Mozambique's policy framework for sustainable biofuels

A reflection on the development of the first African policy framework for sustainable biofuels

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Abstract

The objective of this paper is to describe, analyse and reflect upon the unfolding policy process that made Mozambique the first African country to develop and approve[1] a national policy framework for sustainable biofuels. Based on action-research conducted in Mozambique between December 2008 and July 2012, we describe and analyse the policy context, considerations and choices related to the policy process and the policy content for four successive policy development stages. This provides the basis for (1) presenting the Mozambican policy framework for sustainable biofuels, (2) recommendations for the Mozambican government in terms

[1] At the time this abstract was submitted (October 2012), the framework was in the process of being approved by the Mozambican Council of Ministers. The framework has been approved by the Advisory Councils of the Ministry of Energy and the Ministry for the Coordination of Environmental Affairs, which are represented by their respective ministers. It is expected that the Council of Ministers will approve the policy framework by the end of 2012 or beginning of 2013.

of policy implementation and necessary follow-up actions, and (3) a reflection on the lessons learned for other developing countries involved in similar policy development.

Key success factors in Mozambique were aligning and integrating the biofuel sustainability framework with existing legal procedures, developing the framework as a 'licence to produce' that balances between the national goals of biofuel production in Mozambique and the requirements of global biofuel markets, and the creation of an inter-ministerial working group to facilitate communication between the relevant ministries. Challenges mainly related to developing a framework that promotes sustainability across different types of biofuel production systems (smallholder, agro-industrial and outgrower), continuous stakeholder involvement and empowerment, and political support throughout the policy process.

Keywords

Mozambique, sustainable biofuels, policy framework

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1. Introduction

Over the past 10 years, biofuels have become an increasingly important topic on international energy policy agendas. In Europe, concerns about climate change and energy security have created support for exploring a shift to a more bio-based economy. This was – amongst others – materialised in the European Union Renewable Energy Directive (EU RED) policy stating that by the year 2020, 10% of the EU Member State's fuel or electricity used in the transport sector has to come from renewable energy sources, including biofuels (EU, 2009). Several individual countries (e.g. Brazil, South Africa, Malaysia, Indonesia and Mozambique) were consulted on the draft EU policy. However, the consultation took place at a very late stage in the decision-making process, "suggesting that it had a formal rather than a substantial meaning" (Di Lucia, 2010 7398).

The approval of the EU RED and the expected demand for biofuels has triggered investments in biofuels across the globe. Many investors started exploring the production of biomass for biofuels in so-called developing countries where – as was

assumed – land is abundant, agro-ecological conditions are good for biomass production and labour is relatively cheap as compared to European countries. In the policy debate, biofuels were framed as a pathway out of poverty for developing countries as it could generate foreign currency through export and simultaneously boost industrial progress, the development of infrastructure, create employment and transfer of technology to increase agricultural production. Mozambique was one of the countries overwhelmed by requests for land to produce biomass for biofuels. By December 2008, the Mozambican government had officially received 17 large scale biofuel investment proposals, requesting 245,404 ha of land and representing a total investment of 1.3 billion US$ (Schut et al., 2010).

International concerns about competition with food production, the acquisition of large tracks of land at the expense of the local population, pressure on biodiversity and the export of raw material to Europe initiated discussions about the sustainability of biofuel production in developing countries. The EU responded by developing a set of biofuel sustainability criteria to ensure that only biofuels produced in line with these criteria (1) can contribute to the obligatory Member State's biofuel blending targets, and (2) are entitled to market incentives, irrespective of whether the raw materials are cultivated inside or outside the EU's territory.

The Mozambican government – together with several other developing countries – complained that the EU framework could create trade barriers for exporting to European markets and that the criteria did not reflect the reality of many developing countries and their country-specific objectives for promoting biofuels (Reuters, 2008). Following this disappointment and the lack of consultation from the side of the EU, the Mozambican government decided in 2007 to develop its own national policy framework to promote the sustainable production of biofuels. Five years later, in June 2012, the policy framework was presented during a multi-stakeholder seminar in the capital Maputo; making Mozambique the first African country to have developed a national policy framework for sustainable biofuels.

During these five years of policy development, a highly dynamic process unfolded. The biofuel investment climate worsened, increasing concerns on land grabbing and

food security dominated the media, the 'wonder biofuel crop' jatropha[2] could not live up to its expectations and other energy sources (natural gas and coal) were discovered in Mozambique. These developments influenced the negotiation and decision-making processes between stakeholders and – consequently – the course and outcome of the policy process. As several other countries are exploring similar policies for sustainable biofuels, it is essential that the experiences from Mozambique are being described, analysed and reflected upon.

2. Objectives, methods and analytical framework

The objective of this paper is to describe, analyse and reflect upon the unfolding policy process that led to the development and approval of Mozambique's policy framework for sustainable biofuels. In doing so, the paper provides lessons learned that can support other (developing) countries and policymakers that are in the process of developing, or have yet to develop a policy framework for sustainable biofuels. In addition, such insights can also contribute to the work of researchers, development organisations and/or consultants who seek to support such policy processes.

The paper is based on experiences gathered from action-research that took place in Mozambique between December 2008 and June 2012. For analytical reasons, the policy process has been subdivided in two phases, each consisting of two stages (Fig. 1.). Although visualised as such, phases and stages in policy processes are not linear or sequential, but rather iterative and part of a more fluid problem-solving process (cf. Sabatier and Jenkins-Smith, 1999).

[2] *Jatropha curcas Linnaeus* (henceforth abbreviated as jatropha) is a small tree or shrub that produces toxic grain with a relatively high oil content (between 30 and 35%) (Jongschaap et al., 2007; van Eijck and Romijn, 2008; de Jongh, 2010).

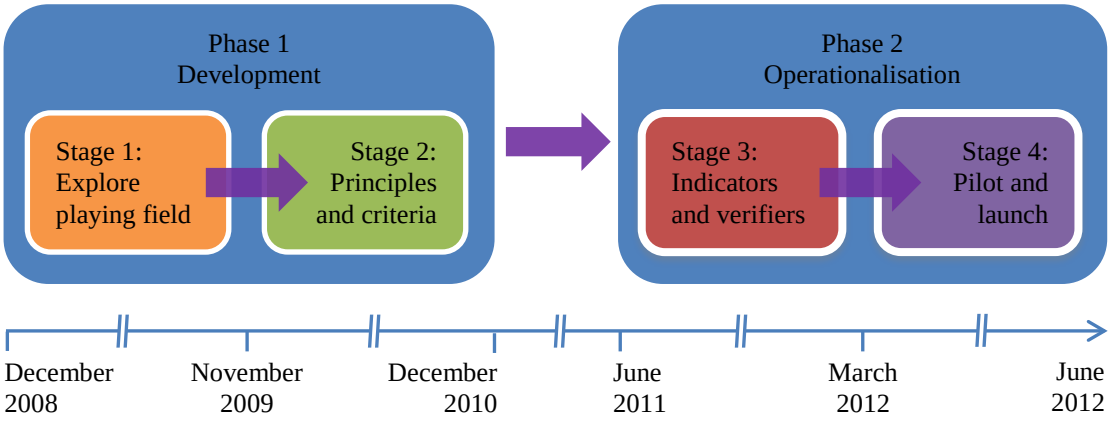

Fig. 1. Timeline including the two phases and four stages of the policy process.

The objective of Phase 1 was to develop sustainability principles and criteria for biofuels in Mozambique. The objective of Phase 2 was to operationalize (through developing of sustainability indicators) and prepare framework implementation. Throughout the policy process, two of this paper's authors formally fulfilled the role of policy advisor for a government-led workgroup responsible for developing the policy framework for sustainable biofuels. The authors supported different groups of stakeholders and, in close collaboration with the workgroup, contributed to drafting the policy framework. Data for this paper was gathered using multiple research methods, including participatory observations when working with stakeholders and during policy debates (cf. Russell Bernard, 2006), and secondary data analysis of e.g. policy documents and other sustainability frameworks (cf. Kumar, 2005).

The analytical approach is mainly descriptive. Within each stage, the interactions between policy context, the policy process and the policy content are described and analysed (Fig. 2.). Doing this for the four consecutive stages provides insight in how the policy debate on sustainable biofuels in Mozambique unfolded.

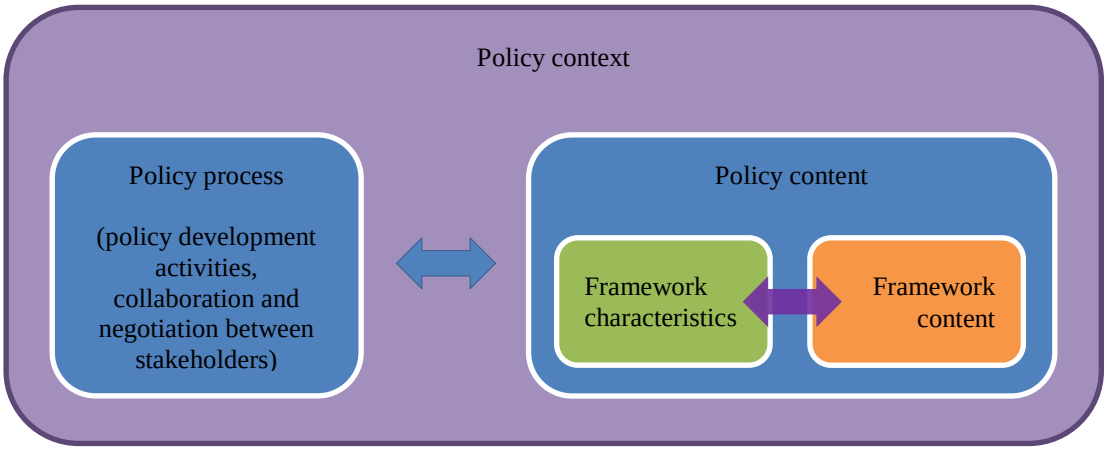

Fig. 2. Analytical framework

Policy context refers to how policies are influenced by, and influence, the context in which they are embedded. For the purpose of this paper, the policy context includes biofuel developments in Mozambique and the development of biofuel policies that are not directly related to biofuel sustainability. The main focus is on Mozambique, although developments at the supranational level are described if necessary to understand the Mozambican policy context.

