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ANNEX I

GENERAL FRAMEWORK FOR INTEGRATED NATIONAL ENERGY AND CLIMATE PLANS

Part 1

General framework

SECTION A: NATIONAL PLAN

1. OVERVIEW AND PROCESS FOR ESTABLISHING THE PLAN
 - 1.1. Executive summary
 - i. Political, economic, environmental, and social context of the plan
 - ii. Strategy relating to the five dimensions of the Energy Union
 - iii. Overview table with key objectives, policies and measures of the plan
 - 1.2. Overview of current policy situation
 - i. National and Union energy system and policy context of the national plan
 - ii. Current energy and climate policies and measures relating to the five dimensions of the Energy Union
 - iii. Key issues of cross-border relevance
 - iv. Administrative structure of implementing national energy and climate policies
 - 1.3. Consultations and involvement of national and Union entities and their outcome
 - i. Involvement of the national parliament
 - ii. Involvement of local and regional authorities
 - iii. Consultations of stakeholders, including the social partners, and engagement of civil society and the general public
 - iv. Consultations of other Member States
 - v. Iterative process with the Commission
 - 1.4. Regional cooperation in preparing the plan
 - i. Elements subject to joint or coordinated planning with other Member States
 - ii. Explanation of how regional cooperation is considered in the plan
2. NATIONAL OBJECTIVES AND TARGETS
 - 2.1. Dimension decarbonisation
 - 2.1.1. GHG emissions and removals⁽¹⁾
 - i. The elements set out in point (a)(1) of Article 4

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- ii. Where applicable, other national objectives and targets consistent with the Paris Agreement and the existing long-term strategies. Where applicable for the contribution to the overall Union commitment of reducing the GHG emissions, other objectives and targets, including sector targets and adaptation goals, if available
- 2.1.2. Renewable energy
- i. The elements set out in point (a)(2) of Article 4
 - ii. Estimated trajectories for the sectoral share of renewable energy in final energy consumption from 2021 to 2030 in the electricity, heating and cooling, and transport sector
 - iii. Estimated trajectories by renewable energy technology that the Member State projects to use to achieve the overall and sectoral trajectories for renewable energy from 2021 to 2030, including expected total gross final energy consumption per technology and sector in Mtoe and total planned installed capacity (divided by new capacity and repowering) per technology and sector in MW
 - iv. Estimated trajectories on bioenergy demand, disaggregated between heat, electricity and transport, and on biomass supply by feedstocks and origin (distinguishing between domestic production and imports). For forest biomass, an assessment of its source and impact on the LULUCF sink
 - v. Where applicable, other national trajectories and objectives, including those that are long term or sectoral (e.g. share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, renewable energy communities and renewables self-consumers, energy recovered from the sludge acquired through the treatment of wastewater)
- 2.2. Dimension energy efficiency
- i. The elements set out in point (b) of Article 4
 - ii. The indicative milestones for 2030, 2040 and 2050, the domestically established measurable progress indicators, an evidence-based estimate of expected energy savings and wider benefits, and their contributions to the Union's energy efficiency targets as included in the roadmaps set out in the long-term renovation strategies for the national stock of residential and non-residential buildings, both public and private, in accordance with Article 2a of Directive 2010/31/EU
 - iii. Where applicable, other national objectives, including long-term targets or strategies and sectoral targets, and national objectives in areas such as energy efficiency in the transport sector and with regard to heating and cooling
- 2.3. Dimension energy security
- i. The elements set out in point (c) of Article 4
 - ii. National objectives with regard to increasing: the diversification of energy sources and supply from third countries for the purpose of increasing the resilience of regional and national energy systems
 - iii. Where applicable, national objectives with regard to reducing energy import dependency from third countries, for the purpose of increasing the resilience of regional and national energy systems

