European Network for Rural Development

FACTSHEET

Monitoring data and raising awareness of rural actors' contribution to climate action

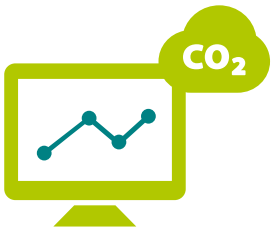
ENRD Thematic Group 'Bioeconomy and climate action in rural areas'

Funded by the European Commission

1. INTRODUCTION

Actors in rural bioeconomy – producers and entrepreneurs, companies and entire value chains – as well as rural communities and territories can contribute to climate change mitigation in several ways. Often this implies conscious efforts and changes in the way of doing things to reduce greenhouse gas (GHG) emissions where possible, or to adopt practices that enhance carbon sequestration in soil or biomass (read more about the opportunities and motivation for climate action in the ENRD Thematic Group fact sheet 'Decision support for climate action across the bioeconomy[1]').

This document highlights the importance of knowledge, data and monitoring to facilitate rural climate action and enable rural actors to communicate success along value chains to both consumers and the wider society.[2]



2. WHY MONITORING AND DATA ON RURAL CLIMATE ACTION IS NEEDED

Why is monitoring, reporting and data on climate performance important for the bioeconomy?

- **Integrity and legitimacy** – to demonstrate that the bioeconomy is reaching its goal of contributing to a carbon neutral society and respects ecosystems' boundaries.
- **Trust** – to demonstrate that all parts of the value chains and the resulting products contribute to environmental protection and climate action.
- **Improvement, transition and innovation** – to develop a continuous improvement approach where value chains evolve to reach their potential to mitigate climate change.
- **Communication and recognition** – common reporting can provide a language to communicate along a value chain, support other actors in the chain and promote achievements to the wider society. This can result in an increase in product value which in turn can justfy a price hike due to the added climate, environmental and social benefits.

Monitoring and reporting on climate action can potentially appear complex and burdensome. However, well-structured approaches based on good advice, can empower rural actors committed to climate change mitigation. These approaches build on indicators that are tailored to the rural actors' needs and are easy to assess. Finally, monitoring and reporting frameworks offer economic opportunities, through improved market access for value-added products or by qualifying rural climate action for public support, for example under the CAP.

Rural actors and communities involved in climate change mitigation need data at several stages

5. to effectively communicate the difference that they are making

4. to be able to adjust the approach if it is not working (learning)

3. to understand if the action is delivering what was planned (monitoring progress)

2. to define what success looks like (setting targets)

1. to know what the situation is to start with (define a baseline)

(1) https://enrd.ec.europa.eu/sites/enrd/files/enrd_publications/bioeconomy_factsheet-decision-support.pdf

(2) The factsheet does not address the monitoring system for climate action envisaged under the post-2020 CAP Strategic Plans as foreseen in the Commission's CAP post 2020 legal proposals, but more in general the monitoring and data approaches related to climate change mitigation of rural initiatives.

3. RURAL ACTORS USING CLIMATE DATA

A **monitoring baseline** is needed to plan the path from the initial situation on towards the set climate targets. It is also necessary, as required by climate audit and assessment schemes, to monitor, report and communicate the progress made towards achieving the targets. The objective of setting a baseline is to empower climate actors – whether producers, enterprises or communities – to better understand how they can contribute to climate mitigation and to offer a pathway towards new solutions. A reliable baseline is key to ensuring the robustness of any support scheme that might reward emission reductions or carbon sequestration.

Carbon assessment as a first step to support change

In any sector, the first step towards GHG mitigation is understanding which emissions are generated, what is causing them and what opportunities are available to reduce them.