Policy process refers to how the policy debate and stakeholder collaboration are organised in relation to making choices about the policy content. Stakeholders are: "[I]ndividuals or groups with a vested interest in the outcome of a policy decision […]" (McNie, 2007 19). In policy processes, the government is often the initiating stakeholder who determines what other stakeholders can participate in the policy process, when and in what form. Several authors have advocated that frameworks for sustainable biofuels should be developed through participatory and collaborative multi-stakeholder processes (e.g. van Dam et al., 2008). However, they often refer to stakeholder groups as homogeneous entities whereas within these groups a multiplicity of stakes and objectives can exist. To strengthen their position, different (sub)groups of stakeholders can form coalitions to influence the course and outcome of policy processes (Sabatier and Jenkins-Smith, 1999). Consequently, this paper focusses on analysing the activities of, and interaction and collaboration within and between different groups of government, private sector and civil society stakeholders in the policy debate on biofuel sustainability in Mozambique.

Policy content implies the nature and content of the policy issue at stake. In this paper, policy content is subdivided into ‘framework characteristics’ and ‘framework content’. Framework characteristics refer to the options, considerations and decisions regarding the type of framework, its focus, legal power and enforcement (cf. Lewandowski and Faaij, 2006; van Dam et al., 2008). Table 1 provides examples of different framework characteristics that reflect the types of choices made during the development of the Mozambican policy framework. Framework content refers to the options, considerations and decisions regarding the definition of biofuel sustainability; i.e. what principles, criteria and indicators are included in the framework and how were they formulated.

Framework characteristics	**Description/ examples**
Type of framework	Policy framework versus certification scheme
Level of framework detail and operationalization	Sustainability principles, sustainability criteria, sustainability indicators, verifiers and standards, guide for investors
Crop-specific versus general frameworks for sustainable biofuels	Focus on a specific biofuel crop (e.g. sugarcane, soy, etc.) versus focus on biofuels in general
Supply chain focus	Supply chain approach or focus on specific segment of the biofuel supply chain (e.g. production, processing, trade, etc.)
Type of approach	Mandatory versus voluntary
Type of licence	Licence to sell (access to certain markets or market incentives) versus licence to produce (comply required for biomass production)
Scope of the framework	National, regional or international focus.
Market focus	External market versus internal market focus
Enforcement and monitoring	Enforced by government, private sector, civil society organisation or by an independent certifying body
Costs	Who carries the costs of framework development, implementation and – eventually – audits and certification
Consequences of (non-) compliance	Incentives, fiscal benefits, fines, market access, void licence to produce
Production system focus	Agro-industrial production systems, smallholder production systems or outgrower production system
Institutional arrangements	Developing a new institutional framework or standard versus adapting existing institutional frameworks
Implementation focus	Gradual implementation versus non-gradual implementation

Table 1. Options related to framework characteristics for biofuel sustainability.

Framework content and framework characteristics are interrelated as e.g. the objective of the framework will influence the required level of detail and the type of indicators required.

3. The development of the policy framework for biofuel sustainability in Mozambique

In this section, four stages of the policy process that led to the policy framework for biofuel sustainability for Mozambique are described. The policy context, policy process and policy content (framework content and framework characteristics) are described and analysed for each of the stages.

3.1 Stage 1: Exploring the playing field (December 2008 –October 2009)

Policy context – Despite the lack of operational policies to guide biofuel projects and investments, the biofuel boom had sparked a variety of biofuel activities, ranging from the establishment of agro-industrial plantations to smallholder- and community-based development projects to the construction and/or expansion of biofuel processing and storage facilities. Up till August 2009, four agro-industrial projects had formally received a provisional, renewable lease in the form of a land title or DUAT (*Direito de Uso e Aproveitamento dos Terras*). Several other projects were in the process of obtaining similar rights, which did not withhold them from initiating business development activities including land clearing and plantation establishment. Figure 3 provides an overview of biofuel developments in Mozambique up till October 2009.

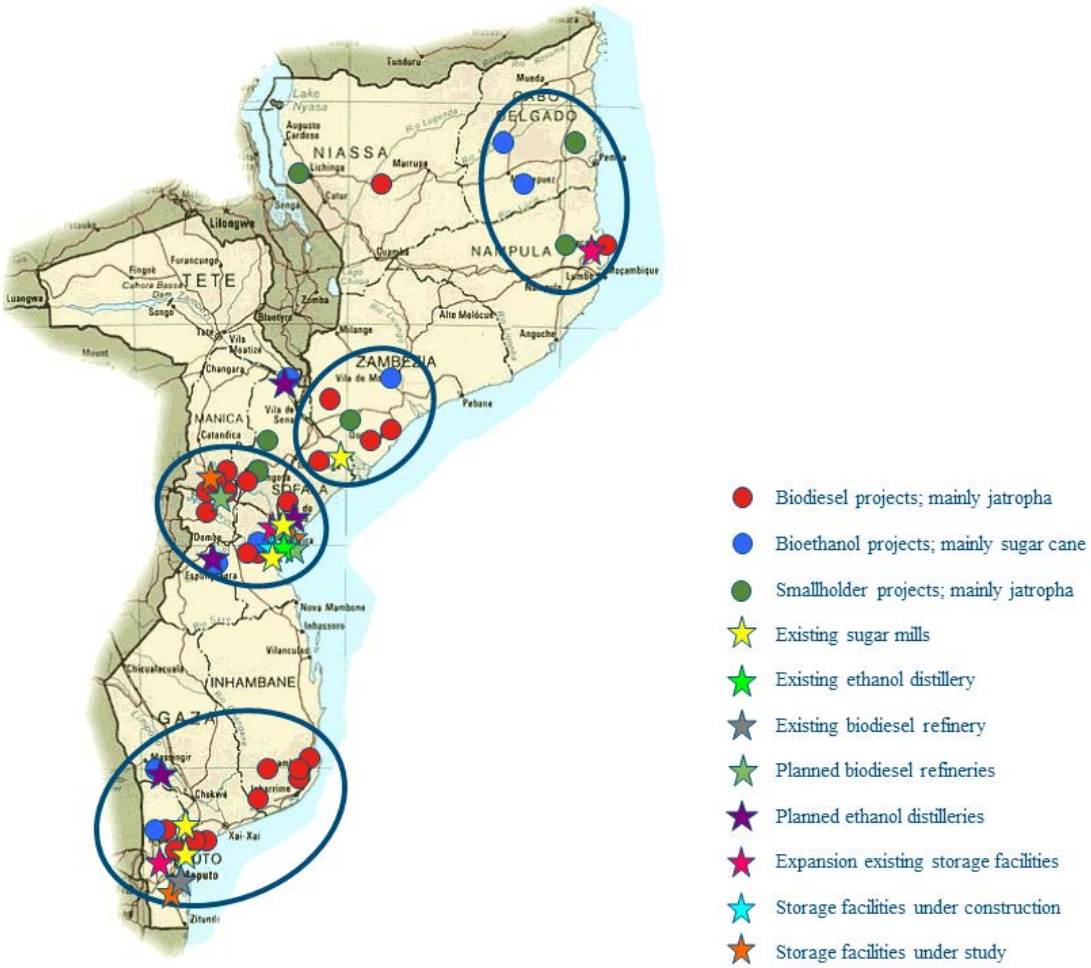

Fig. 3. Overview of biofuel developments in Mozambique during Stage 1 (adapted from Schut et al., 2010 5162).

To guide the biofuel investments in Mozambique, the Mozambican government undertook a feasibility study (Econergy, 2008), started developing a National Biofuel Policy and Strategy (NBPS - Government of Mozambique, 2009), and initiated a first phase of countrywide agro-ecological zoning at a scale of 1:1,000,000 that identified nearly 7 million hectare of land available for large-scale commercial agroindustry.[3]

Policy process – After the decision by the Mozambican government to develop a national framework for sustainable biofuels, four biofuel workgroups were established including a workgroup on sustainable biofuels. This workgroup was under

[3] Includes production of biomass for biofuels, but also other agroindustry focussing on producing food crops. Moreover the zoning identified available land, without examining the suitability for producing specific crops.

the responsibility of the National Council for Sustainable Development (CONDES) that together with the Agriculture Promotion Centre (CEPAGRI) drafted the terms of reference (ToR) for the workgroup.[4] The ToR stated that the workgroup would be composed of government officials and representatives of private and public sector organisations. Furthermore, it included an action plan that focussed on multi-stakeholder collaboration, dialogue and collective learning for decision-making and action. The workgroup was to be supported by a Technical Secretariat responsible for conducting research and facilitating workgroup activities. Based on monthly meetings, the objective of Phase 1 was to reach consensus about the basic principles for the sustainable production of biofuels in Mozambique (Workgroup Sustainable Biofuels, 2009). In March 2009, the World Wildlife Fund (WWF) organised a biofuel workshop for Mozambican civil society organisations. The objective was to reach a common position on how to fulfil the rural development promise of biofuels in Mozambique. The participants of the workshop established a civil society biofuel platform and emphasised the need for regular meetings with the private sector and government, and an enabling environment for multi-stakeholder collaboration in developing and disseminating biofuel policies (WWF, 2009). Also private sector representatives were encouraged to organise themselves as a collective. As a result of leadership changes in the CEPAGRI and CONDES, the formation of the multi-stakeholder workgroup stagnated and up till October 2009 no formal workgroup activities took place. Due to the lack of policy progress, the National Directorate for New and Renewable Energy (DNER – also chair of the National Biofuel Taskforce responsible for coordinating the different biofuel workgroups and the implementation of the NBPS) started collaborating with the Technical Secretariat to keep the policy process going.

Policy content – The NBPS (that was approved in May 2009) revealed some of the Mozambican government's biofuel objectives and ideas about framework content and characteristics. In terms of the framework characteristics, the NBPS states that biofuel sustainability criteria will be used to select investment projects and allocate land titles as a licence to produce (Government of Mozambique, 2009). Furthermore, the sustainability criteria should be applicable to the agro-industrial biofuel sector. During

[4] CONDES forms part of the Mozambican Ministry for the Coordination of Environmental Affairs (MICOA) and CEPAGRI forms part of the Ministry of Agricultural (MINAG).

