



TEXTS ADOPTED

P9_TA(2022)0317

Renewable Energy Directive *I**

Amendments adopted by the European Parliament on 14 September 2022 on the proposal for a directive of the European Parliament and of the Council amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652 (COM(2021)0557 – C9-0329/2021 – 2021/0218(COD))¹

(Ordinary legislative procedure: first reading)

[Amendment 1, unless otherwise indicated]

AMENDMENTS BY THE EUROPEAN PARLIAMENT*

to the Commission proposal

2021/0218 (COD)

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Directive (EU) 2018/2001 of the European Parliament and of the Council, Regulation (EU) 2018/1999 of the European Parliament and of the Council and Directive 98/70/EC of the European Parliament and of the Council as regards the

¹ The matter was referred back for interinstitutional negotiations to the committee responsible, pursuant to Rule 59(4), fourth subparagraph (A9-0208/2022).

* Amendments: new or amended text is highlighted in bold italics; deletions are indicated by the symbol **■**.

**promotion of energy from renewable sources, and repealing Council Directive (EU)
2015/652**

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 114 and 194(2) thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee¹,

Having regard to the opinion of the Committee of the Regions²,

Acting in accordance with the ordinary legislative procedure,

Whereas:

- (1) The European Green Deal³ establishes the objective of the Union becoming climate neutral in 2050 in a manner that contributes to the European economy, growth and job creation. That objective, and the objective of a **reduction of at least 55% greenhouse gas emissions by 2030 as set out in *Regulation (EU) 2021/119 (the European Climate Law)***, requires an energy transition and significantly higher shares of renewable energy sources in an integrated energy system.
 - (1a) *The energy transition affects Member States, regions, economic sectors and citizens differently and depending on their particular situation. It is therefore essential to ensure that the Green Deal is implemented in a way that promotes economic, social and territorial cohesion in the Union and that the energy transition is just and inclusive. In particular, it must be ensured that disruptions are avoided in critical sectors that meet basic needs of the economy and society, such as mobility.*
 - (1b) *Energy is an essential production factor that is in constant demand and vitally important in economic, social and environmental terms. All human activities, including transport, depend on sufficient and affordable energy being available when needed.*
 - (1c) *The General Union Environment Action Programme to 2030 (8th EAP) sets out thematic priority objectives for 2030 in the areas of climate change mitigation, adaptation to climate change, protecting and restoring biodiversity, a non-toxic circular economy, a zero pollution environment and minimising environmental pressures from production and consumption across all sectors of the economy and recognises that these objectives, which address both drivers and impacts of environmental damage, are inherently interlinked. The 8th EAP also has a long-term priority objective that by 2050 at the latest, people live well, within the planetary boundaries in a well-being economy where nothing is wasted, growth is regenerative, climate neutrality in the Union has been achieved and inequalities have been significantly reduced. A healthy environment underpins the well-being of all people and is an*

¹ OJ C , , p. .

² OJ C , , p. .

³ Communication from the Commission COM(2019) 640 final of 11.12.2019, The European Green Deal.

environment in which biodiversity is conserved, ecosystems thrive, and nature is protected and restored, leading to increased resilience to climate change, weather and climate-related disasters and other environmental risks.

- (1d) The General Union Environment Action Programme to 2030 ('8th EAP'), the framework for Union action in the field of the environment and climate, aims to accelerate the green transition to a climate-neutral, sustainable, non-toxic, resource-efficient, renewable energy-based, resilient and competitive circular economy in a just, equitable and inclusive way, and to protect, restore and improve the state of the environment by, inter alia, halting and reversing biodiversity loss. It supports and strengthens an integrated policy and implementation approach, building upon the European Green Deal. The 8th EAP recognises that achieving this transition will require systemic change which, according to the EEA, entails a fundamental, transformative and cross-cutting change that implies major shifts and reorientation in system goals, incentives, technologies, social practices and norms, as well as in knowledge systems and governance approaches.*
- (1e) Ensuring that legislative initiatives, programmes, investments, projects and their implementation are consistent with, contribute where relevant, and do no harm to any of the 8th EAP objectives is necessary for the objectives' achievement. Furthermore, ensuring that social inequalities resulting from climate- and environmental-related impacts and policies are minimised and that measures taken to protect the environment and climate are carried out in a socially fair and inclusive way, as well as gender mainstreaming throughout climate and environmental policies, including by incorporating a gender perspective at all stages of the policy-making process, will be required to meet the objectives of the 8th EAP and, as such, are also laid down as enabling conditions in the 8th EAP.*
- (1f) The 2030 climate mitigation objective of the 8th EAP is swift and predictable reduction of greenhouse gas emissions and, at the same time, enhancement of removals by natural sinks in the Union to attain the 2030 greenhouse gas emission reduction target as laid down in Regulation (EU) 2021/1119, in line with the Union's climate and environment objectives, whilst ensuring a just transition that leaves no one behind. To help achieve its objectives, the 8th EAP also lays down the enabling condition of phasing out of environmentally harmful subsidies, including through setting a deadline for the phasing out of fossil fuel subsidies consistent with the ambition of limiting global warming to 1,5°C as well as a binding Union framework to monitor and report on Member States' progress towards phasing out fossil fuel subsidies, based on an agreed methodology.*
- (1g) This Directive aims to ensure that, as part of the EU's energy policy, investments in renewable energy production are encouraged while upholding the energy sovereignty of each Member State.*
- (1h) The renewable energy directive is part of the 'Fit for 55 package', which will also have multiple effects on the Union, including on competitiveness, job creation, household purchasing power, the achievement of climate targets and on the magnitude of carbon leakage. As such, a comprehensive evaluation of the aggregated macroeconomic impact of the Regulations that make up the 'Fit for 55 package' should be carried out on a regular basis.*

- (2) Renewable energy plays a fundamental role in delivering the European Green Deal and for achieving climate neutrality by 2050, given that the energy sector contributes over 75% of total greenhouse gas emissions in the Union. By reducing those greenhouse gas emissions, renewable energy also contributes to tackling environmental-related challenges such as biodiversity loss, *land, water and air pollution, as long as the use of the renewable energy sources themselves does not exacerbate those challenges. The low operating costs of renewable energy and the reduced exposure to price shocks compared to fossil fuels gives renewable energy a key role in tackling energy poverty.*
- (2a) *With ever more countries committing to climate-neutrality by mid-century, both domestic and global demand for renewable technologies are projected to rise and offer significant opportunities for job creation, the expansion of a European renewables industrial base and continued European leadership in research and development of innovative renewable technologies, which in turn enhance the competitive advantage of European companies and the EU's energy independence from fossil fuel imports.*
- (2b) *The share of gross final energy consumption from renewable sources in EU reached 22 % in 2020¹, 2 percentage points (pp) above the target for the share of renewable energy in gross final energy consumption for 2020, as set out in Directive 2009/28/EC on the promotion of the use of energy from renewable sources.*
- (2c) *Renewable energy is a key enabler of sustainable development, contributing directly and indirectly to many Sustainable Development Goals (SDGs), including poverty alleviation, education, water and sanitation. Renewables also bring broad socio-economic benefits, creating new jobs and fostering local industries.*
- (2d) *At international level, at the 2021 United Nations Climate Change Conference (COP 26) the Commission, together with global partners, committed to end direct support for the international unabated fossil fuel energy and to use these funds for the deployment of renewable energy.*
- (2e) *At COP26, the Commission together with global leaders elevated the global ambition level for the preservation and recovery of global forests, and for an accelerated transition to zero emissions transportation.*
- (2f) *Renewable energy production often takes place at local level and depends on regional SMEs; Member States should therefore fully involve local and regional authorities when setting targets and supporting policy measures.*
- (2g) *Since around 35 million Europeans are affected by energy poverty², renewable energy policies have an important role to play in any strategy to tackle energy poverty and consumer vulnerability.*
- (3) Directive (EU) 2018/2001 of the European Parliament and of the Council³ sets a binding Union target to reach a share of at least 32 % of energy from renewable

¹ <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220119-1>

² *Commission Recommendation (EU) 2020/1563 of 14 October 2020 on energy poverty.*

³ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources, OJ L 328, 21.12.2018, p. 82–209

sources in the Union's gross final consumption of energy by 2030. Under the Climate Target Plan, the share of renewable energy in gross final energy consumption would need to increase to 45 % by 2030 in order to achieve the Union's greenhouse gas emissions reduction target¹. Therefore, the target set out in Article 3 of that Directive needs to be increased.

- (3a) In line with the Commission recommendation of 28 September 2021 entitled "On Energy Efficiency First: from principles to practice. Guidelines and examples for its implementation in decision-making in the energy sector and beyond", this Directive should take an integrated approach by promoting the most energy efficient renewable source for any given sector and application, as well as by promoting system efficiency, so that the least energy is required for different economic activities.***
- (3b) In line with the Commission Communication of 18 May 2022 entitled "REPowerEU Plan", boosting the production of sustainable biomethane to at least 35 bcm by 2030 is a cost-efficient path to increase the share of renewable energy and diversify EU gas supply, thereby supporting security of supply and EU climate ambitions. The Commission should develop an EU strategy to address the regulatory barriers to scale biomethane production and integration in the EU internal gas market.***
- (3c) To support the cost-effective achievement of the renewable energy target and the electrification of end-use sectors, while empowering households and industries to play an active part in securing and decarbonising the EU energy system and rewarding them for that, Member States should ensure that the national regulatory framework enables the reduction of peak electricity demand through the activation of demand-side flexibility in all end-use sectors. To that end, Member States could introduce in their integrated energy and climate plans a minimum target for the reduction of peak electricity demand of at least 5 % by 2030, to increase system flexibility, in accordance with Article 4(d)(3) of Regulation (EU) 2018/1999.***
- (3d) One of the five cohesion policy objectives for the period 2021-2027 is that of a greener Europe by promoting investment in clean energy, the circular economy, climate change mitigation and sustainable transport. Cohesion policy funds should therefore target preventing any increase in disparities, helping those regions bearing the heaviest transition burden, encouraging investment in infrastructure, and training workers in new technologies to ensure no one is left behind.***
- (3e) The ERDF will have to support promoting energy efficiency and a reduction in greenhouse gas emissions; promote renewable energy; the development of smart energy systems and networks, and promote sustainable, multimodal, urban mobility, in the context of the transition towards a net zero carbon economy; the ESF+ has to contribute to improvements in education and training systems necessary for the adaptation of skills and qualifications, the upskilling of all, including the labour force, the creation of new jobs in***

¹ Point 3 of the Communication from the Commission COM(2020) 562 final of 17.9.2020, Stepping up Europe's 2030 climate ambition Investing in a climate-neutral future for the benefit of our people

sectors related to the environment, climate, energy, the circular economy and the bioeconomy (Article 4 of the ESF+ Regulation).

- (3f) Renewable energy production has a strong local dimension. It is therefore important that the Member States fully involve local and regional authorities in the planning and implementation of national climate measures, provide direct access to funds and monitor the progress of the measures adopted. Where applicable, the Member States should incorporate local and regional contributions into national energy and climate plans.*
- (3g) Recognises the important role cohesion policy plays in contributing to helping island regions achieve climate neutrality goals, bearing in mind the additional costs connected to sectors such as energy and transport, as well as the impact of mobile technology on their energy systems, which require a level of investment for management of intermittent renewable energy sources that is, proportionately speaking, very high.*
- (3h) Points out that owing to their small size and isolated energy systems, the most remote island regions, just like the outermost regions, face a major challenge when it comes to energy supply as they generally rely on fossil fuel imports for electricity generation, transport and heating.*
- (3i) Considers that use of renewable energy, including tidal power, should be a priority and believes it could benefit islands substantially, bearing in mind the local communities' requirements, including preservation of the islands' traditional architecture and local habitat; calls, therefore, for support for the development of a wide range of renewable energy sources based on their geographical features; welcomes the green hydrogen programmes which islands have launched.*
- (4) There is a growing recognition of the need for alignment of bioenergy policies with the cascading principle of biomass use¹, with a view to ensuring fair access to the biomass raw material market for the development of innovative, high value-added bio-based solutions and a sustainable circular bioeconomy. When developing support schemes for bioenergy, Member States should therefore take into consideration the available sustainable supply of biomass for energy and non-energy uses and the maintenance of the national forest carbon sinks and ecosystems, ***the protection of biodiversity*** as well as the principles of the circular economy and the biomass cascading use, and the waste hierarchy established in Directive 2008/98/EC of the European Parliament and of the Council². ***However, they should be able to grant support for the production of energy from stumps or roots in the case of waste or residues derived from the implementation of works carried out with the primary objective of nature conservation and landscape management, such as from roadsides. In any event, Member States should*** avoid promoting the use of quality roundwood for energy except in well-

¹ The cascading principle aims to achieve resource efficiency of biomass use through prioritising biomass material use to energy use wherever possible, increasing thus the amount of biomass available within the system. In line with the cascading principle, woody biomass should be used according to its highest economic and environmental added value in the following order of priorities: 1) wood-based products, 2) extending their service life, 3) re-use, 4) recycling, 5) bio-energy and 6) disposal.

² Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives ([OJ L 312, 22.11.2008, p. 3](#)).

defined circumstances, *for example wildfire prevention and salvage logging*. In line with the cascading principle, woody biomass should be used according to its highest economic and environmental added value in the following order of priorities: 1) wood-based products, 2) extending their service life, 3) re-use, 4) recycling, 5) bio-energy and 6) disposal. Where no other use for woody biomass is economically viable or environmentally appropriate, energy recovery helps to reduce energy generation from non-renewable sources. Member States' support schemes for bioenergy should therefore be directed to such feedstocks for which little market competition exists with the material sectors, and whose sourcing is considered positive for both climate and biodiversity, in order to avoid negative incentives for unsustainable bioenergy pathways, as identified in the JRC report 'The use of woody biomass for energy production in the EU'¹³¹. On the other hand, in defining the further implications of the cascading principle, it is necessary to recognise the national specificities, which guide Member States in the design of their support schemes. Waste prevention, reuse and recycling of waste should be the priority option. Member States should avoid creating support schemes which would be counter to targets on treatment of waste and which would lead to the inefficient use of recyclable waste. Moreover, in order to ensure a more efficient use of bioenergy, from 2026 on Member States should not give support anymore to electricity-only plants, unless the installations are in regions with a specific use status as regards their transition away from fossil fuels, if *they* use carbon capture and storage *or if the installations cannot be modified in a direction to cogeneration in exceptional justified cases upon approval by the Commission*.

- (5) The rapid growth and increasing cost-competitiveness of renewable electricity production can be used to satisfy a growing share of energy demand, for instance using heat pumps for space heating or low-temperature industrial processes, electric vehicles for transport, or electric furnaces in certain industries. Renewable electricity can also be used to produce synthetic fuels for consumption in hard-to-decarbonise transport sectors such as aviation and maritime transport. *Innovative technologies in connections with a dedicated target should be developed, as they could contribute towards the 2030 climate goals as well as the 2050 climate targets*. A framework for electrification needs to enable robust and efficient coordination and expand market mechanisms to match both supply and demand in space and time, stimulate investments in flexibility, *energy storage, demand response and other flexibility mechanisms* and help integrate large shares of variable renewable generation. Member States should therefore, *in accordance with the energy efficiency first principle*, ensure that the deployment of renewable electricity continues to increase at an adequate pace to meet growing demand, *including by coordinating import strategies at Union level, while also ensuring that demand flexibly adapts to renewable energy generation*. For this, Member States should establish a framework that includes market-compatible mechanisms to tackle remaining barriers to have secure and adequate electricity systems fit for a high level of *flexible* renewable energy, as well as storage facilities, fully integrated into the electricity system. In particular, this framework shall tackle remaining barriers,

¹ <https://publications.jrc.ec.europa.eu/repository/handle/JRC122719>

including non-financial ones such as insufficient digital and human resources of authorities to process a growing number of permitting applications.

- (5a) *Innovative technologies, such as hybrid heat pumps, need to be developed and used within the criteria of Directive (EU) 2018/2001, as they can be used as a transition technology towards the 2030 climate goals as well as contributing to the achievement of the 2050 climate targets.***
- (5b) *The future EU's economic governance framework should encourage Member States to implement the reforms necessary to accelerate the green transition, and enable investments in needed technologies.***
- (6) When calculating the share of renewables in a Member State, renewable fuels of non-biological origin should be counted in the sector where they are consumed (electricity, heating and cooling, or transport). *Where renewable fuels of non-biological origin are consumed in a Member State different from the one where they have been produced, energy generated by the use of renewable fuels of non-biological origin should be accounted for 80 % of their volume in the country and sector where it is consumed and for 20 % of their volume in the country where it produced, unless agreed otherwise between the Member States concerned. Agreements between Member States can be in the form of a specific cooperation agreement made via the Union Renewable Development Platform (URDP). The Commission should be notified of any such agreements and make available information on them, including the exact volumes of supply and demand, the times of the transfer and the date by which the arrangement will become operational. For the subtargets, the renewable fuels of non-biological origin shall be accounted for 100 % of their volume in the country where they are consumed.* To avoid double-counting, the renewable electricity used to produce these fuels should not be counted. This would result in a harmonisation of the accounting rules for these fuels throughout the Directive, regardless of whether they are counted for the overall renewable energy target or for any sub-target. It would also allow to count the real energy consumed, taking account of energy losses in the process to produce those fuels. Moreover, it would allow for the accounting of renewable fuels of non-biological origin imported into and consumed in the Union.**
- (6a) *Since the charging current is sustainable only if it is produced from clean energy, life cycle analyses of electrified heat, transport and industrial products should always take into account the remaining fossil shares of the preceding electricity generation.***
- (7) Member States' cooperation to promote renewable energy can take the form of statistical transfers, support schemes or joint projects. It allows for a cost-efficient deployment of renewable energy across Europe and contributes to market integration. Despite its potential, cooperation has been very limited, thus leading to suboptimal results in terms of efficiency in increasing renewable energy. Member States should therefore be obliged to test cooperation through implementing ■ *pilot projects by December 2025 and by 2030 a third project, for Member States with an annual electricity consumption of more than 100 TWh.* Projects financed by national contributions under the Union renewable energy financing mechanism established by Commission Implementing**

Regulation (EU) 2020/1294¹ would meet this obligation for the Member States involved.

- (7a) All fields of EU policies must orient its actions towards the newly established climate targets and achieve climate neutrality. This is the case for Cohesion Policy, which has, for over twenty years, contributed to decarbonising the economy, while providing examples and best practices that can be mirrored in other policy dimensions, such as the amending of this Directive. Cohesion policy not only offers investment opportunities to respond to local and regional needs through the European Structural and Investment (ESI) Funds, but also provides an integrated policy framework to reduce developmental disparities between the European regions and helps them address the multiple challenges to their development, including through environmental protection, high-quality employment and fair, inclusive and sustainable development.*
- (7b) Local and regional authorities play a crucial role in integrated and decentralised energy systems. The Commission should therefore help regional and local authorities to work across borders by helping them to set up cooperation mechanisms, including the European grouping of territorial cooperation (EGTC).*
- (7c) Cohesion policy ensures greater coherence and coordination between the cohesion policy and other EU legislative fields, improving the policy integration of climate aspects, designing more effective source-based policies, providing targeted EU funding and, consequently, improving the implementation of climate policies on the ground.*
- (7d) It is paramount to fully uphold multi-level governance and partnership principles in the transition to a climate-neutral economy, as local and regional authorities have direct competencies on the environment and climate change, implementing 90% of climate adaptation and 70% of climate mitigation actions. Furthermore, these authorities also develop actions that aim to promote climate-friendly behaviour among citizens, including those linked to waste management, smart mobility, sustainable housing and energy consumption.*
- (8) The Offshore Renewable Energy Strategy introduces an ambitious objective of 300 GW of offshore wind and 40 GW of ocean energy across all the Union's sea basins by 2050. To ensure this step change, Member States will need to work together across borders at sea-basin level. Member States should therefore jointly define, ***and allocate adequate space in their maritime spatial plan for***, the amount of offshore renewable generation to be deployed within each sea basin by 2050, with intermediate steps in 2030 and 2040. ***Should there be a possible gap between the potential amount of offshore renewable energy resources of the Member States and the planned amount of offshore renewable energy, the Commission should take additional measures to reduce that gap.*** These objectives should be reflected in the updated national energy and climate plans that will be submitted in 2023 and 2024 pursuant to Regulation (EU) 2018/1999. In defining the amount, Member States should take into account the

¹ Commission Implementing Regulation (EU) 2020/1294 of 15 September 2020 on the Union renewable energy financing mechanism (OJ L 303, 17.9.2020, p. 1).

offshore renewable energy potential of each sea basin, *the technical and economic feasibility of the transmission grid infrastructure*, environmental protection, *biodiversity*, climate adaptation and other uses of the sea, *especially the activities that already take place in the affected areas and the possible harm to the environment*, as well as the Union's decarbonisation targets. In addition, Member States should increasingly consider the possibility of combining offshore renewable energy generation with transmission lines interconnecting several Member States, in the form of hybrid projects or, at a later stage, a more meshed grid. This would allow electricity to flow in different directions, thus maximising socio-economic welfare, optimising infrastructure expenditure and enabling a more sustainable usage of the sea. *Member States bordering a sea basin should use the maritime spatial planning process to ensure a strong public participation approach so that the views of all stakeholders and coastal communities are taken into account.*

- (8a) The conditions considered necessary for harnessing the potential of renewable energy in European seas and oceans, including those around the islands and outermost regions are varying. Therefore, the Union undertakes to establish alternative technologies capable of not impacting the marine environment adversely for these areas of particular interest.*
- (8b) The geographical diversity and alternative uses of the marine environment have to be taken into account in order for the renewable energy potential of all Europe's seas and oceans to be harnessed, and this calls for a far broader set of technological solutions. These solutions include floating offshore wind and solar farms, energy from waves, currents and tides, the differential in thermal or saline gradients, marine cooling, heating and geothermal energy and marine biomass (algae).*
- (8c) The installation of renewable energy projects on rural land and on agricultural land in general should be governed by the principles of proportionality, complementarity and compensation. Member States should ensure the orderly deployment of renewable projects in order to avoid the loss of agricultural land, and encourage the development and use of appropriate technologies that render renewable energy production compatible with agricultural and livestock production.*
- (9) The market for renewable power purchase agreements is rapidly growing and provides a complementary route to the market of renewable power generation in addition to support schemes by Member States or to selling directly on the wholesale electricity market. At the same time, *these agreements provide the producer with the security of a certain income, whilst the user can benefit from a stable electricity price.* The market for renewable power purchase agreements is still limited to a small number of Member States and large companies, with significant administrative, technical and financial barriers remaining in large parts of the Union's market. *Besides renewable power purchase agreements, the Commission shall assess barriers to the roll-out of renewable heating and cooling purchase agreements, which will play an increasing role in reaching the EU's climate and renewables targets.* The existing measures in Article 15 to encourage the uptake of renewable power purchase agreements should therefore be strengthened further, by exploring the use of credit guarantees to reduce these agreements' financial risks, taking into account that these guarantees, where public, should not crowd out private financing.

