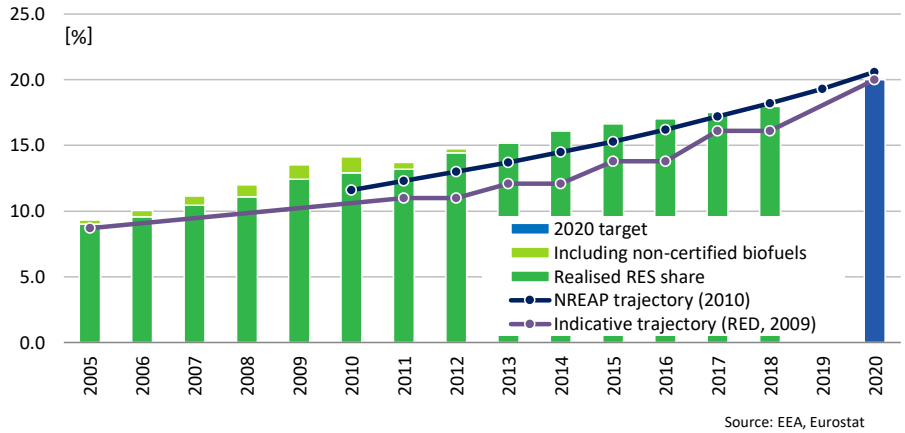
European Union

Renewable Energy Policy Factsheet

October 2020

Summary

The European Union aims to achieve a 20% share (with legally binding national targets) of its final energy consumption from RES by 2020, and – as it stands to date (mid-October 2020) – at least a 32% share by 2030. This 2030 EU target is not broken down into nationally binding targets. Key instruments at EU level to promote RES include directives, such the recast Renewable Energy Directive, RED II. RED II, along with the rules defined by the governance regulation, Regulation (EU) 2018/1999, is to ensure that the EU-wide RES target for 2030 of 32% will be met. The EU Emission Trading Scheme (ETS) is indirectly supporting the uptake of renewables. The European Commission is currently drafting state aid guidelines for beyond year 2020 to ensure that support schemes to promote RES at national level are compatible with EU competition law and internal market rules. Several EU instruments will support renewable energy development as from 2021, including Horizon Europe, InvestEU, the Just Transition Fund, ERDF, the Cohesion Fund, the Modernisation Fund and the Innovation Fund.



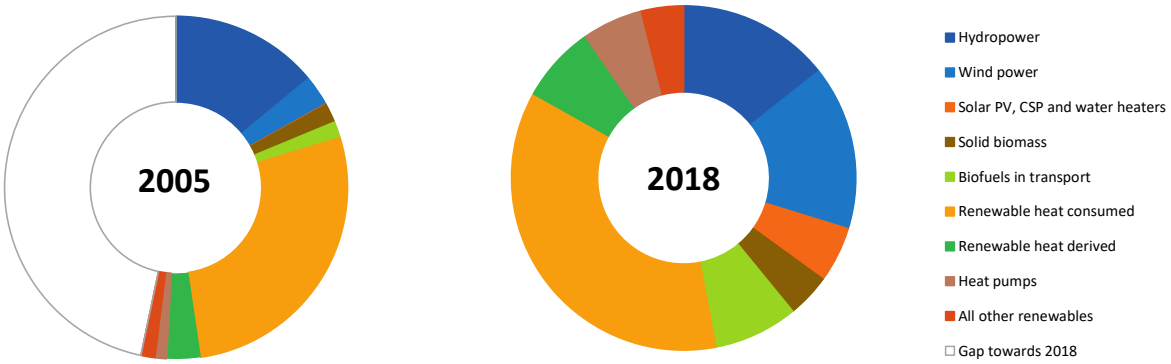
Source: EEA, Eurostat

Abbreviations used:

RES: renewable energy sources
RES-E: renewable electricity
RES-H/C: renewable heating/cooling
RES-T: renewable transport fuels

Data for 2018

Overall RES share:	18.0%	Avoided fossil fuels:	351.3 [Mtoe]
Overall RES 2020 target:	20.0%	Avoided fuel expenses:	110.4 [billion euro]
Share RES-E in electricity:	32.1%	RES Turnover:	158860 [MEUR]
Share RES-T in transport:	8.0%	RES Employment:	1512900 [jobs]
Share RES-H/C in heating:	19.7%		



Source: Eurostat, 2020.