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- iv. National objectives with regard to increasing the flexibility of the national energy system, in particular by means of deploying domestic energy sources, demand response and energy storage
- 2.4. Dimension internal energy market
 - 2.4.1. Electricity interconnectivity
 - i. The level of electricity interconnectivity that the Member State aims for in 2030 in consideration of the electricity interconnection target for 2030 of at least 15 %, with a strategy with the level from 2021 onwards defined in close cooperation with affected Member States, taking into account the 2020 interconnection target of 10 % and the following indicators of the urgency of action:
 - (1) Price differential in the wholesale market exceeding an indicative threshold of EUR 2/MWh between Member States, regions or bidding zones;
 - (2) Nominal transmission capacity of interconnectors below 30 % of peak load;
 - (3) Nominal transmission capacity of interconnectors below 30 % of installed renewable generation.
 - Each new interconnector shall be subject to a socioeconomic and environmental cost-benefit analysis and implemented only if the potential benefits outweigh the costs
 - 2.4.2. Energy transmission infrastructure
 - i. Key electricity and gas transmission infrastructure projects, and, where relevant, modernisation projects, that are necessary for the achievement of objectives and targets under the five dimensions of the Energy Union Strategy
 - ii. Where applicable, main infrastructure projects envisaged other than Projects of Common Interest (PCIs)⁽²⁾
 - 2.4.3. Market integration
 - i. National objectives related to other aspects of the internal energy market such as increasing system flexibility, in particular related to the promotion of competitively determined electricity prices in line with relevant sectoral law, market integration and coupling, aimed at increasing the tradeable capacity of existing interconnectors, smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, and real-time price signals, including a timeframe for when the objectives shall be met
 - ii. Where applicable, national objectives related to the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets, including a timeframe for when the objectives are to be met
 - iii. Where applicable, national objectives with regard to ensuring that consumers participate in the energy system and benefit from self-generation and new technologies, including smart meters;
 - iv. National objectives with regard to ensuring electricity system adequacy, as well as for the flexibility of the energy system with regard to renewable energy production, including a timeframe for when the objectives are to be met
 - v. Where applicable, national objectives to protect energy consumers and improve the competitiveness of the retail energy sector

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2.4.4. Energy poverty

Where applicable, national objectives with regard to energy poverty, including a timeframe for when the objectives are to be met

2.5. Dimension research, innovation and competitiveness

- i. National objectives and funding targets for public and, where available, private research and innovation relating to the Energy Union, including, where appropriate, a timeframe for when the objectives are to be met
- ii. Where available, national 2050 objectives related to the promotion of clean energy technologies and, where appropriate, national objectives, including long-term targets (2050) for deployment of low-carbon technologies, including for decarbonising energy and carbon-intensive industrial sectors and, where applicable, for related carbon transport and storage infrastructure
- iii. Where applicable, national objectives with regard to competitiveness

3. POLICIES AND MEASURES

3.1. Dimension decarbonisation

3.1.1. GHG emissions and removals

- i. Policies and measures to achieve the target set under Regulation (EU) 2018/842 as referred in point 2.1.1 and policies and measures to comply with Regulation (EU) 2018/841, covering all key emitting sectors and sectors for the enhancement of removals, with an outlook to the long-term vision and goal to become a low emission economy and achieving a balance between emissions and removals in accordance with the Paris Agreement
- ii. Where relevant, regional cooperation in this area
- iii. Without prejudice to the applicability of State aid rules, financing measures, including Union support and the use of Union funds, in this area at national level, where applicable

3.1.2. Renewable energy

- i. Policies and measures to achieve the national contribution to the binding 2030 Union target for renewable energy and trajectories as referred to in point (a)(2) Article 4, and, where applicable or available, the elements referred to in point 2.1.2 of this Annex, including sector- and technology-specific measures⁽³⁾
- ii. Where relevant, specific measures for regional cooperation, as well as, as an option, the estimated excess production of energy from renewable sources which could be transferred to other Member States in order to achieve the national contribution and trajectories referred to in point 2.1.2
- iii. Specific measures on financial support, where applicable, including Union support and the use of Union funds, for the promotion of the production and use of energy from renewable sources in electricity, heating and cooling, and transport
- iv. Where applicable, the assessment of the support for electricity from renewable sources that Member States are to carry out pursuant to Article 6(4) of Directive (EU) 2018/2001

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- v. Specific measures to introduce one or more contact points, streamline administrative procedures, provide information and training, and facilitate the uptake of power purchase agreements

Summary of the policies and measures under the enabling framework Member States have to put in place pursuant to Article 21(6) and Article 22(5) of Directive (EU) 2018/2001 to promote and facilitate the development of self-consumption and renewable energy communities
- vi. Assessment of the necessity to build new infrastructure for district heating and cooling produced from renewable sources
- vii. Where applicable, specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilisation taking into account:
 - biomass availability, including sustainable biomass: both domestic potential and imports from third countries
 - other biomass uses by other sectors (agriculture and forest-based sectors); as well as measures for the sustainability of biomass production and use
- 3.1.3. Other elements of the dimension
 - i. Where applicable, national policies and measures affecting the EU ETS sector and assessment of the complementarity and impacts on the EU ETS
 - ii. Policies and measures to achieve other national targets, where applicable
 - iii. Policies and measures to achieve low emission mobility (including electrification of transport)
 - iv. Where applicable, national policies, timelines and measures planned to phase out energy subsidies, in particular for fossil fuels
- 3.2. Dimension energy efficiency

Planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2, including planned measures and instruments (also of a financial nature) to promote the energy performance of buildings, in particular with regard to the following:
 - i. Energy efficiency obligation schemes and alternative policy measures under Articles 7a and 7b and Article 20(6) of Directive 2012/27/EU and to be prepared in accordance with Annex III to this Regulation
 - ii. Long-term renovation strategy to support the renovation of the national stock of residential and non-residential buildings, both public and private⁽⁴⁾, including policies, measures and actions to stimulate cost-effective deep renovation and policies and actions to target the worst performing segments of the national building stock, in accordance with Article 2a of Directive 2010/31/EU
 - iii. Description of policy and measures to promote energy services in the public sector and measures to remove regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models⁽⁵⁾
 - iv. Other planned policies, measures and programmes to achieve the indicative national energy efficiency contributions for 2030 as well as other objectives referred to in point 2.2 (for example measures to promote the exemplary role of public buildings and energy-efficient public procurement, measures to promote energy audits and energy

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- management systems⁽⁶⁾, consumer information and training measures⁽⁷⁾, and other measures to promote energy efficiency⁽⁸⁾)
- v. Where applicable, a description of policies and measures to promote the role of local renewable energy communities in contributing to the implementation of policies and measures in points i, ii, iii and iv
 - vi. Description of measures to develop measures to utilise energy efficiency potentials of gas and electricity infrastructure⁽⁹⁾
 - vii. Regional cooperation in this area, where applicable
 - viii. Financing measures, including Union support and the use of Union funds, in the area at national level
- 3.3. Dimension energy security⁽¹⁰⁾
- i. Policies and measures related to the elements set out in point 2.3⁽¹¹⁾
 - ii. Regional cooperation in this area
 - iii. Where applicable, financing measures in this area at national level, including Union support and the use of Union funds
- 3.4. Dimension internal energy market⁽¹²⁾
- 3.4.1. Electricity infrastructure
- i. Policies and measures to achieve the targeted level of interconnectivity as set out in point (d) of Article 4
 - ii. Regional cooperation in this area⁽¹³⁾
 - iii. Where applicable, financing measures in this area at national level, including Union support and the use of Union funds
- 3.4.2. Energy transmission infrastructure
- i. Policies and measures related to the elements set out in point 2.4.2, including, where applicable, specific measures to enable the delivery of Projects of Common Interest (PCIs) and other key infrastructure projects
 - ii. Regional cooperation in this area⁽¹⁴⁾
 - iii. Where applicable, financing measures in this area at national level, including Union support and the use of Union funds
- 3.4.3. Market integration
- i. Policies and measures related to the elements set out in point 2.4.3
 - ii. Measures to increase the flexibility of the energy system with regard to renewable energy production such as smart grids, aggregation, demand response, storage, distributed generation, mechanisms for dispatching, re-dispatching and curtailment, real-time price signals, including the roll-out of intraday market coupling and cross-border balancing markets

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- iii. Where applicable, measures to ensure the non-discriminatory participation of renewable energy, demand response and storage, including via aggregation, in all energy markets
- iv. Policies and measures to protect consumers, especially vulnerable and, where applicable, energy poor consumers, and to improve the competitiveness and contestability of the retail energy market
- v. Description of measures to enable and develop demand response, including those addressing tariffs to support dynamic pricing⁽¹⁵⁾

3.4.4. Energy poverty

- i. Where applicable, policies and measures to achieve the objectives set out in point 2.4.4

3.5. Dimension research, innovation and competitiveness

- i. Policies and measures related to the elements set out in point 2.5
- ii. Where applicable, cooperation with other Member States in this area, including, where appropriate, information on how the SET Plan objectives and policies are being translated to a national context
- iii. Where applicable, financing measures in this area at national level, including Union support and the use of Union funds

SECTION B: ANALYTICAL BASIS⁽¹⁶⁾

4. CURRENT SITUATION AND PROJECTIONS WITH EXISTING POLICIES AND MEASURES⁽¹⁷⁾⁽¹⁸⁾

4.1. Projected evolution of main exogenous factors influencing energy system and GHG emission developments

- i. Macroeconomic forecasts (GDP and population growth)
- ii. Sectoral changes expected to impact the energy system and GHG emissions
- iii. Global energy trends, international fossil fuel prices, EU ETS carbon price
- iv. Technology cost developments

4.2. Dimension Decarbonisation

4.2.1. GHG emissions and removals

- i. Trends in current GHG emissions and removals in the EU ETS, effort sharing and LULUCF sectors and different energy sectors
- ii. Projections of sectoral developments with existing national and Union policies and measures at least until 2040 (including for the year 2030)