- (10) Overly complex and excessively long administrative procedures constitute a major barrier for the deployment of renewable energy. ***Further streamlining of administrative and permitting procedures is needed to ease the administrative burden for both renewable energy projects and the related grid infrastructure projects. Within one year after the entry into force of this Directive, the Commission should revise guidelines on permit granting to shorten and simplify processes for new, repowering and the upgrade of renewable projects. Key performance indicators should be developed in the context of these guidelines.***
- (10a) ***Local and regional authorities are key actors when it comes to bringing Europe closer to achieving its energy and climate objectives. Energy production at the local level is crucial to foster renewable energy production, reduce external energy dependence and decrease energy poverty rates.***
- (11) Buildings have a large untapped potential to contribute effectively to the reduction in greenhouse gas emissions in the Union. The decarbonisation of heating and cooling in this sector through an increased share in production and use of renewable energy, ***particularly in the local context***, will be needed to meet the ambition set in the ***European Climate Law*** to achieve the Union objective of climate neutrality. However, progress on the use of renewables for heating and cooling has been stagnant in the last decade, largely relying on increased use of biomass. Without the establishment of ***indicative*** targets to increase the production and use of renewable energy in buildings, there will be no ability to track progress and identify bottlenecks in the uptake of renewables. ***It should be possible for Member States to count waste heat and cold towards the indicative target for renewable energy in buildings, up to a limit of 20 %, with an upper limit of 54 %.*** Furthermore, the creation of targets will provide a long-term signal to investors, including for the period immediately after 2030. This will complement obligations related to energy efficiency and the energy performance of buildings ***and comply with the energy efficiency first principle.*** Therefore, indicative targets for the use of renewable energy in buildings should be set to guide and incentivise Member States' efforts to exploit the potential of using and producing renewable energy ***on-site or nearby*** in buildings ***and encourage the development of ■ technologies which produce renewable energy and help their efficient integration in the energy system***, while providing certainty for investors and local level engagement, ***as well as contributing to system efficiency. Emission trading schemes are designed to increase fossil energy costs and lead to market-driven energy saving investments or switching to renewable energy. Double burdens for consumers through emissions trading schemes and other targets required under Union law should be avoided.***
- (11a) ***Following the invasion of Ukraine by Russia, the case for a rapid energy transition has never been stronger and clearer. Russia provides more than 40% of the EU's total gas consumption, which is mostly used in the building sector, which is responsible for 40% of the EU's total energy consumption. By accelerating the roll out of solar rooftops and heat pumps the EU could save significant amounts of fossil fuel imports. Frontloading such investments will further accelerate the reduction of EU dependence from external suppliers. According to REPowerEU, for 2022 alone an additional 2,5 bcm of gas could be saved by installing up to 15 TWh of rooftop solar PV systems, and an***

additional 12bcm by every 10 million heat pumps installed. At the same time this would be a major booster to local job markets, alone such an installation wave for solar roof tops could create up to 225.000 local jobs in the installation business¹.

- (12) Insufficient numbers of skilled workers, in particular installers and designers of renewable heating and cooling systems, slow down the replacement of fossil fuel heating systems by renewable energy based systems and is a major barrier to integrating renewables in buildings, industry and agriculture. Member States should cooperate with social partners and renewable energy communities to anticipate the skills that will be needed. A sufficient number of high-quality ***and effective upskilling and reskilling strategies and*** training programmes and certification possibilities ensuring proper installation and reliable operation of a wide range of renewable heating and cooling systems ***and storage technologies, as well as electric vehicles charging points,*** should be made available and designed in a way to attract participation in such training programmes and certification systems. Member States should consider what actions should be taken to attract groups currently under-represented in the occupational areas in question. The list of trained and certified installers should be made public to ensure consumer trust and easy access to tailored designer and installer skills guaranteeing proper installation and operation of renewable heating and cooling.

(12a) Agricultural and horticultural businesses have space and roof area and they produce biomass. These are assets that allow them to play a key role in the energy transition of rural areas and within rural communities, especially given the decentralised production. The sector is a relatively small user of energy and can produce significantly more renewable energy than it needs. This is why the roll-out of energy sharing and energy communities should be further encouraged and supported.

- (13) Guarantees of origin are a key tool for consumer information as well as for the further uptake of renewable power purchase agreements. In order to establish a coherent Union base for the use of guarantees of origin and to provide access to appropriate supporting evidence for persons concluding renewable power purchase agreements, all renewable energy producers should be able to receive a guarantee of origin without prejudice to Member States' obligation to take into account the market value of the guarantees of origin if the energy producers receive financial support. ***The system of guarantees of origin provided for by Member States should be a harmonised system applicable throughout the Union. A more flexible energy system and growing consumer demands call for a more innovative, digital, technologically advanced and reliable tool to support and document the increasing production of renewable energy. In particular, innovative technologies can ensure a higher spatial and temporal granularity of guarantees of origin. To facilitate digital innovation in this field, Member States should introduce additional size granularity in their schemes for guarantees of origin.***

(13a) In line with the Joint European Action for more affordable, secure and sustainable energy set out in the Commission communication of 8 March 2022, where relevant, Member States should assess the need to extend existing

¹ ***European Commission, Joint Research Centre (2020), Arnulf Jäger-Waldau: "The Untapped Area Potential for Photovoltaic Power in the European Union".***

gas network infrastructure to facilitate the integration of gas from renewable sources and to reduce reliance on fossil fuels, in particular if that infrastructure contributes significantly to the interconnection between at least two Member States or between a Member State and a third country.

- (14) Infrastructure development for district heating and cooling networks should be stepped up and steered towards harnessing a wider range of renewable heat and cold sources in an efficient and flexible way in order to increase the deployment of renewable energy and deepen energy system integration. It is therefore appropriate to update the list of renewable energy sources that district heating and cooling networks should increasingly accommodate and require the integration of thermal energy storage as a source of flexibility, greater energy efficiency and more cost-effective operation.

(14a) Member States' actions to integrate intermittent renewable electricity in the grid, while ensuring grid stability and security of supply, can relate to the development of solutions such as storage facilities, demand-side management and grid-balancing power plants and high-efficient cogeneration plants that participate in grid-balancing in support of intermittent renewable electricity.

- (15) With more than 30 million electric vehicles expected in the Union by 2030 it is necessary to ensure that they can fully contribute to the system integration of renewable electricity, and thus allow reaching higher shares of renewable electricity in a cost-optimal manner. The potential of electric vehicles to absorb renewable electricity at times when it is abundant and feed it back into a grid when there is scarcity has to be fully utilised, *contributing to the system integration of variable renewable electricity while ensuring a secure and reliable supply of electricity.* It is therefore *necessary* to introduce specific measures on electric vehicles and information about renewable energy and how and when to access it which complement those in Directive (EU) 2014/94 of the European Parliament and of the Council¹ and the [proposed Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020]. *Furthermore, solar-electric vehicles can make a crucial contribution to the decarbonisation of the European transport sector. They are significantly more energy efficient compared to traditional battery electric vehicles, do not extensively rely on the electricity grid for charging, and can generate additional clean energy that may be fed into the grid through bidirectional charging, contributing to Europe's energy independence and generation of renewable energy [Am. 26].*

(15a) The potential of grid-balancing power plants and cogeneration plants that participate in grid-balancing in support of intermittent renewable electricity, thus allowing the expansion of such renewable electricity, should be fully utilised.

- (16) In order for flexibility and balancing services from the aggregation of distributed storage assets to be developed in a competitive manner, real-time access to basic battery information such as state of health, state of charge, capacity and power set point should be provided under non-discriminatory terms, *in full compliance*

¹ Directive 2014/94/EU of the European Parliament and of the Council of 22 October 2014 on the deployment of alternative fuels infrastructure (OJ L 307, 28.10.2014, p. 1)

*with the relevant provisions of Regulation (EU) 2016/679 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)¹, and free of charge to the owners or users of the batteries and the entities acting on their behalf **through explicit consent**, such as building energy system managers, mobility service providers and other electricity market participants, **such as electric vehicle users**. It is therefore appropriate to introduce measures addressing the need of access to such data for facilitating the integration-related operations of domestic batteries and electric vehicles, **smart heating and cooling systems, and other smart devices**, complementing the provisions on access to battery data related to facilitating the repurposing of batteries in [the proposed Commission regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020]. The provisions on access to battery data of electric vehicles should apply in addition to any laid down in Union law on type approval of vehicles.*

- (17) The increasing number of electric vehicles in road, rail, maritime and other transport modes will require that recharging operations are optimised and managed in a way that does not cause congestion and takes full advantage of the availability of renewable electricity and low electricity prices in the system. In situations where **smart and** bidirectional charging would assist further penetration of renewable electricity by electric vehicle fleets in transport and the electricity system in general, such functionality should also be made available. In view of the long life span of recharging points, requirements for charging infrastructure should be kept updated in a way that would cater for future needs and would not result in negative lock-in effects to the development of technology and services.
- (18) Electric vehicle users entering into contractual agreements with electromobility service providers and electricity market participants should have the right to receive information and explanations on how the terms of the agreement will affect the use of their vehicle and the state of health of its battery. Electromobility service providers and electricity market participants should explain clearly to electric vehicle users how they will be remunerated for the flexibility, balancing and storage services provided to the electricity system and market by the use of their electric vehicle. Electric vehicle users also need to have their consumer rights secured when entering into such agreements, in particular regarding the protection of their personal data such as location and driving habits, in connection to the use of their vehicle. Electric vehicle users' preference regarding the type of electricity purchased for use in their electric vehicle, as well as other preferences, can also be part of such agreements. For the above reasons, it is important **to ensure that the charging infrastructure that is to be deployed is used most effectively. In order to improve consumer confidence in e-mobility, it is essential** that electric vehicle users can use their subscription at multiple recharging points. This will also allow the electric vehicle user's service provider of choice to optimally integrate the electric vehicle in the electricity system, through predictable planning and incentives based on the electric vehicle

¹ **Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation (OJ L 119, 4.5.2016, p. 1).**

user preferences. This is also in line with the principles of a consumer-centric and prosumer-based energy system, and the right of supplier choice of electric vehicle users as final customers as per the provisions of Directive (EU) 2019/944.

- (18a) ***Beyond domestic and electric vehicle batteries, a variety of other appliances such as smart heating and cooling devices, hot water tanks, thermal energy storage units and other smart devices have a significant demand response potential which should urgently be tapped to allow consumers to provide their flexibility to the energy system. It is therefore necessary to introduce measures enabling real-time access to data relevant for demand response to users, as well as to third parties acting on the owners' and users' behalf, such as electricity market participants, under non-discriminatory terms and free of charge, in full compliance with the relevant provisions of Regulation (EU) 2016/679.***
- (19) ***Accordingly, distributed and decentralised generation, demand response and storage assets, such as domestic batteries and batteries of electric vehicles, smart heating and cooling systems and other smart devices and thermal energy storage have the potential to offer considerable flexibility and balancing services to the grid through aggregation. In order to facilitate the development of such devices and related services, the regulatory provisions concerning connection and operation of the decentralised generation and storage assets, such as tariffs, commitment times and connection specifications, should be designed in a way that does not hamper the potential of all storage assets, including small and mobile ones, to offer flexibility and balancing services to the system and to contribute to the further penetration renewable electricity, in comparison with larger, stationary storage assets. Member States should also provide a level playing-field for smaller market actors, in particular renewable energy communities, so that they are able to participate in the market without facing a disproportionate administrative or regulatory burden.***
- (20) Recharging points where electric vehicles typically park for extended periods of time, such as where people park for reasons of residence or employment, are highly relevant to energy system integration, therefore smart ***and bidirectional*** charging functionalities need to be ensured. ***Specific initiatives should be taken to increase the number of recharging points in rural and sparsely populated areas and to ensure adequate distribution in the most remote and mountainous areas.*** In this regard, the operation of non-publicly accessible normal charging infrastructure, ***for example through smart metering systems,*** is particularly important for the integration of electric vehicles in the electricity system as it is located where electric vehicles are parked repeatedly for long periods of time, such as in buildings with restricted access, employee parking or parking facilities rented out to natural or legal persons.
- (21) Industry accounts for 25 % of the Union's energy consumption, and is a major consumer of heating and cooling, which is currently supplied 91 % by fossil fuels. However, 50 % of heating and cooling demand is low-temperature (<200 °C) for which there are cost-effective renewable energy options, including through ***direct renewable*** electrification, ***industrial heat-pumps and geothermal solutions.*** In addition, industry uses non-renewable sources as raw materials to produce products such as steel or chemicals. Industrial investment decisions today will determine the future industrial processes and energy options that can

be considered by industry, so it is important that those investments decisions are future-proof *and avoid the creation of stranded assets*. Therefore, benchmarks should be put in place to incentivise industry to switch to a renewables-based production processes that not only are *fuelled* by renewable energy, but also use renewable-based raw materials such as renewable hydrogen. █

- (21a) *Member States should promote the necessary spatial planning instruments that classify agricultural soils and identify soils of high agricultural value on the basis of their edaphological characteristics. In their policies for the development and promotion of renewable energies, Member States should ensure the purpose of these soils is preserved for agricultural and livestock use.*
- (22) *In application of the energy efficiency first principle, renewable fuels of non-biological origin can be used for energy purposes, but also for non-energy purposes as feedstock or raw material in industries such as steel or chemicals. The use of renewable fuels of non-biological origin for both purposes exploits their full potential to replace fossil fuels used as feedstock and to reduce greenhouse gas emissions in industrial processes which are difficult to electrify and should therefore be included in a target for the use of renewable fuels of non-biological origin. National measures to support the uptake of renewable fuels of non-biological origin in those industrial sectors should not result in net pollution increases due to an increased demand for electricity generation that is satisfied by the most polluting fossil fuels, such as coal, diesel, lignite, oil peat and oil shale.*
- (22a) *As referred to in the EU Hydrogen Strategy, low-carbon fuels and low carbon hydrogen can play a role in the energy transition to reduce emissions of existing fuels. As low-carbon fuels and low-carbon hydrogen are not renewable fuels, the revision of Directive (EU) .../... [Directive gas and hydrogen] should define the complementary provisions on the role of low-carbon fuels and low-carbon hydrogen to achieve carbon neutrality by 2050.*
- (23) Increasing ambition in the heating and cooling sector is key to delivering the overall renewable energy target given that heating and cooling constitutes around half of the Union's energy consumption, covering a wide range of end uses and technologies in buildings, industry and district heating and cooling. To accelerate the increase of renewables in heating and cooling, an annual 1.1 █ should be made binding as a minimum for all Member States, *with an indicative target going up to 2.3, according to the REPowerEU level*. For those Member States, which already have renewable shares above 50% in the heating and cooling sector, it should remain possible to only apply half of the binding annual increase rate and Member States with 60% or above may count any such share as fulfilling the average annual increase rate in accordance with points b) and c) of paragraph 2 of Article 23. *Member States should carry out, with the involvement of local and regional authorities and in accordance with the energy efficiency first principle, an assessment of their potential of energy from renewable sources in the heating and cooling sector and of the use of waste heat and cold*. In addition, Member State-specific top-ups should be set, redistributing the additional efforts to the desired level of renewables in 2030 among Member States based on GDP and cost-effectiveness. A longer list of different measures should also be included in Directive (EU) 2018/2001 to facilitate increasing the share of renewables in heating and cooling. Member

States *should* implement *three* measures from the list of measures. *When adopting and implementing those measures, Member States should ensure their accessibility to all consumers, in particular those in low-income or vulnerable households, and should require a significant share of measures to be implemented as a priority in low-income households at risk of energy poverty and in social housing [Am. 38].*

- (24) To ensure that a greater role of district heating and cooling is accompanied by better information for consumers, it is appropriate to clarify and strengthen the disclosure of the renewables share and *the associated greenhouse gas emissions, as well as the* energy efficiency of these systems.
- (24a) The agricultural sector has the potential to produce additional renewable electricity. This renewable electricity is produced in a decentralised way, which is an opportunity in the energy transition. In order to put this electricity on the grid, this grid needs to have sufficient capacity. However, in rural areas the grid often ends and therefore has insufficient capacity to accommodate additional electricity. Grid reinforcement in rural areas should be strongly encouraged so that farms can actually fulfil their potential contribution to the energy transition through decentralised electricity production.*
- (24b) Small-scale on-farm energy production installations have an enormous potential to increase the on-farm circularity by transforming the waste and residual streams of the farm, amongst others manure, into heat and electricity. Therefore, all barriers should be removed to encourage farmers to invest in these technologies towards a circular farm, such as pocket digesters. One of these barriers is the valorisation of residues of the process, for instance RENURE, as well as ammonium sulphate, which should be able to be categorised and used as fertilizers.*
- (25) Modern renewable-based efficient district heating and cooling systems have demonstrated their potential to provide cost-effective solutions for integrating renewable energy, increased energy efficiency and energy system integration, facilitating the overall decarbonisation of the heating and cooling sector. To ensure this potential is harnessed, the annual increase of renewable energy and/or waste heat in district heating and cooling should be raised from 1 percentage point to 2.3 without changing the indicative nature of this increase, reflecting the uneven development of this type of network across the Union.
- (26) To reflect the increased importance of district heating and cooling and the need to steer the development of these networks towards the integration of more renewable energy, it is appropriate to set requirements to ensure the connection of third party suppliers of renewable energy and waste heat and cold with district heating or cooling networks systems above 25MW.
- (27) Waste heat and cold are underused despite their wide availability, leading to a waste of resources, lower energy efficiency in national energy systems and higher than necessary energy consumption in the Union. Requirements for closer coordination between district heating and cooling operators, industrial and tertiary sectors, and local authorities could facilitate the dialogue and cooperation necessary to harness cost-effective waste heat and cold potentials via district heating and cooling systems.

- (28) To ensure district heating and cooling participate fully in energy sector integration, it is necessary to extend the cooperation with electricity distribution system operators to electricity transmission system operators and widen the scope of cooperation to grid investment planning and markets to better utilise the potential of district heating and cooling for providing flexibility services in electricity markets. Further cooperation with gas network operators, including hydrogen and other energy networks, should also be made possible to ensure a wider integration across energy carriers and their most cost-effective use.
- (29) The use of renewable fuels and renewable electricity in transport can contribute to the decarbonisation of the Union transport sector in a cost-effective manner, and improve, amongst other, energy diversification in that sector while promoting innovation, growth and jobs in the Union economy and reducing reliance on energy imports. With a view to achieving the increased target for greenhouse gas emission savings defined by the Union, the level of renewable energy supplied to all transport modes in the Union should be increased. Expressing the transport target as a greenhouse gas intensity reduction target would stimulate an increasing use of the most cost-effective and performing fuels, in terms of greenhouse gas savings, in transport. In addition, a greenhouse gas intensity reduction target would stimulate innovation and set out a clear benchmark to compare across fuel types and renewable electricity depending on their greenhouse gas intensity. Complementary to this, increasing the level of the energy-based target on advanced biofuels and biogas and introducing a target for renewable fuels of non-biological origin would ensure an increased use of the renewable fuels with smallest environmental impact in transport modes that are difficult to electrify. The achievement of those targets should be ensured by obligations on fuel suppliers as well as by other measures included in [Regulation (EU) 2021/XXX on the use of renewable and low-carbon fuels in maritime transport - FuelEU Maritime and Regulation (EU) 2021/XXX on ensuring a level playing field for sustainable air transport]. Dedicated obligations on aviation fuel suppliers should be set only pursuant to [Regulation (EU) 2021/XXX on ensuring a level playing field for sustainable air transport].
- (29a) *The COVID-19 pandemic has demonstrated the strategic importance of the transport sector. The implementation of green lanes, which provided secure supply chains for health care and emergency services, essential food supply and pharmaceutical products was a good practice, which in the future should take precedence over emissions reduction in times of crisis.***
- (29b) *The implementation or installation of wind-assisted propulsion and wind propulsion systems is considered as a renewable energy source and one of the decarbonisation solutions for maritime transport.***
- (30) Electromobility will play an essential role in decarbonising the transport sector. To foster the further development of electromobility, Member States should establish a credit mechanism enabling operators of charging points accessible to the public to contribute, by supplying renewable electricity ***or renewable energy***, towards the fulfilment of the obligation set up by Member States on fuel suppliers. ***Member States can include private recharging stations in this mechanism, if it can be demonstrated that the renewable electricity supplied to those recharging stations is provided solely to electric vehicles.*** While supporting electricity in transport through such a mechanism, it is important that Member States continue setting a high level of ambition for the decarbonisation

of their liquid fuel mix, *particularly in hard-to-decarbonise transport sectors, such as maritime and aviation, where direct electrification is much more difficult.*

- (30a) *Hydrogen can be used as feedstock or a source of energy in industrial and chemical processes and in air and maritime transport, decarbonising sectors in which direct electrification is not technologically possible or competitive, as well as for energy storage to balance, where necessary, the energy system, thereby playing a significant role in energy system integration.***
- (30b) *The Union regulatory framework and initiatives aimed at achieving the greenhouse gas emission reduction targets should support the industry to shift towards a more sustainable European energy system, especially when establishing new targets and production thresholds.***
- (31) The Union's renewable energy policy aims to contribute to achieving the climate change mitigation objectives of the European Union in terms of the reduction of greenhouse gas emissions. In the pursuit of this goal, it is essential to also contribute to wider environmental objectives, and in particular the prevention of biodiversity loss, which is negatively impacted by the indirect land use change associated to the production of certain biofuels, bioliquids and biomass fuels. *Likewise, inadequate planning of the installations of large wind or photovoltaic projects can have undesired effects on biodiversity, on landscapes, and on local communities. The indirect effects of deforestation and soil compaction, the effects of wind turbines and the conflicts of land use with regard to solar parks should also be taken into account.* Contributing to these climate and environmental objectives constitutes a deep and longstanding intergenerational concern for Union citizens and the Union legislator. *The Union should thus promote fuels in quantities which balance the necessary ambition with the need to avoid contributing to direct and indirect land-use change.* As a consequence, the changes in the way the transport target is calculated should not affect the limits established on how to account toward that target certain fuels produced from food and feed crops on the one hand and high indirect land-use change-risk fuels on the other hand. In addition, in order not to create an incentive to use biofuels and biogas produced from food and feed crops in transport *and to take into consideration the war against Ukraine*, Member States should continue to be able to choose whether count them or not towards the transport target. If they do not count them, they may reduce the greenhouse gas intensity reduction target accordingly, assuming that food and feed crop-based biofuels save 50 % greenhouse gas emissions, which corresponds to the typical values set out in an annex to this Directive for the greenhouse gas emission savings of the most relevant production pathways of food and feed crop-based biofuels as well as the minimum savings threshold applying to most installations producing such biofuels. *In addition, Member States should also consider securing additional food supply to stabilise global food commodity markets..***
- (31a) *Account should be taken of Article 349 of the Treaty on the Functioning of the European Union (TFEU), which acknowledges the particular vulnerability of the outermost regions arising from their remoteness from mainland regions, insularity, small size, difficult topography and climate and economic dependence on a few products, a combination that severely restrains their development and generates substantial extra costs in many areas,***

particularly for transport. Efforts being made and targets set at European level for greenhouse gas reduction must be adapted to this difficult situation, balancing environmental objectives against the high social costs for these regions.

