



# POLICY ROADMAPS FOR THE EUROPEAN UNION

Promoting bioenergy  
communities

NOVEMBER 2023



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## ABOUT

Over the last years, the EU has witnessed some remarkable steps in Renewable Energy (RE) deployment. However, at the same time, we see an increasingly uneven penetration of RE across the different energy sectors, with the heating and cooling sector lagging behind. Community bioenergy schemes can play a catalytic role in the market uptake of bioenergy heating technologies and can strongly support the increase of renewables penetration in the heating and cooling sector, contributing to the EU target for increasing renewable heat within the next decade. However, compared to other Renewable Energy Resources (RES), bioenergy has a remarkably slower development pace in decentralised energy production which is a model that is set to play a crucial role in the future of the energy transition in the EU.

The ambition of the EU-funded BECoop project is **to provide the necessary conditions and technical as well as business support tools for unlocking the underlying market potential of community bioenergy**. The project's goal is to make community bioenergy projects more appealing to potential interested actors and to foster new links and partnerships among the international bioenergy community.

**The project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952930.**

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# Policy roadmap for the European Union

## Summary

This roadmap has been devised to offer practical advice and policy proposals for European Union (EU) policymakers and decision-makers to facilitate the development of community-based bioenergy initiatives throughout the EU. Drawing from insights obtained through decision-makers, expert surveys, and policy document reviews, the roadmap encompasses an overview of the initial context and obstacles towards bioenergy communities. It also reviews relevant policy objectives and regulatory frameworks.

The roadmap provides practical policy suggestions, along with a schedule and sequence of recommended measures. These measures recognise the intricacy of transitioning towards bioenergy communities and underscore the significance of appropriate legislation and support for local ventures. Customised frameworks, strategies to mitigate financial risks, and awareness campaigns are deemed essential to stimulate the expansion of bioenergy communities in Europe.

Regarding policy priorities, there are five key proposed actions:

- 1 firstly, the immediate adoption of RED II and its revisions into national law to support bioenergy communities
- 2 secondly, medium-term implementation of EU-wide regulations favouring community renewable energy initiatives, possibly through tax incentives and regional subsidies, and recognising district heating grids as essential infrastructure
- 3 thirdly, distinguishing directives for heating and electricity, necessitating specific legislation
- 4 fourthly, launching a comprehensive EU-wide awareness campaign about the merits of bioenergy, targeting educational systems and the general public
- 5 and finally, introducing clear EU-wide definitions for bioenergy communities and establishing new financing mechanisms to facilitate their development.

These changes are anticipated to exert a positive impact on various policy domains, such as decarbonising the heating sector, creating a supportive regulatory environment, enhancing public perception, and expediting local adoption.

## Purpose and development of the roadmap

The development of bioenergy and bioenergy communities in the EU can contribute to the reduction of carbon emissions, the decarbonisation of the transport sector, and the diversification of energy supply. At the same time, (community) bioenergy allows citizens to be actively involved in decision-making and energy production processes. It can create new economic opportunities, reduce energy poverty, and reduce non-renewable energy imports. However, current challenges must be overcome to unlock such opportunities.

This policy roadmap aims to provide practical and applicable policy recommendations for European and national policymakers and decision-makers in the bioenergy community field based on insights and findings of the BECoop project. The roadmap outlines the opportunities of community bioenergy for the EU to meet its climate and energy targets and increase energy security and independence. Furthermore, the roadmap intends to open the policy debate around opportunities and required measures to promote community bioenergy in the EU.

The policy roadmap has been developed based on three main methods:



policy analyses



stakeholder consultations



an expert workshop

Firstly, key policy documents at the national level were reviewed to identify the policy frameworks and enabling mechanisms for bioenergy communities across the EU. We reviewed a comprehensive suite of policies and legislation, including directives on renewable energy, for their policy objectives and bioenergy and community energy measures. The analysis enabled the development of draft policy recommendations to unlock the community bioenergy potential in the EU (Appendix 1).

Secondly, we surveyed stakeholders and participants working with the BECoop network to understand the findings of other relevant policy work within the project and beyond, and to compile insights into structuring strategic templates and recommendations.

Thirdly, we held an EU policy workshop on the 12<sup>th</sup> of June 2023, bringing together 20 stakeholders from policymaking, industry, non-governmental organisations, and energy communities. Following presentations from three-high profile speakers, participants at the workshop discussed the various uses and potentials of bioenergy. They acknowledged the importance of clear communication and practical understanding for effective public engagement and acceptance of bioenergy solutions. The participants expressed their interest in exploring new strategies, policies, and collaborations to promote sustainable energy practices, biomass energy, and the involvement of energy communities in the transition to a greener future.

The workshop allowed participants to discuss the purpose and contents of the policy roadmap. They were divided into three breakout groups, each of which was assigned specific questions to discuss. After the breakout sessions, a designated rapporteur from each group would provide brief feedback to the entire workshop. Google Docs were shared for each group to facilitate collaboration and document the discussions.

The roadmap is structured as follows:

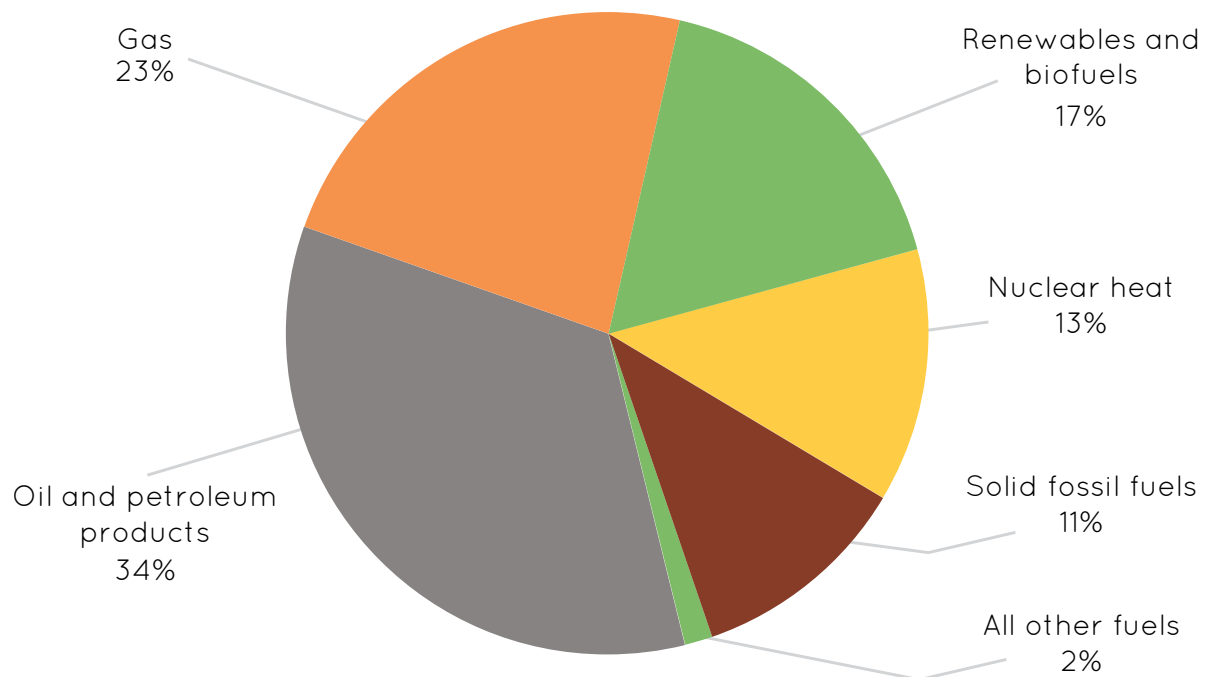
- Firstly, it outlines the current situation of community bioenergy in the European Union - where there are challenges in the current implementation of bioenergy policy at the EU level.
- Secondly, it presents the targets and opportunities for (community) bioenergy in 2030, 2050 - where we want to go.
- Thirdly, it draws concrete policy recommendation to unlock the community (bio)energy potential in the European Union - how do we get there by 2030/2050.

