

Novel regional and landscape-based approaches to govern sustainability of bioenergy and biomaterials supply chains

Authors: Rocio Diaz-Chavez and Jinke van Dam

Edited by: Inge Stupak and C. Tattersall Smith

Need for novel approaches to govern sustainability

There is an increasing worldwide demand for biomass for a diverse range of end-uses. This growing demand can play an important role for meeting renewable energy targets and fulfil goals related to the bioeconomy, and thus help the development of sustainable value chains. Certification is a useful tool to promote and guarantee sustainability of commodities, especially in international value chains. However, certification has its limitations, as it may not be taken up by all stakeholders in a region, nor will it even out differences among biomass suppliers in access to the needed resource input or their production. Equally, certification has limitations in its ability to address off-farm issues (such as water or tenure rights) that often involve processes operating at landscape level, or in wider regional or national context. Hence, certification promotes a producer's sustainability but may be inadequate for effectively addressing the great complexity of interwoven sustainability concerns that exist along the whole value chain and in a landscape.



Pictures from Landscape Lake Naivasha: one of the case studies included in the report

Novel regional and landscape governance approaches aim at addressing these challenges. They may enhance commitment and collaboration between multiple stakeholders across sectors to achieve common goals for a more sustainable production at larger geographical scales, regardless of the end-use of the produced raw materials or products, or the end-destination of products. Landscape governance can be defined as “the process of multi-sector, multi-actor and multi-level interaction and decision-making at the landscape level”.

Several landscape governance initiatives are emerging, but there is a need to better understand what makes them effective in achieving their sustainability goals, and whether such initiatives are adequate to provide documentation, legitimacy and trust in the desired sustainability of bioenergy and biomaterial supply chains so that they support a more sustainable development.

The topic of landscape governance was addressed in the study [“Novel regional and landscape-based approaches to govern sustainability of bioenergy and biomaterials supply chains”](#), carried out in the frame of IEA Bioenergy Task 43 (Sustainable biomass supply). It encompasses nine case studies from Africa, Asia, South America and Europe, where landscape governance has been adopted to manage resources and land uses with the participation of the different stakeholders from government, landowners, businesses, and non-governmental organisations.

Table 1: overview of case studies

Initiative	Start date
Jurisdictional certification palm oil in Kalimantan, Indonesia	2015 (with signing of provincial Declaration)
PCI (Produce, Conserve, Include) approach in Mato Grosso, Brazil	2015 (Announcement Green Growth Strategy)
SBP Regional Risk Assessment (RRA) for Latvia	Assessment was conducted in 2017
The 3PLRCL (Partnership for Productivity Protection and Resilience in Cocoa Landscapes) project in Ghana	Launched in 2017
REDD+ Multi-jurisdictional landscape initiatives of San Martín, Peru	Since 2007
DOCG (Denominazione di origine controllata e garantita) wine – Chianti Classico, Italy	Chianti Classico obtained the DOCG status in 1984
Imarisha Naivasha (Lake Naivasha watershed), Kenya	2009
Lari-Kijabe landscape, Kenya	2014
South West Mau Forest, Kenya	2014

Key findings and recommendations for the bioeconomy

There are great differences in how landscape initiatives approach the governance of the resources in the landscape, how they engage stakeholders for their economic and social activities, and conduct a sustainability assessment. These vary according to where they are based on the globe, the type of actors participating in the initiative and according to the kind of natural resources and commodities involved. Nevertheless, concern about availability of resources, that can meet the demand, and the impacts of their production, is a common denominator. Typical challenges include water availability and degradation of forest resources.

Benefits of landscape governance

- Involvement of different stakeholders through multi-stakeholder processes helps to ensure a better *balance of power* over limited resources, although this requires that time, capacity and resources are made available.
- Enhanced collaboration in landscape governance creates opportunities for a more sustainable management of natural resources; for example, through managing competition between land uses, organising commodity production, sales and consumption. This accrues *greater benefits and values for all stakeholders along the supply chain, especially those working and living in the landscape*.
- Where a specific commodity is produced by different stakeholders in the landscape, the specific commodity and its land use system can more easily be targeted to a sustainability standard or certification system that enables *access to international markets*.
- Potential to provide better monitoring through *better resource management and decision-making*.

Challenges confronting landscape governance

- Landscape governance is still novel and gathering meaningful data to analyse its effectiveness remains a key challenge, as the inherent involvement of several different stakeholders entails data fragmentation.
- The effectiveness of a landscape governance initiative will depend on the legal framework relating to specific environmental issues; the extent to which it is enforceable within the landscape boundaries and is subject to government actions and priorities (e.g. meeting demand for water or halting deforestation).
- Landscape labels are being developed but have yet not been established.
- Limited evidence that social goals are being specified and directly addressed.

For actors seeking to establish bioeconomy supply chains, we recommend engaging with existing landscape governance initiatives to explore how they may help develop solutions to meet key challenges (e.g. climate change, deforestation, water scarcity), or identify sustainable residues and waste materials for bioenergy production or for the creation of novel bioproducts and biochemicals.

Where no landscape initiative yet exists, we recommended engaging with primary sectors (e.g. agriculture or forestry), to explore opportunities to launch one, and seek continuous, long-term financial support. Given the time it takes to develop a complex governance system, we suggest that initial efforts focus on developing and implementing process-based sustainability indicators, while moving over time towards adopting a wider number of performance-based indicators.