- (32) Expressing the transport target as a greenhouse gas intensity reduction target makes it unnecessary to use multipliers to promote certain renewable energy sources. This is because different renewable energy sources save different amounts of greenhouse gas emissions and, therefore, contribute differently to a target. Renewable electricity should be considered to have zero emissions, meaning it saves 100% emissions compared to electricity produced from fossil fuels. This will create an incentive for the use of renewable electricity since renewable fuels and recycled carbon fuels are unlikely to achieve such a high percentage of savings. Electrification relying on renewable energy sources would therefore become the most efficient way to decarbonise road transport. In addition, in order to promote the use of advanced biofuels and biogas and renewable fuels of non-biological origin in the aviation and maritime modes, which are difficult to electrify, it is appropriate to keep the multiplier for those fuels supplied in those modes when counted towards the specific targets set for those fuels.
- (33) Direct electrification of end-use sectors, including the transport sector, contributes to the *system* efficiency and facilitates the transition to an energy system based on renewable energy. It is therefore in itself an effective means to reduce greenhouse gas emissions. The creation of a framework on additionality applying specifically to renewable electricity supplied to electric vehicles in the transport is therefore not required [Am. 10].
- (34) Since renewable fuels of non-biological origin are to be counted as renewable energy regardless of the sector in which they are consumed, the rules to determine their renewable nature when produced from electricity, which were applicable only to those fuels when consumed in the transport sector, should be extended to all renewable fuels of non-biological origin, regardless of the sector where they are consumed.
- (34 a) *Electricity obtained from direct connection to one or several installations generating renewable electricity may be fully counted as renewable electricity where it is used for the production of renewable fuels of non- biological origin. Installations demonstrate that the electricity concerned has been supplied without taking electricity from the grid. Electricity taken from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated by the conclusion of a power purchasing agreement. In order to be fully qualified as renewable fuel of non-biological origin, the geographical correlation should be on bidding zone level and should also take into consideration offshore situations. Renewable properties of that electricity are to be claimed only once and only in one end-use sector. The same should apply to renewable fuels of non-biological origin imported in the Union [Am. 11].***
- (35) To ensure higher environmental effectiveness of the Union sustainability and greenhouse emissions saving criteria for solid biomass fuels in installations producing heating, electricity and cooling, the minimum threshold for the

applicability of such criteria should be lowered from the current 20 MW to **7.5 MW**.

- (36) Directive (EU) 2018/2001 strengthened the bioenergy sustainability and greenhouse gas savings framework by setting criteria for all end-use sectors. It set out specific rules for biofuels, bioliquids and biomass fuels produced from forest biomass, requiring the sustainability of harvesting operations and the accounting of land-use change emissions. To achieve an enhanced protection of especially biodiverse and carbon-rich habitats, such as primary **and old-growth** forests, highly biodiverse forests, grasslands, peat lands **and heathlands**, exclusions and limitations to source forest biomass from those areas should be introduced, in line with the approach for biofuels, bioliquids and biomass fuels produced from agricultural biomass. In addition, the greenhouse gas emission saving criteria should also apply to existing biomass-based installations to ensure that bioenergy production in all such installations leads to greenhouse gas emission reductions compared to energy produced from fossil fuels. ***Semi-natural forests as forests or other wooded land that are neither primary forest nor plantation forest and composed predominantly of native trees and shrub species which have not been planted have a high biodiversity and climate value and should not be transformed into plantation forests or otherwise degraded. Special attention should be given towards forest science to address open questions and provide data, as they are key for understanding better the role of our trees for climate, environment, economy and society. Biofuels, bioliquids and biomass fuels produced from agricultural and forest biomass and Renewable Fuels of Non-Biological Origin should be obtained from lands or forests for which third parties' rights concerning use and tenure of the land or forest are respected by obtaining free, prior and informed consent of these third parties, with the participation by representative institutions and organisations, while human and labour rights of third parties are respected and the availability of food and feed for third parties is not at risk.***
- (37) In order to reduce the administrative burden for producers of renewable fuels and recycled carbon fuels and for Member States, where voluntary or national schemes have been recognised by the Commission through an implementing act as giving evidence or providing accurate data regarding the compliance with sustainability and greenhouse gas emissions saving criteria as well as other requirements set in this Directive, Member States should accept the results of the certification issued by such schemes within the scope of the Commission's recognition. In order to reduce the burden on small installations, Member States should establish a simplified verification mechanism for installations of between 5 and **20 MW**.
- (38) The Union database to be set up by the Commission aims at enabling the tracing of liquid and gaseous renewable fuels and recycled carbon fuels. Its scope should be extended from transport to all other end-use sectors in which such fuels are consumed. This should make a vital contribution to the comprehensive monitoring of the production and consumption of those fuels, mitigating risks of double-counting or irregularities along the supply chains covered by the Union database. In addition, to avoid any risk of double claims on the same renewable gas, a guarantee of origin issued for any consignment of renewable gas registered in the database should be cancelled. ***This database should be made publicly available in an open, transparent and user friendly manner. The Commission***

should publish annual reports for the general public about the information reported in the Union database, including the quantities, the geographic origin and feedstock type of biofuels, bioliquids and biomass fuels.

- (38a)** *In order to offset of the regulatory burdens for citizens, administrations and businesses introduced by this Directive, the Commission should, in the framework of its annual burden survey conducted pursuant to paragraph 48 of the Interinstitutional Agreement of 13 April 2016 on Better Law-Making, review the regulatory framework in the concerned sectors in line with the “one in, one out” principle, as set out in the Commission communication of 29 April 2021 entitled “Better Regulation: Joining forces to make better laws”, and, where appropriate, present legislative proposals for the amendment or deletion of provisions in other Union legislative acts that generate compliance costs in those sectors.*
- (38b)** *Adequate anti-fraud provisions must be laid down, in particular in relation to used cooking oil (UCO) given the widespread mixing of palm oil. As the detection and prevention of fraud is essential to prevent unfair competition and rampant deforestation in third countries, full and certified traceability of these raw materials should be implemented.*
- (39) The Governance Regulation (EU) 2018/1999 makes several references in a number of places to the Union-level binding target of at least 32 % for the share of renewable energy consumed in the Union in 2030. As that target needs to be increased in order to contribute effectively to the ambition to decrease greenhouse gas emissions by **at least** 55 % by 2030, those references should be amended. Any additional planning and reporting requirements set will not create a new planning and reporting system, but should be subject to the existing planning and reporting framework under Regulation (EU) 2018/1999.
- (40) The scope of Directive 98/70/EC of the European Parliament and of the Council¹ should be amended in order to avoid a duplication of regulatory requirements with regard to transport fuel decarbonisation objectives and align with Directive (EU) 2018/2001.
- (40a)** *It is also important to encourage research and innovation in the field of clean energies, such as hydrogen, in order to meet the growing demand for alternative fuels and, above all, to make available on the market energy that is cheaper than fossil fuels like diesel, fuel oil and petrol, for which prices are now hitting record highs.*
- (41) The definitions of Directive 98/70/EC should be amended in order to align them with Directive (EU) 2018/2001 and thereby avoid different definitions being applied in those two acts.
- (42) The obligations regarding the greenhouse gas emissions reduction and the use of biofuels in Directive 98/70/EC should be deleted in order to streamline and avoid double regulation with regards to the strengthened transport fuel decarbonisation obligations which are provided for in Directive (EU) 2018/2001.

¹ Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC (OJ L 350, 28.12.1998, p. 58).

- (43) The obligations regarding the monitoring of and reporting on the greenhouse gas emission reductions set out in Directive 98/70/EC should be deleted to avoid regulating reporting obligations twice.
- (44) Council Directive (EU) 2015/652, which provides the detailed rules for the uniform implementation of Article 7a of Directive 98/70/EC, should be repealed as it becomes obsolete with the repeal of Article 7a of Directive 98/70/EC by this Directive.
- (45) As regards bio-based components in diesel fuel, the reference in Directive 98/70/EC to diesel fuel B7, that is diesel fuel containing up to 7 % fatty acid methyl esters (FAME), limits available options to attain higher biofuel incorporation targets as set out in Directive (EU) 2018/2001. That is due to the fact that almost the entire Union supply of diesel fuel is already B7. For that reason the maximum share of bio-based components should be increased from 7% to 10%. Sustaining the market uptake of B10, that is diesel fuel containing up to 10 % fatty acid methyl esters (FAME), requires a Union-wide B7 protection grade for 7% FAME in diesel fuel due to the sizeable proportion of vehicles not compatible with B10 expected to be present in the fleet by 2030. This should be reflected in Article 4, paragraph 1, second subparagraph of Directive 98/70/EC as amended by this act.
- (45a) A greater use of renewable energy can also increase energy security and self-sufficiency by, amongst other things, reducing dependence on fossil fuels. However, further reinforcement and interconnection of the transmission system is essential for the fair and efficient use of this transition, so that the resulting benefits are spread evenly across the population of the Union and do not lead to energy poverty.***
- (46) The transitional provisions should allow for an ordered continuation of data collection and the fulfilment of reporting obligations with respect to the articles of Directive 98/70/EC deleted by this Directive.
- (47) In accordance with the Joint Political Declaration of 28 September 2011 of Member States and the Commission on explanatory documents¹, Member States have undertaken to accompany, in justified cases, the notification of their transposition measures with one or more documents explaining the relationship between the components of a directive and the corresponding parts of national transposition instruments. With regard to this Directive, the legislator considers the transmission of such documents to be justified, in particular following the judgment of the European Court of Justice in Case Commission vs Belgium² (case C-543/17).
- (47a) There is enormous potential for the Union and its developing partner countries in terms of technology cooperation, renewable energy projects and clean energy exports and development of greater interconnectivity of clean energy grids. Despite their steady growth overall, renewable energy investments remain concentrated in a handful of regions and countries. Regions dominated by developing and emerging countries remain consistently underrepresented, attracting only about 15 % of global investments in***

¹ OJ C 369, 17.12.2011, p. 14.

² Judgment of the Court of Justice of 8 July 2019, Commission v Belgium, C-543/17, ECLI: EU: C:2019:573.

renewables¹. Union energy partnerships should target renewable energy generation projects, as well as supporting the development of renewable energy projects and setting legal and financial frameworks, and should include the provision of necessary technical assistance and knowledge transfer in close cooperation with the private sector. Commitments on good governance and the perspective of stable, long-term collaboration should be conditional for Union cooperation. Sustainable energy cooperation should be key priority for suitable countries under the Global Gateway Initiative [Am. 12].

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Amendments to Directive (EU) 2018/2001

Directive (EU) 2018/2001 is amended as follows:

(1) in Article 2, the second paragraph is amended as follows:

(-a) point (1) is replaced by the following:

‘(1) ‘energy from renewable sources’ or ‘renewable energy’ means energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, osmotic energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas, and biogas;’;

(-aa) in point (16), point (c) is replaced by the following:

‘(c) the primary purpose of which is to provide environmental, economic or social community benefits, in accordance with the energy efficiency first principle, for its shareholders or members or for the local areas where it operates, rather than financial profits;’;

(a) point (36) is replaced by the following:

‘(36) ‘renewable fuels of non-biological origin’ means liquid and gaseous fuels the energy content of which is derived from renewable sources other than biomass;’;

(b) point (47) is replaced by the following:

¹ *International Renewable Energy Agency (Irena)- report on global landscape of renewable energy finance 2020, page 9.*

‘(47) ‘default value’ means a value derived from a typical value by the application of pre-determined factors and that may, in circumstances specified in this Directive, be used in place of an actual value;’;

(c) the following points are added:

‘(47a) ‘quality roundwood’ means roundwood felled or otherwise harvested and removed, whose characteristics, such as species, dimensions, rectitude, and node density, make it suitable for industrial use, as defined and duly justified by Member States according to the relevant forest conditions. This does not include pre-commercial thinning operations or trees extracted from forests affected by fires, pests, diseases or damage due to abiotic factors;

(47b) ‘innovative renewable energy technology’ means a renewable energy generation technology that improves in at least one way comparable state-of-the-art renewable energy technologies or makes exploitable a largely untapped renewable energy resource and involves a clear degree of risk, in technological, market or financial terms, which is higher than the risk generally associated with comparable non-innovative technologies or activities;

(47c) ‘bidding zone’ means a bidding zone as defined in Article 2, point (65) of Regulation (EU) 2019/943 of the European Parliament and of the Council¹;

(47d) ‘smart metering system’ means **a** smart metering system as defined in Article 2, point (23) of Directive (EU) 2019/944 of the European Parliament and of the Council²;

(47e) ‘recharging point’ means **a** recharging point as defined in **■** Article 2, point (33) of Directive (EU) No 2019/944;

(47f) ‘market participant’ means **a** market participant as defined in **■** Article 2, point (25) of Regulation (EU) 2019/943;

(47g) ‘electricity market’ means **an** electricity market as defined in Article 2, point (9) of Directive 2019/944;

(47h) ‘domestic battery’ means a stand-alone rechargeable battery of rated capacity greater than 2 kwh, which is suitable for installation and use in a domestic environment;

(47i) ‘electric vehicle battery’ means an electric vehicle battery as defined in Article 2, point (12) of [the proposed Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020³];

¹ Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (OJ L 158, 14.6.2019, p. 54).

² Directive Regulation (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (OJ L 158, 14.6.2019, p. 125).

³ COM(2020) 798 final

- (47j) ‘industrial battery’ means **an** industrial battery as defined in Article 2, point (11) of [the proposed Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020];
- (47k) ‘state of health’ means state of health as defined in Article 2, point (25) of [the proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020¹];
- (47l) ‘state of charge’ means state of charge as defined in Article 2, point (24) of [the proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) 2019/1020];
- (47m) ‘power set point’ means the information held in a battery’s management system prescribing the electric power settings at which the battery operates during a recharging or a discharging operation, so that its state of health and operational use are optimised;
- (47n) ‘smart charging’ means a recharging operation in which the intensity of electricity delivered to the battery is adjusted in real-time, based on information received through electronic communication **and which can be realised at normal charging speeds as well as during fast charging through a response to dynamic price signals or an optimisation of power flow;**
- (47o) ‘regulatory authority’ means **a** regulatory authority defined in Article 2, point (2) of Regulation (EU) 2019/943;
- (47p) ‘bidirectional charging’ means **a** smart charging **operation** where the direction of **the flow** may be reversed, **allowing electricity to flow** from the battery to the recharging point it is connected to;
- (47q) ‘normal power recharging point’ means **a** normal power recharging point as defined in Article 2, point (31) of [the proposal for a Regulation concerning the deployment of alternative fuel infrastructure, repealing Directive 2014/94/EU];
- (47r) ‘**community battery**’ means **a stand-alone rechargeable battery with a rated capacity greater than 50 kWh, which is suitable for installation and use in a residential, commercial or industrial environment and which is owned by jointly acting renewable self-consumers or a renewable energy community;**
- (47s) ‘**renewables energy purchase agreement**’ means **a contract under which a natural or legal person agrees to purchase renewable energy directly from a producer, which encompasses, but it is not limited to, renewables power purchase agreements, renewables hydrogen purchase agreements and renewables heating and cooling purchase agreements;**
- (47t) ‘**renewables heating and cooling purchase agreement**’ means **a contract under which a natural or legal person agrees to purchase renewable heating and cooling directly from a producer;**

¹ the proposal for a Commission Regulation ‘concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) 2019/1020 (xxxxx).

- (47u) ‘renewables hydrogen purchase agreement’ means a contract under which a natural or legal person agrees to purchase renewable fuels of non-biological origin directly from a producer;**
- (47v) ‘industry’ means companies and products that fall sections B, C, F and J, division (63) of the statistical classification of economic activities (NACE REV.2)¹;**
- (47w) ‘non-energy purpose’ means the use of fuels as raw materials in an industrial process, instead of being used to produce energy;**
- (47x) ‘renewable fuels’ means biofuels, bioliquids, biomass fuels and renewable fuels of non-biological origin;**
- (47y) ‘energy efficiency first’ means energy efficiency first as defined in Article 2, point (18) of Regulation (EU) 2018/1999;**
- (47z) ‘offshore renewable hybrid asset’ means a transmission asset serving the dual purpose of connecting offshore renewable energy generation and connecting two or more bidding zones;**
- (47aa) ‘renewable based district heating and cooling’ means highly energy efficient district heating and cooling systems operating exclusively by renewable energy sources;**
- (47ab) ‘primary woody biomass’ means all roundwood felled or otherwise harvested and removed. It comprises all wood obtained from removals, i.e., the quantities removed from forests, including wood recovered due to natural mortality and from felling and logging. It includes all wood removed with or without bark, including wood removed in its round form, or split, roughly squared or in other form, e.g., branches, roots, stumps and burls (where these are harvested) and wood that is roughly shaped or pointed. This does not include woody biomass obtained from sustainable wildfire prevention measures in high-risk fire prone areas, woody biomass obtained from road safety measures, and woody biomass extracted from forests affected by natural disasters, active pests or diseases to prevent their spread, whilst minimising wood extraction and protecting biodiversity, resulting in more diverse and resilient forests, and shall be based on guidelines from the Commission [Am. 42];**
- (47ac) ‘renewable hydrogen’ means hydrogen produced through the electrolysis of water (in an electrolyser, powered by electricity stemming from renewable sources, or through the reforming of biogas or biochemical conversion of biomass, if in compliance with sustainability criteria set out in Article 29 of Directive (EU) 2018/2001 of the European Parliament and of the Council;**
- (47ad) ‘plantation forest’ means a planted forest that is intensively managed and meets, at planting and stand maturity, all the following criteria: one or two**

¹ Regulation (EC) No 1893/2006 of the European Parliament and of the Council of 20 December 2006 establishing the statistical classification of economic activities NACE Revision 2 and amending Council Regulation (EEC) No 3037/90 as well as certain EC Regulations on specific statistical domains (OJ L 393, 30.12.2006, p. 1).’;

species, even age class, and regular spacing. It includes short rotation plantations for wood, fibre and energy, and excludes forests planted for protection or ecosystem restoration, as well as forests established through planting or seeding which at stand maturity resemble or will resemble naturally regenerating forests;

(47ae) ‘planted forest’ means forest predominantly composed of trees established through planting and/or deliberate seeding provided that the planted or seeded trees are expected to constitute more than fifty percent of the growing stock at maturity; it includes coppice from trees that were originally planted or seeded;

(47af) ‘osmotic energy’ means energy naturally created from the difference in salt concentration between two fluids, commonly fresh and salt water;

(4ag) ‘system efficiency’ means an energy system which integrates variable renewables cost-effectively and maximises the value of demand-side flexibility to optimise the transition to climate neutrality, measured in reductions of system investment and operational costs, greenhouse gas emissions and fossil fuel uses in each national energy mix;

(47ah) ‘renewable hybrid power plant’ means a combination of two or more renewable generation technologies which share the same grid connection, and can also integrate storage capacity;

(47ai) ‘co-located energy storage project’ means a project encompassing an energy storage facility and a facility producing renewable energy connected behind the same grid access point;

(47aj) ‘solar-electric vehicle’ means a highly energy efficient motor vehicle equipped with a powertrain containing only non-peripheral electric machines as energy converter with an electric rechargeable energy storage system, which can be recharged externally, also equipped with vehicle-integrated photovoltaic panels [Am. 29]’;

(2) Article 3 is amended as follows:

(a) paragraph 1 is replaced by the following:

‘1. Member States shall collectively ensure that the share of energy from renewable sources in the Union’s gross final consumption of energy in 2030 is at least 45 %.