Diverse energy and carbon audit tools exist for farms, enterprises or even territories. They can be applied to estimate the GHG emissions of different actions, and to identify management options to reduce GHG and to sequester carbon (on farms). A management plan is prepared, ideally with an advisor, outlining which management practices/measures should be prioritised. At this stage, a farmer carrying out the audit can choose the management options most relevant to their farm. A good assessment tool also covers other important aspects, such as cost of inputs, to support the decision-making. It also allows to target the actions where they are likely to achieve biggest climate impact and additional benefits. An audit should be repeated after a set number of years to monitor the changes and further adjust the actions, if needed.

Rural Development Programmes (RDPs) can help with the development of audit tools and advice services to support, inform and empower farmers. Data generated by such tools could also be used to help target further support for 'additional' climate mitigation effort.

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Indicators to monitor rural climate change mitigation

Change can be measured with various indicators and climate action is no exception. Climate policies, strategies and action plans refer to quantities of CO_2 equivalents released to, or captured from the atmosphere. In practice, it is not always necessary, or even possible, to directly measure the amount of GHG emissions reduced or avoided, or the carbon removed from the atmosphere, following mitigation actions. Different environmental indicators for soil quality and condition, water levels in peatlands, or biomass quantities in forests, and their combinations, are reliable clues to calculate the amount of GHGs being released or CO_2 being captured or stored. They also have value on their own. Indeed, a one-dimensional monitoring of GHGs makes little sense in a rural context facing multiple challenges.

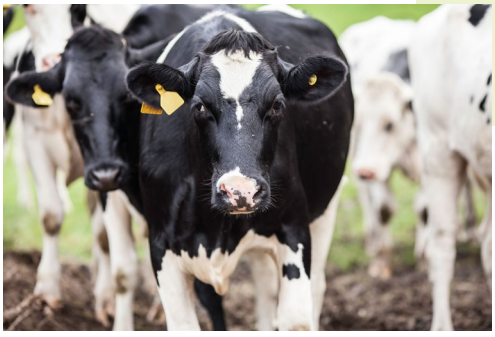
Established monitoring schemes, like the RDPs, commonly use the application of **good practices** as a 'proxy' indicator for the environmental benefits resulting from an intervention. The application of good practices on climate mitigation (practices that increase the soil organic carbon content, restore water levels in peatlands or increase the forest biomass for example) can be used as an indicator to monitor rural climate action. In these cases, the measures are tested and evaluated to ensure they are strongly linked to set levels of GHG fluxes.

Effects of one-off changes, such as replacing a piece of polluting equipment with low emission technology, can reliably be expressed in quantified (CO_2 equivalent) terms. On the other hand, mitigation based on a behaviour or management practice only produces climate benefits as long as it is being properly applied. Hence, the use of 'good practices' for climate change mitigation needs to be monitored over time. They should also be accompanied by continuous advice.

1 Focus on good practices on nutrients and climate

The Swedish Greppa Näringen farm advisory project (Focus on Nutrients) is financed by the Swedish RDP 2014-20. It aims to reduce GHG emissions and eutrophication by improving the efficiency of nutrient managment on farms. Free advice on good practices is provided during regular farm visits. After about seven advisory visits, the farm's nutrient balance is calculated, to show changes in nutrient excess and nitrogen leaking. Through the use of Key indicators, the farmer gets a good idea of which measures can increase resource efficiency and lead to lower costs, increased profitability, fewer emissions and less nutrients leaking into the environment. The project promotes several of the measures required by quality labelling organisations such as Svenskt Sigill (the Swedish Seal of Quality) and KRAV.[3]

The French **CARBON AGRI**[4] climate change mitigation initiative for agriculture builds on the implementation of several practices (e.g. manure management, crop management, use of fertilisers, energy use) that contribute to reductions in GHG emissions or the increase of carbon storage on livestock and mixed farms. Practices are selected using the on-farm carbon audit tool CAP'2ER. The assessment method includes several environmental criteria. Carbon impacts, meanwhile, are expressed based on the implementation of selected practices, whose carbon impact is quantified using an official reference table. The CARBON AGRI method is also recognised as one of the climate mitigating methods of the French label 'Bas Carbone' that aims to orient funding for voluntary carbon offsetting measures to rural projects undertaking additional climate mitigation efforts.