4.2.2. Renewable energy

- i. Current share of renewable energy in gross final energy consumption and in different sectors (heating and cooling, electricity and transport) as well as per technology in each of these sectors

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- ii. Indicative projections of development with existing policies for the year 2030 (with an outlook to the year 2040)
- 4.3. Dimension Energy efficiency
 - i. Current primary and final energy consumption in the economy and per sector (including industry, residential, service and transport)
 - ii. Current potential for the application of high-efficiency cogeneration and efficient district heating and cooling⁽¹⁹⁾
 - iii. Projections considering existing energy efficiency policies, measures and programmes as described in point 1.2.(ii) for primary and final energy consumption for each sector at least until 2040 (including for the year 2030)⁽²⁰⁾
 - iv. Cost-optimal levels of minimum energy performance requirements resulting from national calculations, in accordance with Article 5 of Directive 2010/31/EU
- 4.4. Dimension energy security
 - i. Current energy mix, domestic energy resources, import dependency, including relevant risks
 - ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)
- 4.5. Dimension internal energy market
 - 4.5.1. Electricity interconnectivity
 - i. Current interconnection level and main interconnectors⁽²¹⁾
 - ii. Projections of interconnector expansion requirements (including for the year 2030)⁽²²⁾
 - 4.5.2. Energy transmission infrastructure
 - i. Key characteristics of the existing transmission infrastructure for electricity and gas⁽²³⁾
 - ii. Projections of network expansion requirements at least until 2040 (including for the year 2030)⁽²⁴⁾
 - 4.5.3. Electricity and gas markets, energy prices
 - i. Current situation of electricity and gas markets, including energy prices
 - ii. Projections of development with existing policies and measures at least until 2040 (including for the year 2030)
- 4.6. Dimension research, innovation and competitiveness
 - i. Current situation of the low-carbon-technologies sector and, to the extent possible, its position on the global market (that analysis is to be carried out at Union or global level)
 - ii. Current level of public and, where available, private research and innovation spending on low-carbon-technologies, current number of patents, and current number of researchers
 - iii. Breakdown of current price elements that make up the main three price components (energy, network, taxes/levies)

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- iv. Description of energy subsidies, including for fossil fuels
- 5. IMPACT ASSESSMENT OF PLANNED POLICIES AND MEASURES⁽²⁵⁾
 - 5.1. Impacts of planned policies and measures described in section 3 on energy system and GHG emissions and removals, including comparison to projections with existing policies and measures (as described in section 4).
 - i. Projections of the development of the energy system and GHG emissions and removals as well as, where relevant of emissions of air pollutants in accordance with Directive (EU) 2016/2284 under the planned policies and measures at least until ten years after the period covered by the plan (including for the last year of the period covered by the plan), including relevant Union policies and measures.
 - ii. Assessment of policy interactions (between existing policies and measures and planned policies and measures within a policy dimension and between existing policies and measures and planned policies and measures of different dimensions) at least until the last year of the period covered by the plan, in particular to establish a robust understanding of the impact of energy efficiency / energy savings policies on the sizing of the energy system and to reduce the risk of stranded investment in energy supply
 - iii. Assessment of interactions between existing policies and measures and planned policies and measures, and between those policies and measures and Union climate and energy policy measures
 - 5.2. Macroeconomic and, to the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects (in terms of costs and benefits as well as cost-effectiveness) of the planned policies and measures described in section 3 at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures
.....
 - 5.3. Overview of investment needs
 - i. existing investment flows and forward investment assumptions with regard to the planned policies and measures
 - ii. sector or market risk factors or barriers in the national or regional context
 - iii. analysis of additional public finance support or resources to fill identified gaps identified under point ii
 - 5.4. Impacts of planned policies and measures described in section 3 on other Member States and regional cooperation at least until the last year of the period covered by the plan, including comparison to projections with existing policies and measures
 - i. Impacts on the energy system in neighbouring and other Member States in the region to the extent possible
 - ii. Impacts on energy prices, utilities and energy market integration
 - iii. Where relevant, impacts on regional cooperation

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Part 2

List of parameters and variables to be reported in Section B of National Plans⁽²⁶⁾⁽²⁷⁾⁽²⁸⁾⁽²⁹⁾

The following parameters, variables, energy balances and indicators are to be reported in Section B 'Analytical Basis' of the National Plans, if used:

1. General parameters and variables
 - (1) Population [million]
 - (2) GDP [euro million]
 - (3) Sectoral gross value added (including main industrial, construction, services, and agriculture sectors) [euro million]
 - (4) Number of households [thousands]
 - (5) Household size [inhabitants/households]
 - (6) Disposable income of households [euro]
 - (7) Number of passenger-kilometres: all modes, i.e. split between road (cars and buses separated if possible), rail, aviation and domestic navigation (when relevant) [million pkm]
 - (8) Freight transport tonnes-kilometres: all modes excluding international maritime, i.e. split between road, rail, aviation, domestic navigation (inland waterways and national maritime) [million tkm]
 - (9) International oil, gas and coal fuel import prices [EUR/GJ or euro/toe] based on the Commission's recommendations
 - (10) EU-ETS carbon price [EUR/EUA] based on the Commission's recommendations
 - (11) Exchange rates to EUR and to USD (where applicable) assumptions [euro/currency and USD/currency]
 - (12) Number of Heating Degree Days (HDD)
 - (13) Number of Cooling Degree Days (CDD)
 - (14) Technology cost assumptions used in modelling for main relevant technologies
2. Energy balances and indicators
 - 2.1. Energy supply
 - (1) Indigenous Production by fuel type (all energy products that are produced in significant quantities) [ktoe]
 - (2) Net imports by fuel type (including electricity and split into intra- and extra EU net imports) [ktoe]
 - (3) Import dependency from third countries [%]
 - (4) Main import sources (countries) for main energy carriers (including gas and electricity)

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- (5) Gross Inland Consumption by fuel type source (including solids, all energy products: coal, crude oil and petroleum products, natural gas, nuclear energy, electricity, derived heat, renewables, waste) [ktoe]
- 2.2. Electricity and heat
 - (1) Gross electricity generation [GWh]
 - (2) Gross electricity generation by fuel (all energy products) [GWh]
 - (3) Share of combined heat and power generation in total electricity and heat generation [%]
 - (4) Capacity electricity generation by source, including retirements and new investment [MW]
 - (5) Heat generation from thermal power generation
 - (6) Heat generation from combined heat and power plants, including industrial waste heat
 - (7) Cross-border interconnection capacities for gas and electricity [Definition for electricity in line with outcome of ongoing discussions on basis for 15 % interconnection target] and their projected usage rates
- 2.3. Transformation sector
 - (1) Fuel inputs to thermal power generation (including solids, oil, gas) [ktoe]
 - (2) Fuel inputs to other conversion processes [ktoe]
- 2.4. Energy consumption
 - (1) Primary and final energy consumption [ktoe]
 - (2) Final energy consumption by sector (including industry, residential, tertiary, agriculture and transport (including split between passenger and freight transport, when available)) [ktoe]
 - (3) Final energy consumption by fuel (all energy products) [ktoe]
 - (4) Final non-energy consumption [ktoe]
 - (5) Primary energy intensity of the overall economy (primary energy consumption per GDP [toe/euro]
 - (6) Final energy intensity by sector (including industry, residential, tertiary and transport (including split between passenger and freight transport, when available))
- 2.5. Prices
 - (1) Electricity prices by type of using sector (residential, industry, tertiary)
 - (2) National retail fuel prices (including taxes, per source and sector) [euro/ktoe]
- 2.6. Investment
Investment costs in energy transformation, supply, transmission and distribution sectors
- 2.7. Renewables

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- (1) Gross final consumption of energy from renewable sources and share of renewable energy in gross final energy consumption and by sector (electricity, heating and cooling, transport) and by technology
- (2) Electricity and heat generation from renewable energy in buildings; this shall include, where available, disaggregated data on energy produced, consumed and injected into the grid by solar photovoltaic systems, solar thermal systems, biomass, heat pumps, geothermal systems, as well as all other decentralised renewables systems
- (3) Where applicable, other national trajectories, including those that are long-term or sectoral the share of food-based and advanced biofuels, the share of renewable energy in district heating, as well as the renewable energy produced by cities and renewable energy communities.
3. GHG emissions and removals related indicators
 - (1) GHG emissions by policy sector (EU ETS, effort sharing and LULUCF)
 - (2) GHG emissions by IPCC sector and by gas (where relevant, split into EU ETS and effort sharing sectors) [tCO₂eq]
 - (3) Carbon Intensity of the overall economy [tCO₂eq/GDP]
 - (4) CO₂ emission related indicators
 - (a) GHG intensity of domestic power and heat generation [tCO₂eq/MWh]
 - (b) GHG intensity of final energy consumption by sector [tCO₂eq/toe]
 - (5) Non-CO₂ emission related parameters
 - (a) Livestock: dairy cattle [1 000 heads], non-dairy cattle [1 000 heads], sheep [1 000 heads], pig [1 000 heads], poultry [1 000 heads]
 - (b) Nitrogen input from application of synthetic fertilisers [kt nitrogen]
 - (c) Nitrogen input from application of manure [kt nitrogen]
 - (d) Nitrogen fixed by N-fixing crops [kt nitrogen]
 - (e) Nitrogen in crop residues returned to soils [kt nitrogen]
 - (f) Area of cultivated organic soils [hectares]
 - (g) Municipal solid waste (MSW) generation
 - (h) Municipal solid waste (MSW) going to landfills
 - (i) Share of CH₄ recovery in total CH₄ generation from landfills [%]