In order to promote the production and use of renewable energy from innovative renewable energy technologies and to safeguard the Union’s industrial competitiveness, each Member State shall set an indicative target of at least 5 % of new installed renewable energy capacity between ... [entry into force of the directive] and 2030 as innovative renewable energy technology.

In order to facilitate further penetration of renewable electricity and to increase the flexibility and balancing services, Member States shall set an indicative target for storage technologies.

To support the cost-effective achievement of the target referred to in the first subparagraph and the achievement of system efficiency, Member States shall set a minimum indicative national target for demand-side flexibility corresponding to a reduction of 5 % of peak electricity demand by 2030. That target shall be achieved through the activation of demand-side flexibility in all end-use sectors, including through buildings renovation and energy efficiency in accordance with Directive (EU) .../... [revised directive (EU) 2018/844] and Directive (EU) .../... [revised directive (EU) 2018/2002].

Member States shall specify their national demand-side flexibility target, including intermediate milestones, in the national objectives set out in their integrated energy and climate plans to increase system flexibility, in accordance with Article 4, point (d), point (3) of Regulation (EU) 2018/1999. When needed, the Commission may take complementary measures to support the Members States to fulfil their target.

Each Member State shall identify in its integrated energy and climate plan, in accordance with Article 4, point (d), point (3), of Regulation (EU) 2018/1999, the measures needed to meet the targets referred to in the second and third subparagraphs of paragraph 1 of this Article.’;

(b) paragraph 3 is replaced by the following:

‘3. Member States shall take measures to ensure that energy from biomass is produced in a way that minimises undue distortive effects on the biomass raw material market and harmful impacts on biodiversity, **the environment and the climate**. To that end, they shall take into account the waste hierarchy as set out in Article 4 of Directive 2008/98/EC and the cascading principle referred to in the third subparagraph.

As part of the measures referred to in the first subparagraph:

(a) Member States shall grant no support for:

- (i) the use of saw logs, veneer logs, stumps and roots to produce energy;
- (ii) the production of renewable energy produced from the incineration of waste if the separate collection **and waste hierarchy** obligations laid down in Directive 2008/98/EC have not been complied with;
- (iii) practices which are not in line with the **implementing** act referred to in the third subparagraph.

(b) From 31 December 2026, and without prejudice **to the provisions set out in Article 6 and** to the obligations in the first sub-paragraph, Member States shall grant no support to the production of electricity from forest biomass in electricity-only-installations, unless such electricity meets at least one of the following conditions:

- (i) it is produced in a region identified in a territorial just transition plan approved by the  Commission, in accordance with Regulation (EU) 2021/... of the European Parliament and the Council establishing the Just Transition Fund due to its

reliance on solid fossil fuels, and meets the relevant requirements set in Article 29, **point** (11);

(ii) it is produced applying Biomass CO₂ Capture and Storage and meets the requirements set in Article 29, **point** (11), second subparagraph.

(ii a) it is produced by plants that are already in operation on ... [the date of entry into force of this amending Directive], for which modifications in the direction of cogeneration are not possible due to the absence of the infrastructure and demand conditions and meet the requirements set out in Article 29, point (11), provided that Member States notify the Commission of the usage of such exemption and justify it by means of verified and up-to-date scientific and technical information and that the Commission approves the exemption.

No later than one year after [the entry into force of this amending Directive], the Commission shall adopt **an implementing act** on how to apply the cascading principle for **forest** biomass, in particular on how to minimise the use of quality roundwood for energy production, with a focus on support schemes and with due regard to **the highest economic and environmental added-value and national specificities including wildfire prevention and salvage logging**.

By 2026 the Commission shall present a report on the impact of the Member States' support schemes for biomass, including on biodiversity, **climate, environment** and possible market distortions, and will assess support schemes to forest biomass.;

(c) the following paragraph 4a is inserted:

‘4a. Member States shall establish a framework, which may include support schemes and facilitating the uptake of renewable **and co-located energy storage projects as well as renewables energy purchase agreements and renewables heating and cooling purchase agreements**, enabling the deployment of renewable **energy** to a level that is consistent with the Member State's national contribution referred to in paragraph 2 and at a pace that is consistent with the indicative trajectories referred to in Article 4(a)(2) of Regulation (EU) 2018/1999. In particular, that framework shall tackle remaining barriers, including those related to permitting procedures, **the establishment of energy community initiatives and the development of the necessary energy transport networks, to support** a high level of renewable **energy** supply. When designing that framework, Member States shall take into account the additional renewable electricity **and storage infrastructures** required to meet demand in the transport, industry, building and heating and cooling sectors and for the production of renewable fuels of non-biological origin.’;

In accordance with the energy efficiency first principle, Member States shall ensure the flexible consumption, trade and storage of renewable electricity in these end-use sectors to help its penetration in a cost-effective way.

Member States may include a summary of the policies and measures under the enabling framework and an assessment of their implementation respectively in their integrated national energy and climate plans and progress reports, pursuant to Regulation (EU) 2018/1999.’;

(3) Article 7 is amended as follows:

(-a) in the first subparagraph of paragraph 1, point (c) is replaced by the following:

‘(c) final consumption of energy from renewable sources and fuels in the transport sector.’;

(a) in paragraph 1, the second subparagraph is replaced by the following:

‘With regard to the first subparagraph, point (a), (b), or (c), gas and electricity from renewable sources shall be considered only once for the purposes of calculating the share of gross final consumption of energy from renewable sources. Energy produced from renewable fuels of non-biological origin shall be accounted in the sector - electricity, heating and cooling or transport - where it is consumed. **Where renewable fuels of non-biological origin are consumed in a Member State different from the one where they have been produced, energy generated by the use of renewable fuels of non-biological origin shall be accounted for 80 % of their volume in the country and sector where it is consumed and for 20 % of their volume in the country where it is produced, unless agreed otherwise between Member States concerned. In order to monitor such agreements and to avoid any double counting, the Commission shall be notified of any such agreement, including the exact volumes of the supply and demand, the times of the transfer and the date by which the arrangement will become operational. The Commission shall make available information on the concluded agreements, including their timing, volume, price and any additional conditions.**’;

(aa) in paragraph 1, the following subparagraph is inserted after the second subparagraph:

“For the purposes of the targets referred to in Articles 15a, 22a, 23(1), 24(4) and 25(1), renewable fuels of non-biological origin shall be accounted for 100% of their volume in the country where they are consumed.”;

(b) in paragraph 2, the first subparagraph is replaced by the following:

‘For the purposes of paragraph 1, first subparagraph, point (a), gross final consumption of electricity from renewable sources shall be calculated as the quantity of electricity produced in a Member State from renewable sources, including the production of electricity from renewables self-consumers and renewable energy communities and electricity from renewable fuels of non-biological origin and excluding the production of electricity in pumped storage units from water that has previously been pumped uphill as well as the electricity used to produce renewable fuels of non-biological origin.’;

(c) in paragraph 4, point (a) is replaced by the following:

‘(a) Final consumption of energy from renewable sources in the transport sector shall be calculated as the sum of all biofuels, biogas and renewable fuels of non-biological origin consumed in the transport sector.’;

(4) Article 9 is amended as follows:

(a) the following paragraph 1a is inserted:

‘1a. *Each* Member State shall *enter into cooperation agreements* to establish *joint projects* with one or more other Member States for the production of renewable energy, including *offshore* renewable *hybrid assets, as follows*:

(a) by 31 December 2025, Member States with an annual electricity consumption of 100 TWh or less shall establish at least two joint projects;

(b) by 2030, Member States with an annual electricity consumption of more than 100 TWh shall establish a third joint project.. █ ;

Such joint projects shall not correspond to the projects of common interest already adopted under Regulation (EU) 2022/869^{1a}. The identification of joint projects shall be based on the needs identified in the high-level strategic integrated offshore network development plans for each sea-basin and the Ten Years Network Development Plan but may go beyond those needs and may involve local and regional authorities and private operators.

Projects financed by national contributions under the Union renewable energy financing mechanism established by Commission Implementing Regulation (EU) 2020/1294¹ shall *be taken into account for the purposes of fulfilling the requirements of the first subparagraph* for the Member States involved *in those projects*.

Member States shall work towards a fair distribution of costs and benefits of joint projects. To that end, all the relevant costs and benefits of the joint project shall be taken into account in the relevant cooperation agreement.

Member States shall notify the Commission of the cooperation agreements referred to in the first subparagraph, including the date on which the project is expected to become operational.

^{1a} *Regulation (EU) 2022/869 of the European Parliament and of the Council of 30 May 2022 on guidelines for trans-European energy infrastructure, amending Regulations (EC) No 715/2009, (EU) 2019/942 and (EU) 2019/943 and Directives 2009/73/EC and (EU) 2019/944, and repealing Regulation (EU) No 347/2013 (OJ L 152, 3.6.2022, p. 45).’;*

¹ Commission Implementing Regulation (EU) 2020/1294 of 15 September 2020 on the Union renewable energy financing mechanism (OJ L 303, 17.9.2020, p. 1).

(b) the following paragraph is inserted:

*‘7a. Member States bordering a sea basin shall cooperate **in order to establish jointly, after consulting stakeholders**, the amount of offshore renewable energy they plan to produce in that sea basin by 2050, with intermediate steps **and trajectories per sea basin** in 2030 and 2040 **in accordance with Regulation (EU) 2022/869**. Each Member State shall indicate the volumes it plans to achieve through governmental tenders, with a focus on technical and economic feasibility for the grid infrastructure.*

*In their cooperation agreements, the Member States shall collectively ensure that those plans are in line with the fulfilment of the objectives laid down in Commission communication of 19 November 2020 entitled ‘An EU Strategy to harness the potential of offshore renewable energy for a climate neutral future’, while respecting Union environmental law and the protection of biodiversity, the specificities and development in each region, especially the activities that already take place in the affected areas, the possible harm to the environment, the offshore renewable potential of the sea basin and the importance of ensuring associated integrated grid planning. Member States shall notify that amount **and the planned grid** in their updated integrated national energy and climate plans submitted pursuant to Article 14 of Regulation (EU) 2018/1999. **The Commission may take complementary measures to support Member States in their efforts to align with the trajectories per sea basin.***

Following the communication of the updated integrated national energy and climate plans, the Commission shall assess any possible gap between the potential amount of offshore renewable energy resources of the Member States and the amount of offshore renewable energy planned for 2030, 2040 and 2050. Where appropriate, the Commission shall take additional measures to reduce that gap.

Member States bordering a sea basin shall jointly define the adequate space for offshore renewable energy projects and allocate that space in their maritime spatial plans while ensuring a strong public participation approach so that the views of all stakeholders and affected coastal communities, as well as the impacts on the activities already taking place in the affected areas, are taken into account.

In order to facilitate permit granting for joint offshore renewable energy projects, Member States shall reduce the complexity and increase the efficiency and transparency of the permit granting process and enhance cooperation among themselves, including, where appropriate, by establishing a single point of contact (‘one-stop shop’) per priority offshore grid corridor.

In order to enhance broad public acceptance, Member States shall ensure the possibility of including renewable energy communities in joint cooperation projects on offshore renewable energy.’;

(5) Article 15 is amended as follows:

(-a) paragraph 1 is amended as follows:

(a) *the first subparagraph is replaced by the following:*

‘Member States shall ensure that any national rules concerning the authorisation, certification and licensing procedures that are applied to plants, including renewable hybrid power plants and associated transmission and distribution networks for the production of electricity, heating or cooling from renewable sources, to the process of transformation of biomass into biofuels, bioliquids, biomass fuels or other energy products, and to renewable fuels of non-biological origin are proportionate and necessary and contribute to the implementation of the energy efficiency first principle.’;

(-aa) *the second subparagraph is amended as follows:*

(i) *point (a) is replaced by the following:*

‘(a) all administrative procedures are streamlined, including regional and municipal processes, and expedited at the appropriate administrative level and predictable timeframes are established for the procedures referred to in the first subparagraph;’;

(ii) *points (c) and (d) are replaced by the following:*

‘(c) all administrative charges paid by consumers, planners, architects, builders and equipment and system installers and suppliers are transparent and cost-related; and

(d) simplified and less burdensome authorisation procedures, including a simple-notification procedure and single contact points are established for decentralised devices, and for producing and storing energy from renewable sources.’;

(a) *paragraph 2 is replaced by the following:*

*‘2. Member States shall clearly define any technical specifications which are to be met by renewable energy equipment and systems in order to benefit from support schemes **and to be eligible under public procurement**. Where **regulatory or** harmonised standards or European standards exist, including technical reference systems established by the European standardisation organisations, such technical specifications shall be expressed in terms of those standards. Precedence shall be given to **regulatory and** harmonised standards, the references of which have been published in the Official Journal of the European Union in support of European legislation, **including for instance Regulation (EU) 2017/1369 or (EU) 2009/125**. In their absence, other harmonised standards and European standards shall be used, in that order. Such technical specifications shall not prescribe where the equipment and systems are to be certified and shall not impede the proper functioning of the internal market’;*

(aa) *paragraph 3 is replaced by the following:*

‘3. Member States shall ensure that their competent authorities at national, regional and local level include provisions for the integration and deployment of renewable energy, including for renewables self-consumption and renewable energy communities, and the use of unavoidable waste heat and

cold when planning, including early spatial planning, designing, building and renovating urban infrastructure, industrial, commercial or residential areas and energy and transport infrastructure, including electricity, district heating and cooling, natural gas and alternative fuel networks. Member States shall, in particular, encourage local and regional administrative bodies to include heating and cooling from renewable sources in the planning of city infrastructure where appropriate, and to consult the network operators to reflect the impact of energy efficiency and demand response programs as well as specific provisions on renewables self-consumption and renewable energy communities, on the infrastructure development plans of the operators.’;

(b) paragraphs 4, 5, 6 and 7 are deleted:

(c) paragraph 8 is replaced by the following:

‘8. Member States shall assess the regulatory and administrative barriers to long-term renewables *energy* purchase agreements, *including renewables power purchase agreements, renewables heating and cooling purchase agreements and renewables hydrogen purchase agreements, co-located energy storage projects as well as cross-border ones.* █

*They shall remove █ barriers at national and cross border level to their development, such as barriers to permitting, for example for energy intensive industries and SMEs, as well as other smaller actors and municipalities, and promote the uptake of, such agreements, including by exploring how to reduce the financial risks associated with them, in particular by using credit guarantees. Member States shall ensure that those agreements are not subject to disproportionate or discriminatory procedures or *any* charges *or fees*, and that any associated guarantees of origin can be transferred to the buyer of █ energy under *a renewables energy* purchase agreement.*

Member States shall describe their policies and measures promoting the uptake of renewables *energy* purchase agreements in their integrated national energy and climate plans referred to in Articles 3 and 14 of Regulation (EU) 2018/1999 and progress reports submitted pursuant to Article 17 of that Regulation. They shall also provide, in those reports, an indication of the volume of renewable power generation supported by *the different types of* renewables *energy* purchase agreements.

Member States shall ensure that applicants are allowed to submit all relevant documents in digital form. If an applicant makes use of the digital application option, the entire permitting process including the administrative internal processes needs to be carried out digitally. Member States shall further ensure the digitalisation of the public hearings and the participation procedures.’;

(d) the following paragraph 9 is added:

‘9. By ... [one year after the entry into force of this amending Directive], the Commission shall *revise guidelines to Member States on permitting practices to accelerate and simplify the process for new and repowered projects. Those guidelines shall include recommendations on how to implement and apply* the rules on administrative procedures set out in *Articles 15 and 17 together with* their application *to renewable heating, cooling and power and renewable*

cogeneration and a set of key performance indicators (KPIs) to enable a transparent assessment and monitoring of both progress and effectiveness.

To that end, the Commission shall carry out appropriate consultations, including with relevant stakeholders. Such guidance shall also include information on digital and human resources of permitting authorities, effective single contact points, spatial planning, military and civil aviation constraints, court proceedings and civil resolution and mediation cases as well as adjustment and retrofitting of laws on mining, geological works as well as ensuring adequate technical capacity to perform those tasks.

Member States shall present an assessment of their permitting process and the measures for improvement to be taken in line with the guidelines in the updated integrated national energy and climate plan referred to in Article 14(2) of Regulation (EU) 2018/1999 in accordance with the procedure and timeline laid down in that Article.

The Commission shall assess the corrective measures in the plans and scoring of each Member state in the key performance indicators. The assessment shall be made publicly available.

*In the case of a lack of progress, the Commission may take additional measures to support Member States in their implementation **assisting them in reforming and streamlining their permitting procedures.***’;

(6) the following Article is inserted:

‘Article 15a

Mainstreaming renewable energy in buildings

1. In order to promote the production and use of renewable energy *and waste heat and cold* in the building sector, Member States shall set an indicative target for the share of renewables *produced on site or nearby including from the grid* in final energy consumption in their buildings sector in 2030 that is consistent with an indicative target of at least a 49 % share of energy from renewable sources *and unavoidable waste heat and cold* in the buildings sector in the Union’s final consumption of energy in 2030. *Member States that do not explicitly price carbon in the building sector through a tax or emissions trading scheme or Member States that temporarily opt out of the new European emissions trading scheme for buildings and transport shall set a higher indicative share of renewable energy sources.* The national *indicative* target shall be expressed in terms of share of national final energy consumption and calculated in accordance with the methodology set out in Article 7, *which may include in the calculation of the share of final consumption the electricity from renewable sources comprising self-consumption, energy communities, the share of renewable energy in the electricity mix and the unavoidable waste heat and cold.* Member States shall include their target in the updated integrated national energy and climate plans submitted pursuant to Article 14 of Regulation (EU) 2018/1999 as well as information on how they plan to achieve it.

Member States may count waste heat and cold towards the target referred to in the first subparagraph, up to a limit of 20 %. If they decide to do so, the target shall increase by half of the waste heat and cold percentage used to an upper limit of 54 %.

2. Member States shall introduce measures in their building regulations and codes and, where applicable, in their support schemes, to increase the share of electricity and heating and cooling from renewable sources ***both produced on site or nearby including from the grid*** in the building stock, including national measures relating to substantial increases in renewables self-consumption, renewable energy communities, ***local renewable energy sharing*** and local energy storage, ***smart and bidirectional charging, other flexibility services such as demand response***, and in combination with energy efficiency improvements relating to ***high-efficiency*** cogeneration and passive, nearly zero-energy and zero-energy buildings, ***taking into account innovative technologies***.

To achieve the indicative share of ***renewable energy sources*** set out in paragraph 1, Member States shall, in their building regulations and codes and, where applicable, in their support schemes or by other means with equivalent effect, require the use of minimum levels of energy from renewable sources ***both produced on-site or nearby, including from the grid***, in ***new buildings and in those subject to major renovation***, in line with the provisions of Directive 2010/31/EU ***and where that is economically, technically and functionally feasible***. Member States shall allow those minimum levels to be fulfilled, among others, through efficient district heating and cooling.

For existing buildings, the first subparagraph shall apply to the armed forces only to the extent that its application does not cause any conflict with the nature and primary aim of the activities of the armed forces and with the exception of material used exclusively for military purposes.

3. Member States shall ensure that public buildings at national, regional and local level, fulfil an exemplary role as regards the share of renewable energy used, in accordance with the provisions of Article 9 of Directive 2010/31/EU and Article 5 of Directive 2012/27/EU. Member States may, among others, allow that obligation to be fulfilled by providing for the roofs ***or other compatible surfaces and sub-surfaces*** of public or mixed private-public buildings to be used by third parties for installations that produce energy from renewable sources.

Member States shall promote cooperation between local authorities and renewable energy communities in the building sector, particularly through the use of public procurement. Such support shall be indicated in Member States' National Building Renovation Plans under Article 3 of Directive ... [EPBD].

4. In order to achieve the indicative share of renewable energy set out in paragraph 1, Member States shall promote the use of renewable heating and cooling systems and equipment ***including innovative technologies for the given local context, such as***

smart and renewable-based electrified heating and cooling systems and equipment, complemented, where applicable, with smart management of all decentralised energy resources in buildings, through Building Energy Management Systems capable of interacting with the energy grid. To that end, Member States shall use all appropriate measures, tools and incentives, including, among others, energy labels developed under Regulation (EU) 2017/1369 of the European Parliament and of the Council¹, energy performance certificates pursuant to Directive 2010/31/EU, or other appropriate certificates or standards developed at national or Union level, and shall ensure the provision of adequate information and advice, **including through one-stop shops**, on renewable, highly energy efficient alternatives as well as on financial instruments and incentives available to promote an increased replacement rate of old heating **and cooling** systems and an increased switch to solutions based on renewable energy.’;

(7) ■ Article 18 *is amended as follows:*

(a) paragraphs 3 and 4 are replaced by the following:

‘3. Member States shall ensure that certification **schemes or equivalent national qualification** schemes are available for installers and designers of all forms of renewable heating and cooling systems in buildings, industry and agriculture, and for installers of **other renewable energy technologies, storage and demand-response technologies, including charging stations**. Those schemes may take into account existing schemes and structures as appropriate and shall be based on the criteria laid down in Annex IV. Each Member State shall **verify the recognition of** the certification awarded by other Member States in accordance with those criteria.