	2005	2018		
	Energy	Energy	Employment	Turnover
Hydropower	29417.6 ktoe	30067.8 ktoe	102100 Jobs	12250 MEUR
Wind power	5996.7 ktoe	32350.9 ktoe	325300 Jobs	43900 MEUR
Solar PV, CSP and water heaters	126.1 ktoe	10992.2 ktoe	142900 Jobs	17270 MEUR
Solid biomass	3779.6 ktoe	8554.6 ktoe	360600 Jobs	31830 MEUR
Biofuels in transport	3233.1 ktoe	16596.7 ktoe	248200 Jobs	14400 MEUR
Renewable heat consumed	57451.4 ktoe	75794.3 ktoe		
Renewable heat derived	6704.3 ktoe	15112.2 ktoe		
Heat pumps	2288.6 ktoe	11950.5 ktoe	224500 Jobs	26820 MEUR
All other renewables	2756.1 ktoe	8319.4 ktoe	109300 Jobs	12390 MEUR
Gap towards 2018	97985.0 ktoe			

Source: Eurostat, EurObserv'ER, 2020.

Hydropower jobs & turnover only covers 'small hydropower'. PV=Photovoltaics, CSP=Concentrated Solar Power. Biofuels in transport only covers compliant fuels (employment and turnover additionally cover the non-compliant biofuels). Derived heat includes heat produced in main activity producer plants and heat sold produced in autoproducer plants. Its counterpart is the final heat consumption in the final consumption sectors (such as households).

SUMMARY

A transition towards a low carbon energy system is a key priority for the European Union (EU). A prerequisite for this transition is the development of a larger share of renewable energy sources (RES) in the energy system. The European Union aims to achieve a 20% share of its final energy consumption from RES by 2020, and a 32% share by 2030. Whereas the renewables regulatory framework for the period 2011-2020 sets an EU 20% target for energy consumption which relies on legally binding national targets until 2020[1], the 32% target by 2030 is an EU-wide binding target enshrined in Directive (EU)2018/2001 (RED II). It has not been broken down into nationally binding targets. Recommendations by the European Commission on MS contributions to achieving the 2030 renewables share target at EU level are detailed in a Staff Working Document.[2] The Governance regulation sets rules for iterative procedures involving Member State governments and the European Commission that are to result in a renewables share in gross final energy consumption at EU level of at least 32%. Furthermore, RED II contains a transport sub-target: Member States must require fuel suppliers to supply a minimum of 14% of the energy consumed in road and rail transport by 2030 as renewable energy.[3]

The EU Emission Trading Scheme (ETS) aiming at direct GHG emissions reduction by installations falling under this Directive, is indirectly supporting the uptake of renewables RES as well, as does – rather modestly – the current overall GHG emissions reduction target for year 2030 relative to year 1990 emissions of 40%. The latter target rate was adopted by the Council in October 2014. As part of the European Green Deal the European Commission recommended in September 2020 to raise this target to 55%, which is under negotiation to be enshrined in the imminent EU Climate Law by EU co-legislators to-date.[4] Such a rise in legislative ambition would provide more robust indirect support to achieving the 32% renewables objective. The European Commission has also adopted state aid guidelines to ensure that support schemes to promote RES at national level are compatible with EU competition law and internal market rules. The EU has adopted and is being adopting an array of funding instruments at EU level, e.g. the Innovation Fund.[5] These instrument will be explained further down below.

[1] Directive 2009/28/EC, also known as the recast renewables directive, REDII.

[2] In accordance with Article 31 of the Governance Regulation — Regulation (EU) 2018/1999 of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action — the Commission's recommendations on the Member States' renewable energy share are based on the formula set out in Annex II of the Regulation, which is based on the objective criteria listed in Article 5, whilst having due regard to relevant circumstances affecting renewable energy deployment as indicated by the Member States. The methodology followed by the Commission to assess renewable energy contributions is further detailed in Section II of the SWD(2019) 212.

[3] Directive (EU) 2018/2001, Article 25(1)

[4] https://ec.europa.eu/clima/policies/eu-climate-action_en The European Parliament Committee on Environment, Public Health and Food Safety has adopted a resolution to call for the adoption of a 60% GHG reduction target for 2030 in the European Climate Law under legislative preparation. https://www.europarl.europa.eu/news/en/press-room/20200907IPR86512/eu-climate-law-meps-want-to-increase-emission-reductions-target-to-60-by-2030

[5] https://europa.eu/rapid/press-release_MEMO-19-1416_en.htm

RENEWABLE ENERGY POLICY FRAMEWORK

Core renewables policy metrics

The principal core metric for renewables policy in the EU is the one for *the purpose of calculating the contribution of a Member State to EU renewable energy target performance*. It is **the ratio of *annual final renewable energy consumption* and *annual gross final energy consumption*** (Directive 2009/28/EC, Article 5(6)). In Directive 2009/28/EC *inter alia* the following definitions have been laid down:

- '**energy from renewable sources**' means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases
- '**gross final consumption of energy**' means the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and transmission.