Stage 1, principles for biofuel sustainability should be developed. One of the specific objectives of the workgroup was to explore the opportunities for a framework that could reflect both the Mozambican internal market reality and long-term requirements of the major external biofuel markets. Another objective of the workgroup was to propose modifications to the existing Mozambican legal framework, implying a preference for a mandatory policy framework to promote and regulate sustainable biofuels in Mozambique. Analysis of existing legislation in Mozambique revealed that the existing Project Application and Land Acquisition Process – governed by the Mozambican investment law and land law, and their regulatory frameworks (Fig. 4) – could potentially be used to assess the sustainability of biofuel operations in Mozambique. This procedure provides the Mozambican government a legal instrument to void land titles of companies that do not comply with Mozambican legislation (see also: Schut et al., 2010 5153-5155).

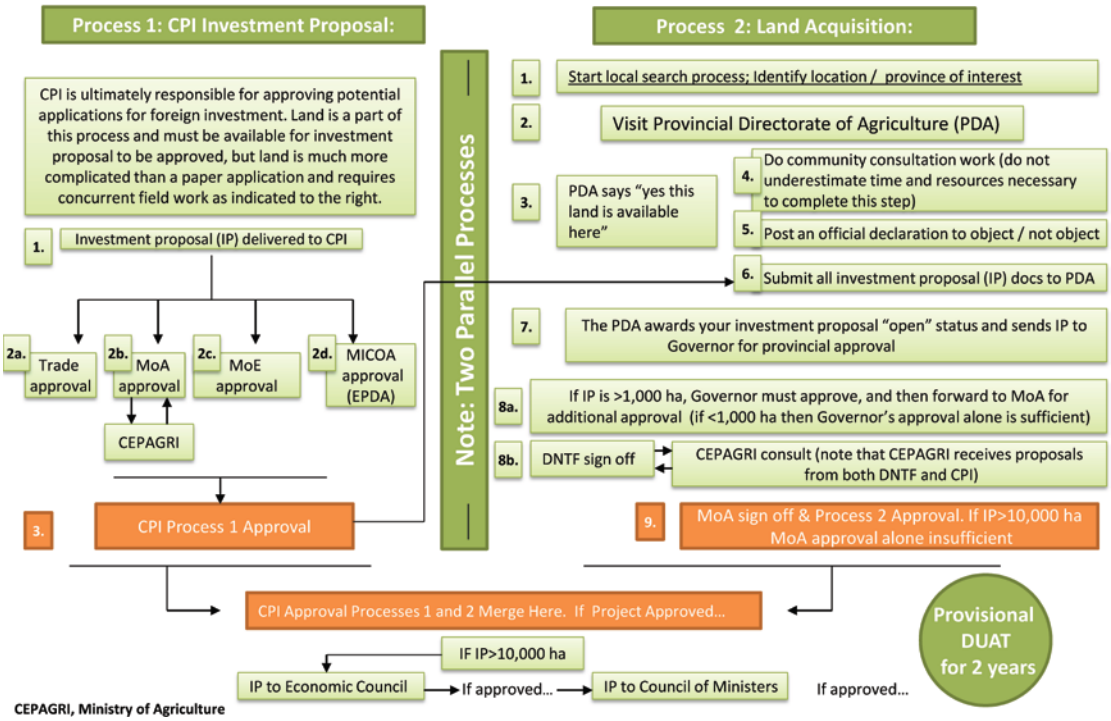

Fig. 4. Project Application and Land Acquisition Process (CEPAGRI, 2008).

On framework content it became clear that the general focus on greenhouse gas emission reduction and biodiversity in the EU framework did not reflect the more social-economic (employment creation and generation of tax revenues and foreign

currency from export) and energy security (diversifying the country's energy matrix and reduce fossil fuel imports) policy objectives of the Mozambican government. Although Mozambique did not have formal obligations under the Kyoto protocol to reduce GHG emissions, opportunities for the Mozambican government to brand itself as "a responsible producer of biofuels" were acknowledged (Lerner, 2009). In line with the workgroup's objectives, there was consensus that the Mozambican principles – where possible – should be aligned with key principles for accessing major external biofuel markets. Key concerns of the civil society platform as identified during the March 2009 workshop relate to: (1) benefits from biofuel activities for and empowerment of rural communities, (2) negative impacts of biofuels on food security, (3) transfer of technology and good agricultural practices to smallholder farmers, (4) negative environmental impact, and (5) protecting the rights and access to land including community consultation (WWF, 2009). Private sector concerns at that time mainly related to the lack of conducive and enabling policies and market development; providing an insecure framework for biofuel investments. In October 2009, the Technical Secretariat presented its recommendations to representatives of CONDES and DNER. The presentation contained a proposal for five principles and ten sub-principles (Table 2). In drafting the principles, careful attention was paid to ensuring that the key-objectives and concerns of government, civil society and private sector stakeholders were reflected (Schut et al., 2011).

