European Network for Rural Development

European rural bioeconomy: policy and tools

Conclusions from the ENRD Thematic Group on 'Mainstreaming the bioeconomy' – Part 1

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The content of this document is based on the work of the ENRD Thematic Group on Bioeconomy, and does not represent the views of the European Commission.

1 INTRODUCTION

Starting in July 2018, the ENRD animated a Thematic Group (TG) on 'Mainstreaming the bioeconomy' with the overarching objective to "encourage the development of sustainable bioeconomy value chains in rural areas in order to promote employment, economic growth, and social inclusion, while preserving eco-systems." The TG was structured as an open group of interested stakeholders across Europe and involved among others Managing Authorities, researchers, farmers and representatives of environmental NGOs.

The TG's work was rooted in the use of EU Common Agricultural Policy (CAP), and particularly Rural Development Programmes (RDPs), in support of its stated objectives. The TG identified the different elements of rural value chains that can benefit from the development of the bioeconomy, how these benefits can be delivered in rural areas and how they can be made sustainable and self-supporting, particularly through the use of the European Agricultural Fund for Rural Development (EAFRD).

The TG has drawn recommendations for better targeting RDP support in the current programming period (2014-2020) to promote the bioeconomy and recommendations for the future operation and the design of successor programmes in the CAP beyond 2020.

This document is based on outcomes of the TG meetings, over 30 interviews with managing and regional authorities, civil interest groups, support services and farmers, desk-based research on literature, policy and strategy documents and direct input from selected experts involved with the TG work.

The TG also produced the following documents:

- 'Recommendations on the use of RDPs to mainstream the bioeconomy' (briefing)
- 'How to mainstream the bioeconomy in rural areas?' (handout)
- 'How to use RDPs to support rural bioeconomy?' (handout)
- 'Exploring the role of awareness-raising and communication in promoting the development of sustainable bioeconomy value chains' (briefing)

All documents are available for free download from the ENRD website.

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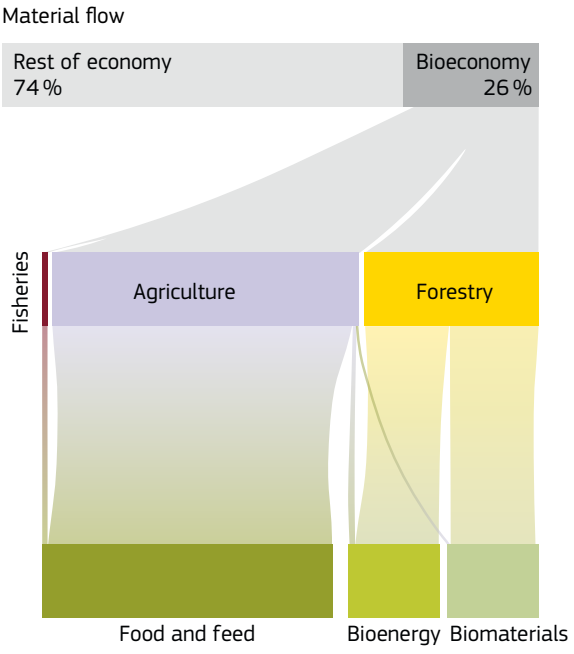
2. RURAL BIOECONOMY IN CONTEXT

The European Commission defines the bioeconomy as "the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy. Its sectors and industries have strong innovation potential due to their use of a wide range of sciences, enabling and industrial technologies, along with local and tacit knowledge."[1]

At its heart, the idea behind the bioeconomy is one of transition, a change from a fossil-based economy characterized by overconsumption and resource depletion, to one where economic growth goes hand in hand with the rebuilding of the natural resources on which that economy relies. Growing within ecological boundaries captures part of this ideal, yet it is all too easy to think that the bioeconomy can replace the fossil economy directly. It cannot, at least not yet. The material consumption per capita in the EU is orders of magnitude larger than can be met through the use of biomass from conventional production systems and approaches alone (Figure 1).

Figure 1. Material flows in the economy

(source: European Environmental Agency, "the circular economy and the bioeconomy – partners in sustainability" – EEA Report n. 8/2018: https://www.eea.europa.eu/publications/circular-economy-and-bioeconomy)



The goal of the bioeconomy is therefore not simply to increase biomass output, but to deliver more sustainable resource use, mitigate and adapt to climate change and promote sustainable growth. The bioeconomy is closely linked to the circular economy agenda, one of resource efficiency, the reuse of resources, and more sustainable consumption and production patterns. Thus, the bioeconomy is directly linked to the global agenda set by the Sustainable Development Goals.

- Read how the bioeconomy links to the Sustainable Development Goals in the scoping paper of the ENRD Thematic Group 'Mainstreaming the Bioeconomy'

Almost all elements of the bioeconomy can be traced back to rural land as the basis of production (Figure 1). The 'rural' bioeconomy tends therefore to be thought of as one of primary production and resource harvesting, but it need not be. The development of sustainable rural bioeconomy value chains can help bring more value-adding elements of the bioeconomy into rural areas, along with the economic and social value that comes with development.

The bioeconomy can, and one could argue should, include all the economic benefits that arise from the management and use of natural resources. The adoption of circular economy principles has helped realise new value from materials that would otherwise need to be disposed of, such as animal manures, food waste, and harvesting residues, and in many cases helped improve resource efficiency.

Looking beyond the production and (re)use of biomass for materials, chemical and energy, the economic opportunities in bioeconomy include also the management and protection of natural habitats and landscapes which generate rural tourism, help to manage water flows, protect and support societies and much, much more. These service-based bioeconomies already exist, and are part of the fabric of rural society, supported through Rural Development Programmes. Yet they feature rarely in bioeconomy strategies.