By 31 December 2023 and every three years thereafter, Member States shall **assess the gap between available and needed trained and qualified installations professionals, and, where appropriate, provide recommendations to remove any gaps. Those assessments and any recommendations shall be made publicly available.**

Member States shall **establish conditions, including through upskilling and reskilling strategies, to ensure that a sufficient number of** trained and qualified installers **referred to in paragraph 3 is** available ■ to service the growth of renewable heating and cooling required to contribute to the annual increase in the share of renewable energy in the heating and cooling sector as set out in Article 23 **and to the targets for renewable energy in buildings set out in Article 15a, in the industry sector set out in Article 22a and in the transport sector set out in Article 25, and to contribute to reaching the overall target set out in Article 3.**

¹ Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1).

To achieve *a sufficient number* of installers and designers, Member States shall, ***provided that they are compatible with national qualification and certification schemes***, ensure that sufficient training programmes leading to qualification or certification covering renewable heating and cooling technologies, and their latest innovative solutions, are made available. Member States shall put in place measures to promote participation in such programmes, in particular by small and medium-sized enterprises and the self-employed, ***as well as ensuring gender balance and targeting in particular underrepresented minorities***. ***If compatible with already existing training and qualification schemes***, Member States may put in place voluntary agreements with the relevant technology providers and vendors to train sufficient numbers of installers, which may be based on estimates of sales, in the latest innovative solutions and technologies available on the market.

Member States shall describe their policies and measures promoting effective, high quality and inclusive training, re-skilling and upskilling of workers in the field of renewable energies in their integrated national energy and climate plans referred to in Articles 3 and 14 of Regulation (EU) 2018/1999 and progress reports submitted pursuant to Article 17 of that Regulation.

4. Member States shall make information on the certification schemes ***or equivalent national qualification schemes*** referred to in paragraph 3 available to the public. Member States shall ***also make available to the public, in a transparent and easily accessible manner, a regularly updated*** list of installers who are qualified or certified in accordance with paragraph 3 ***’***;

(b) ***the following paragraph is added:***

‘6a. Any measures taken under this Article shall be without prejudice to measures taken under Directives (EU) .../... [Energy Efficiency Directive] and (EU) .../... [EPBD].’;

(8) Article 19 is amended as follows:

(-a) ***paragraph 1 is replaced by the following:***

‘1. For the purposes of demonstrating to final customers the origin of energy from renewable sources in an energy supplier's energy mix and in the energy supplied to consumers under contracts marketed with reference to the consumption of energy from renewable sources, Member States shall ensure that the origin of energy from renewable sources can be guaranteed as such within the meaning of this Directive, in accordance with objective, transparent and non-discriminatory criteria.’;

(a) paragraph 2 is amended as follows:

(i) the first subparagraph is replaced by the following:

‘To that end, Member States shall ensure that a guarantee of origin is issued in response to a request from a producer of energy from renewable sources. Member States shall provide for a uniform system of guarantees of origin to be issued for renewable hydrogen.

Member States may decide, for the purposes of accounting for the market value of the guarantee of origin, not to issue such a guarantee of origin to a producer that receives financial support from a support scheme.

The Commission shall introduce supplemental information for guarantees of origin, while avoiding double counting.

*Issuance of guarantees of origin may be made subject to a minimum capacity limit. A guarantee of origin shall be **1 MWh** with the possibility to issue fractions of it. They shall be duly standardized through the European standard CEN-EN16325 and issued upon a request from a producer of energy, provided that this does not lead to double counting. Simplified registration processes and reduced registration fees shall be introduced for small installations of less than 50 kW and for energy communities. Guarantees of origin may be issued for several small installations pooled together.*

*No more than one guarantee of origin shall be issued in respect of each unit of energy produced **and the same unit of energy is taken into account only once.***’;

(ia) the *second subparagraph* is deleted;

(ib) *in the fourth subparagraph, point (c) is replaced by the following:*

‘(c) where the guarantees of origin are not issued directly to the producer but to a supplier or consumer who buys the energy either in a competitive setting or in a long-term renewables power purchase agreement.’;

(ii) the *fifth subparagraph* is deleted;

(aa) *paragraph 3 is replaced by the following:*

‘3. For the purposes of paragraph 1, guarantees of origin shall be valid for transactions for 12 months after the production of the relevant energy unit. Member States shall ensure that all guarantees of origin that have not been cancelled expire at the latest 18 months after the production of the energy unit. Member States shall include expired guarantees of origin in the calculation of their residual energy mix.’;

(ab) *paragraph 4 is replaced by the following:*

‘4. For the purposes of disclosure referred to in paragraphs 8 and 13, Member States shall ensure that energy companies cancel guarantees of origin at the latest six months after the end of the validity of the guarantee of origin. Furthermore, by ... [one year after the entry into force of this amending Directive], Member States shall ensure that the data on their residual mix is published on an annual basis.’;

(ac) *the first subparagraph of paragraph 7 is amended as follows:*

(i) *point (a) is replaced by the following:*

‘(a) the energy source from which the energy was produced and the start and end dates as close to real time as possible, with the objective to arrive at intervals of no more than one hour of production;’;

(ii) *point (c) is replaced by the following:*

‘(c) the identity, location, bidding zone for electricity, type and capacity of the installation where the energy was produced;’;

(iii) *the following points are added:*

‘(g) greenhouse gas emissions over the life cycle of the guaranteed energy in accordance with the standard ISO 14067:2018;

(h) refined time granularity;

(i) locational matching.’;

(b) **█** paragraph 8 **█** is replaced by the following:

*‘Where an electricity supplier is required to demonstrate the **origin** of energy from renewable sources in its energy mix for the purposes of Article 3(9), point (a) of Directive 2009/72/EC, it shall do so by using guarantees of origin except as regards the share of its energy mix corresponding to non-tracked commercial offers, if any, for which the supplier may use the residual mix.*

Where a gas supplier is required to demonstrate the origin of energy from renewable sources in its energy mix for the purposes of Annex I, section 5 of Directive (EU) .../... [on common rules for the internal markets in renewable and natural gases and in hydrogen as proposed by COM(2021)0803], it shall do so by using guarantees of origin except as regards the share of its energy mix corresponding to non- tracked commercial offers, if any, for which the supplier may use the residual mix.

Where Member States have arranged to have guarantees of origin for other types of energy, suppliers shall use for disclosure the same type of guarantees of origin as the energy supplied. Furthermore, when the customer consumes gas from a hydrogen or natural gas network, Member States may ensure that the guarantees of origin cancelled correspond to the relevant network characteristics. Likewise, guarantees of origin created pursuant to Article 14(10) of Directive 2012/27/EU may be used to substantiate any requirement to demonstrate the quantity of electricity produced from high-efficiency cogeneration. For the purposes of paragraph 2 of this Article, where electricity is generated from high-efficiency cogeneration using renewable sources, only one guarantee of origin specifying both characteristics may be issued.’;

(ba) *paragraph 9 is replaced by the following:*

‘9. Member States shall recognise guarantees of origin issued by other Member States in accordance with this Directive exclusively as evidence of the elements referred to in paragraph 1 and points (a) to (i) of the first subparagraph of paragraph 7. A Member State may refuse to recognise a guarantee of origin only where it has well-founded doubts about its accuracy,

reliability or veracity. The Member State shall notify the Commission of such a refusal and its justification.’;

(bb) *paragraph 11 is replaced by the following:*

‘11. Member States shall not recognise guarantees of origin issued by a third country except where the Union has concluded an agreement with that third country on mutual recognition of guarantees of origin issued in the Union and compatible guarantees of origin systems established in that third country, and only where there is direct import or export of energy. The Commission shall issue guidelines clarifying the Union requirements for recognizing guarantees of origin issued by a third country, including the underlying governance arrangements associated, to the purpose of streamlining and accelerating the achievement of such agreements with third countries.

By ... [one year after the entry into force of this amending Directive], the Commission shall issue guidance on relevant safeguards for cross-border transfers.’;

(bc) *paragraph 13 is replaced by the following:*

‘13. The Commission shall adopt a report by 30 June 2025 assessing options to establish a Union-wide green label with a view to promoting the use of renewable energy coming from new installations. Suppliers shall use the information contained in guarantees of origin to demonstrate compliance with the requirements of such a label.’;

(bd) *the following paragraph is added:*

‘13a. The Commission shall monitor the functioning of the guarantees of origin system and assess by 30 June 2025 the balance of supply-demand of guarantees of origin in the market and in the case of imbalances identify relevant factors affecting supply and demand and propose measures rectifying any potential structural imbalances with a view to support markets in focusing on new renewable installations.’;

(9) in Article 20, paragraph 3 is replaced by the following:

*‘3. Subject to their assessment included in the integrated national energy and climate plans in accordance with Annex I to Regulation (EU) 2018/1999 on the necessity to build new **or modernize existing** infrastructure for district heating and cooling from renewable sources in order to achieve the Union target set in Article 3(1) of this Directive, Member States shall, **in accordance with the energy efficiency first principle**, where relevant, take the necessary steps with a view to developing efficient district heating and cooling infrastructure to promote heating and cooling from renewable energy sources, **in** combination with thermal energy storage, **demand response systems and power to heat installations**.*

3a. In accordance with relevant electricity market law, Member States shall, where relevant, take the necessary actions to integrate intermittent renewable electricity in the grid while ensuring grid stability and security of supply.’;

(10) the following Article 20a is inserted:

‘Article 20a

Facilitating system integration of renewable electricity

‘1. Member States shall require transmission system operators, **and, if technically available**, distribution system operators in their territory to make available information on the share of renewable electricity and the greenhouse gas emissions content of the electricity supplied in each bidding zone, as accurately as possible and as close to real time as possible but in time intervals of no more than one hour, with forecasting where available. **Member States shall ensure that distribution system operators have access to the needed data. If they do not have access, according to national legislation, to all information needed, they shall apply existing data reporting system under ENTSO-E, in accordance with the provisions of Directive 2019/944. However, transmission system operators and distribution system operators shall not be liable for forecasting, estimation or calculation errors due to external circumstances. Member States shall incentivise upgrades of smart grids to better monitor grid balance and make available real time information.**

If technically available, distribution system operators should also make available anonymized and aggregated data on the demand response potential and the renewable electricity generated by self-consumers and renewable energy communities and injected to the grid.

1 a. The information **and data referred to in paragraph 1** shall be made available digitally in a manner that ensures **interoperability based on harmonized data formats and standardized data sets so that** it can be used **in a non-discriminatory manner** by electricity market participants, aggregators, consumers and end-users, and that it can be read by electronic communication devices **█**.

2. In addition to the requirements in [the proposal for a Regulation concerning batteries and waste batteries, repealing Directive 2006/66/EC and amending Regulation (EU) No 2019/1020], Member States shall **adopt measures requiring** manufacturers of domestic and industrial batteries **to** enable real-time access to basic battery management system information, including battery capacity, state of health, state of charge and power set point, to battery owners and users as well as to third parties acting on their behalf **with explicit consent and in compliance with the relevant provisions set out in Regulation (EU) 2016/679**, such as building energy management companies and electricity market participants, under non-discriminatory terms and **free of charge**.

By ... [6 months from the entry into force of this amending Directive], Member States shall **adopt measures requiring** vehicle manufacturers **to** make available, in real-time, in-vehicle data related to the battery state of health, battery state of charge, battery power setpoint **and** battery capacity **█** to electric vehicle owners and users, as well as to third parties acting on the owners’ and users’ behalf **with explicit consent**, such as electricity market participants and electromobility service providers, under non-discriminatory terms and **free of charge to the owners or users of the batteries and the entities acting on their behalf**, in addition to further requirements in the type approval and market surveillance regulation **and in full compliance with the relevant provisions in regulation (EU) 2016/679. In accordance with the Battery Regulation, data shall be shared as ‘read-only’, thus preventing third parties from modifying the parameters of the data.**

Member States shall ensure that █ manufacturers of smart heating and cooling systems, thermal energy storage units and other smart devices facilitating consumers

to provide demand response to the energy system enable real-time access to data relevant for demand response under non-discriminatory terms and free of charge to users, as well as to third parties acting on the owners' and users' behalf through explicit consent and in compliance with the relevant provisions set out in Regulation (EU) 2016/679.

3. In addition to the requirements in [the proposal for a Regulation concerning the deployment of alternative fuel infrastructure, repealing Directive 2014/94/EU], Member States shall ensure that non-publicly accessible normal power recharging points installed in their territory from [the transposition deadline of this amending Directive] can support smart charging functionalities and *interface with smart metering systems, when deployed by Member States and*, where appropriate based on assessment by the regulatory authority, bidirectional charging functionalities *as laid down in Article 14(4) of Regulation ... [the Alternative Fuel Infrastructure Regulation] and assessed by regulatory authorities regarding its potential contribution.*

4. Member States shall *ensure that all means of electricity generation, including renewable electricity production units, are involved in providing system and balancing services. Member States shall also ensure that the national regulatory framework does not discriminate against participation in the electricity markets, including congestion management and the provision of flexibility and balancing services for the electricity networks and the district heating and cooling networks, energy storage and flexibility providers as well as balancing services, of small or mobile systems such as domestic and community batteries and electric vehicles, as well as decentralised energy resources with a capacity under 1MW participating to the system, thermal energy storage units, power-to-gas, heat pumps and other technologies able to provide flexibility, both directly and through aggregation. Member States shall provide a level playing field for smaller market actors, in particular renewable energy communities, so that they are able to participate in the market without facing disproportionate administrative or regulatory burden.*’;

4 a. Member States shall ensure that the national regulatory framework allows final customers to enter into contractual agreements with electricity market participants and electromobility service providers to receive information on the terms of the agreement, including their personal data protection, and its implications for the consumers, including the remuneration for the flexibility.’;

(11) the following Article 22a is inserted:

‘Article 22a

Mainstreaming renewable energy in industry

1. Member States shall endeavour to increase the share of renewable sources in the amount of energy sources used for final energy and non-energy purposes in the industry sector by an indicative average minimum annual increase of **1,9** percentage points by 2030. *That increase shall be calculated as an average for the three-year periods, i.e. 2024 to 2027 and 2027 to 2030.*

Member States shall include the *policies and* measures planned and taken to achieve such indicative increase in their integrated national energy and climate plans and

progress reports submitted pursuant to Articles 3, 14 and 17 of Regulation (EU) 2018/1999. *Such measures shall include the renewable-based electrification of industrial processes when considered as a cost-effective option. When adopting measures to increase the share of renewable energy in industry, Member States shall comply with the energy efficiency first principle.*

Member States shall establish a regulatory framework which may include support measures for industry in accordance with in Article 3(4a) and promote the uptake of renewable sources and renewable hydrogen consumed by industry, taking effectiveness and international competitiveness fully into account, as necessary pre-conditions for the uptake of renewable energy consumption in industry. In particular, that framework should tackle regulatory, administrative and economic barriers in line with Article 3(4a) and Article 15(8).

Member States shall ensure that the contribution of renewable fuels of non-biological origin used for final energy and non-energy purposes *is* 50 % of the hydrogen used for final energy and non-energy purposes in industry by 2030. *Member States shall ensure that by 2035, the contribution of renewable fuels of non-biological origin used for final energy and non-energy purposes is at least 70 % of the hydrogen used for final energy and non-energy purposes in industry. The Commission shall analyse the availability of fuels of non-biological origin in 2026 and every year thereafter.* For the calculation of *the* percentage, the following rules shall apply [Am. 34]:

(a) For the calculation of the denominator, the energy content of hydrogen for final energy and non-energy purposes shall be taken into account, excluding hydrogen used as intermediate products for the production of conventional transport fuels *and hydrogen produced as a by-product or derived from by-products in industrial installations;*

(b) For the calculation of the numerator, the energy content of the renewable fuels of non-biological origin consumed in the industry sector for final energy and non-energy purposes shall be taken into account, excluding renewable fuels of non-biological origin used as intermediate products for the production of **■** transport fuels.

(c) For the calculation of the numerator and the denominator, the values regarding the energy content of fuels set out in Annex III shall be used.

By 31 January 2026, following the establishment of the rules referred to in paragraph 1, the Commission shall assess whether, in view of regulatory, technical and scientific development, it is appropriate and justified to adapt the RFNBOs sub-target of 2030, and, where appropriate, shall amend this article for that purpose, accompanied by an impact assessment.

To promote the use of renewable energy solutions for low and medium-temperature industrial heat, Member States shall endeavour to increase the availability of economically viable and technically feasible renewable alternatives to fossil-fuel based energy use for industrial heat applications with the aim of ending the use of fossil-fuel based for applications requiring maximum heating temperatures up to 200 degrees Celsius by 2027 at the latest.

■

1a. *By ... [one year after the entry into force of this amending Directive], the Commission shall develop a global hydrogen import strategy to promote a European*

hydrogen market. This strategy shall complement initiatives to promote domestic hydrogen production within the Union, supporting the implementation of this Directive and the achievement of the targets set out therein, while having due regard to security of supply and the Union's strategic autonomy in energy. The measures included in the strategy shall aim to promote a level playing-field, based on equivalent rules or standards in third countries in terms of environmental protection, sustainability and mitigating climate change. The strategy shall include indicative milestones and measures for imports. Member States shall take appropriate measures to implement the strategy in their integrated national energy and climate plans and progress reports submitted pursuant to Articles 3, 14 and 17 of Regulation (EU) 2018/1999. Furthermore, the strategy shall also take into account the need to develop access to energy for local people.';

(12) Article 23 is amended as follows:

(a) paragraph 1 is replaced by the following:

‘1. In order to promote the use of renewable energy in the heating and cooling sector, each Member State shall, increase the share of renewable energy in that sector by ***an indicative 2.3*** percentage points as an annual average calculated for the periods 2021 to 2025 and 2026 to 2030, starting from the share of renewable energy in the heating and cooling sector in 2020, expressed in terms of national share of gross final energy consumption and calculated in accordance with the methodology set out in Article 7.

That increase shall be of ***2.8*** percentage points for Member States where waste heat and cold is used. In that case Member States may count waste heat and cold up to 40 % of the average annual increase.’;

(b) the following paragraph 1a is inserted:

‘1a. ***In order to give the Commission a full account of the considerable differences in the level of industrial heat demand across the Union,*** Member States shall carry out an assessment of their potential of energy from renewable sources and of the use of waste heat and cold in the heating and cooling sector including ***a cost- benefit analysis covering all the positive externalities,*** where appropriate, an analysis of areas suitable for their deployment at low ecological risk and of the potential for small-scale household projects. ***SMEs, industrial symbioses and of commercial buildings and outline any infrastructure requirements with the participation of local and regional authorities.*** The assessment shall ***consider the available and economically feasible technologies for industrial and domestic uses in order to*** set out milestones and measures to ***increase the use of renewable energy sources*** in heating and cooling and, where appropriate, the use of waste heat and cold through district heating and cooling ***and small-scale households and SMEs*** with a view ***to*** establishing a long-term national strategy to ***reduce greenhouse gas emissions and air pollution originating from*** heating and cooling. ***Such strategy shall take into account the different level of heat quality (high, medium, low temperature) specific to various processes and uses.*** The assessment shall be ***in accordance with the energy efficiency first principle and*** part of the integrated national

energy and climate plans referred to in Articles 3 and 14 of Regulation (EU) 2018/1999, and shall accompany the comprehensive heating and cooling assessment required by Article 14(1) of Directive 2012/27/EU.’;

(c) in paragraph 2, first subparagraph, point (a) is deleted.

(ca) in paragraph 2, the following subparagraph is added:

‘Member States shall in particular provide information to the owners or tenants of buildings and SMEs on cost-effective measures, and financial instruments, to improve the use of renewable energy in the heating and cooling systems. Member States shall provide the information through accessible and transparent advisory tools based in one-stop shops.’;

(d) paragraph 4 is replaced by the following:

‘4. To achieve the average annual increase referred to in paragraph 1, first subparagraph, Member States **shall** implement **at least three** of the following measures::

- (a) physical incorporation of renewable energy or waste heat and cold in the energy sources and fuels supplied for heating and cooling;
- (b) installation of highly efficient renewable heating and cooling systems in buildings, **connection of buildings to high efficiency district heating and cooling systems** or use of renewable energy or waste heat and cold in industrial heating and cooling processes;
- (c) measures covered by tradable certificates proving compliance with the obligation laid down in paragraph 1, first subparagraph, through support to installation measures under point (b) of this paragraph, carried out by another economic operator such as an independent renewable technology installer or an energy service company providing renewable installation services;
- (d) capacity building for national, **regional** and local authorities to **map local renewable heating and cooling potential and** plan, **implement and advise on** renewable projects and infrastructures;
- (e) creation of risk mitigation frameworks to reduce the cost of capital for renewable heat and cooling **and waste heat and cold** projects, **inter alia allowing for the bundling of smaller projects as well as linking such projects more holistically with other energy efficiency and building renovation measures**;
- (f) promotion of **renewables heating and cooling** purchase agreements for corporate and collective small consumers;
- (g) planned replacement schemes of fossil heating **sources, heating** systems **not compatible with renewable sources** or fossil phase-out schemes with milestones;
- (h) renewable heat planning, encompassing cooling, requirements at local and regional level;

- (i) other policy measures, with an equivalent effect, including fiscal measures, support schemes or other financial incentives ***contributing to the installation of renewable heating and cooling equipment and the development of energy networks supplying renewable energy for heating and cooling in buildings and industry;***
- (j) ***promotion of the production of biogas and its injection into the gas grid, instead of its use for electricity production;***
- (k) ***measures promoting the integration of thermal energy storage technologies in heating and cooling systems;***
- (l) ***promotion of consumer-owned renewable based district heating and cooling networks, in particular by renewable energy communities, including through regulatory measures, financing arrangements and support.***

When adopting and implementing those measures, Member States shall ensure their accessibility to all consumers ***including those who are tenants***, in particular those in low-income or vulnerable households, ***and shall require a significant share of measures to be implemented as a priority in households living in a condition of energy poverty as defined in Directive ...[the Energy efficiency Directive recast] and in social housing***, who would not otherwise possess sufficient up-front capital to benefit.’;

(13) Article 24 is amended as follows:

(a) paragraph 1 is replaced by the following:

‘1. ***Member States shall support the renovation of existing and the development of highly efficient 4th and 5th generation renewable district heating and cooling networks fuelled exclusively by renewable energy sources and unavoidable waste heat or cold, following a positive economic and environmental cost-benefit analysis undertaken in partnership with local authorities involved.*** Member States shall ensure that information on the energy performance, ***the greenhouse gas emissions*** and the share of renewable energy in their district heating and cooling systems is provided to final consumers in an easily accessible manner, such as on bills or on the suppliers' websites and on request. The information on the renewable energy share shall be expressed at least as a percentage of gross final consumption of heating and cooling assigned to the customers of a given district heating and cooling system, including information on how much energy was used to deliver one unit of heating to the customer or end-user.’;

(b) paragraph 4 is replaced by the following:

‘4. Member States shall endeavour to increase the share of energy from renewable sources, ***including heat generated from electricity from renewable energy sources***, and from waste heat and cold in district heating and cooling by at least ***2.3*** percentage

points as an annual average calculated for the period 2021 to 2025 and for the period 2026 to 2030, starting from the share of energy from renewable sources, **including heat generated from electricity from renewable energy sources**, and from waste heat and cold in district heating and cooling in 2020, and shall lay down the measures necessary to that end. The share of renewable energy shall be expressed in terms of share of gross final energy consumption in district heating and cooling adjusted to normal average climatic conditions.