Phase 1								Phase 2							
October 2009		March 2010			October 2010			July 2011		March 2012			June 2012		
Principles	Sub-principles	Principles	Criteria		Principles	Criteria		Principles	Criteria	Principles	Criteria		Principles	Criteria	
1. Legalities	**1.1** Legal frameworks: Biofuel production should be in accordance with Mozambican legislation and the national biofuel policy and strategy. **1.2** Land and water use: Biofuel production should respect formal and customary land and water rights.	**1.** Legalities	**1.1** Biofuel production shall comply with Mozambican legislation and the National Biofuel Strategy and Policy. **1.2** Biofuel production shall respect formal and customary laws and rights relevant to use of, and access to land, water and other natural resources. **1.3 Biofuel production, processing and use shall not violate labour rights, promote decent working conditions and well-being of workers.**	Stakeholder consultation workshop Maputo, May 2010	**1.** Legalities **Biofuel operations shall respect all applicable laws, procedures, regulations and rights.**	**1.1 All biofuel operations obliged to comply with Project Application and Land Acquisition Procedures (Circular No. 009/DNTF/07) shall show compliance with the biofuel sustainability criteria as presented in this framework.** **1.2 Biofuel operations shall respect Mozambican policies, strategies, laws and all customary and informal rights.** **1.3** Biofuel **operations** shall respect existing laws and customary rights related to the use of, and access to land, water and other natural resources. **1.4 Biofuel operations shall not violate human and labour rights.**	Stakeholder consultation workshop Nampula and Beira, October 2010	**1. Legality** Biofuel operators shall respect all laws, procedures, regulations and rights.	**1.1** All biofuel **operators** that are required to comply with the Project Application and Land Acquisition Procedures (Circular No. 009/DNTF/07) shall show compliance with the biofuel sustainability criteria as presented in this Framework. **1.2** Biofuel **operators** shall respect Mozambican policies, strategies, laws and all customary and informal rights. **1.3** Biofuel **operators** shall comply with existing laws and customary rights related to the use and access to water, land and other natural resources. **1.4** Biofuel **operators** shall not violate human and labour rights.	1. Legality Biofuel operations shall respect all laws, procedures and regulations.	**1.1 Biofuel operations shall respect the laws, policies, strategies and all existing customary and informal rights related to the use and access to land, water and other natural resources.** **1.2 Biofuel operations shall not violate human and labour rights.**	Stakeholder consultation workshops Maputo, Nampula and Beira, March 2012	1. Legality Biofuel operations shall respect all applicable laws, regulations and legal procedures.	**1.1 Biofuel operations shall comply with all applicable laws, policies and strategies and with all existing customary and informal rights related to the use and access to land, water and other natural resources.** **1.2** Biofuel operations shall not violate human and labour rights **(Labour Law: Law No. 23/2007).**	
2. Social acceptability	**2.1** Free prior and informed consent (respect for local populations): Biofuel land allocation consultation should be carried out in partnership with the affected communities in a participatory, transparent, and well documented process **2.2** Employment and income generation: Biofuel production should contribute to employment and income generation throughout the whole value chain and facilitate the inclusion of smallholder producers. **2.3** Human and labour rights, and social well-being: Biofuel production should not violate human and labour rights; ensure decent work conditions and well-being of workers, working relationships and community relations.	**2.** Social acceptability	**2.1** Community consultation shall be carried out through a Free, Prior, Informed and well-documented process that respects the rights and needs of local communities. **2.2 Biofuel production, processing and use shall contribute to rural socio-economic development of local stakeholders by generating employment, self-employment and income generation.** **2.3 Biofuel production, processing and use shall facilitate the responsible involvement of smallholder producers.** **2.4 Biofuel production, processing and use shall not violate human rights and respect social and cultural practices.** **2.5 Biofuel production, processing and use shall promote decent work and the well-being of workers.**		**2. Social responsibility** **Biofuel operations shall contribute to local development.**	**2.1** Community consultation shall be based on free, prior, and informed consent, through a consensus-driven and well-documented process. **2.2** Biofuel **operations** shall contribute to local socioeconomic development. **2.3 Biofuel operations shall respect social and cultural rights and practices.** **2.4 Biofuel operations shall minimize risks for public health.**		**2.** Social responsibility Biofuel operators shall contribute to local development.	**2.1.** Community consultation shall be based on free, prior, and informed consent, through a consensus-driven and well-documented process. **2.2.** Biofuel **operators** shall contribute to local socioeconomic development. **2.3.** Biofuel **operators** shall respect social and cultural rights and practices. **2.4.** Biofuels **operations** shall **not result in** risks for public health	**2.** Social responsibility Biofuel operations shall contribute to local development.	**2.1** Community consultation shall be based on free, prior, and informed consent, through a consensus-driven and well-documented process. **2.2** Biofuel operations shall contribute to local sustainable socioeconomic development. **2.3 Biofuel operations shall minimize risks for public health.**		**2.** Social responsibility **Biofuel operations shall contribute to local development, while minimizing health risks.**	**2.1** Community consultation shall be based on free, prior, and informed consent, through a consensus-driven and well-documented process **(Land Law: Law No. 19/97; Land law regulations: Decree No. 66/98; Technical annex to the land law regulations: Ministerial Diploma No. 29-A/2000; Land planning law: Law 19/2007).** **2.2** Biofuel operations shall contribute to local socioeconomic development. **2.3** Biofuel operations shall minimize risks for public health **and ensure hygiene and safety at the workplace.**	
		3. Energy security	**3.1** Biofuel production, processing and use shall contribute to the diversification of the energy matrix on the national level. **3.2** Biofuel production, processing and use shall contribute to energy security of local communities. **3.3** Biofuel production, processing and use shall contribute to energy transition in local communities.		**3.** Energy security **Biofuel operations shall contribute to energy security.**	**3.1 Biofuel operations** shall contribute to the diversification of the Mozambican energy matrix. **3.2 Biofuel operations** shall contribute to energy transition.		**3.** Energy security Biofuel operators shall contribute to energy security.	**3.1** Biofuel **operators** shall contribute to the diversification of the national energy matrix. **3.2** Biofuel **operators** shall contribute to **the access and use of technologies that enable the transformation of different energy sources in renewable energy(energy transition).**	**3.** Energy security Biofuel operations shall contribute to energy security.	**3.1 Biofuel operations shall contribute to the diversification of the national energy matrix.**		**3.** Energy security Biofuel operations shall contribute to energy security.	**3.1** Biofuel operations shall contribute to a **sustainable** diversification of the national energy matrix **(Biofuels policy and strategy: Resolution No. 22/2009; Biofuels blending regulations: Decree No. 58/2011); Biofuels technical regulations: forthcoming; Regulations for licensing activities of production, storage, export, transport and commercialization of biofuels: Ministerial Diploma forthcoming).**	
3. Economic security and viability	**3.1** Economic benefits: Biofuel production should create substantial spin-offs at the macro and micro-economic level.	**4.** Economic **viability**	**4.1 Biofuel production, processing and use shall be competitive and economically sustainable to create substantial benefits at the macro-economic level.** **4.2 Biofuel production, processing and use shall contribute towards local prosperity.**		**4. Macro-economic benefits, and economic and financial viability** **Biofuel operations shall result in macro-economic benefits, and be economically and financially viable.**	**4.1 Biofuel operations shall create benefits at the macro-economic level.** **4.2 Biofuel operations shall be economically and financially viable.**		4. Macro-economic benefits, and economic and financial viability Biofuel operations shall result in macro-economic benefits, and be economically and financially viable.	**4.1** Biofuel **operators** shall **contribute positively at the macroeconomic level by providing part of the production of biofuels and by-products for domestic consumption in the country.** **4.2:** Biofuel **operators** shall be economically and financially viable.	**4. Economic and financial viability** **Biofuel operations shall be viable.**	**4.1** Biofuel operations shall be economically and financially viable.		4. Economic and financial viability Biofuel operations shall be **economically and financially** viable.	**4.1** Biofuel operations shall be economically and financially viable **(Investment law: Law No. 36/95; Investment law regulations: Decree No. 36/95; Project application form; Procedures for the presentation and appreciation of investment proposals involving extension areas above 10.000 hectares: Resolution No. 70/2008).**	
					5. Food security Biofuel operations shall not compromise local food security.	**5.1** Biofuel operations shall not compromise local food security by maintaining the availability of, and access to staple food as compared to before the biofuel operations was established.		**5.** Food security Biofuel operators shall not compromise local food security.	**5.1** Biofuel **operators** shall not compromise local food security by maintaining the availability of, and access to staple food as compared to before the biofuel operations was established..	**5.** Food security Biofuel operations shall not compromise local food security.	**5.1** Biofuel operations shall not compromise local food security by maintaining the availability of and access to staple food, as compared to before the biofuel operations were established.		**5.** Food security Biofuel operations shall not compromise local food security.	**5.1** Biofuel operations shall not compromise local food security by maintaining the availability of and access to staple food.	
4. Agricultural productivity	**4.1** Food security: Biofuel production should contribute to local, national and regional food security and no biofuels can be produced in designated food production areas.	**5.** Agricultural productivity	**5.1 Biofuel production, processing and use shall contribute to local and national food security and shall be avoided on land with high food production potential.** **5.2 Biofuel production, processing and use shall contribute to increased agricultural productivity by continuous monitoring of production and processing efficiency and promote the use of by-products, residues and waste.** **5.3 Biofuel production, processing and use shall promote sustainable agricultural practices and facilitate technology transfer.**		**6.** Agricultural productivity **Biofuel operations shall contribute to improved agricultural productivity.**	**6.1 Biofuel operations** shall **continuously improve** agricultural and industrial productivity and the **effective use of resources.** **6.2 Biofuel operations** shall facilitate technology transfer and **knowledge sharing to enhance agricultural productivity.**		**6.** Agricultural productivity Biofuel operators shall contribute to improved agricultural productivity.	**6.1** Biofuel **operators** shall continuously improve agricultural and industrial productivity and the effective use of **natural and human resources.** **6.2** Biofuel operators shall **ensure** technology transfer and knowledge **exchange to improve overall** agricultural productivity.	**6.** Agricultural **and industrial** productivity Biofuel operations shall contribute to improved agricultural **and industrial** productivity.	**6.1** Biofuel operations shall continuously improve agricultural and industrial productivity and the **effective use of resources.** **6.2** Biofuel operations shall facilitate technology transfer and knowledge **sharingto smallholders.**		**6.** Agricultural and industrial productivity Biofuel operations shall contribute to improved agricultural and industrial productivity	**6.1** Biofuel operations shall continuously improve agricultural and industrial productivity and the effective use of resources. **6.2** Biofuel operations shall facilitate technology transfer and knowledge sharing to smallholders.	
5. Environmental protection	**5.1** GHG-emission: Biofuel production should contribute to the long-term reduction of GHG-emissions throughout the production chain. **5.2** Biodiversity: Biofuel production should avoid the use of raw material obtained from land with high biodiversity value, unless evidence is provided that the production of that raw material did not interfere with those nature protection purpose. **5.3** Soil, water and air quality: Biofuel production should avoid negative impact on soil, water and air quality.	**6.** Environmental protection	**6.1** Biofuel production and processing shall contribute to the continuous reduction of GHG-emissions **as compared to fossil fuels.** **6.2** Biofuel production, processing and use shall avoid negative impacts on biodiversity, ecosystem functions and services, and land with high conservation value, unless evidence is provided demonstrating that the production does not interfere with nature protection purposes. **6.3 Biofuel production and processing shall minimize negative impacts on soil quality.** **6.4 Biofuel production and processing shall avoid negative impacts on air quality.** **6.5 Biofuel production and processing shall avoid negative impacts on water availability and quality.**		**7.** Environmental protection **Biofuel operations shall reduce the risk of environmental degradation.**	**7.1** Biofuel operations shall contribute to the continuous reduction of GHG-emissions as compared to fossil fuels. **7.2** Biofuel operations shall avoid negative impacts on biodiversity, ecosystem functions and services, **and maintain the conservation values existing on the land.** **7.3 Biofuel operations shall minimize negative impacts on soil and air quality.** **7.4** Biofuel operations shall minimize negative impacts on water availability and quality. 7.5 Biofuel operations shall carry out an Environmental Impact Assessment (EIA) if required by Mozambican law.		**7.** Environmental protection Biofuel operators shall reduce the risk of environmental degradation.	**7.1** Biofuel **operators** shall contribute to the continuous reduction of GHG-emissions as compared to fossil fuels. **7.2** Biofuel **operators** shall avoid negative impacts on biodiversity, ecosystem functions and services, and maintain the conservation values existing on the land. **7.3** Biofuel **operators** shall minimize negative impacts on soil and air quality. **7.4** Biofuel **operators** shall minimize negative impacts on water availability and quality. **7.5** Biofuel **operators** shall carry out an Environmental Impact Assessment (EIA) if required by Mozambican law.	**7.** Environmental protection Biofuel operations shall reduce the risk of environmental degradation.	**7.1** Biofuel operations shall contribute to the continuous reduction of greenhouse gas emissions as compared to fossil fuels. **7.2** Biofuel operations shall carry out an Environmental Impact Assessment.		**7.** Environmental protection Biofuel operations shall reduce the risk of environmental degradation	**7.1** Biofuel operations shall contribute to the reduction of greenhouse gas emissions (GHG) as compared to fossil fuels **(Biofuel policy and strategy: Resolution No. 22/2009).** **7.2** Biofuel operations shall carry out an Environmental Impact Assessment **(Environmental law: Law No. 20/97; Regulation about the environmental impact assessment: Decree No. 45/2004; General directive for the elaboration of environmental impact studies: Ministerial Diploma No. 129/2006; Manual of procedures for environmental licensing; General directive for the public participation process: Ministerial Diploma No. 130/2006; Forest and wildlife law: Law No. 10/99).** **7.3 Biofuel operations shall minimize negative impacts on biodiversity, ecosystem and conservation values.(General directive for the public participation process: Ministerial Diploma No. 130/2006).** **7.4 Biofuel operations shall minimize the soil and air pollution (General directive for the public participation process: Ministerial Diploma No. 130/2006).** **7.5 Biofuel operations shall minimize negative impacts on water resources (General directive for the public participation process: Ministerial Diploma No. 130/2006).**	

Table 2. Evolution of sustainability principles, sub-principles and criteria for biofuel production in Mozambique (**bold text** indicates changes in the framework content as compared to the previous version of the framework).

3.2 Stage 2: Draft framework for biofuel sustainability, guide for implementation and stakeholder consultation (November 2009 – December 2010)

Policy context – Due to the global economic crises, the financial situation worsened for many biofuel companies. Especially during 2010, several biofuel companies stopped their activities or went bankrupt. In December 2009, the DUAT of one of the agro-industrial biofuel projects was voided by the Mozambican government because the company failed to comply with its contractual obligations (Schut et al., 2010 5152). Moreover, many of the jatropha projects could not live up to their high expectations due to disappointing yields as a result of the limited agronomic knowledge on jatropha crop management. Using these negative experiences, several civil society organisations actively started campaigning against biofuels by highlighting competition with food production and so-called 'land grabbing' (e.g. Justiça Ambiental and UNAC, 2009; Friends of the Earth, 2010). Following critique on its accuracy and utility (e.g. Watson, 2008), the Mozambican government initiated a second phase of agro-ecological zoning at a scale of 1:250,000. At a regional level, the SADC Secretariat developed a framework for sustainable biofuel use and production with the objective to accelerate biofuel developments and harmonize biofuel sustainability policies across the region (SADC, 2010). The framework was approved by the SADC Energy Ministers in April 2010 and SADC advised Member States to put in place policy and legal mechanisms to foster responsible investments in biofuels.