A timeline with concrete measures and their prioritisation and sequencing is provided.

## Community (bio)energy – current state of play

In the EU, more than 17% of the total energy supply is provided by renewable energy sources (Figure 1). Bioenergy currently accounts for around 60% of renewable energy production,<sup>1</sup> while the heating and cooling sector is the largest end user, accounting for about 75% of all bioenergy.<sup>2</sup> In particular, biomethane is one of the main renewable gases, and has been recognised as a natural gas substitute to reduce the EU's dependence on Russian fossil fuels.<sup>3</sup>

**Figure 1** - The contribution of different energy sources to the EU's gross available energy in 2021 (Source: Eurostat energy statistics<sup>4</sup>)



<sup>1</sup> COM(2021) 550 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=EN>

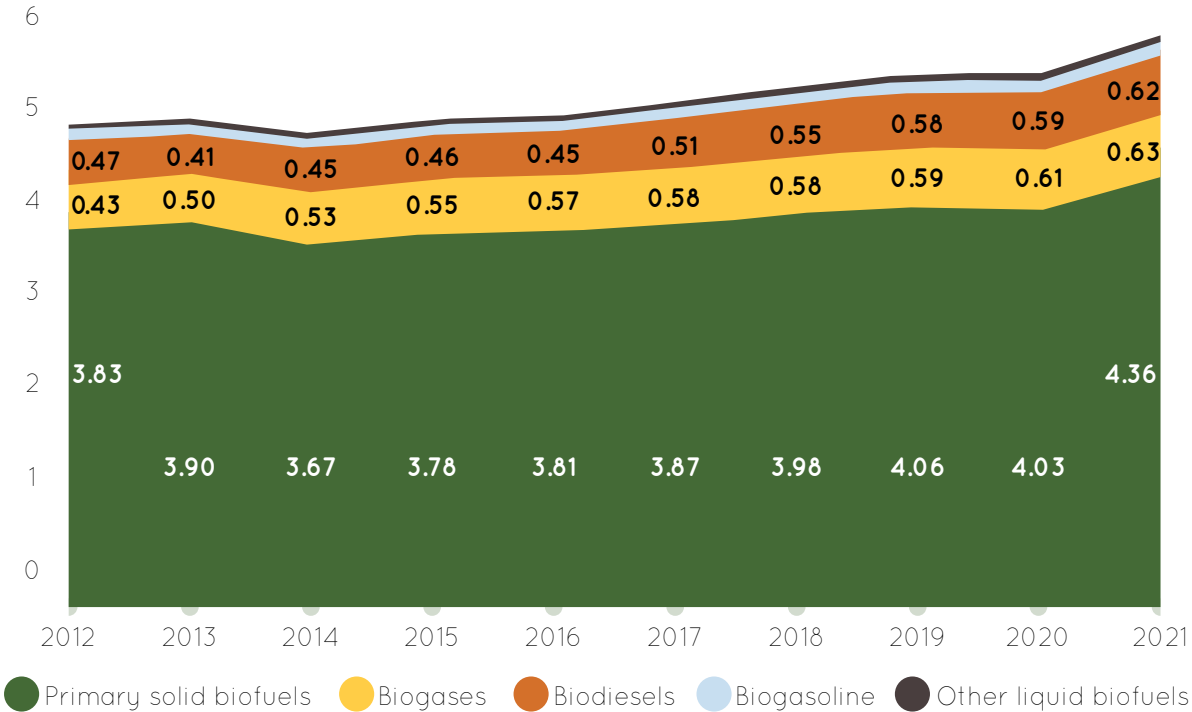
<sup>2</sup> [https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomass\\_en#:~:text=Biomass%20for%20energy%20\(bioenergy\)%20continues,a%20share%20of%20almost%2060%25](https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomass_en#:~:text=Biomass%20for%20energy%20(bioenergy)%20continues,a%20share%20of%20almost%2060%25)

<sup>3</sup> [https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomethane\\_en](https://energy.ec.europa.eu/topics/renewable-energy/bioenergy/biomethane_en)

<sup>4</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy\\_statistics\\_-\\_an\\_overview#Primary\\_energy\\_production](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview#Primary_energy_production)

Primary solid biofuels provide the dominant source of bioenergy in the EU, with biogas and biodiesels playing an increasingly important role (Figure 2). According to the International Energy Agency Bioenergy Technology Collaboration Programme,<sup>5</sup> approximately half of the primary solid biofuel use is used in the residential and service sectors, with a further third being used for electricity and heat outputs. The use of solid biofuels for the latter has steadily increased in the past decades. Other forms of biomass are also important: after strong growth between 2006 and 2013 (from a baseline of 0.2 EJ), the expansion of biogas has slowed down recently, even if the use of this energy carrier is still increasing. Liquid biofuels grew strongly between 2004 and 2010, from a baseline of 0.1 EJ. While levels have stabilised between 2010 and 2016, growth has accelerated once more in recent years.

**Figure 2** - Evolution of biofuel use within the EU-27, in PetaJoules, from 2012 to 2019 (Source: Eurostat complete energy balances<sup>6</sup>)



Over 18 million people are employed in the EU bioeconomy.<sup>7</sup> The 2022 Bioeconomy Progress Report<sup>8</sup> finds that significant bioeconomy deployment has been achieved in Central and Eastern European countries, aided by significant EU funding contributions and the establishment of new collaboration networks. The mobilisation of private investments and research is also increasing across the EU.