- Suggested reading: EU Rural Review 28 'Mainstreaming the Bioeconomy'

(1) European Commission, "Innovating for Sustainable Growth - A Bioeconomy for Europe", 2012: http://ec.europa.eu/research/bioeconomy/pdf/bioeconomycommunicationstrategy_b5_brochure_web.pdf

BOX 1. A sustainable Bioeconomy for Europe: Strengthening the connection between economy, society and the environment

The EU's Bioeconomy Strategy was adopted in 2012, setting out key definitions and needs from the bioeconomy but focusing primarily on research. Its objectives, which remain largely unchanged, focus on paving the way to a more innovative, resource efficient and competitive society that reconciles food security with the sustainable use of renewable resources for industrial purposes, while ensuring environmental protection. To this end the strategy identifies five objectives for the bioeconomy: Ensuring food security; Managing natural resources sustainably; Reducing dependence on non-renewable sources; Mitigating and adapting to climate change; and Creating jobs and maintaining EU competitiveness.

The 2018 update, 'A sustainable Bioeconomy for Europe: strengthening the connection between economy, society and the environment,'(1) reinforced the main purpose of the bioeconomy strategy and provided an updated plan for three concrete action lines, emphasising the delivery of a circular bioeconomy focused on delivering the UN Sustainable Development Goals and commitments to greenhouse gas emission reduction:

1. Strengthen and scale-up the bio-based sectors, unlock investments and markets
2. Deploy local bioeconomy rapidly across Europe
3. Understand the ecological boundaries of the bioeconomy.

(1) https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_strategy_2018.pdf

3. SUSTAINABLE RURAL BIOECONOMY VALUE CHAINS

The development of sustainable rural bioeconomy value chains, whether product-based or service-based, offers great opportunities for rural actors in economic, social and environmental terms (see BOX 2). Maintaining and promoting these benefits in rural areas and making a greater link to urban areas and population centres is crucial.

In considering the potential for improving sustainable rural value chains in the bioeconomy, it is important to be clear about the distinction between supply chains and value chains (BOX 2). A sustainable rural value chain is one in which the economic, environmental and social added value are distributed equitably between the different actors in that value chain, rather than being concentrated in certain links of the chain or being distributed unequally outside the rural sectors.

Figure 2 shows how a circular-bioeconomy value chain allows the flow of biomass and value starting from primary sectors in rural areas, moving through manufacturing, retail and ultimately to consumers in urban ones, make its way back to rural areas.

At the value chain level, environmental sustainability means that there can continue to be a flow of input materials or services to that part of the value chain (for example the supply of landscape harvesting wood to produce fuel-wood pellets), and that the harvesting of those materials helps to improve the environmental value and resilience of the sourcing area, or at least leads to no degradation of those areas. In this way, the bioeconomy can grow without the risk of depleting or exhausting the resources on which it relies and may further promote sustainable growth by leading to new markets for sustainable harvesting machinery, experience or training.

Social sustainability of the bioeconomy, from the rural perspective, relates to the added social value created by new value chains and activities. This value can take form in upgraded skills and competences required by the innovative or multiple functions bioeconomy sets for primary production, and new rural expertise and activities generated. Biomass providers of today – not to speak of tomorrow – need to be tech savvy, often have a deep understanding of biological, bio-chemical and industrial processes and collaborate with a range of new partners in order to access new bio-based markets and commodity chains. Over time, this transformation may contribute to making rural areas more attracting for the young generation and in turn mitigate rural depopulation.

Besides primary production, bio-based value chains open endless opportunities for rural SMEs involved in biomass transport and stocking, pre-processing, processing, product development and related equipment or infrastructure maintenance and other related services. These opportunities translate into rural employment and income, contributing to regenerating rural economies.

3.1. Circularity and the rural-urban link

The ambition and promotion of bioeconomy in the EU is leading to the development of new rural bioeconomy value chains. The markets for sustainably produced bio-materials, bio-energy and bio-based products are constantly growing. However, with the majority of European citizens living in urban areas, there is a natural flow of biomass and added value from rural to urban areas, from where biomass is produced to where products are manufactured, sold and consumed.

One of the opportunities in developing new sustainable rural bioeconomy value chains lies in strengthening the linkages between rural and urban areas, and developing new ways of ensuring that value, materials, nutrients and energy can be made to flow back to these primary sectors, to farmers and foresters.

Promoting bio-materials, bio-energy and bio-based products and services can help drive sustainable production by rewarding rural actors for managing natural resources (that are important to their livelihoods, such as soils) more sustainably. Awareness-raising and education are a key part of this process.

BOX 2: Circular value chains

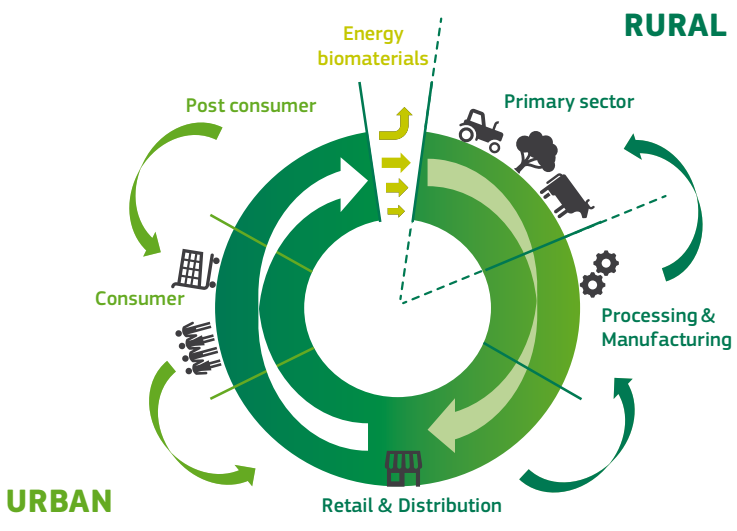
Value chains describe the flow of value between different actors in a supply chain and may include a broader set of actors than in supply chains. Value can be reflected by a range of terms:

- Economic – where value chains describe the flow of profit or income between actors in the supply chain. For example, the flow of income to different actors based on the input and output costs.
- Environmental/climatic – where value chains describe the flow of benefits to given environmental or climate objectives. For example, the greenhouse gas emissions avoided as a result of a bioeconomy value chain.
- Social – where value chains describe the flow of benefits to people and communities. For example, the jobs created in rural areas as a result of new value chains.

These are distinct from supply chains, which describe the flow of goods and services between different actors, such as the production of wheat, its collection, processing, the manufacturing of pasta and eventual sale.