Policy process – Workgroup activities remained limited to meetings between the Technical Secretariat and representatives of DNER, CEPAGRI and CONDES. Although CONDES had formal leadership, DNER and CEPAGRI were now coordinating the majority of workgroup activities. Early 2010, the workgroup was expanded by including representatives from the Investment Promotion Centre (CPI) and the National Directorate for Environmental Impact Assessment (DNAIA – part of the Mozambican Ministry for Coordination of Environmental Affairs); as these government departments play an important role in the Project Application and Land Acquisition Process in which the sustainability criteria would be integrated. It was furthermore decided that the workgroup would function as an inter-ministerial

workgroup, rather than as a multi-stakeholder workgroup. The 'new' workgroup would elaborate sustainability principles and criteria, and civil society and private sector stakeholders would be consulted on the outcome. Within the government, debate over the workgroup leadership and responsibilities continued. DNER's firm role in the workgroup resulted in the uptake of a special principle in energy security, whereas CONDES' proposal to develop sustainability indicators before consulting other stakeholders on the framework was dismissed by the chair of the National Biofuel Taskforce, who suggested that the workgroup's leadership should be transferred from CONDES to DNAIA (both form part of the Mozambican Ministry for Coordination of Environmental Affairs (MICOA). Additionally, struggle about who was to organise and fund the stakeholder consultation workshops emerged. In November 2009, civil society organisations organised a second two-day workshop for which – during one day – also government and private sector stakeholders were invited for sharing experiences. During the workshop, representatives from civil society organisations complained about the lack of space to participate or influence the policy process. Furthermore, civil society representatives were disappointed that the Mozambican government did not keep its promise to include non-government stakeholders in the workgroup. Also within the civil society platform, turmoil emerged with regard to what message and strategy should be applied to influence the policy process. Two key institutions (WWF and *Justiça Ambiental*) clashed and consequently *Justiça Ambiental* and also the National Farmers Union (UNAC) left the platform as they could not relate to the vision and strategy of the platform. In May 2010, Version 0 of the policy framework (including principles, criteria and a guide for implementation) was presented to a group of 70 stakeholders, including government officials, private sector and civil society representatives, researchers, and representatives from donor countries and development organisations (Photo 1). Feedback and written comments by workshop participants and a senior consultant working with the Roundtable for Sustainable Biofuels, resulted in a draft Version 1 of the Mozambican biofuel sustainability framework that was discussed in stakeholder consultation workshops in Nampula and Beira in October 2010, attended by 85 participants. This resulted in Version 1 of the policy framework for sustainable biofuels in Mozambique. From August 2010 onwards, ToR for the second phase of the policy process focussing on the operationalization and implementation of the policy framework were drafted by the Technical Secretariat and workgroup members.

Photo 1. Stakeholder consultation meeting held in Maputo in May 2010.

Policy content – Regarding the framework characteristics, the adaptation of data requirements to assess the sustainability of biofuel operations under the government's Project Application and Land Acquisition was further explored. The fact that the Mozambican government had voided the DUAT of one of the agro-industrial biofuel projects demonstrated the power of this government-led assessment of companies. Furthermore, the proposal to assess the sustainability criteria during the initial assessment of projects' investment proposals for obtaining a provisional DUAT, and again after two years to obtain long-term land rights, was embraced by different groups of stakeholders during the stakeholder consultation workshops. Other advantages of integrating the sustainability criteria in the Project Application and Land Acquisition Process was that it would reduce additional bureaucratic burdens for government and private sector, and smallholder biofuel producers and community-based projects would be exempted from demonstrating compliance to the framework. It was also decided to reformulate the sub-principles as independent criteria to monitor and assess the overall sustainability objective of the biofuel sector. In terms of its focus on the supply chain, it was decided that biofuel operations include biofuel feedstock producers, feedstock processors, biofuel producers and blenders. A guide for implementation was added to the framework, describing additional steps for framework operationalization.

Also the framework content changed considerably. The proposed principles were redefined and new principles were added. Major changes were that food security and energy security were included as separate principles. The proposal to include food security as a key principle was partly a response to increasing 'food or fuel' debate. The proposal to include a specific energy security principle was proposed by DNER, reflecting their departmental mandate. Furthermore, the principle on economic viability was broadened to economic and financial viability as a response to the increasing number of biofuel projects going bankrupt. The framework expanded from five principles and ten sub-principles in October 2009, to six principles and twenty-one criteria in March 2010, to seven principles and twenty criteria in October 2010 (see Table 2). The version of the policy framework developed during Phase 1 was finalised in July 2011 and contained a description of key activities for Phase 2, amongst others a comparison of the criteria with existing Mozambican legislation and procedures, the development of sustainability indicators and an institutional pilot to test the framework.

3.3 Stage 3: Operationalizing the policy framework and preparing implementation (June 2011 – February 2012)

Policy context – During Stage 3 the financial situation of the biofuel sector worsened. Several companies that already had their DUAT stopped operating due to cash flow problems and a reduced number of biofuel investment proposals were submitted to the Mozambican government. Whilst the execution of the agro-ecological zoning was delayed, the Mozambican government became reserved in issuing land titles (DUATs) for large land tracks. This created considerable delays for biofuel projects enrolled in the Project Application and Land Acquisition Process. It resulted in an insecure investment climate for biofuel and negative publicity as project activities (including land clearing and plantation establishment) were taking place without DUAT. In June 2011, an Inter-ministerial Biofuels Commission (CIB) was appointed to replace the National Biofuel Taskforce. In November 2011, the approved Biofuels Blending Regulation was published, establishing a gradual mandatory blending of biodiesel with diesel (B3, 3% biodiesel) and ethanol with gasoline (E10, 10% bio-ethanol) as from 2012 (Government of Mozambique, 2011). The regulation stipulates that export of biofuels is only allowed after assured minimum amounts of biofuel for domestic

consumption. The approval of this legislation emphasized the need for sustainability criteria that can safeguard the sustainability within the entire biofuel value chain. Additionally, the development of a Biofuel Procedure Manual and regulation for Biofuel Licensing were initiated. Both had not been approved at the time this paper was submitted.

Policy process – Several changes took place during Stage 3. First, the responsibility for the workgroup and the framework was formally transferred to DNAIA as CONDES did not have the political and legal mandate to coordinate the workgroup. Second, the workgroup expanded by the inclusion of more government departments. Due to the operationalization of criteria, more expertise related to water, natural resource management, biofuel processing and export, and legal issues was required. The workgroup now consisted of members from six ministries and nine departments (Table 3).

Ministries represented in workgroup	**Departments represented in the workgroup**
Ministry of Energy (ME)	National Directorate for New and Renewable Energy (DNER)
Ministry of Planning and Development (MPD)	Investment Promotion Centre (CPI)
Ministry of Agriculture (MINAG)	Agriculture Promotion Centre (CEPAGRI)
Ministry of Public Works and Housing (MOPH)	National Directorate of Water (DNA)
Ministry of Industry and Commerce (MIC)	National Directorate of Industry (DNI)
Mozambican Ministry for Coordination of Environmental Affairs (MICOA)	National Council for Sustainable Development (CONDES) (workgroup chair Phase 1)
	National Directorate for Environmental Impact Assessment (DNAIA) (workgroup chair Phase 2)
	National Directorate of Environmental Management
	Legal Office

Table 3. Composition of the workgroup during Stage 3

Third, a political process was initiated to prepare the formal approval of the framework. Ministers were informed about the progress of the policy process (e.g. informative notes, updates by department directors, participation in meetings) and legal procedures and requirements were examined and prepared by the workgroup.

In November 2011, WWF organised a four-day workshop to encourage multi-stakeholder dialogue and exchange of experiences on biofuels. Government representatives from national and regional level participated and provided an update on policy developments. Civil society organizations stressed that – as outlined in the NBPS – they should play a more prominent role in the development of the sustainability framework for biofuels. In contrast to the civil society organisations, the biofuel private sector remained poorly organised and only two private sector representatives were present in the workshop. The absence of any type of private sector body was allegedly due to the competition between operators, especially those cultivating jatropha.

Policy content – In terms of the framework characteristics, it was opted to increase the level of detail of the framework not only with indicators but also with verifiers. The former allows assessment about whether or not criteria are met, the latter demonstrates whether the required objective is being realized. An evaluation guide was developed which describes the threshold for compliance per verifier. Such a detailed framework provides the possibility to 'outsource' auditing, although the Mozambican government decided that initially government departments would be responsible for issuing the required licences to sustainably produce biofuels, but also to ensure continuous compliance through periodic monitoring visits to biofuel operations. Those who comply are entitled to fiscal benefits and biannual monitoring visits. Only in case of non-compliance with the framework, extra monitoring visits will be performed by the government and paid by the biofuel operator; aimed at incentivizing compliance. Alternatively, the government can cancel fiscal benefits or not award or cancel the definitive DUAT. It was decided to gradually implement the framework, providing biofuel operators enough time to adapt to the system.

Regarding the framework content, three main activities were executed. First, the seven principles and twenty criteria developed during Phase 1 were compared to existing Mozambican laws and legal procedures. The objective was to operationalize the criteria using indicators that already existed in the Mozambican legalisation. This exercise resulted in a long-list of ninety-four indicators. Not all indicators were useful (some being too specific or too general). As this was found unworkable by the workgroup, the criteria were critically reviewed. Five criteria were found repetitive

(see July 2010 version in Table 2: Criteria 1.1, 2.3, 7.2, 7.3 and 7.4), three criteria were difficult to operationalize (Criteria 3.2, 4.1 and 7.1) and two criteria were grouped (Criteria 1.2 and 1.3). Second, the criteria were compared with two operational biofuel certification schemes that can be used to demonstrate compliance with the EU RED; the Roundtable on Sustainable Biofuels (RSB) and the Dutch NTA 8080/81. The objective was to identify opportunities and constraints for example related to the export of Mozambican biofuels to the EU, but also to explore whether indicators used in the RSB and NTA8080/81 could be used to demonstrate compliance to criteria that were not covered by the existing Mozambican legislation. From the comparison it became clear that the RSB and NTA 8080/81 could not offer indicators to cover the Mozambican Criteria 3.2 and 4.1 (energy transition and macroeconomic development respectively), as both relate specifically to the Mozambican context. Concerning Criteria 7.1 (reduction of GHG emissions), indicators were available in the RSB and NTA 8080/81 but the workgroup decided not to include GHG indicators to not 'overload' investors. However, it was decided to leave Criteria 7.1 in the framework to demonstrate goodwill. Eventually, three RSB indictors were used to monitor child labour, mechanization and the use of genetic modified organisms. Environmental criteria on biodiversity, ecosystems, soil, air and water were grouped as they are covered under the existing Mozambican Environmental Impact Assessment. By the end of Stage 3 the draft Version 2 of the framework for sustainable biofuels consisted of seven principles, twelve criteria and twenty-three indicators (See Table 2).