Member States with a share of energy from renewable sources and from waste heat and cold in district heating and cooling above 60 % may count any such share as fulfilling the average annual increase referred to in the first subparagraph.

Member States shall lay down the necessary measures to implement the average annual increase referred to in the first subparagraph in their integrated national energy and climate plans pursuant to Annex I to Regulation (EU) 2018/1999.’;

(c) the following paragraph 4a is inserted:

‘4a. Member States shall ensure that operators of district heating or cooling systems above 25 MWth capacity are **encouraged** to connect third party suppliers of energy from renewable sources and from waste heat and cold or are **encouraged** to offer to connect and purchase heat or cold from renewable sources and from waste heat and cold from third-party suppliers based on non-discriminatory criteria **to be** set by the **concerned** Member State **if such a connection is technically and economically feasible and**, where such operators need to do one or more of the following:

- (a) meet demand from new customers;
- (b) replace existing heat or cold generation capacity;
- (c) expand existing heat or cold generation capacity.’;

Member States may decide to count renewable electricity used for district heating and cooling in the annual average increase set out in paragraph 4 of this Article. Renewable electricity counted towards Article 7(1), point (b) shall not be taken into account for the purpose of achieving the goals set out in Article 7(1), point (a).

Where Member States decide to count renewable electricity used in district heating and cooling they shall notify it to the Commission before the introduction of such mechanism. Member States shall include the amount of renewable electricity used in district heating and cooling in their integrated national energy and climate progress reports pursuant to Article 17 of Regulation (EU) 2018/1999.’;

(d) paragraphs 5 and 6 are replaced by the following:

‘5. Member States may allow an operator of a district heating or cooling system to refuse to connect and to purchase heat or cold from a third-party supplier in any of the following situations:

- (a) the system lacks the necessary capacity due to other supplies of heat or cold from renewable sources or of waste heat and cold;

(b) the heat or cold from the third-party supplier does not meet the technical parameters necessary to connect and ensure the reliable and safe operation of the district heating and cooling system;

(c) the operator can demonstrate that providing access would lead to an excessive heat or cold cost increase for final customers compared to the cost of using the main local heat or cold supply with which the renewable source or waste heat and cold would compete;

(d) the operator's system meets the definition of efficient district heating and cooling set out in [Article x of the proposed recast of the Energy Efficiency Directive].

Member States shall ensure that, when an operator of a district heating or cooling system refuses to connect a supplier of heating or cooling pursuant to the first subparagraph, information on the reasons for the refusal, as well as the conditions to be met and measures to be taken in the system in order to enable the connection, is provided by that operator to the competent authority. Member States shall ensure that an appropriate process is in place to remedy unjustified refusals.

6. Member States shall put in place, *where needed*, a coordination framework between district heating and cooling system operators and the potential sources of waste heat and cold in the industrial and tertiary sectors to facilitate the use of waste heat and cold. That coordination framework shall ensure *the application of the energy efficiency first principle and facilitate* dialogue as regards the use of waste heat and cold involving at least:

(a) district heating and cooling system operators;

(b) industrial and tertiary sector enterprises generating waste heat and cold that can be economically recovered via district heating and cooling systems, such as data centres, industrial plants, large commercial buildings, *energy storage facilities*, and public transport; █

(c) local authorities responsible for planning and approving energy infrastructures;

(d) scientific experts working on the latest state of the art highly energy efficient fully renewables based district heating and cooling systems;

(e) renewable energy communities involved in heating and cooling. ';

(e) paragraphs 8, 9 and 10 are replaced by the following:

'8. Member States shall establish a framework under which electricity distribution system operators will assess, at least every four years, in cooperation with the operators of district heating and cooling systems in their respective areas, the potential for district heating and cooling systems to provide balancing and other system services, including demand response and thermal storage of excess electricity from *centralised and decentralised* renewable sources, and whether the use of the identified potential would be more resource- and cost-efficient than alternative solutions, *in accordance with the energy efficiency first principle*.

Member States shall ensure that electricity transmission and distribution system operators take due account of the results of the assessment required under the first subparagraph in grid planning, grid investment and infrastructure development in their respective territories.

Member States shall facilitate coordination between operators of district heating and cooling systems and electricity transmission and distribution system operators to ensure that balancing, storage and other flexibility services, such as demand response, provided by district heating and district cooling system operators, can participate in their electricity markets *on a non-discriminatory basis*.

Member States may extend the assessment and coordination requirements under the first and third subparagraphs to gas transmission and distribution system operators, including hydrogen networks and other energy networks.

9. Member States shall ensure that the rights of consumers and the rules for operating district heating and cooling systems in accordance with this Article are clearly defined, publicly available and enforced by the competent authority.

10. A Member State shall not be required to apply *paragraph 2* where at least one of the following conditions is met:

(a) its share of district heating and cooling was less than or equal to 2 % of the gross final energy consumption in heating and cooling on 24 December 2018;

(b) its share of district heating and cooling is increased above 2 % of the gross final energy consumption in heating and cooling on 24 December 2018 by developing new efficient district heating and cooling based on its integrated national energy and climate plan pursuant to Annex I to Regulation (EU) 2018/1999 and the assessment referred to in Article 23(1a) of this Directive;

(c) 90 % of the gross final energy consumption in district heating and cooling systems takes place in district heating and cooling systems meeting the definition laid down in [Article x of the proposed recast of the Energy Efficiency Directive].’;

(14) Article 25 is replaced by the following:

‘Article 25

Greenhouse gas intensity reduction in the transport sector from the use of renewable energy

1. Each Member State shall set an obligation on fuel suppliers to ensure that:

(a) the amount of renewable fuels and renewable electricity supplied to the transport sector leads to a greenhouse gas intensity reduction of at least **16 %** by 2030, compared

to the baseline set out in Article 27(1), point (b), in accordance with *a* trajectory set by the Member State;

(b) the share of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX in the energy supplied to the transport sector is at least **0,5 %** in 2025 and **at least 2,2 %** in 2030, and the share of renewable fuels of non-biological origin is at least **2,6 % in 2028 and at least 5,7 %** in 2030;

(ba) from 2030, fuel suppliers shall deliver at least 1,2 % renewable fuels of non-biological origin and renewable hydrogen, to the hard to abate maritime mode. A Member State which has no maritime ports in its territory may choose not to apply this provision. Any Member State that intends to avail itself of that derogation shall notify the Commission no later than one year after ... [the entry into force of this amending Directive]. Any subsequent change shall also be communicated to the Commission.

If the list of feedstock set out in Part A and of Annex IX is amended in accordance with Article 28(6), the minimum share of advanced biofuels and biogas produced from the feedstock in the energy supplied to the transport sector referred to in point (b) of this paragraph shall be increased accordingly and shall be based on an impact assessment by the Commission.

The Commission shall assess the obligation laid down in paragraph 1 with a view to submitting a legislative proposal by 2025 to increase it where there are further substantial costs reductions in the production of renewable energy, where needed to meet the Union's international commitments for decarbonisation, or where a significant decrease in energy consumption in the Union justifies such an increase.

For the calculation of the reduction referred to in point (a) and the share referred to in point (b), Member States shall take into account renewable fuels of non-biological origin also when they are used as intermediate products for the production of conventional **transport** fuels. For the calculation of the reduction referred to in point (a), Member States may take into account recycled carbon fuels.

When setting the obligation on fuel suppliers, Member States may exempt fuel suppliers supplying electricity or renewable liquid and gaseous transport fuels of non-biological origin from the requirement to comply with the minimum share of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX with respect to those fuels.

2. Member States shall establish a mechanism allowing fuel suppliers in their territory to exchange credits for supplying renewable energy to the transport sector. Economic operators that supply renewable electricity to **light and heavy duty** electric vehicles through public recharging stations **or renewable energy** shall receive credits, irrespectively of whether the economic operators are subject to the obligation set by the Member State on fuel suppliers, and may sell those credits to fuel suppliers, which shall be allowed to use the credits to fulfil the obligation set out in paragraph 1, first subparagraph. **Member States may decide to include private recharging stations in the mechanism referred to in the first subparagraph provided it can be demonstrated that renewable electricity supplied to those private recharging stations is provided solely to electric vehicles.**;

(15) Article 26 is amended as follows:

(a) paragraph 1 is amended as follows:

(i) the first subparagraph is replaced by the following:

‘For the calculation of a Member State's gross final consumption of energy from renewable sources referred to in Article 7 and of the greenhouse gas intensity reduction target referred to in Article 25(1), first subparagraph, point (a), the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport, where produced from food and feed crops, shall be no more than one percentage point higher than the share of such fuels in the final consumption of energy in the transport sector in 2020 in that Member State, with a maximum of 7 % of final consumption of energy in the transport sector in that Member State.

At the request of a Member State, the Commission may allow a derogation from the first subparagraph allowing Member States to exclude bioliquids used for electricity production in outermost regions within the meaning of Article 349 TFEU from the calculation of the ceiling of 7% of final consumption of energy in the road and rail transport sector referred to in the first subparagraph, provided that such derogation is justified by local specificities. Member States shall make the request for the derogation to the Commission by ... [date of transposition of this amending Directive] and provide up-to-date scientific and technical justifications for such derogation. The Commission shall decide on the request of the Member State within three months of its receipt.’;

(i a) *the second subparagraph is replaced by the following:*

‘Where the share of biofuels and bioliquids referred to in the first subparagraph is below 1 % in a Member State, it may be increased to a maximum of 2 % of the final consumption of energy in the road and rail transport sectors.’;

(ii) the fourth subparagraph is replaced by the following:

‘Where the share of biofuels and bioliquids, as well as of biomass fuels consumed in transport, produced from food and feed crops in a Member State is limited to a share lower than 7 % or a Member State decides to limit the share further, that Member State may reduce the greenhouse gas intensity reduction target referred to in Article 25(1), first subparagraph, point (a), accordingly, in view of the contribution these fuels would have made in terms of greenhouse gas emissions saving. For that purpose, Member States shall consider those fuels save 50 % greenhouse gas emissions.’;

(b) **█** paragraph 2 *is amended as follows:*

(i) *in the* first and fifth subparagraphs, ‘the minimum share referred to in the first subparagraph of Article 25(1)’ is replaced by ‘the greenhouse gas

emission reduction target referred to in Article 25(1), first subparagraph, point (a)';

(ii) *the second subparagraph is replaced by the following:*

'By ... [date of entry into force of this amending Directive], that limit shall decrease to 0 %.'

(iii) *the following subparagraph is inserted after the fourth subparagraph:*

'By 30 June 2023, the Commission shall submit to the European Parliament and to the Council an update of the report on the status of worldwide production expansion of the relevant food and feed crops. That update shall include the most recent data from the last two years with regard to deforestation and high indirect land use change risk feedstocks, and shall address other high risk commodities in the category of high indirect land use change risk feedstocks. For the purposes of the delegated acts referred to in the sixth subparagraph, the maximum share of the average annual expansion of the global production area in high carbon stocks shall be 7,9%.'

(16) Article 27 is amended as follows:

(a) the title is replaced by the following:

'Calculation rules in the transport sector and with regard to renewable fuels of non-biological origin regardless of their end use';

(b) paragraph 1 is replaced by the following:

'1. For the calculation of the greenhouse gas intensity reduction referred to in Article 25(1), first subparagraph, point (a), the following rules shall apply:

(a) the greenhouse gas emissions savings shall be calculated as follows:

(i) for biofuel and biogas, by multiplying the amount of these fuels supplied to all transport modes by their emissions savings determined in accordance with Article 31;

(ii) for renewable fuels of non-biological origin and recycled carbon fuels, by multiplying the amount of these fuels that is supplied to all transport modes by their emissions savings determined in accordance with delegated acts adopted pursuant to Article 29a(3);

(iii) for renewable electricity, by multiplying the amount of renewable electricity that is supplied to all transport modes by *a* fossil fuel comparator.

The comparator $EC_{F(e)}$ set out in in Annex V shall be used until 31 December 2029. From 1 January 2030 onwards, the comparator $E_{F(t)}$ set out in in Annex V shall be used.

However, the greenhouse gas emissions savings achieved in 2030 by the use of renewable electricity in transport, calculated in application of the $E_{F(t)}$ comparator, shall constitute an additional contribution of renewable electricity of what was already achieved up until 31 December 2029 with the $EC_{F(e)}$ comparator for the calculation of emission savings from 2030 onwards.

(b) the baseline referred to in Article 25(1) shall be calculated by multiplying the amount of energy supplied to the transport sector by the fossil fuel comparator $E_{F(t)}$ set out in Annex V;

(c) for the calculation of the relevant amounts of energy, the following rules shall apply:

(i) in order to determine the amount of energy supplied to the transport sector, the values regarding the energy content of transport fuels set out in Annex III shall be used;

(ii) in order to determine the energy content of transport fuels not included in Annex III, the Member States shall use the relevant European standards for the determination of the calorific values of fuels. Where no European standard has been adopted for that purpose, the relevant ISO standards shall be used;

(iii) the amount of renewable electricity supplied to the transport sector is determined by multiplying the amount of electricity supplied to that sector by the average share of renewable electricity supplied in the territory of the Member State in the two previous years. By way of exception, where electricity is obtained from a direct connection to an installation generating renewable electricity and supplied to the transport sector, that electricity shall be fully counted as renewable;

(iv) the share of biofuels and biogas produced from the feedstock listed in Part B of Annex IX in the energy content of fuels and electricity supplied to the transport sector shall, except in Cyprus and Malta, be limited to 1,7 %;

If the list of feedstock set out in Part B of Annex IX is amended in accordance with Article 28(6), the cap of such biofuels and biogas shall be increased accordingly and shall be based on an impact assessment by the Commission.

(d) the greenhouse gas intensity reduction from the use of renewable energy is determined by dividing the greenhouse gas emissions saving from the use of biofuels, biogas and renewable electricity supplied to all transport modes by the baseline.

The Commission is empowered to adopt delegated acts in accordance with Article 35 to supplement this Directive by adapting the energy content of transport fuels, as set out in Annex III, in accordance with scientific and technical progress;’;

(c) the following paragraph 1a is inserted:

‘1a. For the calculation of the targets referred to in Article 25(1), first subparagraph, point (b), the following rules shall apply:

(a) for the calculation of the denominator, that is the amount of energy consumed in the transport sector, all fuels and electricity supplied to the transport sector shall be taken into account;

(b) for the calculation of the numerator, the energy content of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX and renewable fuels of non-biological origin supplied to all transport modes in the territory of the Union shall be taken into account;

(c) the shares of advanced biofuels and biogas produced from the feedstock listed in Part A of Annex IX and of renewable fuels of non-biological origin supplied in the aviation and maritime modes shall be considered to be 1,2 times their energy content.’;

(d) paragraph 2 is deleted;

(e) paragraph 3 is *replaced by the following*:

‘3. Where electricity is used for the production of renewable fuels of non-biological origin, either directly or for the production of intermediate products, the average share of electricity from renewable sources in the country of production, as measured two years before the year in question, shall be used to determine the share of renewable energy.

Electricity obtained from direct connection to one or several installations generating renewable electricity may be fully counted as renewable electricity where it is used for the production of renewable fuels of non-biological origin, provided that the installation demonstrates that the electricity concerned has been supplied without taking electricity from the grid.

Electricity that has been taken from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated, ensuring that the renewable properties of that electricity are claimed only once and only in one end-use sector.

This can be fulfilled by complying with the following requirements:

(a) to demonstrate the renewable properties, fuel producers should be required to conclude one or more renewable power purchase agreements with installations generating electricity for an amount that is at least equivalent to the amount of electricity that is claimed as fully renewable.

(b) the balance between the renewable electricity purchased through one or several power purchase agreements and the amount of electricity taken from the grid to produce the fuel shall be achieved on a quarterly basis in order for the production to be fully qualified as renewable fuel of non-biological origin.

From 1 January 2030, the balance between the renewable electricity purchased through one or several power purchase agreements and the amount of electricity taken from the grid to produce the fuel shall be

achieved either on a monthly, quarterly or yearly basis in order for the production to be fully qualified as renewable fuel of non-biological origin. The temporal correlation shall depend on an assessment carried out by the Commission. This requirement shall apply to all existing plants, including the ones commissioned before 2030.

With regard to the location of the electrolyser, at least one of the following conditions shall be fulfilled:

- (a) the installation generating renewable electricity under the renewables power purchase agreement is located in the same country as the electrolyser or in a neighbouring country; or*
- (b) the installation generating renewable electricity under the renewables power purchase agreement is located in an offshore bidding zone adjacent to the country where the electrolyser is located or in a neighbouring country.*

Electricity that has been taken or reinjected from an energy storage facility from the grid may be counted as fully renewable provided that it is produced exclusively from renewable sources and the renewable properties and other appropriate criteria have been demonstrated, ensuring that the renewable properties of that electricity are claimed only once and only in one end-use sector [Am. 13].

Electricity generated by a solar-electric vehicle and used for the movement of the vehicle itself may be counted as fully renewable.’ [Am. 32]

;

(17) Article 28 is amended as follows:

(a) paragraphs 2, 3 and 4 are deleted.

(b) paragraph 5 is replaced by the following:

‘By 31 December 2024, the Commission shall adopt delegated acts in accordance with Article 35 to supplement this Directive by specifying the methodology to determine the share of biofuel, and biogas for transport, resulting from biomass being processed with fossil fuels in a common process.’;

(ba) *in paragraph 6, points (c) and (d) are replaced by the following:*

‘(c) the need to avoid significant distortive effects on markets for (by-)products, wastes or residues, taking into account the future availability of raw materials and the need to avoid market distortion leading to massive imports of raw materials;

(d) the potential for delivering substantial greenhouse gas emissions savings compared to fossil fuels based on a life-cycle assessment of emissions, taking into account available volumes of feedstock and share of pre-existing competing industrial uses with due regard to national specificities;’;

(c) in paragraph 7, ‘laid down in the fourth subparagraph of Article 25(1)’ is replaced by ‘laid down in Article 25(1), first subparagraph, point (b)’;

(18) Article 29 is amended as follows:

(a) paragraph 1 is amended as follows:

(-i) in the first subparagraph, the introductory wording is replaced by the following:

‘Energy from biofuels, bioliquids and biomass fuels shall be taken into account for the purposes referred to in points (a), (b) and (c) of this subparagraph only if they fulfil the sustainability and the greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 of this Article, and if they take into account the waste hierarchy as set out in Article 4 of Directive 2008/98/EC and the cascading principle referred to in Article 3;’ [Am. 43];

(i) in the first subparagraph, point (a) is replaced by the following:

‘(a) contributing towards the renewable energy shares of Member States and the targets referred to in Articles 3(1), 15a(1), 22a(1), 23(1), 24(4), and 25(1) of this Directive;’;

(ia) the following subparagraph is inserted after the first subparagraph:

‘Energy from solid biomass fuels shall not be taken into account for the purposes referred to in points (b) and (c) of the first subparagraph if these are derived from primary woody biomass as defined in Article 2 of this Directive. For the purpose of contributing towards the renewables target referred to in Article 3(1), the energy share from solid biomass fuels derived from primary woody biomass as defined in Article 2 of this Directive shall be no more than the share of the overall energy consumption of the average of such fuel in 2017 - 2022 based on the latest available data.’ [Am. 44];

(ib) the second subparagraph is replaced by the following:

‘However, biofuels, bioliquids and biomass fuels produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues, are required to fulfil only the greenhouse gas emissions saving criteria laid down in paragraph 10 in order to be taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph. In the case of the use of mixed wastes, however, the operators are required to apply mixed waste sorting systems of defined quality aimed at removing fossil materials. This subparagraph shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, bioliquids and biomass fuels.’;

(ii) the fourth subparagraph is replaced by the following:

‘Biomass fuels shall fulfil the sustainability and greenhouse gas emissions saving criteria laid down in paragraphs 2 to 7 and 10 if used,

- (a) in the case of solid biomass fuels, in installations producing electricity, heating and cooling with a total rated thermal input equal to or exceeding 7,5 MW,***

- (b) in the case of gaseous biomass fuels, in installations producing electricity, heating and cooling with a total rated thermal input equal to or exceeding 2 MW,
- (c) in the case of installations producing gaseous biomass fuels with the following average biomethane flow rate:
 - (i) above **500** m³ methane equivalent/h measured at standard conditions of temperature and pressure (i.e. 0°C and 1 bar atmospheric pressure);
 - (ii) if biogas is composed of a mixture of methane and non-combustible other gases, for the methane flow rate, the threshold set out in point (i), recalculated proportionally to the volumetric share of methane in the mixture.’;
- (iii) the following subparagraph is inserted after the fourth subparagraph:

‘Member States may apply the sustainability and greenhouse gas emissions saving criteria to installations with lower total rated thermal input or biomethane flow rate.’;

(aa) in paragraph 3, the first subparagraph is replaced by the following:

‘Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with a high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status:

- (a) *primary and old-growth forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;***
- (b) *highly biodiverse forest and other wooded land which is species rich and not degraded, and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;***
- (c) *areas designated:***
 - (i) by law or by the relevant competent authority for nature protection purposes; or***
 - (ii) for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the first subparagraph of Article 30(4), unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;***
- (d) *highly biodiverse grassland spanning more than one hectare that is:***

(i) natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or

(ii) non natural, namely grassland that would cease to be grassland in the absence of human intervention and that is speciesrich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland.