This flow of benefits is important for the environment and social aspects of sustainability. In environmental terms, bioeconomy supply chains may lead to a flow of resources (such as nutrients) out of rural areas and currently lack the return of those resources to areas of production. This leads to both environmental pressures through the continued exploitation of natural resources and costs for the producers to support production through additional inputs. Social benefits are closely linked with economic benefits realised in the value chain, such as job creation and increased quality of life. In developing new sustainable rural bioeconomy value chains, it is important to explore the potential to increase jobs in rural areas, rather than focus on bioeconomy developments in the processing and manufacturing phase, often in urban areas.

Figure 2. Circular bioeconomy – the rural-urban link



Integrating circularity into existing bioeconomies should enable to close the nutrient, energy and material loops. However, it is not without its challenges and relies on the development of well-functioning bioeconomy value-chain networks that build on the use of wastes and resources, and where products are designed for recovery. This requires a greater connectivity between rural actors and those at different stages in the value chain, helping to realise more rural jobs and new business models to improve incomes.

There is also a question about at what point circularity is achieved, whether resources always flow back to the primary sector in rural areas, or whether closed loops occur at various points along the value chain (see figure 3). Promoting circularity in rural bioeconomy value chains should therefore consider at what point value is and should/could be retained or returned to the rural economy, who benefits and how this can be maintained or ensured.

Service-based value chains, such as those associated with rural tourism, do not involve significant material flows, but generate economic, environmental and social value, through for example accommodation on farm-stays, guided tours or equipment rental. These activities further help diversify farm incomes, increasing rural employment and reducing the exposure to risk from production.

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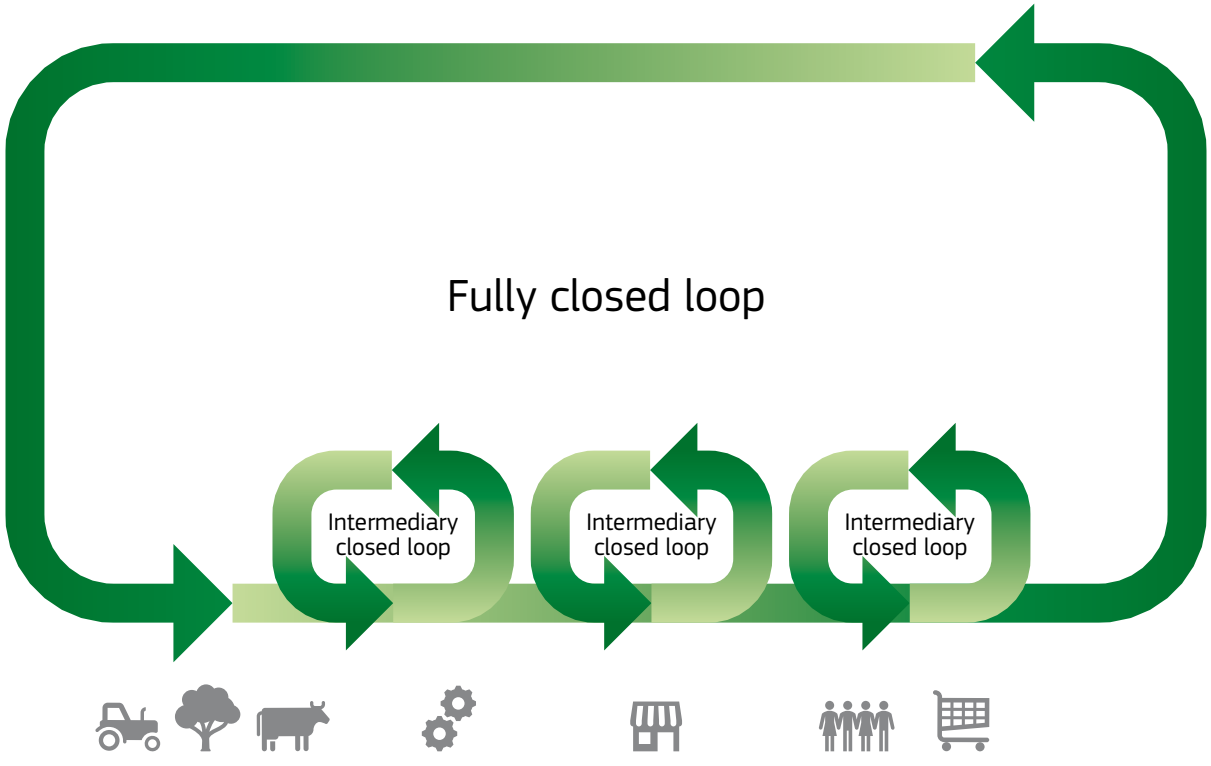
Regardless of whether circularity is achieved, value added from the bioeconomy should be delivered at all stages of the supply chain from producers (farmers, foresters) to processers, final product manufactures and consumers. In turn, consumers need to recognise their role as facilitators of the bioeconomy, in the decisions they make when buying food and other agricultural and forestry commodities or services. A circular bioeconomy implies both farm-to-fork and fork-to-farm thinking.

Figure 3. Circular loops at different stages of the value chain



4. COORDINATED SUPPORT TO SUSTAINABLE RURAL BIOECONOMY VALUE CHAINS

Developing new product-based and service-based bioeconomy value chains requires planning and the engagement of a wide variety of rural actors along with greater networking and communication. Having a clear message and direction is essential. This means bringing together what can quite often be disparate plans and strategies into a coherent vision for rural areas. These strategies can include Member State Long-term Low-emission strategies, territorial approaches to rural bioeconomy and circular economy and the future CAP strategic plans.

Developing new value chains can take time, require long-term investments and new knowledge and skills. This means bringing together old and new rural actors to explore, develop and innovate, renewing efforts to engage and empower rural actors who already struggle to have a voice in the more established agri-food chain. Doing so requires support, advice and education. This should also include mechanisms that reward first movers and protect them from the risks associated with a sector reliant on an evolving pool of technology and knowledge. Flexibility to adapt will also be important, avoiding system lock-in where choices prevent change.