Other factors remaining the same, **gross final energy consumption reduction boosts the share of renewables** as defined by the aforementioned metric.

The elaboration of the terms final renewable energy consumption or energy from renewable sources (RES) is rather complex. For RES target compliance accounting under EU law, *grosso modo*, the following obtains:

- Gross final consumption of energy does not include final consumption of energy carriers for non-energy purposes, notably as feedstocks in industrial processes e.g. natural gas for fertilizer production.
- The energy content of energy carriers is calculated on a net calorific value basis, determined by subtracting the heat of vaporization of the water from the higher heating value. The latter value includes the latent heat of escaping water vapor when combusting the energy carrier.
- Directive 2009/28/EC, Article 5(3), defines *gross final consumption of electricity from RES* as the quantity of electricity produced in a Member State from renewable energy sources, excluding the production of electricity in pumped storage units from water that has previously been pumped uphill. In multi-fuel plants using renewable and conventional sources, only the part of electricity produced from renewable energy sources shall be taken into account. For the purposes of this calculation, the contribution of each energy source shall be calculated on the basis of its energy content.
- Directive 2009/28/EC, Article 5(4), defines *gross final consumption of energy from renewable sources for heating and cooling* as the quantity of district heating and cooling produced in a Member State from renewable sources, plus the consumption of other energy from renewable sources in industry, households, services, agriculture, forestry and fisheries, for heating, cooling and processing purposes. In multi-fuel plants using renewable and conventional sources, only the part of heating and cooling produced from renewable energy sources shall be taken into account. The contribution of each energy source shall be calculated on the basis of its energy content. Thermal energy generated by passive energy systems in buildings, as such resulting in lower consumption of delivered heating and cooling energy, shall be excluded.

- Directive 2009/28/EC, Annex III, specifies the lower calorific values by weight and volume to be used for calculating *gross final consumption of transport fuels*, including those from RES. Article 3(4) of this directive stipulates that for the calculation of the contribution from electricity produced from renewable sources and consumed in all types of electric vehicles … Member States may choose to use either the average share of electricity from renewable energy sources in the Community or the share of electricity from renewable energy sources in their own country as measured two calendar years before the reporting calendar year.
- The denominator encompasses: the consumption of petrol and diesel for transport (all transport modes), biofuels used in road and rail transport, electricity used in any mode of transport (including pipeline transport)
- The numerator includes compliant – i.e. meeting the sustainability criteria - biofuels (liquid and gaseous) in all modes of transport and the multiplier 2 is used for categories indicated in Annex IX of Directive (EU) 2018/2001.
- Furthermore, for the calculation of the electricity from renewable energy sources consumed by electric road vehicles, that consumption shall be considered to be 2,5 times the energy content of the input of electricity from renewable energy sources [*in the denominator. In the numerator that consumption shall be considered to be five times the energy content of the electricity from renewable energy sources*][6].
- For the calculation of the electricity from renewable energy sources consumed by electrified rail transport, that consumption shall be considered to be 2,5 times the energy content of the input of electricity from renewable energy sources [in both numerator and denominator][7].
- *Gas, electricity and hydrogen from RES* shall be considered for only one of the three forms of final RES consumption (Directive 2009/28/2009, Article 1 (1)).
- *Imports and exports of any of the three forms of final RES consumption* for the purpose of RES target compliance accounting take the form of 'statistical transfers' (Directive 2009/28/2009, Article 6) or other notifications of legal cross-border transactions of RES under the 'cooperation mechanisms' (Directive 2009/28/2009, Articles 7-11). All states involved in these legal transactions have to notify to, and obtain the approval of, the European Commission.
- Guarantees of origin shall have no function in RES target compliance accounting (Article 15 (2) of Directive 2009/28/EC)
- *Eurostat has detailed the recommended methodology to calculate gross final consumption of energy in: Eurostat,2019. Shares Tool Manual, Version 2019.02102020*.[8]