(iii) heathland that maintains the natural species composition and ecological characteristics and processes.’;

- (b) in paragraph 3, the following subparagraph is inserted after the first subparagraph:

‘This paragraph, with the exception of the first subparagraph, point (c), also applies to biofuels, bioliquids and biomass fuels produced from forest biomass.’;

- (c) **█** paragraph 4 is replaced by the following:

‘4. Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained from land with high carbon stock, namely land that had one of the following statuses in January 2008 and no longer has that status:

(a) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year;

(b) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds in situ;

(c) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Part C of Annex V is applied, the conditions laid down in paragraph 10 of this Article would be fulfilled;

(ca) heathland that maintains the natural species composition and ecological characteristics and processes.

This paragraph shall not apply if, at the time the raw material was obtained, the land had the same status as it had in January 2008.

The first subparagraph, with the exception of points (b) and (c), and the second subparagraph also apply to biofuels, bioliquids and biomass fuels produced from forest biomass.’;

- (d) paragraph 5 is replaced by the following:

‘5. Biofuels, bioliquids and biomass fuels produced from agricultural or forest biomass taken into account for the purposes referred to in paragraph 1, first subparagraph, points (a), (b) and (c), shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is

provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil **and compliance on national or subnational level, in line with the criteria to minimise the risk of using forest biomass derived from unsustainable production referred to in paragraph 6, can be reported by competent national authority.**';

(da) *the following paragraph is inserted:*

'5a. Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1 shall not be made from raw material obtained in a country that is not Party to the Paris Agreement';

(e) in paragraph 6, *the first subparagraph is amended as follows:*

(i) *the introductory wording is replaced by the following:*

'Biofuels, bioliquids and biomass fuels produced from forest biomass, taken into account for the purposes referred to in points (b) and (c) of the first subparagraph of paragraph 1 shall not be derived from primary woody biomass, take into account the waste hierarchy as set out in Article 4 of Directive 2008/98/EC and the cascading principle referred to in Article 3, and shall meet the following criteria to minimise the risk of using woody biomass derived from unsustainable production. For the purpose of contributing towards the renewable targets referred to in Article 3(1) the energy share from biofuels, bioliquids and biomass fuels derived from primary woody biomass as defined in Article 2 of this Directive shall be no more than the share of the overall energy consumption of the average of such fuels in 2017 - 2022 based on the latest available data.' [Am. 45];

(ii) *in point (a), point (iii) is replaced by the following:*

'(iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands, grassland, heathland and peatlands, are protected with the aim of preserving biodiversity and to prevent habitat destruction as set out in Directives 2009/147/EC and 92/43/EEC, the environmental status of oceans as set out in Directive 2008/56/EC as well as the ecological status of rivers as set out in Directive 2000/60/EC;';

(iii) *in point (a), point (iv) is replaced by the following:*

'(iv) that harvesting is carried out *ensuring* maintenance of soil quality and biodiversity with the aim of *preventing* negative impacts, in a way that *prevents* harvesting of stumps and roots *not suitable for material use e.g. through the use of sustainable forest management practices*, degradation of primary *and old-growth* forests or their conversion into plantation forests, and harvesting on vulnerable soils; *prevents* clear-cuts, *unless this leads to favourable and appropriate ecosystem conditions*, ensures locally *and ecologically* appropriate thresholds for deadwood extraction, and *ensures* requirements to use logging systems that minimise impacts on soil quality, including soil compaction, and on biodiversity features and habitats: ';

(v) in point (b), point (iv) is replaced by the following:

‘(iv) that harvesting is carried out *ensuring* maintenance of soil quality and biodiversity with the aim of *preventing* negative impacts, in a way that *prevents* harvesting of stumps and roots *not suitable for material use e.g. through the use of sustainable forest management practices*, degradation of primary *and old-growth* forests or their conversion into plantation forests, and harvesting on vulnerable soils; *prevents* clear-cuts, *unless this leads to favourable and appropriate ecosystem conditions*, ensures locally *and ecologically* appropriate thresholds for deadwood extraction, and *ensures* requirements to use logging systems that minimise impacts on soil quality, including soil compaction, and on biodiversity features and habitats.’;

(fa) *the following paragraph is inserted:*

‘7a. *Biofuels, bioliquids and biomass fuels produced from forest biomass shall not exceed the cap defined at national level for the use of forest biomass that is consistent with the Member State’s targets on carbon sink growth as defined in Regulation ... [the revised Regulation 2018/841].’;*

(g) in paragraph 10, first subparagraph, point (d) is replaced by the following:

‘(d) at least 70 % for electricity, heating and cooling production from biomass fuels used in installations *starting operations from 1 January 2021* until 31 December 2025, and at least *85 % for installations starting operations* from 1 January 2026.’ [Am. 46];

(ga) *in paragraph 11, the introductory wording is replaced by the following:*

‘11. *Electricity from biomass fuels shall be taken into account for the purposes referred to in points (b) and (c) of the first subparagraph of paragraph 1 only if the fuels in use do not include primary woody biomass and it meets one or more of the following requirements. For the purpose of contributing towards the renewable targets referred to in Article 3(1) the electricity share from biomass fuels derived from primary woody biomass as defined in Article 2 of this Directive shall be no more than the share of the overall electricity consumption of the average of such fuels in 2017 - 2022 based on the latest available data.*’ [Am. 47];

(gb) *paragraph 13 is replaced by the following:*

‘13. For the purposes referred in the first subparagraph of paragraph 1 of this Article, Member States may derogate, for a limited period of time, from the criteria laid down in paragraphs 2 to 7 and 10 and 11 of this Article by adopting different criteria for:

(a) installations located in an outermost region as referred to in Article 349 TFEU to the extent that such facilities produce electricity or heating or cooling from biomass fuels *and bioliquids, and for biofuels especially for the space sector and related astrophysics activities*; and

(b) biomass fuels *and bioliquids* used in the installations *and biofuels especially used in the space sector and related astrophysics activities* referred to in point (a) of this subparagraph, irrespective of the place of

origin of that biomass, provided that such criteria are objectively justified on the grounds that their aim is to ensure, for that outermost region, *access to safe and secured energy and* incentivise the transition from fossil fuels to sustainable biomass fuels *and bioliquids*.

Bioliquids, biofuels and biomass fuels produced from primary woody biomass extracted in a sustainable manner and resulting from land use planning in an outermost region where forests cover at least 90% of the territory of that outermost region shall be taken into account for the purposes referred to in point (a), (b) and (c) of the first subparagraph of Article 29.

In order to ensure energy security in the outermost regions, Member States may continue to grant support to the production of electricity from forest biomass in electricity-only-installations located in outermost regions as referred to in Article 349 TFEU. [Am. 33]

(gc) paragraph 14 is replaced by the following:

‘14. For the purposes referred to in points (a), (b) and (c) of the first subparagraph of paragraph 1, Member States may establish additional sustainability criteria for *biofuels, bioliquids and* biomass fuels.’;

(19) the following Article 29a is inserted:

‘Article 29a

Greenhouse gas emissions saving criteria for renewable fuels of non-biological origin and recycled carbon fuels

1. Energy from renewable fuels of non-biological origin shall be counted towards Member States’ shares of renewable energy and the targets referred to in Articles 3(1), 15a(1), 22a(1), 23(1), 24(4) and 25(1) only if the greenhouse gas emissions savings from the use of those fuels are at least 70 %.
2. Energy from recycled carbon fuels may be counted towards the greenhouse gas emissions reduction target referred to in Article 25(1), first subparagraph, point (a), only if the greenhouse gas emissions savings from the use of those fuels are at least 70%.
3. The Commission is empowered to adopt delegated acts in accordance with Article 35 to supplement this Directive by specifying the methodology for assessing greenhouse gas emissions savings from renewable fuels of non-biological origin and from recycled carbon fuels. The methodology shall ensure that credit for avoided emissions is not given for CO₂ the capture of which has already received an emission credit under other provisions of law. *The carbon content of the wastes and their release to the atmosphere shall be included in the methodology.*

In any event, the methodology for assessing greenhouse gas emissions savings from recycled carbon fuels shall consider, in a life-cycle approach, the embedded carbon.’;

(19a) the following Article 29b is inserted:

‘Article 29b

Sustainability criteria for hydropower plants

Energy generated by hydropower shall be produced at a plant which in accordance with Directive 2000/60/EC and in particular Articles 4 and 11 of that Directive has implemented all technically feasible and ecologically relevant mitigation measures to reduce adverse impacts on water as well measures to enhance protected habitats and species directly dependent on water.’;

(20) Article 30 is amended as follows:

- (a) in paragraph 1, first subparagraph, the introductory phrase is replaced by the following:

‘Where renewable fuels and recycled carbon fuels are to be counted towards the targets referred to in Articles 3(1), 15a(1), 22a(1), 23(1), 24(4) and 25(1), Member States shall require economic operators to show ***via mandatory independent and publicly available audits*** that the sustainability and greenhouse gas emissions saving criteria laid down in Articles 29(2) to (7) and (10) and 29a(1) and (2) for renewable fuels and recycled-carbon fuels have been fulfilled. For that purpose, they shall require economic operators to use a mass balance system which.’;

- (b) in paragraph 3, the first and second subparagraphs are replaced by the following:

‘Member States shall take measures to ensure that economic operators submit reliable information regarding the compliance with the sustainability and greenhouse gas emissions saving criteria laid down in Articles 29(2) to (7) and (10) and 29a(1) and (2), ***take into account EU biodiversity targets***, and that economic operators make available to the relevant Member State, upon request, ***and to the public*** the data used to develop that information. ***Member States shall accredit independent assurance service providers in accordance with Regulation (EC) No 765/2008 to provide an opinion on the information submitted, and to provide evidence that this has been done. In order to comply with Article 29(3), points (a), (b) and (d), Article 29(4), point (a), Article 29(5), Article 29(6), point (a) and Article 29(7), point (a), the first or second party auditing may be used up to the first gathering point of the forest biomass. The auditing shall verify that the systems used by economic operators are accurate, reliable and protected against fraud, including verification ensuring that materials are not intentionally modified or discarded so that the consignment or part thereof could become waste or residue. It shall evaluate the frequency and methodology of sampling and the robustness of the data.***

The obligations laid down in this paragraph shall apply regardless of whether renewable fuels and recycled carbon fuels are produced within the Union or are

imported. Information about the geographic origin and feedstock type of biofuels, bioliquids and biomass fuels per fuel supplier shall be made available to consumers *in an up to date, easily accessible, and user-friendly manner* on the websites of operators, suppliers *and* the relevant competent authorities *as well as at refuelling stations* and shall be updated on an annual basis.’;

- (c) in paragraph 4, the first subparagraph is replaced by the following:

‘The Commission may decide that voluntary national or international schemes setting standards for the production of renewable fuels and recycled carbon fuels, provide accurate data on greenhouse gas emission savings for the purposes of Articles 29(10) and 29a (1) and (2), demonstrate compliance with Articles 27(3) and 31a(5), or demonstrate that consignments of biofuels, bioliquids and biomass fuels comply with the sustainability criteria laid down in Article 29(2) to (7). When demonstrating that the criteria laid down in Article 29(6) and (7) are met, the operators may provide the required evidence directly at sourcing area level. The Commission may recognise areas for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature for the purposes of Article 29(3), first subparagraph, point (c)(ii).’;

- (ca) *in paragraph 4, the second subparagraph is replaced by the following:*

‘The Commission may decide that those schemes contain accurate information on measures taken for soil, water and air protection, for the restoration of degraded land *and* for the avoidance of excessive water consumption in areas where water is scarce ■ .’;

- (d) paragraph 6 is replaced by the following:

‘6. Member States may set up national schemes where compliance with the sustainability and greenhouse gas emissions saving criteria laid down in Articles 29(2) to (7) and (10) and 29a(1) and (2), in accordance with the methodology developed under Article 29a(3), is verified throughout the entire chain of custody involving competent national authorities. Those schemes may also be used to verify the accuracy and completeness of the information included by economic operators in the Union database, to demonstrate compliance with Article 27(3) and for the certification of biofuels, bioliquids and biomass fuels with low indirect land-use change-risk.

A Member State may notify such a national scheme to the Commission. The Commission shall give priority to the assessment of such a scheme in order to facilitate mutual bilateral and multilateral recognition of those schemes. The Commission may decide, by means of implementing acts, whether such a notified national scheme complies with the conditions laid down in this Directive. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3).

Where the decision is positive, other schemes recognised by the Commission in accordance with this Article shall not refuse mutual recognition with that Member State's national scheme as regards verification of compliance with the criteria for which it has been recognised by the Commission.

For installations producing electricity heating and cooling with a total rated thermal input between 5 and 20 MW, Member States shall establish simplified national verification schemes to ensure the fulfillment of the sustainability and greenhouse gas emissions criteria set out in paragraphs (2) to (7) and (10) of Article 29.';

- (e) in paragraph 9, the first subparagraph is replaced by the following:

'9. Where an economic operator provides evidence or data obtained in accordance with a scheme that has been the subject of a decision pursuant to paragraph 4 or 6, a Member State shall not require the economic operator to provide further evidence of compliance with the elements covered by the scheme for which the scheme has been recognised by the Commission.';

- (f) paragraph 10 is replaced by the following:

'10. At the request of a Member State, which may be based on the request of an economic operator, the Commission shall, on the basis of all available evidence, examine whether the sustainability and greenhouse gas emissions saving criteria laid down in Article 29(2) to (7) and (10) and Article 29a(1) and (2) in relation to a source of renewable fuels and recycled carbon fuels have been met.

Within six months of receipt of such a request and in accordance with the examination procedure referred to in Article 34(3), the Commission shall, by means of implementing acts, decide whether the Member State concerned may either:

(a) take into account the renewable fuels and recycled carbon fuels from that source for the purposes referred to in points (a), (b) and (c) of the first subparagraph of Article 29(1); or

(b) by way of derogation from paragraph 9 of this Article, require suppliers of the source of renewable fuels and recycled carbon fuels to provide further evidence of compliance with those sustainability and greenhouse gas emissions saving criteria and those greenhouse gas emissions savings thresholds.';

- █
(22) the following Article is inserted:

‘Article 31a

Union database

1. ***By ... [three months after entry into force of this amending Directive],*** the Commission shall ensure that a Union database is set up to enable the tracing of

biomass fuels, liquid and gaseous renewable fuels and recycled carbon fuels (*the “Union Database”*).

2. Member States shall require the relevant economic operators to enter in a timely manner accurate information into that database on the transactions made and *on* the sustainability *criteria* of the fuels subject to those transactions, including their life-cycle greenhouse gas emissions, starting from their point of production to the moment it is consumed in the Union. *The interconnected gas system shall be considered to be a single mass balance system. Information about injection and withdrawal shall be provided in the Union Database for gaseous fuels.* Information on whether support has been provided for the production of a specific consignment of fuel, and if so, on the type of support scheme, shall also be included in the database.

Where appropriate to improve traceability of data along the entire supply chain, the Commission is empowered to adopt delegated acts in accordance with Article 35 to further extend the scope of the information to be included in the Union database to cover relevant data from the point of production or collection of the raw material used for the fuel production.

Member States shall require fuel suppliers to enter the information necessary to verify compliance with the requirements laid down in Article 25(1), first subparagraph, into the Union database.

Notwithstanding subparagraphs 1 to 3, for gaseous renewable fuels and for gaseous fuels injected into the European gas system, economic operators should enter information on the transactions made and the sustainability criteria and other relevant information such as GHG emissions of the fuels up to the injection point to the interconnected gas system, where the mass balancing traceability system is complemented by guarantees of origin.

3. Member States shall have access to the Union database for the purposes of monitoring and data verification.
4. *Where* guarantees of origin have been issued for the production of a consignment of renewable gases, Member States shall ensure that those guarantees of origin are cancelled *after* the consignment of renewable gases *is withdrawn from the European interconnected system for gas*.
5. Member States shall ensure that the accuracy and completeness of the information included by economic operators in the database is verified, for instance by using voluntary or national schemes, *which may be complemented by a system of guarantees of origin*.

- 5a. *The database shall be made publicly available in an open, transparent and user-friendly manner and kept up-to-date.*

The Commission shall publish annual reports for the general public about the information reported in the Union database including the quantities, the geographic origin and feedstock type of renewable and low carbon fuels.’;

- (22a) *Article 33 is amended as follows:*

- (a) *in paragraph 3, the first subparagraph is replaced by the following:*

'3. In 2025, the Commission shall submit, if appropriate, a legislative proposal on the regulatory framework for the promotion of energy from renewable sources for the period after 2030.'

(b) in paragraph 3, the following subparagraph is added:

'When preparing the legislative proposal referred to in the first subparagraph the Commission shall take into account:

- (a) the advice of the European Scientific Advisory Board on Climate Change established under Article 10a of Regulation (EC) No 401/2009;*
- (b) the projected indicative Union greenhouse gas budget as set out in Article 4(4) of Regulation (EU) 2021/1119;*
- (c) the integrated national energy and climate plans submitted by Member States by 30 June 2024 pursuant to Article 14 (2) of Regulation (EU) 2018/1999;*
- (d) the experience gained by the implementation of this Directive, including its sustainability and greenhouse gas emissions saving criteria; and*
- (e) technological developments in energy from renewable sources.'*

(c) the following paragraph is added:

'4a. By ... [two years after entry into force of this amending Directive], the Commission shall review the implementation of this Directive and publish a report setting out the conclusions of its review. The review shall, in particular, examine the following:

- (a) the external effects of the deployment of renewable energy and its impact on the environment;*
- (b) the socio-economic benefits of the implementation of this Directive;*
- (c) the status of the implementation of related renewables energy initiatives under the RepowerEU;*
- (d) whether the increase in demand for electricity in the transport, industry, building and heating and cooling sectors and RFNBOs is met with equivalent amounts of renewable generation capacities;*
- (e) a phase down, by 2030, of the share of fuels derived from primary woody biomass as defined in Article 2 of this Directive, for the purpose of counting towards the renewable targets referred to in Article 3(1), based on an impact assessment by the Commission. This review for a phase down shall be presented at the latest by ... [3 years after the transposition of this amending Directive] [Am. 48].*

The Commission and the competent authorities in the Member States shall continuously adapt to best administrative practices administrative procedures and take all other measures to simplify the implementation of this Directive, and reduce compliance costs for involved actors and affected sectors to a minimum.'

(23) Article 35 is amended as follows:

(a) paragraph 2 is replaced by the following:

‘The power to adopt delegated acts referred to in Article 8(3), second subparagraph, Article 29a(3), Article 26(2), fourth subparagraph, Article 26(2) fifth subparagraph, Article 27(1), second subparagraph, Article 27(3), fourth subparagraph, Article 28(5), Article 28(6), second subparagraph, Article 31(5), second subparagraph, and Article 31a(2), second subparagraph, shall be conferred on the Commission for a period of five years from [the entry into force of this amending Directive]. The Commission shall draw up a report in respect of the delegation of power not later than nine months before the end of the five-year period. The delegation of power shall be tacitly extended for periods of an identical duration, unless the European Parliament or the Council opposes such extension not later than three months before the end of each period.’;

(b) paragraph 4 is replaced by the following:

‘The delegation of power referred to in Article 7(3), fifth subparagraph, Article 8(3), second subparagraph, Article 29a(3), Article 26(2), fourth subparagraph, Article 26(2) fifth subparagraph, Article 27(1), second subparagraph, Article 27(3), fourth subparagraph, Article 28(5), Article 28(6), second subparagraph, Article 31(5), and Article 31a(2), second subparagraph, may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.’;

(c) paragraph 7 is replaced by the following:

‘A delegated act adopted pursuant to Article 7(3), fifth subparagraph, Article 8(3), second subparagraph, Article 29a(3), Article 26(2), fourth subparagraph, Article 26(2) fifth subparagraph, Article 27(1), second subparagraph, Article 27(3), fourth subparagraph, Article 28(5), Article 28(6), second subparagraph, Article 31(5), and Article 31a(2), second subparagraph, shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two months of notification of that act to the European Parliament and to the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by two months at the initiative of the European Parliament or of the Council.’;

(24) the Annexes are amended in accordance with the Annexes to this Directive.