According to the European Commission, an estimated 9000 energy communities currently operate across the EU.<sup>9</sup> They are often financed by local authorities, small businesses or citizens, and run by citizen volunteers. Many of them rely on bioenergy sources.

<sup>5</sup>[https://www.ieabioenergy.com/wp-content/uploads/2021/11/CountryReport2021\\_EU28\\_final.pdf](https://www.ieabioenergy.com/wp-content/uploads/2021/11/CountryReport2021_EU28_final.pdf)  
<sup>6</sup>[https://ec.europa.eu/eurostat/databrowser/view/NRG\\_BAL\\_C\\_custom\\_7488738/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/NRG_BAL_C_custom_7488738/default/table?lang=en)  
<sup>7</sup><https://op.europa.eu/en/publication-detail/-/publication/775a2dc7-2a8b-11e9-8d04-01aa75ed71a1>  
<sup>8</sup>[https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/adoption-bioeconomy-strategy-progress-report-2022-06-09\\_en](https://research-and-innovation.ec.europa.eu/news/all-research-and-innovation-news/adoption-bioeconomy-strategy-progress-report-2022-06-09_en)  
<sup>9</sup>[https://energy.ec.europa.eu/news/focus-energy-communities-transform-eus-energy-system-2022-12-13\\_en#:text=Overcoming%20barriers%20to%20decentralise%20energy%20in%20the%20EU&text=However%2C%20they%20are%20still%20a,in%20operation%20across%20the%20EU](https://energy.ec.europa.eu/news/focus-energy-communities-transform-eus-energy-system-2022-12-13_en#:text=Overcoming%20barriers%20to%20decentralise%20energy%20in%20the%20EU&text=However%2C%20they%20are%20still%20a,in%20operation%20across%20the%20EU)

The recast Renewable Energy Directive 2018/2001/EU (RED II)<sup>10</sup>, which entered into force in December 2018, provides the main legal framework for the development of bioenergy and energy communities within the EU. Energy communities are considered as a new instrument to ensure the broad participation of citizens in the energy transition. According to the Directive, a **'renewable energy community'** is defined as a legal entity:

- (a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity;
- (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities;
- (c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits.

Thus, renewable energy communities can take different legal forms and be based on different renewable energy sources, including bioenergy.

The revision of the Directive, adopted by the EU Parliament in September 2023, has committed the EU to a 42.5% share of renewables by 2030, with Member States achieving a 45% share. The revision will need to be formally endorsed by the EU Council in order to come into law.

The revision introduces a range of amendments, including:

- Article 1(2) amends Article 3(1) REDII with 'the updated 2030 EU target of at least a 40% share of energy from renewable sources in the Union's gross final energy consumption in 2030'.
- Article 1(6) inserts a new Article 15a on 'mainstreaming renewable energy and enabling measures to mainstream heating & cooling in buildings. This new Article includes a new indicative EU target of renewables in buildings by 2030 of 49%, and a reference to the new definition of 'efficient district heating and cooling' that will be added to the recast Energy Efficiency Directive'.
- Article 1(7) amends Article 18(3) REDII with adjusted paragraphs on the 'qualification and certification requirements of installers, to address the shortage of installers of renewable heating systems'.
- Article 1(9) amends Article 20(3) REDII with a 'new and additional paragraph to enhance energy system integration between district heating and cooling' (DHC) systems and 'other energy networks, by requiring Member States, where relevant, to develop efficient DHC to promote heating and cooling' from renewable energy sources (RES).

<sup>10</sup> DIRECTIVE (EU) 2018/2001, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN>



- Multiple amendments to Article 24, concerning the regulation of DHC systems, e.g. by adding the new definition of efficient district heating (to be added to the recast Energy Efficiency Directive).
- Article 1(14) amends Article 25(1) REDII by 'increasing the ambition level of renewables in transport by setting a 13% greenhouse gas intensity reduction target, increasing the sub-target for advanced biofuels from at least 0.2 % in 2022 to 0.5% in 2025 and 2.2 % in 2030.

Based on existing policy documents, the **barriers and gaps for (community) bioenergy** in the EU include:<sup>11</sup>

- Lack of awareness around the concept of (bio)energy communities.
- Lack of awareness of national potentials for biogas and biomethane production and the effective integration of the latter into the grid.
- Public engagement around the environmental impacts of bioenergy.
- Energy market integration and legal status of energy community formation by citizens.
- Uncertainties related to the energy market integration and legal status of energy community formation by citizens.
- Policy incompatibilities among EU, national, and regional levels regarding bioenergy.
- Missing integration of sustainable biomethane to the gas grid.
- Current transport-centred use of biomethane (fuel supply obligation set out in Article 25 of the RED II).
- Long permitting times of bioenergy plants.
- Missing commitment/targets to eliminate coal-fired heating.
- High investment risks and lack of financial mechanisms.
- High costs of biogas upgrading that prevent the entry of individual economic operators into biomethane production. Part of these costs are the costs of upgrading, grid connection, and grid injection.
- Lack of performance standards or emission limits for biomass boilers with capacities ranging from 500 kW to 1 MW.
- Lack of a platform for strategic discussion among key stakeholders along the whole value chain on how to best support the production and use of biogas and biomethane.

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<sup>11</sup> Sources: The accompanying staff working document SWD (2022) 230 final of the REPowerEU plan, in which the Commission proposes to address the main barriers to increased sustainable biomethane production, and the use and facilitation of its integration into the EU internal gas market.



## Policy targets for, and visions of, community bioenergy for 2030 and 2050

### Bioenergy in the EU

As was pointed out above, the revision of the REDII Directive, adopted by the EU Parliament in September 2023, has now committed the EU to a 42.5% share of renewables by 2030, with Member States achieving a 45% share. Previously, the EU had formally committed that renewable energy sources should account for 40% of total consumption in the EU until 2030.<sup>12</sup> With the REPowerEU plan,<sup>13</sup> the Commission proposed increasing the EU's 2030 renewables target from to 45%. The plan defines the precise aim to scale biomethane: 'Boosting sustainable biomethane production to 35 bcm by 2030 is a cost-efficient path to achieve our ambition to reduce imports of natural gas from Russia'. This would require the investment of about EUR 37 billion euro over the period.