4.1. Territorial approaches to bioeconomy

National and regional strategies and action plans for bioeconomy are being designed at an increasing speed all over Europe. The main advantages of regional approaches over national approaches include the possibility to match territorial strategies closely with the territorial strengths and weaknesses and an easier involvement of local and regional stakeholders in the drafting of policies, which creates a sense of ownership. However, the promotion of the bioeconomy and related strategies is highly uneven across Europe, with a few leading regions but many more still trying to define what bioeconomy could even mean in their specific context.

Initiatives also exist at the very local level to use bioeconomy as an answer to local needs. Such initiatives can be initiated by Local Action Groups (LAGs) or other local stakeholders, producers' associations or local authorities and generally aim at balancing environmental sustainability with social or economic opportunities. Often, however, local initiatives can expand only if backed up by regional or national authorities that provide supportive regulatory frameworks and financial incentives. In the lack of such conducive framework, despite their concrete functions in creating social, economic and environmental value from bio-based solutions, such initiatives may not even define themselves as bioeconomy – thus missing the opportunity of being supported as such by regional or national authorities.

Fully understanding the opportunities of bioeconomy development in a regional or territorial context might require going a step further from looking at value chains, into seeking and developing 'value webs'. These refer to symbiotic production and uses of products, by-products and wastes of diverse value chains existing within the territory, including synergies between design, technology development, machinery, logistics and marketing. The more the processes of the 'value web' are integrated, the higher the overall value added is for the region. Clusters are one useful approach to promoting this kind of territorial development.

In light of ENRD TG's discussions and analytical work it seems evident that the local, regional and national level approaches to promoting rural bioeconomy mutually need each other to be effective. Bottom-up development and territorial needs and dynamics essentially need to be taken into account when drafting higher level strategies; on the other hand, in the absence of a coherent national framework, the former can only develop until a certain point and risk being undermined any time by barriers in regulations, competition with established industries, and biased public support.

In the Finnish Lapland, the Arctic Smart Rural Communities cluster is helping this remote area of Europe to recognise the potential of its local natural resources to supply bio-based energy, food and materials. Part of the mission of Arctic Smart Rural Community is to avoid capital outflow from rural Lapland and create new innovative enterprises based on circular economy principles with a goal to transfer the added value of local natural resources for the benefit of local communities[2]. Support comes from a variety of sources, and involves the Regional Council of Lapland, and the agricultural advisory organisation. Finland has a national Bioeconomy Strategy since 2014.

4.2. EAFRD support for the bioeconomy

Rural Development support through the Common Agricultural Policy (CAP) is an important source of funding to develop rural bioeconomy value chains, associated infrastructure and facilities that benefit rural communities. In turn, the development of the bioeconomy offers the potential to support the overarching objectives of the CAP: viable food production, sustainable management of natural resource and climate action, and balanced territorial development. Thus, bioeconomy developments and rural development go hand in hand.

(2) https://www.clustercollaboration.eu/sites/default/files/profile-article/arctic_smart_rural_community_esite_en_final.pdf

Knowledge transfer and innovation (Rural Development Priority 1) is the basis on which new bioeconomy value chains will develop, particularly through the strengthening and improving of rural networks. Sustainable bioeconomy developments will naturally promote the restoration, preservation and enhancement of ecosystems (Priority 4) through more resource-efficient land management that is more climate-resilient (Priority 5). These sustainable rural bioeconomy value chains thus help to improve the resilience of production and farm viability (Priority 2) by reducing exposure to risk and diversifying income streams and markets, and through networking enabling greater integration of rural actors into the food and broader biomass value chain (Priority 3). The growing recognition and importance placed on the bioeconomy and its development in rural areas will foster social inclusion through diversified local development and help to both create and retain value in rural areas (Priority 6).

Yet this potential will not be reached without support and investment through RDPs. Ensuring this shift requires considering environmental and social needs, supporting value added within rural communities and more resource-efficient, environmentally-beneficial and climate-sensitive practices alongside delivering new, innovative end products. It will also require a greater and more innovative use of RDP measures than is currently the case. Something that future CAP Strategic Plans could help facilitate.

While in principle RDPs offer a wide range of opportunities to support bioeconomy value chains (see below), currently these are not specifically designed for the bioeconomy. Most of the bioeconomy-related support activities identified by the ENRD Thematic Group apply investment measures (M4), cooperation measure – particularly EIP Operational Groups for innovation (M16) – and the local development method Leader (M19). Forest measures (M8) are fairly common, too. Other applied measures include setting up of producer groups (M9), advice (M1) or supporting sustainable biomass production (M8, 10 and 11). Only in a very few cases a coordinated use of different RDP measures is applied for broader support to rural bioeconomy value chains.

A certain confusion reigns regarding the very definition of 'bioeconomy'. Across EU Member States, bioeconomy support mostly coincides with forest sector activities (the focus of many national bioeconomy strategies) and energy generation, particularly biogas. This probably stems from a clearer understanding of bioeconomy in the forest context and on the rather evident idea of wastes being turned into bioenergy. In some cases, the understanding of the concept is even blurrier. For example, the Hungarian version of certain European documents translates bioeconomy into 'biogazdaság', which means organic farm. Some ministry departments have opted to use a different term, translated as 'biomass-based economy' – which is also imperfect. In Sweden, bioeconomy is often understood to refer to any kind of farming, therefore missing the specific character of the bioeconomy.

Greater clarity about the type of bioeconomy we want to see in the future is crucial and enhancing rural actors' as well as policy-makers' understanding on what bioeconomy means in the rural context and in different geographical areas may lead to a more robust and effective use of RDPs to support the bioeconomy.

4.2.1. Examples of RDP-supported activities

Bioeconomy value chains may already exist but lack promotion or optimisation, others may need to be developed from scratches or require changing existing approaches. Developing bioeconomy value chains can require support at various points in the process – and current RDP measures, at least in theory, enable such targeted support.