ANNEX II

NATIONAL CONTRIBUTIONS FOR THE SHARE OF ENERGY FROM RENEWABLE SOURCES IN GROSS FINAL CONSUMPTION OF ENERGY IN 2030

1. The following indicative formula represents the objective criteria listed in points (e) (i) to (v) of Article 5(1), each expressed in percentage points:

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- (a) the Member State's national binding target for 2020 as set out in the third column of the table Annex I to Directive (EU) 2018/2001;
 - (b) a flat rate contribution (C_{Flat});
 - (c) a GDP-per-capita based contribution (C_{GDP});
 - (d) a potential-based contribution ($C_{\text{Potential}}$);
 - (e) a contribution reflecting the interconnection level of the Member State (C_{Interco}).
2. C_{Flat} shall be the same for each Member State. All Member States' C_{Flat} shall together contribute 30 % of the difference between the Union's targets for 2030 and 2020.
 3. C_{GDP} shall be allocated between Member States based on Eurostat's GDP per capita index to the Union average over the 2013 to 2017 period, expressed in purchasing power standard, where for each Member State individually the index is capped at 150 % of the Union average. All Member States' C_{GDP} shall together contribute 30 % of the difference between the Union's targets for 2030 and 2020.
 4. $C_{\text{Potential}}$ shall be allocated between Member States based on the difference between a Member State's RES share in 2030 as shown in PRIMES scenario and its national binding target for 2020. All Member States' $C_{\text{Potential}}$ shall together contribute 30 % of the difference between the Union's targets for 2030 and 2020.
 5. C_{Interco} shall be allocated between Member States based on an electricity interconnection share index to Union average in 2017, measured by the net transfer capacity over total installed generation capacity, where for each Member State individually the interconnection share index is capped at 150 % of the Union average. All Member States' C_{Interco} shall together contribute 10 % of the difference between the Union's targets for 2030 and 2020.

ANNEX III

NOTIFICATION OF MEMBER STATES' MEASURES AND METHODOLOGIES TO IMPLEMENT ARTICLE 7 OF DIRECTIVE 2012/27/EU

Member States shall notify to the Commission their proposed detailed methodology pursuant to point 5 of Annex V to Directive 2012/27/EU for the operation of the energy efficiency obligation schemes and alternative policy measures referred to in Articles 7a and 7b and Article 20(6) of that Directive.

1. Calculation of the level of the energy savings requirement to be achieved over the whole period from 1 January 2021 to 31 December 2030, showing how the following elements are taken into account:
 - (a) the annual final energy consumption, averaged over the most recent three-year period prior to 1 January 2019 [in ktoe];
 - (b) the total cumulative amount of end-use energy savings to be achieved [in ktoe] in accordance with point (b) of Article 7(1) of Directive 2012/27/EU;

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- (c) data used in the calculation of final energy consumption and sources of such data, including justification for the use of alternative statistical sources and any differences of the resulting quantities (if other sources than Eurostat are used);
2. Member States that decide to use any of the possibilities under Article 7(2) of Directive 2012/27/EU shall also notify their calculation of the level of the energy savings requirement to be achieved over the whole period from 1 January 2021 to 31 December 2030, showing how the following elements are taken also into account:
- (a) their own annual savings rate;
- (b) their own calculation baseline and energy used in transport, in whole or in part, excluded from the calculation [in ktoe];
- (c) calculated cumulative amount of energy savings over the whole period from 1 January 2021 to 31 December 2030 (before application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU) [in ktoe];
- (d) application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU:
- (i) final energy consumption in industrial activities [in ktoe] listed in Annex I to Directive 2003/87/EC excluded from the calculation, in accordance with point (b) of Article 7(4) of Directive 2012/27/EU;
- (ii) amount of energy savings [in ktoe] achieved in the energy transformation, distribution and transmission sectors, including efficient district heating and cooling infrastructure, in accordance with point (c) of Article 7(4) of Directive 2012/27/EU;
- (iii) amount of energy savings [in ktoe] resulting from individual actions newly implemented since 31 December 2008 that continue to have an impact in 2020 and beyond, in accordance with point (d) of Article 7(4) of Directive 2012/27/EU;
- (iv) amount of energy savings [in ktoe] that stem from policy measures, provided it can be demonstrated that those policy measures result in individual actions carried out from 1 January 2018 and until 31 December 2020, which deliver savings after 31 December 2020, in accordance with point (e) of Article 7(4) of Directive 2012/27/EU;
- (v) amount of energy generated [in ktoe] on or in buildings for own use as a result of policy measures promoting new installation of renewable energy technologies, in accordance with point (f) of Article 7(4) of Directive 2012/27/EU;
- (vi) amount of energy savings [in ktoe] that exceed the cumulative energy savings required in the period from 1 January 2014 to 31 December 2020, which Member States count towards the period from 1 January 2021 to 31 December 2030 in accordance with point (g) of Article 7(4) of Directive 2012/27/EU;
- (e) total cumulative amount of energy savings (after application of the options referred to in points (b) to (g) of Article 7(4) of Directive 2012/27/EU).
3. Policy measures in view of the achievement of the savings requirement referred to in Article 7(1) of Directive 2012/27/EU:

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- 3.1. Energy efficiency obligation schemes referred to in Article 7a of Directive 2012/27/EU:
- (a) description of the energy efficiency obligation scheme;
 - (b) expected cumulative and annual amount of savings and duration of the obligation period(s);
 - (c) obligated parties and their responsibilities;
 - (d) target sectors;
 - (e) eligible actions provided for under the measure;
 - (f) information on the application of the following provisions of Directive 2012/27/EU:
 - (i) where applicable, specific actions, share of savings to be achieved in households affected by energy poverty in accordance with Article 7(11);
 - (ii) savings achieved by energy service providers or other third parties in accordance with point (a) of Article 7a(6);
 - (iii) 'banking and borrowing' in accordance with point (b) of Article 7a(6);
 - (g) where relevant, information on trading of energy savings.
- 3.2 Alternative measures referred to in Article 7b and Article 20(6) of Directive 2012/27/EU (except taxation):
- (a) type of policy measure;
 - (b) brief description of the policy measure, including the design features per each policy measure notified;
 - (c) expected total cumulative and annual amount of savings per each measure and/ or amount of energy savings in relation to any intermediate periods;
 - (d) implementing public authorities, participating or entrusted parties and their responsibilities for implementing the policy measure(s);
 - (e) target sectors;
 - (f) eligible actions provided for under the measure;
 - (g) where applicable, specific policy measures or individual actions targeting energy poverty.
- 3.3. Information on taxation measures:
- (a) brief description of taxation measure;
 - (b) duration of taxation measure;
 - (c) implementing public authority;
 - (d) expected cumulative and annual amount of savings per measure;
 - (e) target sectors and segment of taxpayers;

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- (f) calculation methodology, including which price elasticities are used and how they have been established, in accordance with point (4) of Annex V to Directive 2012/27/EU.
- 4. Calculation methodology for measures notified under Articles 7a and 7b and Article 20(6) of Directive 2012/27/EU (except for taxation measures):
 - (a) measurement methods used referred to in point 1 of Annex V to Directive 2012/27/EU;
 - (b) method to express the energy savings (primary or final energy savings);
 - (c) lifetimes of measures, rate at which the savings decline over time and approach used to take into account the lifetime of savings;
 - (d) brief description of the calculation methodology, including how additionality and materiality of savings are ensured and which methodologies and benchmarks are used for deemed and scaled savings;
 - (e) information on how the possible overlaps between the measures and individual actions are addressed to avoid double counting of energy savings;
 - (f) where relevant, climatic variations and approach used.
- 5. Monitoring and verification
 - (a) brief description of the monitoring and verification system and the process of the verification;
 - (b) implementing public authority and its main responsibilities in charge of monitoring and verification system in relation to the energy efficiency obligation scheme or alternative measures;
 - (c) independence of monitoring and verification from the obligated, participating or entrusted parties;
 - (d) statistically significant proportion of energy efficiency improvement measures and proportion and criteria used to define and select a representative sample;
 - (e) reporting obligations for obligated parties (savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme).
 - (f) publication of energy savings achieved (each year) under the energy efficiency obligation scheme and alternative measures;
 - (g) information on Member State law on penalties to be applied in the case of non-compliance;
 - (h) Information on policy measures provided for in the event that progress is not satisfactory.

ANNEX IV

GENERAL FRAMEWORK FOR LONG-TERM STRATEGIES

- 1. OVERVIEW AND PROCESS FOR DEVELOPING THE STRATEGIES
 - 1.1. Executive summary

Status: Point in time view as at 11/12/2018.