Article 2

Amendments to Regulation (EU) 2018/1999

(1) Article 2 is amended as follows:

(a) point 11 is replaced by the following:

‘(11) ‘the Union's 2030 targets for energy and climate’ means the Union-wide binding target of at least 40 % domestic reduction in economy-wide greenhouse

gas emissions as compared to 1990 to be achieved by 2030, the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001, the Union-level headline target of at least 32,5 % for improving energy efficiency in 2030, and the 15 % electricity interconnection target for 2030 or any subsequent targets in this regard agreed by the European Council or by the European Parliament and by the Council for 2030.’;

(b) in point 20, point (b) is replaced by the following:

‘(b) in the context of Commission recommendations based on the assessment pursuant to point (b) of Article 29(1) with regard to energy from renewable sources, a Member State's early implementation of its contribution to the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001 as measured against its national reference points for renewable energy.’;

(2) In Article 4, point (a)(2) is replaced by the following:

‘(2) with respect to renewable energy:

With a view to achieving the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001, a contribution to that target in terms of the Member State's share of energy from renewable sources in gross final consumption of energy in 2030, with an indicative trajectory for that contribution from 2021 onwards. By 2022, the indicative trajectory shall reach a reference point of at least 18 % of the total increase in the share of energy from renewable sources between that Member State's binding 2020 national target, and its contribution to the 2030 target. By 2025, the indicative trajectory shall reach a reference point of at least 43 % of the total increase in the share of energy from renewable sources between that Member State's binding 2020 national target and its contribution to the 2030 target. By 2027, the indicative trajectory shall reach a reference point of at least 65 % of the total increase in the share of energy from renewable sources between that Member State's binding 2020 national target and its contribution to the 2030 target.

By 2030, the indicative trajectory shall reach at least the Member State's planned contribution. If a Member State expects to surpass its binding 2020 national target, its indicative trajectory may start at the level it is projected to achieve. The Member States' indicative trajectories, taken together, shall add up to the Union reference points in 2022, 2025 and 2027 and to the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001. Separately from its contribution to the Union target and its indicative trajectory for the purposes of this Regulation, a Member State shall be free to indicate higher ambitions for national policy purposes.’;

(3) In Article 5, paragraph 2 is replaced by the following:

‘2. Member States shall collectively ensure that the sum of their contributions amounts to at least the level of the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001.’;

(4) In Article 29, paragraph 2 is replaced by the following:

‘2. In the area of renewable energy, as part of its assessment referred to in paragraph 1, the Commission shall assess the progress made in the share of energy from renewable sources in the Union's gross final consumption on the basis of an indicative Union trajectory that starts from 20 % in 2020, reaches reference points of at least 18 % in 2022, 43 % in 2025 and 65 % in 2027 of the total increase in the share of energy from renewable sources between the Union's 2020 renewable energy target and the Union's 2030 renewable energy target, and reaches the Union's binding target for renewable energy in 2030 as referred to in Article 3 of Directive (EU) 2018/2001.’;

Article 3

Amendments to Directive 98/70/EC

Directive 98/70/EC is amended as follows:

(1) Article 1 is replaced by the following:

‘Article 1

Scope

This Directive sets, in respect of road vehicles, and non-road mobile machinery (including inland waterway vessels when not at sea), agricultural and forestry tractors, and recreational craft when not at sea, technical specifications on health and environmental grounds for fuels to be used with positive ignition and compression-ignition engines, taking account of the technical requirements of those engines.’;

(2) Article 2 is amended as follows:

(a) points 1, 2 and 3 are replaced by the following:

‘1. ‘petrol’ means any volatile mineral oil intended for the operation of internal combustion positive-ignition engines for the propulsion of vehicles and falling within CN codes 2710 12 41, 2710 12 45 and 2710 12 49;

2. ‘diesel fuels’ means gas oils falling within CN code 2710 19 43¹ as referred to in Regulation (EC) No 715/2007 of the European Parliament and the Council² and Regulation (EC) 595/2009 of the European Parliament and of the Council³ and used for self-propelling vehicles;

¹ The numbering of these CN codes as specified in the Common Customs Tariff, Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff (OJ L 256 7.9.1987, p. 1).

² Regulation (EC) No 715/2007 of the European Parliament and of the Council of 20 June 2007 on type approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and Euro 6) and on access to vehicle repair and maintenance information (OJ L 171, 29.6.2007, p. 1).

³ Regulation (EC) No 595/2009 of the European Parliament and of the Council of 18 June 2009 on type-approval of motor vehicles and engines with respect to emissions from heavy duty vehicles (Euro VI) and on access to vehicle repair and maintenance

‘3. ‘gas oils intended for use by non-road mobile machinery (including inland waterway vessels), agricultural and forestry tractors, and recreational craft’ means any petroleum-derived liquid, falling within CN codes 27101943¹, referred to in Directive 2013/53/EU of the European Parliament and of the Council², Regulation (EU) 167/2013 of the European Parliament and of the Council³ and Regulation (EU) 2016/1628 of the European Parliament and of the Council⁴ and intended for use in compression ignition engines.’;

(b) points 8 and 9 are replaced by the following:

‘8. ‘supplier’ means ‘fuel supplier’ as defined in Article 2, first paragraph, point (38) of Directive (EU) 2018/2001 of the European Parliament and of the Council⁵;

‘9. ‘biofuels’ means ‘biofuels’ as defined in Article 2, first paragraph, point (33) of Directive 2018/2001;’;

(3) Article 4 is amended as follows:

(a) In paragraph 1, the second subparagraph is replaced by the following:

‘Member States shall require suppliers to ensure the placing on the market of diesel with a fatty acid methyl ester (FAME) content of up to 7%.’

(b) Paragraph 2 is replaced by the following:

‘2. Member States shall ensure that the maximum permissible sulphur content of gas oils intended for use by non-road mobile machinery (including inland waterway vessels), agricultural and forestry tractors and recreational craft is 10 mg/kg. Member States shall ensure that liquid fuels other than those gas oils may be used in inland waterway vessels and recreational craft only if the sulphur content of those liquid fuels does not exceed the maximum permissible content of those gas oils.’;

(4) Articles 7a to 7e are deleted.

information and amending Regulation (EC) No 715/2007 and Directive 2007/46/EC and repealing Directives 80/1269/EEC, 2005/55/EC and 2005/78/EC (OJ L 188, 18.7.2009, p. 1);

¹ The numbering of these CN codes as specified in the Common Customs Tariff, Council Regulation (EEC) No 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff (OJ L 256 7.9.1987, p. 1).

² Directive 2013/53/EU of the European Parliament and of the Council of 20 November 2013 on recreational craft and personal watercraft and repealing Directive 94/25/EC (OJ L 354, 28.12.2013, p.90).

³ Regulation (EU) No 167/2013 of the European Parliament and of the Council of 5.02.2013 on the approval and market surveillance of agricultural and forestry vehicles, (OJ L 060 of 2.3.2013, p. 1).

⁴ Regulation (EU) 2016/1628 of the European Parliament and of the Council of 14 September 2016 on requirements relating to gaseous and particulate pollutant emission limits and type-approval for internal combustion engines for non-road mobile machinery, amending Regulations (EU) No 1024/2012 and (EU) No 167/2013, and amending and repealing Directive 97/68/EC, (OJ L 354 of 28.12.2013, p.53).

⁵ Directive (EU) 2018/2001 of the European Parliament and of the Council on the promotion of the use of energy from renewable sources, (OJ L 328 of 21.12.2018, p. 82.)

- (5) Article 9 is amended as follows:
- (a) in paragraph 1, points (g), (h), (i) and (k) are deleted;
 - (b) paragraph 2 is deleted;
- (6) Annexes I, II, IV and V are amended in accordance with Annex I to this Directive.

Article 4

Transitional provisions

- (1) Member States shall ensure that the data collected and reported to the authority designated by the Member State with respect to the year [OJ: replace by calendar year during which the repeal takes effect] or a part thereof in accordance with Article 7a(1), third subparagraph, and Article 7a(7) of Directive 98/70/EC, which are deleted by Article 3(4) of this Directive, are submitted to the Commission.
- (2) The Commission shall include the data referred to in paragraph 1 of this Article in any report it is obliged to submit under Directive 98/70/EC.

Article 5

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 December **2023** at the latest. They shall forthwith communicate to the Commission the text of those provisions.
- When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.
2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Article 6

Repeal

Council Directive (EU) 2015/652¹ is repealed with effect from [OJ: replace by calendar year during which the repeal takes effect].

Article 7

Entry into force

By December 2024, the Commission shall present a comprehensive impact assessment on the combined and cumulative effects of the "fit for 55" package, including this Directive.

¹ Council Directive (EU) 2015/652 of 20 April 2015 laying down calculation methods and reporting requirements pursuant to Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels, OJ L 107, 25.4.2015, p. 26–67

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament
The President

For the Council
The President

ANNEX I

The Annexes to Directive (EU) 2018/2001 are amended as follows:

(1) in Annex I, the final row in the table is deleted;

■

(3) Annex III is replaced by the following:

ENERGY CONTENT OF FUELS

Fuel	Energy content by weight (lower calorific value, MJ/kg)	Energy content by volume (lower calorific value, MJ/l)
FUELS FROM BIOMASS AND/OR BIOMASS PROCESSING OPERATIONS		
Bio-Propane	46	24
Pure vegetable oil (oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified)	37	34
Biodiesel - fatty acid methyl ester (methyl-ester produced from oil of biomass origin)	37	33
Biodiesel - fatty acid ethyl ester (ethyl-ester produced from oil of biomass origin)	38	34
Biogas that can be purified to natural gas quality	50	—
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of diesel	44	34
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of petrol	45	30
Hydrotreated (thermochemically treated with hydrogen) oil of biomass origin, to be used for replacement of jet fuel	44	34
Hydrotreated oil (thermochemically treated with hydrogen) of biomass origin, to be used for replacement of liquefied petroleum gas	46	24

Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin to be used for replacement of diesel	43	36
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace petrol	44	32
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace jet fuel	43	33
Co-processed oil (processed in a refinery simultaneously with fossil fuel) of biomass or pyrolysed biomass origin, to be used to replace liquefied petroleum gas	46	23
RENEWABLE FUELS THAT CAN BE PRODUCED FROM VARIOUS RENEWABLE SOURCES, INCLUDING BIOMASS		
Methanol from renewable sources	20	16
Ethanol from renewable sources	27	21
Propanol from renewable sources	31	25
Butanol from renewable sources	33	27
Fischer-Tropsch diesel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons to be used for replacement of diesel)	44	34
Fischer-Tropsch petrol (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass, to be used for replacement of petrol)	44	33
Fischer-Tropsch jet fuel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass, to be used for replacement of jet fuel)	44	33
Fischer-Tropsch liquefied petroleum gas (a synthetic hydrocarbon or mixture of synthetic hydrocarbons, to be used for replacement of liquefied petroleum gas)	46	24

DME (dimethylether)	28	19
Hydrogen from renewable sources	120	—
ETBE (ethyl-tertio-butyl-ether produced on the basis of ethanol)	36 (of which 37 % from renewable sources)	27 (of which 37 % from renewable sources)
MTBE (methyl-tertio-butyl-ether produced on the basis of methanol)	35 (of which 22 % from renewable sources)	26 (of which 22 % from renewable sources)
TAAE (tertiary-amyl-ethyl-ether produced on the basis of ethanol)	38 (of which 29 % from renewable sources)	29 (of which 29 % from renewable sources)
TAME (tertiary-amyl-methyl-ether produced on the basis of methanol)	36 (of which 18 % from renewable sources)	28 (of which 18 % from renewable sources)
THxEE (tertiary-hexyl-ethyl-ether produced on the basis of ethanol)	38 (of which 25 % from renewable sources)	30 (of which 25 % from renewable sources)
THxME (tertiary-hexyl-methyl-ether produced on the basis of methanol)	38 of which 14 % from renewable sources)	30 (of which 14 % from renewable sources)
NON-RENEWABLE FUELS		
Petrol	43	32
Diesel	43	36
Hydrogen from non-renewable sources	120	—

(4) Annex IV is amended as follows:

a) the title is replaced by the following:

‘TRAINING AND CERTIFICATION OF INSTALLERS AND DESIGNERS OF RENEWABLE INSTALLATIONS’

b) the introductory sentence and the first point are replaced by the following:

‘The certification schemes and training programmes referred to in Article 18(3) shall be based on the following criteria:

1. The certification process shall be transparent and clearly defined by the Member States or by the administrative body that they appoint.’;

c) The following points 1a and 1b are inserted:

‘1a. The certificates issued by certification bodies shall be clearly defined and easy to identify for workers and professionals seeking certification.

1b. The certification process shall enable installers to put in place high quality installations that operate reliably.’;

d) Points 2 and 3 are replaced by the following:

‘2. Installers of biomass, heat pump, shallow geothermal, solar **■** thermal energy **and storage and demand-response technologies, including charging stations**, shall be certified by an accredited training programme or training provider **or formal qualification schemes according to national law.**’

3. The accreditation of the training programme or provider shall be effected by Member States or by the administrative body that they appoint. The accrediting body shall ensure that the training, **upskilling and reskilling programmes** offered by the training provider **are inclusive and have** continuity and regional or national coverage.

The training provider shall have adequate technical facilities to provide practical training, including sufficient laboratory equipment or corresponding facilities to provide practical training.

The training provider shall offer, in addition to the basic training, shorter refresher and upskilling courses organised in training modules allowing installers and designers to add new competences, widen and diversify their skills across several technologies and their combinations. The training provider shall ensure adaptation of training to new renewable technologies in the context of buildings, industry and agriculture. Training providers shall recognise acquired relevant skills.

The training programmes and modules shall be designed to enable life-long learning in renewable installations and be compatible with vocational training for first time job seekers and adults seeking reskilling or new employment.

The training programmes shall be designed in order to facilitate acquiring qualification in different technologies and solutions and avoid limited specialisation in a specific brand or technology. The training provider may be the manufacturer of the equipment or system, institutes or associations.’;

da) Point 5 is replaced by the following:

‘5. The training course shall end with an examination leading to a certificate or qualification. The examination shall include a practical assessment of successfully installing biomass boilers or stoves, heat pumps, shallow geothermal installations, solar thermal installations or storage and demand-response technologies, including charging stations.’;

e) In point 6(c) the following points (iv) and (v) are added :

‘(iv) an understanding of feasibility and design studies;

(v)an understanding of drilling, in the case of geothermal heat pumps.’;

(5) In Annex V, part C is amended as follows:

a) points 5 and 6 are replaced by the following:

‘5. Emissions from the extraction or cultivation of raw materials, eec, shall, include emissions from the extraction or cultivation process itself; from the

collection, drying and storage of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO₂ in the cultivation of raw materials shall be excluded. If available, the disaggregated default values for soil N₂O emissions set out in Part D shall be applied in the calculation. It is allowed to calculate averages based on local farming practices based on data of a group of farms, as an alternative to using actual values.’;

6. For the purposes of the calculation referred to in point 1(a), greenhouse gas emissions savings from improved agriculture management, esca, such as shifting to reduced or zero-tillage, improved crop/rotation, the use of cover crops, including crop residue management, and the use of organic soil improver (e.g. compost, manure fermentation digestate), shall be taken into account only if they do not risk to negatively affect biodiversity. Further, solid and verifiable evidence shall be provided that the soil carbon has increased or that it is reasonable to expect to have increased over the period in which the raw materials concerned were cultivated while taking into account the emissions where such practices lead to increased fertiliser and herbicide use¹.’;

b) point 15 is deleted:

c) point 18 is replaced by the following:

‘18. For the purposes of the calculation referred to in point 17, the emissions to be divided shall be eec + el + esca + those fractions of ep, etd, eccs, and eccr that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for those purposes instead of the total of those emissions. In the case of biogas and biomethane, all co-products that do not fall under the scope of point 7 shall be taken into account for the purposes of that calculation. No emissions shall be allocated to wastes and residues. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purposes of the calculation. Wastes and residues including all wastes and residues included in Annex IX shall be considered to have zero life-cycle greenhouse gas emissions up to the process of collection of those materials irrespectively of whether they are processed to interim products before being transformed into the final product. ■ In the case of biomass fuels produced in refineries, other than the combination of processing plants with boilers or cogeneration units providing heat and/or electricity to the processing plant, the unit of analysis for the purposes of the calculation referred to in point 17 shall be the refinery’;

¹ Measurements of soil carbon can constitute such evidence, e.g. by a first measurement in advance of the cultivation and subsequent ones at regular intervals several years apart. In such a case, before the second measurement is available, increase in soil carbon would be estimated on the basis of representative experiments or soil models. From the second measurement onwards, the measurements would constitute the basis for determining the existence of an increase in soil carbon and its magnitude.

(6) In Annex VI, part B is amended as follows:

a) points 5 and 6 are replaced by the following:

‘5. Emissions from the extraction or cultivation of raw materials, eec, shall, include emissions from the extraction or cultivation process itself; from the collection, drying and storage of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO₂ in the cultivation of raw materials shall be excluded. If available, the disaggregated default values for soil N₂O emissions set out in Part D shall be applied in the calculation. It is allowed to calculate averages based on local farming practises based on data of a group of farms, as an alternative to using actual values.’

6. For the purposes of the calculation referred to in point 1(a), greenhouse gas emissions savings from improved agriculture management, esca, such as shifting to reduced or zero-tillage, improved crop/rotation, the use of cover crops, including crop residue management, and the use of organic soil improver (e.g. compost, manure fermentation digestate), shall be taken into account only if they do not risk to negatively affect biodiversity. Further, solid and verifiable evidence shall be provided that the soil carbon has increased or that it is reasonable to expect to have increased over the period in which the raw materials concerned were cultivated while taking into account the emissions where such practices lead to increased fertiliser and herbicide use^{1,2};

b) point 15 is deleted:

c) point 18 is replaced by the following:

‘18. For the purposes of the calculations referred to in point 17, the emissions to be divided shall be $e_{ec} + e_l + e_{sca}$ + those fractions of e_p , e_{td} , e_{ccs} and e_{ccr} that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for those purposes instead of the total of those emissions.

In the case of biogas and biomethane, all co-products that do not fall under the scope of point 7 shall be taken into account for the purposes of that calculation. No emissions shall be allocated to wastes and residues. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purposes of the calculation.

Wastes and residues including all wastes and residues included in Annex IX shall be considered to have zero life-cycle greenhouse gas emissions up to the process of collection of those materials irrespectively of whether they are

¹ Measurements of soil carbon can constitute such evidence, e.g. by a first measurement in advance of the cultivation and subsequent ones at regular intervals several years apart. In such a case, before the second measurement is available, increase in soil carbon would be estimated on the basis of representative experiments or soil models. From the second measurement onwards, the measurements would constitute the basis for determining the existence of an increase in soil carbon and its magnitude.

processed to interim products before being transformed into the final product. ■

In the case of biomass fuels produced in refineries, other than the combination of processing plants with boilers or cogeneration units providing heat and/or electricity to the processing plant, the unit of analysis for the purposes of the calculation referred to in point 17 shall be the refinery'

(6a) In Annex VI, the following part Ba is inserted:

'Ba.

Biomass fuel feedstocks for use in stationary installations outside the transport sector, including the following points:

1. Biomass fraction of residues and waste in the primary food processing industry:

(a) beet pulp (only self-use internal to sector)

(b) herbs & leaves from beet washing

(c) cereal husks and fruit shells

(d) biomass fraction of industrial waste not fit for use in the food and feed chain

(e) the fibrous fraction of sugar beet after extraction of the diffusion juice, leaves and tails and other liquors obtained after sugar extraction

2. Biomass fraction of sludge from waste water treatment in the primary food processing industry;';

(7) in Annex VII, in the definition of 'Q_{usable}', the reference to Article 7(4) is replaced by a reference to Article 7(3).

(8) Annex IX is amended as follows:

(a) in Part A, the introductory phrase is replaced by the following:

'Feedstocks for the production of biogas for transport and advanced biofuels:'

(b) In Part B, the introductory phrase is replaced by the following:

'Feedstocks for the production of biofuels and biogas for transport, the contribution of which towards the greenhouse gas emissions reduction target established in Article 25(1), first subparagraph, point (a), shall be limited:';

ANNEX II

Annexes I, II, IV and V to Directive 98/70/EC are amended as follows:

(1) Annex I is amended as follows:

(a) the text of footnote 1 is replaced by the following:

‘(1) Test methods shall be those specified in EN 228:2012+A1:2017. Member States may adopt the analytical method specified in replacement EN 228:2012+A1:2017 standard if it can be shown to give at least the same accuracy and at least the same level of precision as the analytical method it replaces.’;

(b) the text of footnote 2 is replaced by the following:

‘(2) the values quoted in the specification are ‘true values’. In the establishment of their limit values, the terms of EN ISO 4259-1:2017/A1:2021 ‘Petroleum and related products — Precision of measurement methods and results – Part 1: Determination of precision data in relation to methods of test’ have been applied and in fixing a minimum value, a minimum difference of 2R above zero has been taken into account (R = reproducibility). The results of individual measurements shall be interpreted on the basis of the criteria described in EN ISO 4259-2:2017/A1:2019.’;

(c) the text of footnote 6 is replaced by the following:

‘(6) Other mono-alcohols and ethers with a final boiling point no higher than that stated in EN 228:2012 +A1:2017.’

(2) Annex II is amended as follows:

(a) in the last line of the table, ‘FAME content – EN 14078, the entry in the last column ‘Limits’ ‘Maximum’, ‘7,0’ is replaced by ‘10.0’;

(b) the text of footnote 1 is replaced by the following:

‘(1) Test methods shall be those specified in EN 590:2013+A1:2017. Member States may adopt the analytical method specified in replacement EN 590:2013+A1:2017 standard if it can be shown to give at least the same accuracy and at least the same level of precision as the analytical method it replaces.’;

(c) the text of footnote 2 is replaced by the following:

‘(2) The values quoted in the specification are ‘true values’. In the establishment of their limit values, the terms of EN ISO 4259-1:2017/A1:2021 ‘Petroleum and related products — Precision or measurement methods and results – Part 1: Determination of precision data in relation to methods of test’ have been applied and in fixing a minimum value, a minimum difference of 2R above zero has been taken into account (R = reproducibility). The results of individual measurements shall be interpreted on the basis of the criteria described in EN ISO 4259-2:2017/A1:2019.’;

(3) Annexes IV and V are deleted.