Only for the transport sector, a sector-specific renewable core target metric has been specified in EU legislation. **This core metric regards *the share of fuels from renewable origin in gross final consumption of transport fuels.*** Its calculation broadly follows the calculation of the renewables share in gross final energy consumption, explained above, as far as transport fuels are concerned. Yet there are some deviations in calculating the renewables share for gauging the performance of a Member State in contributing to the EU renewable transport target: Commission Decision of 30 June 2009 establishing a template for National Renewable Energy Action Plans under Directive 2009/28/EC, specifies how the sectoral renewable energy transport target and trajectory are calculated:

"For the transport target, and not for the overall target:

— Among petroleum products, only petrol and diesel count towards the denominator. This means that the kerosene/jet fuel used in aviation and the fuel oil used in shipping do not count (though the diesel used by some trains and some inland waterway vessels does),

[6] Text in brackets is based on: Eurostat,2019. Shares Tool Manual, Version 2019.02102020: pp. 17-18
[7] Ibid.
[8] https://ec.europa.eu/eurostat/documents/38154/4956088/SHARES+tool+manual-2019.pdf/8822f775-121e-f73e-3040-93c01f6ebd3e This document contains, inter alia, default net calorific values for a range of energy carriers.

— Biofuels from wastes, residues, non-food cellulosic material and ligno-cellulosic material count double towards the numerator,

— Electricity from renewable sources used in road vehicles counts 2,5 times towards the numerator and the denominator."

Furthermore a Frequently Asked Questions document published by the European Commission states that LPG is not included in the denominator for the transport target, nor is aviation kerosene or any type of fuel used for international shipping.[9]

Directives

To date, the prime directive in force aimed at promoting renewables is the 2009 Renewable Energy Directive[10], which sets a binding target of a 20% share of energy from renewable energy source of total final energy consumption to be achieved in 2020. This target is broken down into national binding targets at Member State level. The recast Renewable Energy Directive for the timeframe 2021-2030 specifies a RES target at EU level of at least 32%. This directive was politically agreed upon by the European Commission on 14 July 2018. [11] Upon endorsement by both co-legislators, i.e. the European Parliament and the European Council, the updated Renewable Energy Directive was published in the Official Journal of the Union on 21 December 2018 [12] and entered into force 3 days later.[13] Member States are due to have transposed the new elements of the Directive into national law 18 months after its entry into force.

A series of additional directives contribute to the promotion of RES and related infrastructure, such as the 2009 Fuel Quality Directive, which promotes the use of biofuels in road transport and non-road machinery. Additionally, new rules came into force in 2015 which amend the current legislation on biofuels – specifically the Renewable Energy Directive and the Fuel Quality Directive - to reduce the risk of indirect land use change and to prepare the transition towards advanced biofuels. This refers to the 2015 Directive to reduce the indirect land use change for biofuels and bioliquids.

State aid guidelines

The Commission adopted revised guidelines on state aid for environmental protection and energy that are currently in force, in June 2014. These guidelines aim to avoid market distortions resulting from support for RES and to promote a gradual transition towards market-based support for renewable energies. The guidelines gradually introduce competitive bidding processes for public support for RES and promote a transition from feed-in-tariffs to feed-in- premiums. In addition, certain energy-intensive industries can be partially exempted from surcharges financing RES support, in order to safeguard their competitiveness. The guidelines apply for the 2014–2020 period.[14] New guidelines are expected to be adopted late 2020 for the period 2021-2030. These would have to adequately allow for state aid given to help develop nascent renewable energy technology warranted for achieving the European Green Deal objectives, complying with internal market rules.

[9] https://ec.europa.eu/energy/sites/ener/files/documents/nreap_z_faq_040110.pdf
[10] https://ec.europa.eu/energy/en/topics/renewable-energy/renewable-energy-directive
[11] http://data.consilium.europa.eu/doc/document/ST-10308-2018-INIT/en/pdf

[12] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN
[13] https://ec.europa.eu/info/news/new-renewables-energy-efficiency-and-governance-legislation-comes-force-24-december-2018-2018-dec-21_en
[14] https://ec.europa.eu/competition/sectors/energy/legislation_en.html

National Action Plans and Biennial progress reports

The 2009 Renewable Energy Directive requires Member States to put in place appropriate measures to reach their national binding RES targets for 2020, and that these are presented in *National Renewable Energy Action Plans (NREAPs)*.[15] Among others, the plans cover individual renewable energy targets for the electricity, heating and cooling, and transport sectors the planned mix of different renewables technologies policy measures to achieve national targets including cooperation between local, regional, and national authorities. Every two years, the Member States are required to report on their progress towards the EU's 2020 renewable energy goals. Based on the national reports and on other available data, the European Commission produces an EU-wide report which gives an overview of renewable energy policy developments in EU countries.