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(3) http://greppa.nu/download/18.37e9ac46144f41921cd1d91e/1402565315382/A%20decade%20of%20advice%20-%20Focus%20on%20nutrients.pdf

(4) http://idele.fr/reseaux-et-partenariats/bouvinnov/publication/idelesolr/recommends/carbon-agri.html

Operational Groups developing carbon monitoring

The rural development cooperation measure (M16) offers opportunities to promote local, innovative ways to assess the climate mitigation effects of rural activities.

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An Operational Group (OG) called **PRATI_CO** [5] in Emilia-Romagna, Italy, has developed a way to quantify the carbon footprint across the production process of Parmigiano-Reggiano cheese. It identified the permanent meadows, central to the fodder production, as a key carbon sink, and has developed guidelines for optimising their management.

CARBOCERT OG [6] in Spain, has identified management strategies to increase the carbon captured and stored in soils from the main agricultural crops in a Mediterranean environment. It aims to establish methods to quantify the stored carbon and has developed a database and guidelines on good practices for farmers. To keep the system simple and easy to replicate, it focuses on measures known to increase the soil's carbon content. The national standardisation body participates in the OG to establish a certification scheme for practices that sequester carbon.

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(5) https://www.pedologia.net/it/PRATI-CO/cms/Pagina.action?pageAction=&page=InfoSuolo.37&localeSite=it

(6) https://ec.europa.eu/eip/agriculture/en/find-connect/projects/grupo-operativo-carbocert-cuantificaci%C3%B3n-y

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Territorial aspects

Climate monitoring by communities is still rare but on the increase. However, a one-dimensional monitoring of GHGs may not serve the best interests of the community accountability (to a funding source or to comply with a regulation, for example). For a rural community, combining an overall sustainability vision with a life cycle toolbox approach, tailored to the local context, allows for more meaningful monitoring.

Several tools exist to assess the life cycle emissions of a product or service. The advantage of the life cycle assessment (LCA) approach is that it assesses the actual footprint of a product, including possible emissions during upstream processes, use, and end-of-life phases. It can be used to assess the environmental perfomance of whole value chains. An LCA can also be applied to the territorial context, often in relation to specific sectors. The challenge is to maintain the feasibility of the assessment process, while providing reliable results. Hence, most LCA-type territorial climate assessments focus only on selected activities within the territory. The approach also requires effective stakeholder relations to assess each step along the value chain.(7)

Combining climate monitoring with monitoring of social effects

The RDP-supported project **Towards Low carbon villages**(8) was implemented in 19 villages of North Karelia, Finland, between 2016 and 2019. It launched local experiments encouraging villages to adopt emission-reducing or carbon-saving solutions. The pilot initiatives, selected through a participatory planning process, looked at various topics such as the shift to renewable and local energy, mobility, waste management or landscape aspects. The climate effects of the initiatives were evaluated using the LCA method. Social impacts were also evaluated to measure the impact – both positive and negative – of the experiments on the community's social, human, cultural, built and natural environment. The framework developed can be used in future, for a comprehensive evaluation and planning of the community and village climate experiments. The results of the pilot initiatives showed that the impact varied and the energy projects were the most effective. The initiative was highly successful in terms of building a shared awareness and motivating the villagers to carry out further climate actions.