1

Identifying opportunities at the territorial level is the first stage of developing a sustainable rural bioeconomy value chain. Often this starts with a review of the resource base, such as the wastes or residues generated in an existing value chain or the tourism opportunities in the area. So far RDP measures have not been widely used for such activities, despite their potential and although the RDP needs assessment does set out the priorities for interventions in a given area. One example of where RDP support has been used in this way is in the previous programming period using LEADER:

The area covered by the Local Action Group Pays des Condruses has a developed cattle breeding sector. Since 2009 the LAG supported a series of feasibility studies for biogas production, including mapping the distribution of farms in the area and their capacity to produce biogas, identifying the areas of higher consumption of energy for heating, examining the options for setting up cooperatives that would handle the digesters and methods for compensating their members. The studies were accompanied by seminars, study trips and informative publications and guidelines on how to apply the dry digestion technique. The LAG estimated that if all the animal waste of the area was processed for biogas, the production could cover the annual consumption of electricity of the seven towns in the LAG area.

Source: EAFRD Projects Brochure on 'Bioeconomy'

2

Gathering the key players is essential, as making connections between different actors in the value chain is as important as developing new approaches. This means gathering multiple farmers, land managers or producer groups, innovative rural SMEs, or bringing together multiple different actors including researchers, producers, manufacturers and marketers. The cooperation measure is one of the more flexible tools available in the RDPs to enable such connections.

In Westland, an area of the Netherlands known for greenhouse horticulture, Solidus Solutions has developed a new packaging material based on tomato fibres. The tomato plant residue (leaves and stems), leftover from the harvest, are crushed and mixed with fibres of recycled paper to produce high-grade, recyclable cardboard for packaging. The solution was developed by a unique cooperation called Bio Base Westland, involving growers, green waste processors, board mills, research institutions, universities, consultants and councils. The result is a win-win situation: growers can buy 'back' the board packaging, enriched by their own plants, to pack their own tomatoes. No RDP support was used in this example, but the initiative could have benefitted from a range of RDP Measures, such as M16.1 and M16.4 to bring individuals together, M6.2 and M6.4 – developing farm or non-farm businesses, or M4.2 – investment support.

Source: EEA (2017), 'The circular economy and the bioeconomy', https://www.emmagazine.co.za/solid-board-made-of-tomato-plants-wins-packaging-europe-sustainability-awards-2016/

3

Supporting investments are needed particularly where large up-front investments are required, for instance to build infrastructure to collect and process biomass, tourism infrastructure (e.g. signposts and access facilities), to fund business start-ups or develop an existing business, or to establish new production systems. RDPs provide a range of supporting measures to enable such investments. These can also catalyse funding from other sources, making the value chains more self-sustaining than when they are based solely on public support.

In Sastamala, Finland, a company used the farm and business development measures (M6) and LEADER for a feasibility study to upscale a biocomposite production line from a demonstration facility to a modern production line, creating 20 new jobs. The support enabled the company owners to plan carefully its investments, including funding visits to potential suppliers abroad to develop the bioeconomy value chains.

Source: EAFRD Projects Brochure on 'Bioeconomy'

4

Ensuring sustainability is key since bioeconomy value chains rely on the sustainable production or management of natural resources. RDPs can help improve the sustainability of production and the management of land through diversification of farming activities – e.g. into organic farming – or through more targeted interventions such as those provided through the AEC- and FEC-Measures. Support through these measures can be combined with other RDP support promoting the development of rural bioeconomy value chains to increase the benefit to land managers or even create areas that may attract tourism, such as habitats for rare birds.

However, RDP measures do not necessarily limit or restrict the production or harvesting of biomass for use in the bioeconomy, which if overexploited, can undermine the bioeconomy initiative and lead to the deterioration of the environment or impact on climate objectives. Here RDPs can be used to explore sustainable biomass harvesting.

In the previous programming period Measure 323 (Conservation and upgrading of the rural heritage) was used in Thuringia and Brandenburg, Germany, to support a pilot initiative to identify technical, financial and locally appropriate ways to recover wood fuel through landscape maintenance in the most ecologically and economically advantageous manner. On about 300 ha of non-agricultural land, the wood was harvested from a variety of habitats including sandy dry grasslands, hedge complexes, sand heaths and inland dunes, generating energy for the region. The project aimed to protect the habitat against succession of shrubs and preserve a rich variety of flora and fauna.

Source: ENRD Projects Database, https://enrd.ec.europa.eu/projects-practice/conservation-natural-heritage-biodiversity-and-wood-fuel_en

5

Supporting and advising. Whilst some bioeconomies are well established (such as the production of food or timber), other more novel approaches to the utilisation of different biomass streams or development of service-bioeconomies can be less well understood by those in a position to develop them. Here RDPs can provide both support to beneficiaries and to advisors, also in order to provide specialist advice and support in remote areas.

For example, Leader can be used as a flexible measure to support information exchange and visits, such as in the 'Academy on Tour' initiative in Belgium which was used to support (potential) agri-food entrepreneurs to develop their business ideas into concrete plans and then implement them. The initiative consists of an all-day tour to a foreign country on a VIP- bus with appropriate facilities for work.

Source: ENRD Projects Database, https://enrd.ec.europa.eu/projects-practice/academy-tour_en

In Scotland, the GrowBiz initiative (supported through Measure 413 of the previous programming period) aimed to implement the Sirolli method of supporting businesses, an approach that is entirely community-led. Activities included establishing a volunteer board of up to 10 people from the community and appointing a locally-based Enterprise Coordinator. This helped these remote rural areas to establish their own advice and support network and removed the barrier of having to travel to the local city to get such advice.

Source: ENRD Projects Database, https://enrd.ec.europa.eu/projects-practice/growbiz-enterprising-rural-perthshire_en

6

Promotion and dissemination are needed to make sustainable rural bioeconomy value chains self-financing in the long term, creating a market for the goods and services provided. Some RDP measures are able to support the promotion of new products linked to new quality schemes and may allow to develop schemes to support new or existing bio-based products or services.

The Leader-funded project 'Promoting the natural resources of western Weinviertel' (Austria) aimed to raise awareness about the extraordinary fauna and flora of the region and disseminate information about the region in Lower Austria, Vienna and the Czech Republic. As a first step, educational activities targeted the local population of Schmidatal and Retzerland. The second main step of the project was to develop a touristic offer based on the natural resources of the area with the contribution of the local communities, establishing a service-based bioeconomy value chain. Elsewhere in Austria, the basic services and village renewal measure has been used in the 'Nature Connects' campaign to raise and generate awareness on the importance of biodiversity in rural landscapes by bringing together land owners, experts and the broader public.