The RED II calls on Member States to 'consider the available sustainable supply of biomass and take due account of the principles of the circular economy and of the waste hierarchy', when developing renewable-energy support schemes. RED II addresses the role of bioenergy specifically in the aviation and transport sectors. The mid-term importance of advanced biofuels and renewable liquid and gaseous fuels of non-biological origin for aviation has also been highlighted in the communication 'A European Strategy for Low-Emission Mobility'.<sup>14</sup>

Essential for bioenergy is the requirement for fuel suppliers of the Member States to supply a minimum of 14% of the energy consumed in road and rail transport by 2030 as renewable energy. Under the 14% transport sub-target, Annex IX states a dedicated target for advanced biofuels produced from feedstocks. The contribution of advanced biofuels and biogas produced from the feedstock listed as a share of the final consumption of energy in the transport sector shall be:

- at least 0.2 % in 2022
- at least 1 % in 2025
- at least 3.5 % in 2030

Furthermore, the ReFuelEU Aviation Regulation proposal on ensuring a level playing field for sustainable air transport<sup>15</sup> is already directly relevant for biofuels including **5% blending requirement of sustainable aviation fuels by 2030 and 63% by 2050** for all departures from EU airports. It is added to ensure that 'fuel technologies supported under this Regulation have the highest potential in terms of innovation, decarbonisation and availability'.

According to the policy scenarios assessed, 'renewable and low-carbon fuels should represent between 6% and 9% of the international maritime transport fuel mix in 2030 and between 86% and 88% by 2050'.<sup>16</sup> Relevant for shipping is the proposal for the FuelEU Maritime Regulation,<sup>17</sup> which includes a fuel standard for maritime shipping fuel, reducing on-board GHG intensity by 6% by 2030 and incrementally reaching 75% GHG intensity reduction by 2050.

<sup>12</sup>COM(2021) 550 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0550&from=E>

<sup>13</sup>COM(2022)108 final, [https://eur-lex.europa.eu/resource.html?uri=cellar:71767319-9f0a-11ec-83e1-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:71767319-9f0a-11ec-83e1-01aa75ed71a1.0001.02/DOC_1&format=PDF)

<sup>14</sup>COM(2016) 501 final, [https://eur-lex.europa.eu/resource.html?uri=cellar:e44d3c21-531e-11e6-89bd-01aa75ed71a1.0002.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:e44d3c21-531e-11e6-89bd-01aa75ed71a1.0002.02/DOC_1&format=PDF)

<sup>15</sup>COM(2021) 561 final, [https://eur-lex.europa.eu/resource.html?uri=cellar:00c59688-e577-11eb-a1a5-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:00c59688-e577-11eb-a1a5-01aa75ed71a1.0001.02/DOC_1&format=PDF)

<sup>16</sup>COM(2021) 561 final, [https://eur-lex.europa.eu/resource.html?uri=cellar:00c59688-e577-11eb-a1a5-01aa75ed71a1.0001.02/DOC\\_1&format=PDF](https://eur-lex.europa.eu/resource.html?uri=cellar:00c59688-e577-11eb-a1a5-01aa75ed71a1.0001.02/DOC_1&format=PDF)

<sup>17</sup>COM(2021) 562 final

The EU Biodiversity Strategy 2030,<sup>19</sup> whose main objective is to ‘put Europe’s biodiversity on a path to recovery by 2030’ is also important in this context. It highlights the need to assess the biodiversity and climate risks of the EU and global biomass supply. To avoid negative impacts and potential land-use conflict, it should be ensured that (community) bioenergy is developed and produced in line with the sustainability criteria and that the cleanest advanced biofuels are promoted.

The EU also wants to ‘strengthen sustainability criteria for bioenergy by extending their scope of application and by enlarging no-go areas for sourcing’ (‘Fit for 55’ plan). The RED II, along with other regulations, outlines identified direct and indirect risks of land-use change for biofuels, bioliquids, and biomass, and defines a series of sustainability and greenhouse gas emission (GHG) criteria for bioliquids to ensure that no additional land demand is created, while promoting the use of wastes and residues. In transport, the criteria must be met to be counted towards the overall 14% target and to be eligible for financial support by public authorities.

### Community (bio)energy

The EU has no specific target or vision for community bioenergy, though the EU generally recognises the importance of renewable energy communities.<sup>20</sup>

The REPowerEU plan has been accompanied by a Staff Working Document<sup>21</sup> on investment needs, hydrogen accelerator, and achieving the bio-methane targets to promote participatory multi-stakeholder engagement. It defines the aim of taking additional measures to encourage biogas producers to create energy communities.

“The Commission might consider the option of developing an EU strategy for energy transition in rural areas as a tool to support the implementation of such integrated energy solutions in rural areas, taking advantage of numerous decentralised small biogas plants operating in the EU and integrating them in the overall renewable energy mix, by also addressing related environmental and social aspects. The existing local infrastructure such as the development and implementation of Local Development strategies (supported through rural development funds of the Common Agriculture Policy or structural and cohesion policy as relevant, e.g. through Community Led Local Development) and of farmers’ cooperative structure could be used. In addition, other multistakeholder structures, such as **energy communities**, could be used; the work in this area should build on the Rural Energy Community Advisory Hub.”

Furthermore, the working documents stated that a ‘special focus should be given to improving technological efficiency and cost-effectiveness of **small-scale solutions** that would not hamper EU food and feed production, as well as to environmental and socio-economic sustainability and looking for alternative materials where today scarcity might block scaling up’ as well as ‘small-scale technologies for biogas upgrading’.

<sup>19</sup>COM(2020) 380 final, <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1590574123338&uri=CELEX%3A52020DC0380>




<sup>20</sup>RES II: ‘renewable energy community’ is defined as a legal entity: (a) which, in accordance with the applicable national law, is based on open and voluntary participation, is autonomous, and is effectively controlled by shareholders or members that are located in the proximity of the renewable energy projects that are owned and developed by that legal entity; (b) the shareholders or members of which are natural persons, SMEs or local authorities, including municipalities; (c) the primary purpose of which is to provide environmental, economic or social community benefits for its shareholders or members or for the local areas where it operates, rather than financial profits;

<sup>21</sup><https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022SC0230&from=EN>

## Recommendations for key policy measures on community bioenergy

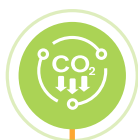
The EU wants to accelerate renewable energy technologies to reduce its GHG emissions. The following policy recommendations will elaborate on how to: (i) account for the decarbonisation of the heating sector and the role of community bioenergy for 2050; (ii) design regulatory frameworks for simplifying and streamlining procedures for community bioenergy in local heating markets (e.g., procurement criteria, etc.), (iii) improve the social perception of the bioenergy sector, (iv) support research and innovation in new bioenergy technologies and biobased raw material; (v) design place-based supporting actions, tailored to regional challenges and visions, that could speed up the bioheat technology diffusion process, as well as (vi) improve policy awareness and cooperation in (community) bioenergy.