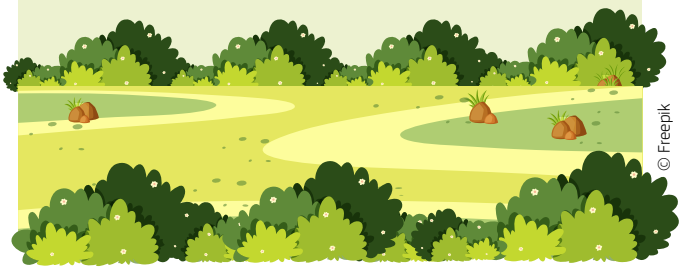
Standards and labels

Based on the knowledge resulting from monitoring and review, it is possible to assess the added value of an intervention in terms of its contribution to climate mitigation and the wider sustainability. Efficiently monitored actions can be linked to quality standards and related certificates and labels. These can facilitate market access for climate neutral products and services, and add value to them. It should be noted that quality standards do not have to relate to a single part of the chain (production only for example), but could relate to multiple stages. One example of this is the EU sugar beet sustainability standard that seeks to deliver more sustainable practices both in the field and in the subsequent processing activities.(9)

Standardisation of climate data could serve rural actors that currently may be requested to provide different data for different reporting and monitoring instances.

Certifying hedgerows for biomass feedstock generation and carbon storage

In the regions of Normandy, Brittany and Pays de la Loire, France, a participatory certification scheme promotes the sustainable management of hedgerows while enabling excess wood to be sold to supply bioenergy.(10) Hedges can promote the retention and sequestration of carbon, alongside the delivery of other ecosystem services linked to biodiversity, soil and water. The scheme was developed to maximise resource by allowing sustainably managed hedges to be certified. Subsequently, project managers are now investigating whether the carbon sequestered in hedges might also be paid for in the form of a results-based scheme. A digital cartography tool will ensure traceability of the hedge wood and assist landowners in the sustainable management of hedgerows.



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(7) The 7th International Summer School on Life Cycle Approaches to Sustainable Regional Development "Life cycle tool box for bio-economy initiatives", 25-28 August 2018, Leipzig, Germany

(8) https://msl.fi/kohtivahahiilisiakylia/yleista/

(9) http://www.sustainablesugar.eu/good-practices

(10) https://enrd.ec.europa.eu/projects-practice/certification-label-sustainable-management-hedgerows_en

Learning and connecting with others

To maximise emission reductions and resource efficiency, actors along bio-based value chains and within regions must work together. It is important to coordinate processes and make links between material availability, processing and end products, to ensure each step contributes to climate action.

Effective and coherent cooperation requires knowledge and information about each actor's climate performance. It requires a common language whereby actors can demonstrate positive climate actions, progress, learning and continuous improvement. This narrative can also be used to demonstrate the added value of activities and hence make links to new economic opportunities.

Aggregation of climate data into a system to enable the monitoring of the climate performance of a territory, a sector or a value chain requires relying on statistical data and calculations. Data from representative units (farms for example) are used to calculate the overall carbon impact of a cluster of similar units. These are then summed up. Such an approach can work, for example, for large cooperatives or companies that want to monitor their overall climate performance.

The role of mediator or multiplicator organisations in a solid climate monitoring framework is important. Intermediary organisations, such as farmer associations, facilitate the aggregation of data from several small units. Importantly, they also have a role to play in enhancing knowledge and understanding about the causality between actions and climate outcomes among rural actors.

Bringing together networks, tools to promote innovation and stakeholder engagement

A Local Action Group (LAG) actively supports innovation on emission reductions in the transport and energy sector in the Opavsko region of the Czech Republic. The LAG developed a 'toolbox' to support knowledge sharing, bring together stakeholders and develop networks. Various activities were carried out including information events, articles in the LAG newsletter, excursions, seminars, conferences, awareness raising events and larger networking projects such as the energy concept for the Opavsko region. A study was carried out on alternative heat sources in households. While the LAG is not the biggest player in the region, it acts as an 'oil can' that lubricates the gears of cooperation between municipalities, businesses and associations. It also brokers new local-national partnerships with actors such as national companies or universities to complement the rural region's capacity and expertise.

4. SUPPORTING A SOLID MONITORING SYSTEM

A solid monitoring, reporting and verification framework for rural climate action should serve all the different data needs of rural actors. Being able to plan, monitor, improve, report and communicate on the climate effects of their activities enables rural producers, entrepreneurs and communities to undertake climate action that adds value to their activities. Robust common monitoring frameworks are also the condition for orienting public support to upscale climate mitigating practices, for building reward schemes, or for ensuring the overall sustainability of the bioeconomy and rural activities. A single actor cannot create such a system alone.