3.4 Stage 4: Institutional pilot, launch and the road to legalising the framework (March 2012 – June 2012)

Policy context – Early 2012, the financial situation of many biofuel projects further worsened. Increasingly projects (some DUAT-holders) stopped actively managing their plantations or went bankrupt. Also the number of biofuel project proposals in relation to other agricultural project proposals, the total land requested and land requested per project decreased as compared to the days of the biofuel boom (2007-2008), when the policy process was initiated (Table 4).

Year	2008	2009	2010	2011
Number of biofuel investment proposals received by CEPAGRI at the national level	13	6	7	10
Total number of agricultural investment proposals received at the national level	17	33	38	42
Percentage of biofuels proposals in relation to total number of proposals	76%	18%	18%	24%
Total land requested for biofuel production (ha)	191,053	65,906	49,498	93,490
Average amount of land requested for biofuel production per project (ha)	14,696	10,984	7,071	9,349

Table 4. Number of biofuel investment proposals submitted to Government of Mozambique and amounts of land involved (adapted from: CEPAGRI, 2011).

Relevant to highlight is that as from 2012, the discovery of other (non-renewable) energy resources in Mozambique has gradually overshadowed biofuel developments. Especially coal mining in Tete province, but also the discovery of large gas-fields off the coast of Cabo Delgado province have required the attention of the Mozambican government (Hanlon, 2012). Due to revisions, the Biofuels Blending Regulation was published in May 2012. One of the measures is the export tax on pure plant oils for biodiesel to encourage the use of pure plant oil to meet the Mozambican blending targets and create job opportunities in the country. Although the Biofuels Blending Regulation entered into force in 2012, the government is still having difficulties to acquire the necessary amount of feedstock to achieve the targets. With regard to the E10 target, negotiations took place between the Ministry of Energy (ME) and the four biggest sugar mills in the country to acquire sugarcane molasses. Regarding the B3 target, the yields of especially the jatropha plantations were much lower than projected, resulting in insufficient produce to fulfil the biodiesel blending target.

Policy process – In March 2012, the draft Version 2 was presented to civil society representatives, national and regional governmental officials and the biofuel private sector in Maputo (southern region), Nampula (northern region) and Beira (central region). In total, 82 stakeholders participated in the three workshops. Feedback and comments were mainly related to the enforcement of the framework by the

government, the limited progress in finalizing the second phase of the agro-ecological zoning exercise, the limited numbers of environmental indicators and the lack of a criterion related to the reduction of GHG emissions. To identify legislative and procedural gaps in the Project Application and the Land Acquisition Process, an institutional pilot-study was conducted. A 'try-out' biofuel project proposal was assessed by the different ministries and departments, which provided valuable feedback on the lack of communication and coordination of tasks and responsibilities between the partaking ministries and departments at the national level, as well as the lack of transparency for the investor. This underlined the need for an integrative policy framework for biofuel sustainability in which all biofuel-related legislation could be brought together. In May 2012, the framework was presented to, and approved by the Advisory Councils of MICOA and ME, consisting of the respective ministers, vice-ministers and the directors of the departments. In June 2012, Version 2 of the policy framework for sustainable biofuels was presented at a launch seminar in Maputo. In total, 70 stakeholders, including biofuel investors, project managers, policy makers and civil society representatives participated in the seminar. Furthermore, a guide for biofuel investors was developed that clarifies how biofuel investors can demonstrate compliance with the policy framework.

Policy content – Several changes to the framework were made as a result of the regional workshop and the institutional pilot. In terms of framework characteristics, civil society representatives and the private sector stressed that the blending targets stipulated in the Biofuels Blending Regulations could be easily met once full production would be reached. Consequently, it was decided to include key EU criteria to facilitate the export of Mozambican biofuels to the EU. In that way, the national, internal focus of the framework was somewhat broadened. There was also a need to further specify who should comply with the different indicators and verifiers. This had been introduced in the October 2010 version of the framework and was further specified by including feedstock exporters, biofuel exporters, biofuel wholesalers and biofuel distributers. It was also decided that biofuel projects that already hold a DUAT do not have to redo the Project Application and Land Acquisition Process, although they will be monitored periodically and have to, when necessary, implement measures to demonstrate compliance to the sustainability criteria.

In terms of framework content, to facilitate export of surplus to the EU, the workgroup agreed on including an indicator that reflects the EU criteria on the reduction of GHG emissions. Consequently, an indicator was added under Principle 7 which obliges biofuel operators to use an internationally recognized method to calculate GHG emission reductions. The ‘grouping’ of the environmental criteria related to biodiversity and ecosystems, soil and air, and water that took place during Stage 3 was undone, as this better reflects the environmental concerns related to biofuel production in Mozambique.

The four stages of the policy process in Mozambique are summarised in Table 5.

Time span (phase and stage) / Developments and activities			**Phase 1**		**Phase 2**	
			Stage 1	Stage 2	Stage 3	Stage 4
			December 2008 – October 2009	November 2009 – November 2010	June 2011 – February 2012	March 2012 – June 2012
Policy context	Developments in the biofuels sector		Biofuel boom; High number of biofuel investment proposals received by Mozambican government; First four DUATs awarded to biofuel companies.	First impacts global economic crisis lead to stagnation of biofuel sector; DUAT voided of big biofuel project; Potential of jatropha as biofuel crop questioned; Active campaigning against biofuels by civil society organisations.	Financial crises and bankruptcy; Reduced number of biofuel investment proposals received by the Mozambican government; Limited DUATs approved due to delayed execution of second phase agro-ecological zoning; negative publicity companies operating without DUAT.	Financial situation biofuel sector remains bad; Increasing investments in gas and coal; Low yields on jatropha plantations question feasibility of B3 blending target.
	Other government activities related to biofuels		Feasibility study; NBPS; First phase agro-ecological zoning.	Second phase agro-ecological zoning; Approval of SADC framework for sustainable biofuel use and production.	CIB established to replace National Biofuel Taskforce; Blending Regulation approved; Biofuel Licencing initiated.	Negotiation between government and sugarmills to acquire sugarcane molasses to meet E10 blending requirements.
Policy process	Main activities		Development of ToR for workgroup; exploratory research on stakeholder perceptions on sustainability of biofuels.	Draft framework developed by DNER, CEPAGRI and CONDES supported by Technical Secretariat; Stakeholder consultation workshops; DNER and CEPAGRI develop ToR for Phase 2 of workgroup.	Initiation political process and legal procedures to prepare formal approval of framework; Development of indicators and verifiers; Development of evaluation guide for framework assessment; Exploring implementation pathways.	Stakeholder consultation workshops; Institutional pilot; Framework launch; Development of guide for biofuel investors.
	Collaborations between stakeholder groups		Intention to develop a multi-stakeholder workgroup sustainable biofuels; No concrete workgroup activities.	Multi-stakeholder workgroup becomes an inter-ministerial workgroup; Civil society complains about level of participation in policy process; Three stakeholder consultation workshops.	WWF multi-stakeholder workshop (participation of government, and the private sector).	Participation of civil society organisations and private sector in stakeholder consultation workshops and the launch of the framework.
	Collaboration within stakeholder groups	Government	CONDES and CEPAGRI develop ToR for Phase 1 of workgroup; Technical Secretariat appointed; Workgroup formation stagnates due to leadership changes in CONDES and CEPAGRI; DNER involvement due to limited workgroup progress.	DNER and CEPAGRI coordinate workgroup activities; Inter-ministerial workgroup expanded by inclusion of CPI and DNAIA; Proposal to transfer workgroup leadership from CONDES to DNAIA; Struggle over organisation and funding of stakeholder consultation.	Workgroup leadership formally transferred from CONDES to DNAIA; Inter-ministerial workgroup expanded by inclusion of DNA, DNI and MICOA's Legal Office.	Framework approved by Advisory Councils of MICOA and ME; Preparing approval of the framework by Council of Ministers.
		Civil society	First civil society workshop to develop joint vision and strategy; Establishment of civil society platform.	2nd Civil society workshop; *Justiça Ambiental* leaves civil society platform; civil society representation during stakeholder consultation workshops.	3rd Civil society workshop; UNAC left the civil society platform.	Civil society representation during stakeholder consultation workshops and launch seminar of the framework.
		Private sector	Private sector encouraged to organise themselves as collective.	No formal collaboration or collective representation; Several individual biofuel investors and plantation managers participate in the stakeholder	No formal collaboration or no collective representation; competition between biofuel operators.	No formal collaboration or collective representation; Several individual biofuel investors and plantation

				consultation workshop.		managers participate in the stakeholder consultation workshop and launch seminar of the framework.
Policy content	Framework characteristics		Internal and external market focus; To select investment projects and allocate land titles (licence to produce); Applicable to agro-industrial biofuel sector; Develop sustainability principles; Reflect needs of internal and external markets; Mandatory framework; Integrate with existing legislation.	Integration in existing legal framework further explored; Government-led framework; Principles and criteria; Specification of 'who should comply' to the framework; Guide for implementation.	Increase level of detail of framework by developing indicators and verifiers; Enforcement by government; Specifying consequences of (non-) compliance; Gradual implementation of the framework; Development of evaluation guide for assessor.	More attention for external market (EU); 'Who should comply' further specified; Companies that hold DUAT do not have to redo their Project Application and Land Acquisition Process.
	Framework content		Socio-economic development; Energy security; Mozambique could brand itself as 'responsible producer of biofuels'; Negative impact on environment and rural communities (incl. food security).	Food and energy security and financial sustainability included as separate sustainability principles; Criteria further specified.	Criteria compared to existing Mozambican legislation; Criteria compared to other biofuel certification frameworks; GHG criteria not operationalised, but kept in framework to demonstrate goodwill; Environmental criteria grouped.	Inclusion of indicator to demonstrate compliance with EU criteria on reduction of GHG emissions; Environmental criteria on biodiversity and ecosystems, soil, air and water 'ungrouped'.