Based on stakeholder consultations and relevant policy and working documents, the following points emerge as priorities for action:

-  The role of bioenergy in helping reduce the carbon footprint of the heating sector, particularly in decentralised settings. There is a need to address open field burning of agricultural residues and promote the potential for collecting and processing them in controlled environments to produce renewable heat, reduce emissions, and provide farmers with financial benefits.
-  Integrating and implementing European legislation related to collective consumption of heating. There is a lack of such regulation in Member States in particular.
-  Mobilisation and engagement are crucial factors in implementing bioenergy projects, particularly in terms of different government actors, including municipalities. Concerning EU institutions, this needs to involve clear communication, awareness-raising, and access to information for project initiators, such as communities and municipalities. There is also a need to improve community knowledge sharing and capacity building. As for EU policies and legislation, this could involve providing technical assistance, training, and educational resources to help community members understand and implement bioenergy solutions for heating.
-  The need for local mapping of renewable energy potential, including bioenergy resources, to understand the available sustainable resources at the community level. Municipalities are best placed to take the lead in initiating bioenergy projects, as they are trusted by local communities.
-  The challenges of framing the concept in certain countries, such as Poland, where co-operatives have a negative association. There is a need to build trust, both at the local level and between citizens and governments, in promoting energy communities and overcoming NIMBYism sentiments. This needs to be accompanied by adequate local support to ensure the success and acceptance of bioenergy and community-driven initiatives.

- 6 Investment assistance to overcome initial financial barriers. Various forms of financial aid, including grants, tax breaks and loans, are relevant here, along with the potential for municipalities to provide grants for district heating network development. This includes establishing rules that mitigate the financial risks associated with district heating infrastructure. At the EU level, these risks could also be addressed through a solidarity fund, or a guaranteed mechanism to protect energy communities from financial hardship.
- 7 The need for a comprehensive approach towards storage solutions for bioenergy: to serve as a backup and support the electrification of heating systems. Ancillary services to the grid and maximising the efficiency of bioenergy initiatives.
- 8 Policy and regulatory frameworks that provide for stability and predictability. This includes ensuring clear guidelines and procedures for project approval, grid connection, and heat distribution. It also involves removing barriers and bureaucratic hurdles that currently hinder the growth of community bioenergy projects in particular.
- 9 The importance of monitoring and evaluation to ensure the effectiveness and sustainability of community bioenergy projects. This includes establishing performance indicators, conducting regular assessments, and sharing best practices to improve the sector continuously.

Policy measures to mitigate these priorities range can be grouped across five domains.



### Decarbonising the heating sector:

- ✓ Depending on the country's context, develop district heating and cooling infrastructure to accommodate the development of heating and cooling from large biomass, solar energy, ambient energy and geothermal energy facilities and from waste heat and cold.
- ✓ Member States may oblige fuel suppliers supplying fuels for the heating sector with minimum shares for bioenergy.
- ✓ Consider broadening the scope of the fuel supply obligation from transport in the RED II.
- ✓ Promote the increased sustainable mobilisation of existing timber and agricultural resources and the development of new forestry and agriculture production systems, provided that sustainability and greenhouse gas emissions saving criteria are met.
- ✓ Promote sustainability and greenhouse gas emissions saving criteria for biofuels, and for bioliquids and biomass fuels (used in the heating sector).
- ✓ Define emission limits for biogas boilers.
- ✓ Support a directive on biomass utilisation in rural areas for heating purposes.



### Improving regulatory stability and support:

- ✓ Define community energy as well as bioenergy community in national law and amend national regulations with regard to the conditions for establishing energy cooperatives in rural areas and their rights to energy trading.
- ✓ Speed up permitting (define maximum processing times).
- ✓ A unified European regulation for resources.
- ✓ Enforce control of emissions stemming from bioenergy and monitor other environmental impacts of newly implemented bioenergy plants.
- ✓ Define minimum energy efficiency standards for biogas plants.
- ✓ Improve legal frameworks, in terms of creating a separation between energy communities and private investors.
- ✓ Legislate the phasing out of fossil-based residential heating solutions: coal and heating oil in the short term, natural gas in the medium term.



### Improving social awareness and building local capacities:

- ✓ Increase awareness around the concept of energy communities and bioenergy in general, to eliminate misconceptions around the environmental impact of biomass.
- ✓ Promote participatory multi-stakeholder engagement, such as energy communities or farmers cooperatives.
- ✓ Create a biogas and biomethane industrial partnership/ forum promoting their sustainable production and use with the aim to promote stakeholder engagement and public acceptance.
- ✓ Support training on how to develop bioenergy communities.
- ✓ Empower local and regional authorities in promoting biomass.
- ✓ Promote knowledge transfer of community bioenergy across Europe.
- ✓ Develop national strategies on sustainable biogas and biomethane production and use or integrate a biogas and biomethane component in the National Energy and Climate Plans (NECPs).
- ✓ Promote sustainable biogas and biomethane co-operation with neighbouring and enlargement countries.



## Research and innovation in new technologies and bio-based raw materials:

- ✓ Due to increasing competition for biobased raw materials, research and funding should be allocated for studying the possibilities for broadening the feedstock base for bioenergy and biofuels production, (e.g. including biomass from marginal, underutilised, contaminated lands) and for innovative collection methods’.
- ✓ Continue investing in R&I with a specific focus on improving technological efficiency and cost-effectiveness and small-scale solutions, as well as small-scale technologies for biogas upgrading.



## Speeding-up local diffusion:

- ✓ Incentivise good practices in the production of biomass, and to ensure supply and demand for woody biomass remain within the limits of sustainability<sup>23</sup> and are in line with our objectives of restoring biodiversity, improving the health of nature, and staying within planetary limits (as highlighted in the ‘Fit for 55’ plan).
- ✓ Limit tendering procedures to specific technologies (e.g. biomethane for gas supply, only high efficiency performance) or small-scale / community bioenergy projects
- ✓ Promote the establishment of one-stop shops for biomethane.
- ✓ Promote access to financing, specifically for community bioenergy enterprises.
- ✓ Launch a €100 million circular bioeconomy thematic investment platform (as planned under the Bioeconomy Action Plan<sup>24</sup>) and dedicate a specific share of the money to bioenergy community investments.

