, including energy security. The Land Use Planning Act addresses the allocation of land resources for competing uses and seeks to protect village lands from arbitrary allocation to investors. Resource constraints may create difficulties in implementing this law however, as village and regional councils authorized to contract on behalf of the village community may lack time or resources to effectively carry out their role and in all events have limited bargaining power with investors. The Employment Act and the Occupational Health and Safety Act house relevant standards associated with employment and labour that are applicable, by virtue of their general nature, both in the bioenergy production and processing spheres.

In view of the fact that, at the time of writing, Tanzania does not have any specific biofuels law, institutional coordination becomes paramount to ensure that the existing regulatory environment is effectively interpreted and implemented in an integrated fashion. The composition of the National Biofuels Task Force, created in 2006 provides a diverse representation of bioenergy industry stakeholders. This Task Force could carry out a coordinating role among existing institutions in the promotion of all aspects of the bioenergy sector as an interim approach until new legislation on bioenergy is passed.

With the exception of the Energy and Trade Policies, however, many of the other policies reviewed in this chapter are at least ten years old. They may thus contain priorities that are out of date, and ostensibly were not drafted with bioenergy in mind. While the government is still in the process of developing the policy and legal framework for bioenergy, the biofuels industry is taking off. The Tanzania Investment Center has registered biofuels companies which are now at different stages of operation. It is therefore crucial that the country's existing legislation is buttressed by coordinated enforcement of existing legislation, and that priority is given to creating a robust regulatory framework for biofuels, with economic

incentives for these companies to operate and flourish, but also with rules and parameters which consider environmental imperatives.

Social benefits created by employment opportunities in the bioenergy should similarly be prioritized. Tanzania's economy is dependent on agriculture – it is a source of employment for almost 80 percent of the population. Bioenergy feedstock cultivation provides an opportunity for diversification of trade in agricultural products. It is quite often larger agricultural producers that benefit from Tanzania's exporting potential in agricultural products even though most of the country's agricultural producers are small-holder farmers. Therefore, part of the focus of new legislation should be to enhance access to micro-financing and related financial and other support schemes for small-scale farmers. Awareness-raising and capacity building initiatives will also go a long way in creating opportunities to harness the benefits of bioenergy, while safeguarding against its risks.

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