National Energy and Climate Plans

As required by Article 9 of the Governance Regulation, for the first time all Member States have prepared draft integrated *National Energy and Climate Plans (NECPs)*.[16] These plans are key instruments to achieve the EU energy and climate targets, including the EU RES target, in a coherent way. The Member States were due to finalise their first NECPs by ultimo 2019 (some did *de facto* by early 2020), providing details on their transition pathways towards completion of energy and climate targets and bridging remaining "ambition gaps". In the 2020 State of the Energy Union report the Commission has taken stock of the final plans and has confirmed that they are consistent with the Union's 2030 targets. [17] In turn, the Member States are to report, mostly on a biennial basis on the progress of implementing their NECPs. The governance process also provides an opportunity to update the plans in 2024.

Policy documents

In the "Clean Energy for All" Communication[18], the European Commission (henceforth: "the Commission") proposed for adoption in November 2016 a key EU energy and climate policy package concerning, inter alia, the promotion of RES. This Communication reflects on what needs to be done to achieve the target of at least 27% for the share of renewable energy consumed in the EU in 2030 set by the European Council. Meanwhile, the recast Renewable Energy Directive has been politically agreed upon by the European institutions on 14 July 2018, specifying an EU-level RES target for year 2030 raised to 32%, including a review clause for a possible upward revision by 2023.[19] This ambitious target is underpinning the strategic long-term vision put forward by the European Commission of a climate neutral European economy by year 2050.[20] The Governance Regulation — Regulation (EU) 2018/1999 [21] — sets rules that are to ensure achievement of the EU-level energy and climate targets for year 2030, such as notably the target of RES share of at least 32% in EU gross final energy consumption.

---

[15] https://ec.europa.eu/energy/en/topics/renewable-energy/national-action-plans
[16] https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans
[17] COM(2020) 564 final https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0564&from=EN
[18] https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans
[19] http://europa.eu/rapid/press-release_STATEMENT-18-4155_en.htm

[20] See https://ec.europa.eu/clima/policies/strategies/2050_en and in particular https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0773
[21] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018R1999&from=EN

In June 2019 the Commission concluded that the renewables contributions specified by the Member States in their draft National Energy and Climate Plans (NECPs, further explained below) add up to an EU renewables share in final energy consumption by 2030 ranging between 30.4% and 31.9% in 2030.[22] That is, the ambition gap with the 32% renewables target needed to be closed in the final NECPs and, last but not least, in the proper implementation thereof. On 17 September 2020 the Commission published its assessment of the cumulative impact of the 27 NECPs at EU-level, in parallel with the proposals for a new 2030 Climate Target Plan. [23] The overall assessment shows that for renewable energy, the combined commitment by EU countries is estimated at 33.1%-33.7%. That is, the combined ambition is surpassing the existing renewable energy target of at least 32%. The combined renewables commitments mark a significant first step in the process to *de facto* achieve the collective EU target.

In December 2019 the Commission launched the European Green Deal, a growth strategy towards a fair and prosperous society and an EU net-zero carbon economy by 2050.[24] On 17 September 2020 the Commission launched a plan to raise the current GHG reduction target of 40% to 55%.[25] Should EU co-legislators embrace this proposal, this is to result in strong policy stimuli for the uptake of renewables in the EU.

In 2015, the Commission outlined the Strategic Energy Technology (SET) Plan, which includes renewable energy as one of the main priority areas for research and innovation.[26] The elaboration of the European Green Deal strategy includes several innovative technology strategies for those technologies, the development of which are warranted to achieving the long-term goals of this strategy. Perhaps the most crucial one is development and market uptake of renewable hydrogen. Given adequate policy support for its take-off, this renewable energy carrier has the potential to offer a cost-effective solution in the medium term to decarbonise industrial processes and economic sectors where reducing emissions is both urgent and hard to achieve.[27][28]

OVERVIEW OF MAIN SUPPORTING INSTRUMENTS AT EU LEVEL

In accordance with Article 194 of the Treaty of the Functioning of the European Union (TFEU), the support for RES takes place mostly at the level of the Member States. Support at EU level includes funding for research and innovation as well as enhancements to private sector finance and Member State support through other EU financing channels to be succinctly presented below. Scenario modelling by Commission staff suggests that yearly additional financing of around €280 billion additional financing is required to achieve the EU's 2030 climate and energy targets, currently proposed by the Commission including 55% GHG emissions reduction.