<sup>23</sup><https://publications.jrc.ec.europa.eu/repository/handle/JRC124374>

<sup>24</sup><https://op.europa.eu/en/publication-detail/-/publication/775a2dc7-2a8b-11e9-8d04-01aa75ed71a1>

## Timeline and sequencing of measures

In terms of policy priorities, the following five areas of action are proposed:

- **Short term:** The need for effective transposition of RED II and its recent revisions into national legislation. While solar and wind energy currently dominate the renewable energy sector, efforts should be made to increase the share of bioenergy communities. The challenges of transposing EU directives into national legislation and the obstacles faced by bioenergy community projects require greater legal recognition and support.
- **Medium term:** The need for EU-wide regulations that favour energy communities based on renewable energy, particularly in rural areas. This could be achieved through tax breaks and regional subsidies. Additionally, it was suggested that district heating grids should be considered as infrastructure with common interest, receiving similar treatment and priority as other utility companies when applying for licenses.
- **Medium term:** Differentiating directives for heating and electricity, as they require distinct support systems. Over the long term, this needs to be accompanied by specific legislation and frameworks tailored to bioenergy and heating instead of considering them under a general renewable energy umbrella.
- **Short-to-long term:** The need for raising awareness about the opportunities, benefits, and success of bioenergy, such as lower and stable prices, supply stability, local job creation, and environmental benefits. This can include interventions in educational systems, particularly involving young students from primary schools. An EU-wide communication campaign focused on clarifying biomass as a renewable energy source can help overcome hesitation, and foster support for bioenergy communities. Integrated mechanisms to map and trace bioenergy communities across the EU could also be helpful in this context.
- **Specific changes to assist local diffusion.** Several legal and policy changes are required across different policy domains. In the short term, there is a need for a clear EU-wide definition of bioenergy communities, which would enable various sectors in the energy industry to understand the eligibility requirements and make investment decisions. In the medium term, new financing mechanisms are identified as crucial aspects to support the development of bioenergy communities. The provision of financial incentives for local energy communities can create an efficient biomass supply chain in collaboration with local forest agencies, farmers and biomass owners, among other actors. The above incentives can also extend into municipal policies to collect and separate biowaste – cities like Brussels and Stockholm provide good examples. There is much space here for collaborations between communities and municipalities, to establish and kick-start bioenergy communities.



These needed changes can assist four key policy domains (Figure 3): the decarbonisation of the heating sector, creating a favourable regulatory environment, improving social perceptions, and the speeding up of local diffusion.

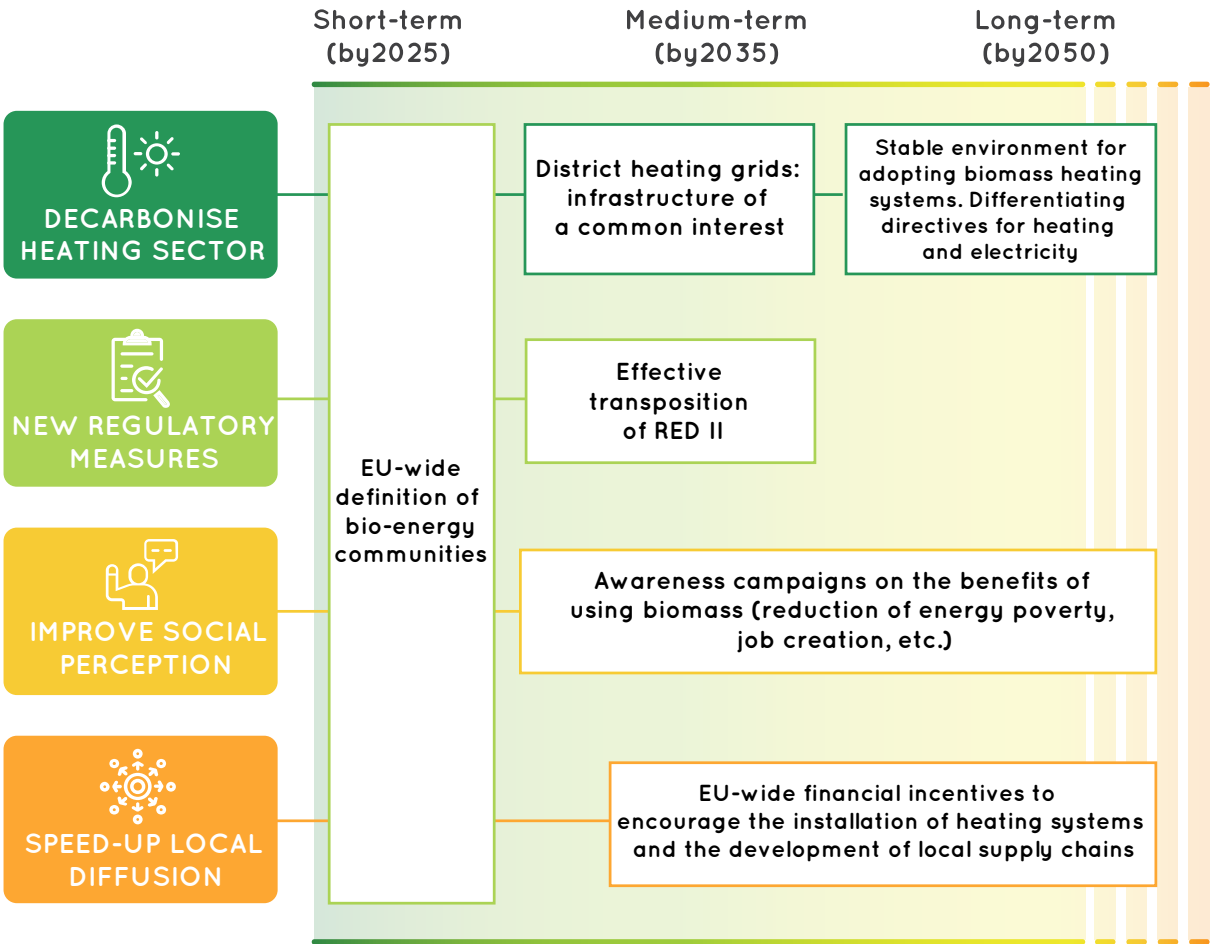


Figure 3 - A roadmap for EU bioenergy community development.



## Conclusions

This roadmap has provided policy solutions and pathways on how community bioenergy can help decarbonise the heating sector while identifying specific measures that can be used in this context. The roadmap has discussed the measures that are needed to improve the social perception of bioenergy communities in the EU, and how to speed up local diffusion.

Based on stakeholder consultations and policy documents, key priorities for action in the bioenergy sector include promoting bioenergy's role in reducing heating sector carbon emissions, integrating European legislation for collective heating consumption, mobilising government actors, particularly municipalities, for bioenergy projects through clear communication and knowledge sharing. The need for mapping local renewable energy potential has also been identified, with municipalities leading bioenergy projects. This needs to be underpinned by building trust and local support and promoting community-driven bioenergy initiatives. There is also a need to provide financial assistance, grants, tax breaks, and loans to overcome initial barriers, along with risk mitigation measures.