Source: ENRD Projects Database, https://enrd.ec.europa.eu/projects-practice/promoting-natural-resources-western-weinviertel_en

7

Ongoing monitoring and review are important to ensure that sustainable rural bioeconomy value chains are delivering added value to the local economy, meeting territorial needs and promoting environmental sustainability. Typically, RDP measures do not support monitoring of measure implementation or the delivery of environmental, social or economic benefits arising from those measures. However, the Technical Assistance Measure[3] can support a range of activities by the Managing Authority, the Paying Agency, the intermediate bodies fulfilling delegated functions and Monitoring Committees. In some cases, such functions can be fulfilled by other bodies responsible for preparation/programming or coordination of the implementation of programmes. They can also be used to reduce the administrative burden of beneficiaries and to build the capacity of MS and beneficiaries to implement EAFRD support (and other European Structural and Investment Funds).

(3) Article 59 of Regulation (EU) 1303/2013 (CPR) and Article 51 of Regulation (EU) 1305/2013 (EAFRD)

4.3. Synergistic policy and support tools

RDP support through the EAFRD is only one of the **European Structural and Investment Funds** (ESIF) that can be utilised to support rural actors in realising the benefits of bioeconomy value chains (see BOX 3). For the 2014-2020 period, Member States have been required to develop Partnership Agreements on the use of ESI Funds. These agreements set out the different interventions needed to achieve the objectives of the Europe 2020 growth strategy, and which ESI Funds can and will be used to support those interventions, in a mutually complementary way. According to an EU mapping on Smart Specialisation strategies focusing on bioeconomy, 67 % of the regions and countries explicitly mention ESIF co-funding to support their bioeconomy activities[4]. Out of the ESI Funds, the one with most resources available for promoting bioeconomy is probably the European Fund for Regional Development. It is also widely used by national and regional entities to support bioeconomy development.

For example, ERDF funding can be very relevant to a region mapping and planning its bioeconomy potential and possible use of available resources in rural areas. ERDF is also a potential fund in rural areas concerning sustainability and environment aspects of new value chains and enterprises. ESF projects can provide complementary support to bioeconomy development through projects that strengthen farmers' and rural entrepreneurs' working capabilities; or through support to projects in circular economy perceived as 'social enterprises' with multiple benefits not limited to economic profit.

Beyond ESI Funds, other financial and support instruments aid the development of bioeconomy value chains, notably LIFE+ funding and Horizon2020 research support for research and innovation.

Bringing together multiple different funding streams to enable innovation and growth in the bioeconomy in rural areas is key. The European Innovation Partnership for Agriculture productivity and sustainability (EIP-AGRI) is one mechanism that enables the joining of such funds. The EIP-AGRI contributes to integrating different funding streams so that they contribute together to a same goal and duplicate results. Under EIP-AGRI RDP Measure 16 is used to support Operational Groups and Innovation Support Services within a country or region. Horizon2020 can fund multi-actor projects and thematic networks involving partners from at least three EU countries, as well as research projects and pilots. Research funding under Horizon 2020 targeted towards agriculture and the bioeconomy is proposed to be increased from € 3.8 bn of the 2014-2020 period to € 10 bn (2020-2027).

Supporting integration and networking across countries can be important for bioeconomy value chains which have markets or sources located in different EU regions. European Territorial Cooperation (ETC) (Interreg programmes) are designed to support such networking, sharing knowledge

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(4) 'Bioeconomy development in EU regions - Mapping of EU Member States' / regions' Research and Innovation plans & Strategies for Smart Specialisation (RIS3) on Bioeconomy', European Commission, 2017: https://ec.europa.eu/research/bioeconomy/pdf/publications/bioeconomy_development_in_eu_regions.pdf

BOX 3 – Overview of ESI Funds

- European regional development fund (ERDF) – promotes balanced development in the different regions of the EU.
- European social fund (ESF) – supports employment-related projects throughout Europe and invests in Europe's human capital – its workers, its young people and all those seeking a job.
- Cohesion fund (CF) – funds transport and environment projects in countries where the gross national income (GNI) per inhabitant is less than 90 % of the EU average.
- European agricultural fund for rural development (EAFRD) – focuses on resolving the particular challenges facing EU's rural areas.
- European maritime and fisheries fund (EMFF) – helps fisher-people to adopt sustainable fishing practices and coastal communities to diversify their economies, improving quality of life along European coasts.

Source: https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/european-structural-and-investment-funds_en#thefunds

between regions through exchanges and setting up logistic and value chains.

Despite the availability of a range of funding and support mechanisms in the EU, access to finance, particularly for small enterprises or those which are unproven and looking to innovate, remains a key challenge. With growing entrepreneurship and innovation in the bioeconomy, and the relatively small size and often remote nature of rural actors, overcoming such barriers is central to enabling the development of sustainable rural bioeconomy value chains that deliver true rural development. Addressing this barrier in the EU are three notable funding tools: COSME, EaSI and InnovFin.

COSME is the 2014-2020 EU programme for the Competitiveness of Enterprises and SMEs, with a budget of € 2.3 billion. COSME intends to support SMEs in the following areas: Facilitating access to finance; Supporting internationalisation and access to markets; Creating an environment favourable to competitiveness; and encouraging an entrepreneurial culture. COSME also works to enable access to markets outside the EU – potentially helping to increase the reach and markets of rural actors in the bioeconomy.

For particularly small businesses, or individuals, the Employment and Social Innovation (EaSI) programme provides micro loans and support to vulnerable groups or micro-enterprises.

InnovFin, or EU Finance for Innovators, is a joint initiative launched by the European Investment Bank Group (EIB and EIF) in cooperation with the European Commission under Horizon 2020. It aims to facilitate and accelerate access to finance for innovative businesses and other innovative entities in Europe that may otherwise struggle to gain access to such funds. Since its launch in 2014, a dozen products have been tailored and made available to accommodate niche markets previously suffering from access to finance gaps and to reinforce the complementarity with the European Fund for Strategic Investments (EFSI).