The CAP, and importantly Pillar II, plays a key role in supporting the integration and use of climate monitoring across rural bioeconomy activities. As seen in the previous examples, it can promote innovation, advice, knowledge exchange and local cooperation. As the CAP evolves into focusing more on the outcome and delivery of public goods, future support (possibly under both Pillar I eco-schemes and Pillar II) could be targeted at agricultural and forestry management practices with climate and other environmental benefits. RDPs, meanwhile, would continue to support rural communities and local, circular value chains, in their quest to track and communicate their climate performance. Ultimately, there is also scope for the delivery of results-based and complementary market-based schemes that could pay rural actors for additional emission reductions or carbon sequestration.

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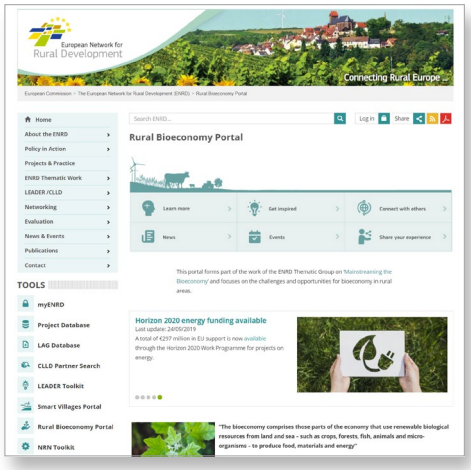

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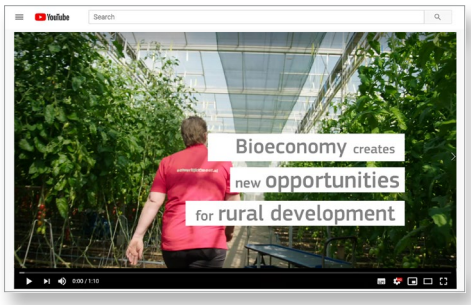
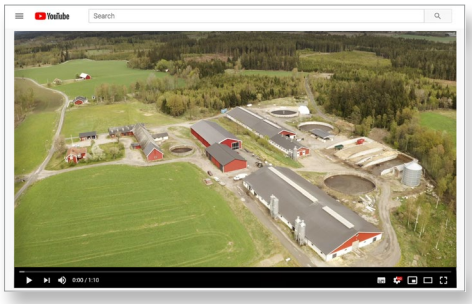
Rural bioeconomy in Europe: De Laarhoeve (NL)



Rural bioeconomy in Europe: Alvesta Biogas (SE)



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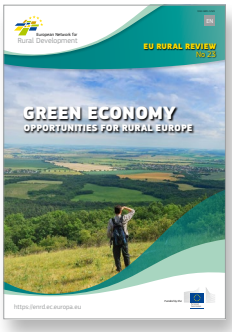
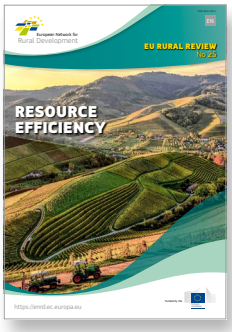
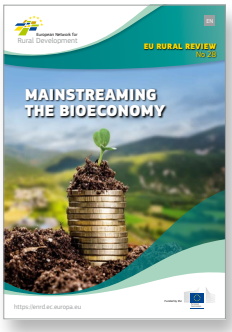
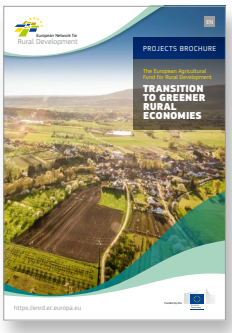






EAFRD Projects Brochure



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