The transition to bioenergy communities, the need for proper legislation, and ramping up efforts to assist local initiatives are highlighted as viable solutions. This is accompanied by tailored frameworks to support the specific needs of bioenergy and heating sectors, as well as by financial risk mitigation and awareness campaigns to promote the growth of bioenergy communities across Europe. Other support mechanisms include the development of comprehensive bioenergy storage solutions to support heating electrification and grid services, as well as establishing stable regulatory frameworks with streamlined project approval processes. Implementing effective monitoring, evaluation, and knowledge sharing for sustainable bioenergy projects is also paramount. The need for a standardised definition of bioenergy communities across Europe has emerged as one of the most pressing priorities.

## BECoop, Task 5.3 – EU-level policy challenges and recommendations

IEECP, 19<sup>th</sup> May 2022

This document summarizes the outcomes of reviews and consultations focusing on EU-level policy and regulation in the bioenergy sector. The conclusions integrate the input of BECoop's consortium members based on an advisory survey to explore expert and practitioner views on a range of issues. These include the challenges in the current implementation of bioenergy policy at the EU level, opportunities in the future implementation of bioenergy policy, challenges that need to be taken into account in the development of National Renewable Action Plans or National Energy and Climate Plans, as well as challenges that need to be considered in the development of EU policy on low-carbon transitions more broadly, particularly the Fit for 55 package.

### 1. Findings from deliverables to date – policy framework

Existing work within BECoop highlights the importance of **REDII – the Recast of the Renewable Energy Directive** – for developing bioenergy and energy communities within the EU. RED II was approved by the European Parliament's plenary session in January 2018, and the main changes regarding bioenergy are mentioned in Annex IX: under a 14% transport sub-target, there is a dedicated target for advanced biofuels produced from feedstocks (a share of final consumption of at least 0.2% in 2022, at least 1% in 2025 and at least 3.5 % in 2030). The regulation also foresees that:

- By 2030, the EU should boost energy efficiency by 35%.
- Renewable energy sources should account for 35% of total consumption.

**REDII** is underpinned by the **2030 Climate and Energy Framework**, which builds on the **2020 Climate and Energy Package** and sets three key targets for the year 2030:

- At least 40% cuts in greenhouse gas emissions.
- At least 27% share for renewable energy.
- At least 27% improvement in energy efficiency.

**Also of importance in this context is the EU Biodiversity Strategy 2030**, whose main objective is to 'put Europe's biodiversity on a path to recovery by 2030'. It highlights the need to assess the biodiversity and climate risks of the EU and global biomass supply. At the same time, the **EU Bioeconomy Strategy** provides concrete measures to scale up the bio-based sectors while recognising and acknowledging the ecological boundaries of the bioeconomy. Other relevant frameworks include:

- **The EU Taxonomy for Sustainable Finance.**
- **Land Use, Land Use Change and Forestry Regulation (LULUCF)**, which accounts for carbon emissions from biomass harvesting in land use.
- **EU Forest Strategy for 2030**, emphasising the need for sustainable forest to support biodiversity goals alongside the development of the circular bioeconomy.
- **The Governance Regulation and National Climate and Energy Plans (NECP) under the Clean Energy Package.**

As a part of the European Green Deal, the European Commission raises the prospects of increased reliance on biomass sources for energy. Important considerations include:

- Recognition in the EU's bioeconomy strategy that the EU bioeconomy and use of biomass for energy needs to be sustainable and operate within ecological limits (IEEP, 2021).
- Shift towards growing woody biomass on cropland in a sustainable manner, including as a feedstock for advanced biogas and biofuels (Fleming and Mauger 2021).
- Just Transition Fund: aligning and minimising the structural changes' unfavourable effects is also crucially important.

## 2. Survey results

Regarding **recommendations for EU policymakers**, surveyed BeCoop partners emphasised that nuclear power and gas must not be classified as sustainable, and that 'National and EU legislation should be revised to remove obstacles for and/or promote the sustainable collection of agricultural and forestry residues'. It was also argued that the 'definition of waste materials varies between the Member States needs to be considered, especially given that 'conflicting and overlapping legislation (e.g., waste legislation vs. circular economy objectives and renewable energy legislation) may cause bottlenecks for valorising and/or using waste and residues. Due to increasing competition for biobased raw materials, research, and funding should be allocated for studying the possibilities for broadening the feedstock base for bioenergy and biofuels production (e.g., including biomass from marginal, underutilised, contaminated lands) and for innovative collection methods. Here, it was highlighted that 'there are no performance standards or emission limits for biomass boilers with capacities ranging from 500 kW to 1 MW'.

Moreover, BeCoop partners argued for a greater focus on 'using woody biomass instead of gas in mountain areas'. They emphasised the need for prioritising the 'local/regional energy (heat and/or electricity) generation' and 'the obligatory support of energy grid owner in electric energy transfer' as well as 'supporting directives in biomass utilisation in rural areas for heating purposes.

In a broader sense, partners argued in favour of increasing 'awareness around the concept of energy communities' as well as 'eliminating misconceptions around the environmental impact of biomass'. The need for reducing 'the risk of investment and lack of financial mechanisms' and a 'unified European regulation for resources' were also underlined. Partners also highlighted the need for 'ensuring stability in the legal framework'.

There were also proposals around the issuance of a 'general policy briefing, regarding bioenergy communities, targeted at EU level actors but also aiming for subsequent regional and local level actors' underpinned by the 'need for concrete and targeted policy making across the EU in order not to be so dependent and have more influence at national scale'. Moreover, 'the promotion of bioenergy communities at the regional level can also be aided by joint working with Bioenergy Europe & RESCoop.eu, while briefing and informing policy makers to create stable frameworks'. Of central importance is the provision of 'relevant information and data about differences in terms of environmental impact (forest sustainability and carbon sequestration) between high scale bioenergy CCHP plants and local scale bioenergy valorisation projects in energy communities'.