Example of combining ESI-Funds to develop rural bioeconomy in South Savo region, Finland.

Finland has a national bioeconomy strategy since 2014, and the bioeconomy is a priority for the development strategies at the province level. This concerns also South Savo, where the strategy focuses on forests, water and food.

The South Savo Strategy for Rural Development refers to ERDF, ESF and EMFF as complementary funding sources and the regional priorities of the programmes financed by these funds are aligned. The province's Rural Development strategy has links to the ERDF investment priorities in the region, in particular to improve access to ICT, improve the competitiveness of rural SMEs, protect the environment and make the use of natural resources more efficient. Whereas RDP support is used by rural SMEs to acquire new technology, processes and equipment necessary to develop bio-based economic activities, it is often preceded by a feasibility study or investment in the product development financed by an ERDF project. ERDF support is also used when the supported activity or target of the investment does not match with the eligibility criteria of the RDP.

Source: ENRD Rural Bioeconomy Portal, https://enrd.ec.europa.eu/sites/enrd/files/bioeconomy_case-study_southsavo-fi.pdf

Box 4: Environmental EU Regulations of relevance for the bioeconomy

- Habitats Directive (92/43/EEC) – aims to "maintain or restore, at favourable conservation status (FCS), natural habitats and species of wild fauna and flora of Community interest." FCS can be described as "a situation where a habitat type or species is prospering (in both quality and extent/population) and with good prospects to do so in the future as well".
- Birds Directives (2009/147/EC) – requires Member States to take the requisite measures to maintain the populations of all wild birds naturally occurring in the EU (Article 1).
- Strategic Environmental Assessment Directive (2001/42/EC) – is intended to ensure that the environmental consequences of certain plans and programmes are identified, assessed and taken into account during their preparation and before their adoption by the competent authorities.
- Environmental Impact Assessment Directive (2011/92/EU & 2014/52/EU) – aims to ensure that projects that are likely to have significant effects on the environment are subject to an environmental assessment prior to their authorisation.
- Water Framework Directive (2000/60/EC) and associated Directives including the Nitrates Directive (91/676/EEC) – for delivery of good ecological status of water bodies and links to land management.
- European Union Guidelines for State aid in the agricultural and forestry sectors and in rural areas 2014 to 2020 – rules around support for forestry and afforestation.
- EU Forest Strategy (COM(2013)659) – setting EU forestry priorities and coordinating forest elements of other policies.
- LULUCF Regulation (2018/84/EU) – on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework specifically in relation to potential links to afforestation and extraction rates of forest material.
- CAP instruments, including Cross Compliance, Pillar 1 Greening and Pillar 2 Rural Development Plans.

4.3.1. Existing policy and tools for environmental sustainability

Within the EU, there are multiple legislative instruments that seek to ensure that the environment is not compromised through development. These include but are not limited to the ones listed in the BOX 4.

The majority of these instruments focus on the protection of the natural environment by putting in place plans, designations and procedures to ensure that natural resources, habitats and species are not negatively impacted by developments on rural land. These tend to focus on protected sites (such as Natura 2000) or protected species, and often do not set specific parameters that can be applied to a process or activity that may form part of the bioeconomy, and for some their implementation by Member States has been limited[(5)].

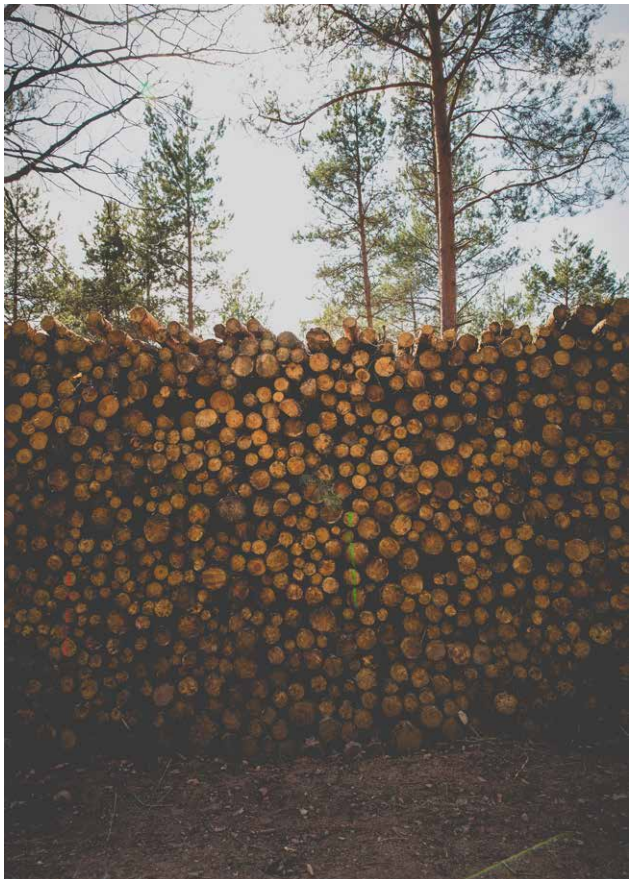
The exception to this is those instruments that affect land management outside of protected sites, such as Cross Compliance GAEC – Good Agricultural and Environmental Conditions (such as GAEC 7 on the retention of landscape features and GAEC 6 on maintaining soil organic matter), or Sustainable Forest Management (SMF), all of which are coordinated at the EU level, but whose implementation choices are left to Member States.

As evidenced by the interviews supporting this report, existing bioeconomy initiatives are often based on a general view that bioeconomy is sustainable because it uses biomass as opposed to fossil resources (notably fuels). However, there is some recognition that biomass could not be extracted and used at all costs and that appropriate indicators are necessary to help guide bioeconomy developments. According to some respondents the existing standards and rules for obtaining CAP support make bioeconomy initiatives sustainable, while for others certification standards such as Organic are ensuring sustainability. In Latvia, eligibility criteria for leader (Measure 19.3) have been introduced to give higher priority to bioeconomy projects.