Table 5. Four stages in the process that led to the policy framework for sustainable biofuels in Mozambique.

4. The policy framework for biofuel sustainability in Mozambique and future challenges

The full version of the policy framework for sustainable biofuels (including its Regulatory Framework and Annexes) that was presented during the launch workshop in June 2012 has recently been published by NLAgency and is online available:

http://www.agentschapnl.nl/en/content/operationalizing-and-implementing-biofuel-sustainability-framework-mozambique-sept-2012
(NLAgency, 2012)

The framework included in the NLAgency report has no legal status, as it still requires formal approval by the Mozambican Government. Also, we want to stress that:

- The framework is translated by the authors and is therefore not an official English version released by the Mozambican Government;
- The final policy framework may differ from the version presented in this paper;
- The authors take no responsibility for changes or errors in the framework;
- No rights may be derived from this publication.

In terms of framework characteristics and framework content a number of differences and similarities with the EU RED framework can be identified. First, the Mozambican policy framework for sustainable biofuels was developed as licence to produce, whereas the EU RED is designed as a licence to access or sell on the EU market. Secondly, with regard to framework content, the Mozambican policy framework has stricter criteria on social responsibility, on the contribution to energy security, on the economic and financial viability, and on agricultural and industrial productivity of the biofuel sector. These reflect the more social-economic development-oriented policy objectives of the Mozambican government as compared to the GHG and environmental objectives of the EU. Thirdly, the importance of food security is emphasised by including it as separate principle. Although the EU RED includes a food security principle, some of the certification schemes (notably NTA8080/81) that can be used to demonstrate compliance to the EU RED state that non-compliance with the food security criteria cannot lead to the exclusion of certification, as this criteria is not labelled as “major non-conformity” (NEN, 2012 15-16). It implies that producers can comply

with EU RED without demonstrating compliance to its food security indicators. Other certification schemes (notably the RSB) for demonstrating compliance with the EU RED pose stricter criteria related to food security.

Since the launch seminar in June 2012, a number of steps have been taken to prepare the policy framework for formal approval by the Mozambican government. The outline of the framework was revised by MICOA's legal office, whose role is to verify whether proposed policy documents are in conformity with existing laws and regulations and who structures these documents into new legislations. Next, the framework has to be approved by the technical and advisory sessions of CONDES, which advises the Council of Ministers on sustainable development in Mozambique. Once approved by CONDES, the framework will be proposed to the Inter-ministerial Biofuel Commission (CIB), composed of the Ministers of Energy (ME – chair), Agriculture (MINAG), Industry and Commerce (MIC), Coordination of Environmental Action (MICOA), and Science and Technology. Subsequently, it can be prepared for approval by the Council of Minister (Fig. 5).

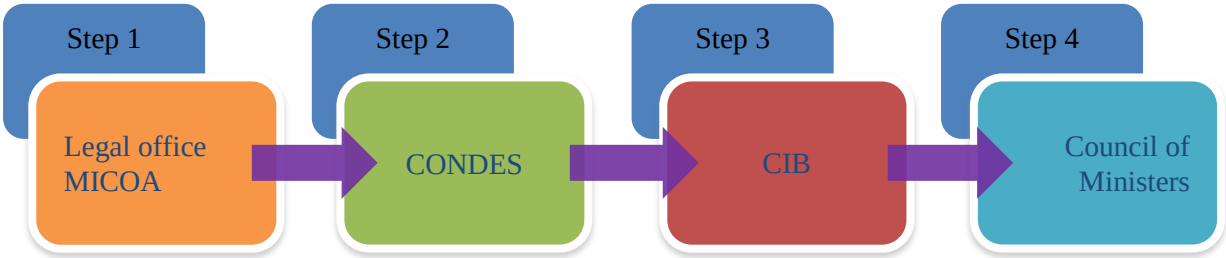

Fig. 5. Legal procedure towards formal approval of the policy framework for sustainable biofuels

After formal approval, additional steps have to be taken by the Mozambican Government, to secure proper implementation and functioning of the framework in practice:

- Operationalizing and implementing the policy framework at provincial level. DUAT applications of (agricultural) projects up till 1000ha can be assessed and approved at provincial levels. Therefore, the framework needs to be integrated in the Project Application and Land Acquisition Procedure at provincial level, and provincial government officials need to be trained and supported in assessing compliance with the criteria.

- For biofuel operations that have already applied for their DUAT or projects that have been formally approved by the Mozambican government a tailor-made sustainability assessment is necessary to work towards complying with the new criteria for sustainable biofuels.
- There is a need for testing the framework in practice, both for different types of biofuel operators, as well as for the government officials that will do project assessments. We recommend that such testing of the framework is not only done with biofuel feedstock producers, but (where possible) also with biofuel processors, traders, distributers and etcetera.
- The current policy framework focusses on regulating large-scale agribusiness projects. Although some criteria focus on creating linkages between large-scale and smallholder producers (e.g. Criterion 6.2), the framework does not include any guidelines for community or smallholder biofuel projects. A recent study in Mozambique by Schut and Florin (*submitted for publication*) showed how community-based or development projects involving smallholders as biofuel producers can have similar negative impacts on e.g. local food security. A licence to operate for government, research, donor-driven or NGO biofuel projects is therefore needed.
- In line with the above mentioned point, clear(er) guidelines for outgrower biofuel projects are required. As the Mozambican government is promoting collaboration between agribusiness and smallholder producers (e.g. Government of Mozambique, 2010), the criteria for sustainable biofuels should not constrain large-scale projects to work with smallholder producers. Therefore, some criteria such as “labour rights” (Criterion 1.2) or “hygiene and safety at the workplace” (Criterion 2.3) need to distinguish between plantation activities and activities on the farm of the outgrower. This is currently not part of the framework.
- The policy framework for sustainable biofuels in Mozambique is built upon and integrates different biofuel-related laws and policies in Mozambique. A number of these policies or activities are still in the process of development (e.g. countrywide agro-ecological zoning), or are still to be approved by the Mozambican Government (e.g. the Regulation for Biofuel Licencing). For the implementability and legality of the policy framework for sustainable biofuels it is essential that these activities are concluded and approved.
- One of the outcomes of regional workshop in March 2012 was that there is a general concern about the extent to which the Mozambican government can enforce the policy

framework in Mozambique. Similar concerns have been raised in other sectors such as in forestry where– despite well-designed policies – the vast majority of timber is produced and extracted unsustainably and even illegally, mainly because of the lack of enforcement of laws, regulations and standards (World Bank, 2009). A possibility would be to contract out the assessment of biofuel projects to an independent third (private) party or certification institute.

- Based on pilot studies for testing the policy framework and the constantly changing biofuel policy context it is likely that future changes in terms of framework characteristics and framework content are required. Periodical evaluation and adaptation of the policy framework in collaboration with stakeholders is recommended to keep the framework up to date.

5. Reflection and lessons learned

One of the objectives of this paper was to reflect on the unfolding policy process in Mozambique to generate lessons learned for policymakers in other (developing) countries, but also for researchers, development organisations and/or consultants involved in similar policy processes. Based on our analysis a number of conclusions can be drawn.

First, there is a strong relation between policy context, policy process and policy content in designing a framework for sustainable biofuels. The booming of biofuel investments (context) led for instance to pressure on the policy process and it created a sense of urgency among stakeholders. The worsening financial situation of biofuel projects in Mozambique, resulting in abandonment of projects, led to the inclusion of 'financial viability criteria' in the policy framework. Similarly, the food or fuel debate and the pressure from civil society organisations led to the inclusion of a specific food security principle and criteria in the framework. The other way round, choices regarding policy content influence dynamics between stakeholders in the policy process. For example the choice to develop a mandatory policy framework (framework characteristics) and to reform the workgroup from 'multi-stakeholder' to 'inter-ministerial' reinforced the role of government as policy initiator and reduced the role of private and public stakeholders mainly to parties to be consulted. A last example refers specifically to the relation between framework characteristics and framework content. The choice to integrate the biofuel sustainability criteria within the existing Mozambican

legislation (framework characteristics) influenced the formulation of principles, criteria and indicators (framework content). As only criteria that fitted within existing laws and regulations would have a solid legal basis, several of the criteria had to be reformulated (e.g. expecting biofuel operators to continuously reduce GHG emissions), grouped or were removed (e.g. demanding biofuel operators to contribute to energy transition) from the framework. The above examples show that the development of the framework was the result of iterations between context, process and content. Hence, adaptive capacity and a degree of flexibility in policy development processes is important, especially in situations where policy formulation takes place in the context of a rapidly developing 'new' sector.

Second, some conclusions can be drawn with regard to stakeholder participation and representation in policy processes. This paper shows that stakeholder groups such as government, private sector or civil society cannot be considered as homogeneous groups with one clear objective and vision. Within each of these stakeholder groups different interests and power issues are at stake. Private sector stakeholders did not manage to organise and represent themselves and therefore remained rather weak in influencing the course and outcome of the policy process. Civil society stakeholders managed to develop a joint vision, but along the way some critical organisations withdrew their support from the civil society platform, as they found its strategy too collaborative with the government. Within the government, political leadership was a challenge. The workgroup's leadership and mandate changed several times which, during some stages, considerably delayed and constrained workgroup activity. We can conclude that dynamics within stakeholder groups need as much attention as dynamics between stakeholder groups. A recommendation to governments would be to be transparent about the type of involvement and participation stakeholders can expect in policy processes. In the Mozambican case, stakeholders were initially promised to form part of the workgroup, whereas they eventually were merely consulted on the policy progress. This initially created expectations and disappointment when this promise was violated. However, the stakeholder consultation whereby the comments of stakeholders led to real changes in the framework did lead to a framework that received large support during its launch in July 2012. Although stakeholder participation in the government-initiated workgroup could have further enhanced the quality of the policy framework, it could equally have led to a stagnation of the policy process as reconciling different interests within and between different stakeholder groups can easily result in 'struggle'. Consequently, careful attention should certainly be paid to stakeholder selection, representation and collaboration in these types of policy processes.