At the **national level**, most recommendations centred on the need for developing better regulations, more effective policy, and support frameworks, reducing bureaucracy, and increasing governmental funding, including:

- Developing legislation that permits the forest residues' collection and treatment.
- The development of a national biomass strategy and the updating of NECP and other relevant strategies and roadmaps.
- Banning open-fire burning of agricultural residues.
- Better enforcement of emission controls. Improving legal frameworks in terms of creating a separation between energy communities and private investors.
- Tailoring investment support to specific efficiency and emission performance standards.
- Financial support should continue, but only appliances reaching specific performance standards (e.g., ECODesign or equivalent) should be eligible for support.
- Intensification of dissemination & promotion of best practices, information and awareness-raising campaigns on the promotion of the benefits of biomass heating and existing best practices should be intensified.
- Promotion of renewable heat and a recognition of the energy role of mountain areas in ensuring energy autonomy.
- Amending national regulations with regard to the conditions for establishing energy cooperatives in rural areas and their rights to energy trading.
- No decisive action is taken to eliminate the use of coal for heating purposes.
- Ensuring legal and political stability for biomass and energy community development.
- Monitoring of the environmental impacts of newly implemented bioenergy communities beyond the lab tests based on the eco-design directive and using data from previously successful cases.
- Legislate the phasing out of fossil-based residential heating solutions: coal and heating oil in the short term and natural gas in the medium term.

It should be noted that these recommendations did not equally apply to all the BECoop study cases.

**Regional policy-maker recommendations** included:

- Development of local and regional action plans, to support the growth of the biomass heating sector. These could include parameters such as the structure of the agricultural sector, types and volumes of biomass that can be mobilised, climate, population density, volume of industry activity etc. Along with local / regional action plans, developing local / regional best practices of biomass utilisation for heating. Such cases can serve as examples for replication. Greater support and participation of local authorities in the use of biomass for heating purposes and the creation of energy cooperatives. Intensive awareness raising of residents in the field of pollutant emissions and the benefits of establishing energy cooperatives is necessary. Support training on how to develop an energy community.
- Support training to create a new generation of technicians on renewable energies.

- Disseminating good examples (case studies) and best practices. Supporting the creation of infrastructure/logistics related to bioenergy production. Defining the conditions in which local bioenergy resources can be sustainably used for residential heating by local communities. Highlighting the positive economic and social impact that bioenergy communities can bring to the region. Providing support to local stakeholders for implementing BEC-based solutions.

The survey identified the following **policy challenges** at the EU level to date:

- Short-term bioenergy project development - uncertainty regarding the bioenergy regulatory framework.
- Energy market integration and legal status of energy community formation by citizens.
- Policy incompatibilities among EU, national and regional levels regarding bioenergy.
- Lack of implementation of the RED II directive.
- Financial viability and the lack of public funding.
- Scaling up from the local level.
- Misconceptions and lobbying.
- Lack of precedents for successful district heat models.
- Lack of integration with smart grid and other low-carbon investments.
- Insufficient number of financial instruments for corrective measures in the housing sector, and allocating funds for corrective measures specified in air protection programmes.
- Emphasising the importance of the issue of air quality improvement by consolidating activities at the national level and establishing partnerships for the improvement of air quality.
- Involving society in activities to improve air quality by increasing public awareness and creating permanent platforms for dialogue with social organisations.
- The need for an appropriate diagnosis of the situation to determine appropriate corrective actions.
- Negative perceptions of energy cooperatives, especially by older residents, particularly in post-communist countries.
- The elimination of fossil fuels (coal, natural gas, heating oil) from heating systems in households and other facilities.
- Introducing environmental fees for the use of fossil fuels in low-power heating systems.
- Harmonising regulations in the EU regarding the principles of establishing and running energy cooperatives (too much leeway in the interpretation of provisions by EU members).
- Lack of adequate public financial schemes to encourage the implementation of bioenergy projects.
- Lack of support for local governments by national and European funds, and a lack of available resources.
- Changes in the traditional method of running municipalities: to implement new ways of generating, using, and managing energy through cooperation at the local level.

The survey also identified several opportunities for **future implementation of bioenergy policy at the EU level**. These included the rapidly changing policy framework and market conditions regarding bioenergy and biomass exploitation, the encouragement of heat production within collective self-consumption systems and renewable energy communities, the decommissioning of fossil fuels, and the introduction of sufficient financial instruments to support bioenergy. Many of the recommendations centred on the opportunities to reduce energy poverty and involve citizens in decision-making and dissemination processes. The simplification of administrative and bureaucratic procedures was also mentioned, as well as the achievement of sustainable and clear business models for all actors in the value chain.

Regarding **emergent low-carbon policies**, the survey responses pointed to the need to address ‘rapidly changing policy frameworks and market conditions’. In that sense, it was pointed out the compliance with the requirements of complex regulations (e.g., RED) may create a large administrative burden for small-scale operators (such as the majority of RESCOOPS that operate small-scale biomass units)’ as ‘in the proposal for REDIII, it is foreseen to lower the exemption threshold for the application of sustainability criteria in the case of solid biomass fuels to 5 MW of thermal input’. In comparison, the exemption threshold in REDII was set to 20 MW of thermal input. Such requirements for small-scale operators may burden the realisation of bioenergy projects.

Other policy proposals included:

- Sourcing of unexploited feedstocks to secure raw material availability.
- Harmonising the definition of waste materials between Member States. However, conflicting and overlapping legislation (e.g., waste legislation vs. circular economy objectives and renewable energy legislation) may cause bottlenecks for valorising and/or using waste and residues.
- The promotion of rural biomass district heating systems.
- Sustainable forest management to prioritize balanced natural resource use.
- The streamlining of energy and agricultural strategy and regulations regarding energy crops.
- The elimination of continued subsidies for fossil fuels and the inclusion of related externalities to eliminate low prices for fossil-based energy.
- The simplification and shortening of approval procedures.
- At the national and regional level, promoting a legal framework that is favourable to energy communities, shared renewable-energy distributed systems and the transposition of European directives.
- Allocating a fixed amount in local budgets for decarbonisation activities, beyond the four-year legislative cycle.

It was also emphasised that an additional step towards the elimination of fossil fuels and increasing the rate of return on investment in renewable energy could be the introduction of CO<sub>2</sub>-related indicators (or dust and other pollutants) by heating systems in households.

### 3. Conclusion

The policy proposals and challenges identified in this phase of Task 5.3 will be further elaborated via the analysis of national policy documents – particularly NECPs. Still, a few general trends emerged from the analysis even at this stage (see also word cloud in Figure 1):

- Specific revision pathways for EU legislation were suggested – particularly around the need to define and support energy communities across the EU, and completely move away from fossil fuels. The need for policy stability and standardisation came up frequently in the survey.
- Responses indicated the need for a greater role of local and regional authorities in promoting biomass and improved financing and regulatory frameworks at this level.
- In that sense, the need for developing strategic frameworks to support bioenergy and communities at the national and regional levels was also highlighted.
- Knowledge transfer was a key element of the recommendations. There is a significant need for awareness and participation around bioenergy and communities across Europe – including the recognition and promotion of best practices – but also at other levels of governance.
- A more transparent and more streamlined approach around biomass's technical and environmental implications is needed, particularly in terms of feedstocks, ecological impacts, and forest management.