Where existing bioeconomy initiatives have a specific focus, such as climate mitigation, their sustainability can be assessed through Carbon footprint calculator tools or by measuring soil carbon levels, when agro-composting is used, and/or via energy calculator tools, when renewable energy systems are being developed. No sustainability tools linked with biodiversity or water use were mentioned by the interviewees. An interesting case is AskKauko, an online tool using artificial intelligence to provide sustainability impact assessments.

Sustainability standards and monitoring practices are

(5) For example, the application of Article 6.3 of the Habitats Directive requirement for an assessment procedure for agricultural developments and changes in practice that may impact on Natura 2000 sites, has been limited (Alliance Environnment, 2017; Sundseth and Roth, 2013).



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being put in place through national environmental goals (as e.g. in Sweden, where these are articulated in the context of the Sustainable Development Goals), the use of assessment agencies to monitor progress (for instance, in the Netherlands the environmental assessment agency Planbureau voor de Leefomgeving – PBL is conducting research into bioeconomy impacts) or the development of ecological self-sufficiency indicators (e.g. in the municipality of Le Méné, France). In France, examples of national guidance include the 2015 report on 'Financing the development of renewable energy projects of territorial interest' or the 2016 'Practical guide to the implementation of an energy management system: feedback from agricultural & agri-food cooperatives' by ADEME (National Agency for Environment and Energy Management).

Example: RDP Funding supporting a bioeconomy activity that promotes sustainable sourcing

France has about 600 000 km of hedgerows, which represent a potential resource and perform wider ecosystem-based environmental and cultural services. However, since the Seventies land managers have been perceiving hedgerows as impeding cultivation or requiring burdensome maintenance. Thus, hedgerows are often abandoned or eliminated.

The Hedgerow Certification Scheme addresses two sets of concerns: the lack of valorisation of hedge wood for farmers and the need for the sustainable management of hedgerows to ensure material can be extracted without risking overexploitation of this resource and retaining wider ecosystem value. As such, the Scheme aims at fostering a renewed interest in hedgerows through their economic valorisation while ensuring their long-term sustainability in the landscape through adequate management practices. The hedge wood is used mainly for bioenergy purposes. Other options such as timber are currently limited but could be developed.

The Scheme was initiated in three regions – Normandy, Britany and Pays de la Loire – and is being developed at the national level. Four 'pilot' organisations operate at regional level (one from Normandy, two from Britany and one from Pays de la Loire). For 2019-2020, the expectation is to work with about 300 farmers. By 2024, this number should rise to 3 500 farmers, around 60 supporting technicians and 35 traders. The coordination of the project at national level is ensured by the French agroforestry organisation Afac-agroforesteries, which liaises with the pilot organisations and with national-level institutions and stakeholders .

The project will be officially introduced to the Ministries of Ecology and Agriculture in June 2019 and the first certified wood is expected in December 2019. By 2024 it is expected that 175 000 tonnes of wood will be certified. The initiative is supported by the EAFRD. The total budget is € 439 631 (of which € 178 459 from EAFRD, € 130 610 from national/ regional funding, € 85 818 from private funding and € 44 743 from other sources)

Source: ENRD Project Database, https://enrd.ec.europa.eu/projects-practice/_en?f%5B0%5D=sm_enrd_eu_countries%3AFrance

4.3.2. Overcoming barriers to effective policy implementation

The work of the TG has pinpointed a series of elements needed to help ensure the sustainability of bioeconomy value chains.

A key issue is the lack of a clear definition – and therefore understanding – of the bioeconomy. Clarity about the concept and its actual meaning for investors, municipalities, farmers or other entrepreneurs would allow the bioeconomy to be included within innovative initiatives and to receive support.

Definitions are crucial for understanding the scope of the bioeconomy. The circular economy is sometimes misrepresented as 'waste management' and climate action is sometimes used as a synonym of biodiversity, while they have potential conflicting environmental objectives. This confusion can impact on the definition of priorities and the assessment of the achievement of sustainability.

The definition of sustainability for the bioeconomy should be made clearer in EU or National legislation, with clear goals and objectives, and should take a more holistic approach that considers all aspects of sustainability, not just environment. Clearer definitions at the central level would ease the recognition of bioeconomy in existing regulations and policies. The following step however is to give bioeconomy a concrete meaning in the national or territorial context, anchoring it to the existing resource base. The bioeconomy should be included within CAP Strategic Plans to embed it more clearly in rural activities, and the SWOT analysis on which the Strategic Plans will build upon will be a key opportunity to give it a relevant meaning.

Beyond definitional challenges, the preference for cheap, non-bio-based options is a problem where bioeconomy products may be more expensive or have greater difficulty in accessing new or existing markets. There is a need for greater information on the bioeconomy to be provided to local citizens, entrepreneurs, authorities and interest groups. Assessing sustainability across the whole value chain is a challenge, not least as this is often beyond the control of the individual involved in part of the chain. Shorter supply chains could be an answer since they are easier to monitor; another one is the development of certifications and labels to trace and ensure the sustainable origin and production process of bio-based products. Novel innovations such as the blockchain technology might offer help for developing the latter.

Underlying all these challenges is the need for better access to information across the value chain and for national and territorial administrations as well as for consumers. Key to this would be the collection and sharing of good examples through storytelling and case studies to demonstrate sustainability in practice. Communications should happen via the press and mainstream media. Further analysis on different awareness raising approaches can be read in the ENRD Thematic Group document 'Exploring the Role of Awareness-Raising and Communication in Promoting the Development of Sustainable Bioeconomy Value Chains'.

Other needs identified include multi-stakeholder approaches involving all the actors in the value chain, to make bioeconomy part of the 'territory'; advisory services that can inform about the bioeconomy; the development of bioeconomy markets and easier access to funding for small actors, together with greater support rates to overcome the lack of markets; product labelling; and carbon pricing.

FOR FURTHER INFORMATION

The ENRD Thematic Group also produced the following documents:

> 'Recommendations on the use of RDPs to mainstream the bioeconomy' (briefing)

> 'How to mainstream the bioeconomy in rural areas?' (handout)

> 'How to use RDPs to support rural bioeconomy?' (handout)

> 'Exploring the role of awareness-raising and communication in promoting the development of sustainable bioeconomy value chains' (briefing)

All documents are available for free download from the ENRD website.

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