Third, inter-ministerial coordination and collaboration is essential for the development of coherent biofuel policy and the sustainability framework. To create an inter-ministerial working group and CIB was essential to being able to deal with all aspects of biofuel policy and its potential impact. Implementing sustainability criteria within the existing inter-ministerial legal framework created opportunities, but also constraints. It reduced additional bureaucratic burdens for the government and it created the possibility to streamline inter-ministerial procedures and cooperation. However, criteria and indicators had to be formulated within the existing laws and regulation which reduced the legal basis for including 'new' criteria, such as GHG-emission and energy transition. Furthermore, some of the criteria and indicators are based on policies that have not yet been approved. Yet the framework was partly built on the future and did not refrain from including all relevant criteria and indicators.

Last, some general lessons regarding the policy process can be drawn. Since the beginning of the policy process in December 2008, there have been ups and downs in terms of the 'energy' in the policy process due to different reasons such as the changing political leadership, the discovery of gas and coal in Mozambique and the shifting mandate and composition of the workgroup. Two aspects have been crucial for the continuity of the policy process; the work and efforts of so-called 'policy champions' and capturing the momentum in the policy process. Over the last years, several governmental and non-governmental Mozambican stakeholders have committed themselves firmly to materialising the policy framework for sustainable biofuels. These policy champions have kept the energy in the policy process, especially during phases when the emphasis on biofuels and the urgency of having a framework for sustainable biofuels was less prominent. Organising the policy process in an incremental, step by step way had clear advantages, as it set targets and enabled to first 'agree' on the principles and criteria (Phase 1), before operationalizing the framework (Phase 2), although – as indicated above – flexibility and adaptive capacity is necessary to respond to the changing policy context. The incremental policy approach also enabled different groups of stakeholders to get used to the idea of the policy framework, and a similar gradual approach is proposed for its implementation.

6. Conclusions

The complex and unfolding interactions between policy context, policy process and policy content in Mozambique have revealed valuable lessons for Mozambique and for countries that are preparing or executing similar policy trajectories. For any country that aims at developing a national sustainability framework for biofuels the list of framework characteristics (Table 1) can provide a useful point of departure. It reveals the variety of options available and choices that can be made with regard to framework characteristics. Regarding framework content, the motives for developing a national framework have to do with sovereignty of the state and the wish to reap the benefits of the new development and reduce its potential negative impact. A national framework should therefore ideally aim at balancing between national development objectives and requirements for international trade. In the Mozambican framework the emphasis has clearly been more on national socio-economic development and energy security, although the reduction of GHG emissions has been included to facilitate international trade. This paper has also shown that framework characteristics have a direct influence on the formulation of criteria and indicators (framework content) and vice versa.

The policy process in Mozambique has resulted in a government-led, mandatory framework embedded in existing legal procedures. However, every country is unique, which makes developing a blueprint approach impossible and undesirable. Adaptive capacity and flexibility in the policy process is crucial, but at the same time subdividing the process in feasible phases and stages with clear objectives can keep the energy in the policy process. Having ‘policy champions’ is essential to keep stakeholders committed and keep the process going. Stakeholder involvement is important for increasing the quality and acceptability of the policy framework. Notably, inter-ministerial collaboration is essential for coherent and integrative policy development as biofuel production, processing and trade have features that belong to different ministries and departments (agriculture, environment, energy, trade, etc.). Representatives of different ministries should have sufficient mandate to represent their ministries and keep them informed to facilitate the formal approval later in the process. Embedding the sustainability framework for biofuels within existing legislation increased the chances for successful approval and implementation.

Not all stakeholders do necessarily have to be part of the core policy development group, but ongoing iterations between policy formulation and other stakeholders consultation could be very effective in moving forward towards policies that have societal approval. For governments it is important to be transparent and clear about the level of public and private stakeholder participation. This prevents unrealistic expectations and disappointment.

Despite these strong points there are still a number of challenges in terms of framework implementation. The framework itself and a number of related policies are yet to be approved by Mozambican government, the framework needs to be implemented at provincial level, testing and updating of the framework with biofuel operators is required, and there is a general concern about the extent to which the Mozambican government can enforce its policy. On several of these challenges follow up actions have been initiated. The latter point remains the biggest threat for the enforcement of any legal framework in Mozambique, but also for many other (developing) countries.

As a final reflection it must be stated that developing a policy framework for sustainable biofuels alone is a bit arbitrary. Why do biofuels require other or additional rules compared to any other activities? In fact the developed sustainability framework could easily be adapted to be applicable for other agricultural activities or supply chains in Mozambique. When we look at the global level we see that the sustainability agenda is indeed already much wider given initiatives to developing frameworks for e.g. sustainable cocoa, timber and fish to name a few. However, these frameworks focus on providing licences to sell, whereas more attention should be paid to harmonising with licence to produce to ensure that also national development objectives are met in the countries where these supply chains start.

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References

CEPAGRI, 2008. Project Application and Land Acquisition Process. Mozambican Ministry of Agriculture, Maputo, Mozambique. [online] URL: http://siteresources.worldbank.org/EXTARD/Resources/336681-1236436879081/5893311-1271205116054/AlbinoPresentation.pdf.

CEPAGRI, 2011. Propostas per provincia [proposals per province], Ministry of Agriculture, Maputo, May 2011.

de Jongh, J. (Ed.), 2010. The jatropha handbook, from cultivation to application. FACT Foundation, Eindhoven.

Di Lucia, L., 2010. External governance and the EU policy for sustainable biofuels, the case of Mozambique. Energy Policy 38, 7395-7403.

Econergy, 2008. Mozambique biofuels assessment. Ministry of Agriculture and Ministry of Energy, Mozambique, p. 426.

EU, 2009. Directive 2009/28/EC of the European Parliament and of the Council on the promotion of biofuels and other renewable fules for transport. Official Journal of the European Union, L 140/16.

Friends of the Earth, 2010. Africa: up for grabs. The scale and impact of land grabbing for agrofuels. Friends of the Earch, Brussels, Belgium, p. 34.

Government of Mozambique, 2009. Política e estratégia de biocombustíveis - Resolução 22/2009 [Biofuel policy and strategy - Resolution 22/2009], Maputo, May 2009, p. 35.

Government of Mozambique, 2010. Strategic plan for agricultural development. Mozambican Ministry of Agriculture, p. 65.

Government of Mozambique, 2011. Regulamento de Biocombustíveis e suas Misturas com combustíveis fósseis – Decreto n.º 58/2011 [Biofuels Blending Regulation – Decree nr. 58/2011], Maputo, November 2011.

Hanlon, J., 2012. Gas: 2nd largest reserve in Africa; tax deal on Cove Energy sale, Mozambique news reports & clippings 196, 18 May 2012.

Jongschaap, R.E.E., Corré, W.J., Bindraban, P.S., Brandenburg, W.A., 2007. Claims and facts on Jatropha curcas L.: global Jatropha curcas evaluation. Breeding and propagation programme, Plant Research International; 158. Plant Research International, Wageningen University and Research Centre, Wageningen.

Justiça Ambiental and UNAC, 2009. Jatropha! A socio-economic pitfall for Mozambique. Justiça Ambiental and União Nacional de Camponeses, p. 51.

Kumar, R., 2005. Research methodology: a step-by-step guide for beginners. SAGE, London.

Lerner, A., 2009. Minutes from meeting between MICOA, CEPAGRI and GTZ/ProBEC held on 18 February 2009. GTZ-ProBEC, Maputo, p. 2.

Lewandowski, I., Faaij, A.P.C., 2006. Steps towards the development of a certification system for sustainable bio-energy trade. Biomass and Bioenergy 30, 83-104.

McNie, E.C., 2007. Reconciling the supply of scientific information with user demands: an analysis of the problem and review of the literature. Environmental Science & Policy 10, 17-38.

NEN, 2012. NTA 8081 - Certification scheme for sustainably produced biomass for energy purposes (Version 1.4). NEN, Delft, the Netherlands, p. 28.

NLAgency, 2012. Operationalization and implementation of the Biofuel Sustainability Framework for Mozambique, NLAgency, Utrecht, the Netherlands, p. 35.

Reuters, 2008. Eight nations warn EU over biofuel barriers. Accessed: February 8, 2011 from: http://www.reuters.com/article/2008/11/06/us-eu-biofuels-wto-idUSTRE4A53J620081106.

Russell Bernard, H., 2006. Research methods in anthropology. Qualitative and quantitative approaches (4th ed.). AltaMira Press, Oxford, UK.

Sabatier, P.A., Jenkins-Smith, H., 1999. The Advocacy Coalition Framework: An Assessment, in: Sabatier, P.A. (Ed.), Theories of the Policy Process. Boulder, CO: Westview Press, pp. 117-168.

SADC, 2010. SADC framework for sustainable biofuel use and production. Accessed: 30 November 2010 from: [online] URL: http://www.probec.org/fileuploads/fl06022010194145_SADC_framework_for_sustainable_biofuels_2010.pdf.

Schut, M., Florin, M.J., *under review*. The policy and practice of biofuel sustainability: between global frameworks and local heterogeneity. Submitted for publication in Biomass and Bioenergy.

Schut, M., Leeuwis, C., van Paassen, A., Lerner, A., 2011. Knowledge and innovation management in the policy debate on biofuel sustainability in Mozambique: what roles for researchers? Knowledge Management for Development Journal 7, 45-64.

Schut, M., Slingerland, M., Locke, A., 2010. Biofuel developments in Mozambique. Update and analysis of policy, potential and reality. Energy Policy 38, 5151-5165.

van Dam, J., Junginger, M., Faaij, A., Jürgens, I., Best, G., Fritsche, U., 2008. Overview of recent developments in sustainable biomass certification. Biomass and Bioenergy 32, 749-780.

van Eijck, J., Romijn, H., 2008. Prospects for Jatropha biofuels in Tanzania: an analysis with Strategic Niche Management. Energy Policy 36, 311-325.

Watson, H., 2008. Biofuels in Africa – the land use issue, Bioenergy Policies for Sustainable Development in Africa, Hotel Olympe International, Bamako, Mali.

Workgroup Sustainable Biofuels, 2009. Terms of Reference Phase 1 Workgroup Sustainable Biofuels Mozambique. 6.

World Bank, 2009. Mozambique - country brief. Accessed: 5 August 2009 from: [online] URL: http://go.worldbank.org/70UK6S1X30.

WWF, 2009. Síntese do Workshop de Capacitação das Organizações da Sociedade Civil sobre Biocombustiveis [*Synthesis of biofuel workshop for civil society organisations*], Maputo, Mozambique.