---

[22] COM(2019) 285 final, p.3 https://ec.europa.eu/energy/sites/ener/files/documents/recommondation_en.pdf
[23] COM(2020) 564 final https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0564&from=EN
[24] COM(2019) 640 final https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf
[25] COM(2020) 562 final https://ec.europa.eu/clima/sites/clima/files/eu-climate-action/docs/com_2030_ctp_en.pdf
[26] https://ec.europa.eu/energy/en/topics/technology-and-innovation/strategic-energy-technology-plan
[27] COM(2020) 301 final: A hydrogen strategy for a climate-neutral Europe. https://ec.europa.eu/energy/sites/ener/files/hydrogen_strategy.pdf
[28] For a review of the hydrogen strategy by the Commission, see OIES paper: EU Hydrogen Vision: regulatory opportunities and challenges. London, September 2020 https://www.oxfordenergy.org/wpcms/wp-content/uploads/2020/09/Insight-73-EU-Hydrogen-Vision-regulatory-opportunities-and-challenges.pdf

The framework programme for research and innovation, Horizon 2020 for the period 2014-2020 and its successor programme *Horizon Europe* for 2021-2027, support research and development in, *inter alia*, photovoltaics, concentrated solar power, wind energy, ocean energy, hydropower, geothermal energy, renewable heating and cooling, energy storage, biofuels and alternative fuels. The Commission's proposal for Horizon Europe in May 2020, as a component of the *2021-2027 Multi-Annual Financial Framework (MFF)* envisages a budget of €94.4 billion of which 35% for climate and energy research.[29] The European parliament supported this proposal, but in June 2020 the European Council agreed on a reduced budget of €89.4 billion as part of a deal struck by the European Council on 21 July 2020 on the 2021-2027 MFF (€1074.3 billion) and *Next Generation EU 2021-2023*, also known as the European Recovery Plan, (€750 billion).[30] Ultimately, before end 2020 EU co-legislators need to achieve a final compromise.

The MFF and Next Generation EU budgets under negotiation include allocations for a *Just Transition Fund*, targeting notably Member States in Eastern and Central Europe such as Poland which need to incur high transition costs from a fossil-fuel-intensive to a climate-neutral economy. The European Council currently proposes €7.5 billion from the MFF budget and €10 billion from the Next Generation EU budget.[31]

The *Modernisation Fund*, funded from the sale of 2% of the total EU ETS emission allowances over the period 2021-2030, is to provide funding for innovative renewable energy projects.[32] Moreover, the *Innovation Fund* for innovative climate and energy projects is to be financed from the additional sale during the period 2021-2030 of 450 million EU ETS allowances and any unspent funds from the NER300 programme.[33]

The *InvestEU* 2021-2027 builds on the European Fund for Strategic Investments (EFSI) – also known as the Juncker Fund – in funding programmes, grants and loans for the expansion of renewable energy and related energy infrastructures. It is funded through the MFF and is managed by the EIB.[34] InvestEU will bring together, under one roof, the European Fund for Strategic Investments and 13 EU financial instruments currently available. InvestEU seeks to trigger at least €650 billion in additional investment over the upcoming 7-year period 2021-2027.

The *European Regional Development Fund* and the *Cohesion Fund* will also get allocations from the MFF 2021-2027. Both funds provide co-funding for, *inter alia*, renewable energy projects.[35] Regulation (EU) No. 1301/2013 provides the legal framework for their functioning.[36]

This project is funded
by the European Union under
contract n° ENER/C2/2016-487/SI2.742173

[29] https://ec.europa.eu/info/node/71880
[30] https://ec.europa.eu/info/strategy/eu-budget/long-term-eu-budget/2021-2027_en
[31] https://www.europarl.europa.eu/news/en/headlines/economy/20200903STO86310/just-transition-fund-help-eu-regions-adapt-to-green-economy
[32] https://ec.europa.eu/clima/policies/budget/modernisation-fund_en
[33] https://ec.europa.eu/clima/policies/innovation-fund_en
[34] https://ec.europa.eu/clima/policies/innovation-fund_en
[35] https://ec.europa.eu/regional_policy/en/funding/
[36] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R1301&from=EN