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- 1.2. Legal and policy context
- 1.3. Public consultation
- 2. CONTENT
- 2.1. TOTAL GHG EMISSION REDUCTIONS AND ENHANCEMENTS OF REMOVALS BY SINKS
 - 2.1.1. Projected emission reductions and enhancement of removals by 2050
 - 2.1.2. National target for 2030 and beyond, if available, and indicative milestones for 2040 and 2050
 - 2.1.3. Adaptation policies and measures
- 2.2. RENEWABLE ENERGY
 - 2.2.1. To the extent feasible, the estimated likely share of renewable energy in final energy consumption by 2050
- 2.3. ENERGY EFFICIENCY
 - 2.3.1. To the extent feasible, the estimated likely energy consumption by 2050
- 2.4. SECTOR-SPECIFIC RELATED CONTENT
 - 2.4.1. Energy system
 - 2.4.1.1. Intended or likely future emissions trajectory or range
 - 2.4.1.2. General description of main drivers for energy efficiency, demand-side flexibility and energy consumption and their evolution from 2021 and beyond
 - 2.4.2. Industry
 - 2.4.2.1. Expected emission reductions by sector and energy demands
 - 2.4.2.2. General overview of the policies, existing plans and measures for decarbonisation as described in point 2.1 of Section A of Part I of Annex I
 - 2.4.3. Transport
 - 2.4.3.1. Expected emissions and energy sources by transport type (e.g. cars and vans, heavy duty road transport, shipping, aviation, rail)
 - 2.4.3.2. Decarbonisation options
 - 2.4.4. Agriculture and land use, land-use change and forestry (LULUCF)
 - 2.4.4.1. To the extent feasible, expected emissions by sources and by individual GHGs
 - 2.4.4.2. Emission reduction options envisaged
 - 2.4.4.3. Links to agricultural and rural development policies
- 3. FINANCING
 - 3.1. Estimates of investment needed
 - 3.2. Policies and measures for related research, development and innovation

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4. IMPACT ASSESSMENT OF THE SOCIO-ECONOMIC ASPECTS

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5. ANNEXES (as necessary)
- 5.1. Details on modelling (including assumptions) and/or analysis, indicators, etc.

ANNEX V

GHG INVENTORIES INFORMATION

Part 1

Information to be included in the reports referred to in Article 26(3):

- (a) their anthropogenic emissions of GHGs listed in Part 2 of this Annex and the anthropogenic emissions of GHGs referred to in Article 2(1) of Regulation (EU) 2018/842 for the year X-2;
- (b) data on their anthropogenic emissions of carbon monoxide (CO), sulphur dioxide (SO₂), nitrogen oxides (NO_x) and volatile organic compounds, consistent with data already reported pursuant to Article 8 of Directive (EU) 2016/2284 for the year X-2;
- (c) their anthropogenic GHG emissions by sources and removals of CO₂ by sinks resulting from LULUCF, for the year X-2, in accordance with the methodologies specified in Part 3 of this Annex. This data shall also be relevant for the compliance report under Article 14 of Regulation (EU) 2018/841;
- (d) any changes to the information referred to in points (a), (b) and (c) for the years between the relevant base year or period and the year X-3, indicating the reasons for those changes;
- (e) information on indicators, as set out in Part 4 of this Annex, for the year X-2;
- (f) summary information on concluded transfers pursuant to Article 5 of Regulation (EU) 2018/842 and Articles 12 and 13 of Regulation (EU) 2018/841 for the year X-1;
- (g) information on the steps taken to improve inventory estimates, in particular in areas of the inventory that have been subject to adjustments or recommendations following expert reviews;
- (h) the actual or estimated allocation of the verified emissions reported by installation operators under Directive 2003/87/EC to the source categories of the national GHG inventory and the ratio of those verified emissions to the total reported GHG emissions in those source categories, for the year X-2;
- (i) where relevant, the results of the checks performed on the consistency of the emissions reported in the GHG inventories, for the year X-2, with the verified emissions reported under Directive 2003/87/EC;
- (j) where relevant, the results of the checks performed on the consistency of the data used to estimate emissions in preparation of the GHG inventories, for the year X-2, with:

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- (i) the data used to prepare inventories of air pollutants pursuant to Directive (EU) 2016/2284;
- (ii) the data reported pursuant to Article 19(1) of, and Annex VII to, Regulation (EU) No 517/2014;
- (iii) the energy data reported pursuant to Article 4 of, and Annex B to, Regulation (EC) No 1099/2008;
- (k) a description of changes to their national inventory system, if any;
- (l) a description of changes to the national registry, if any;
- (m) information on their quality assurance and quality control plans, a general uncertainty assessment, a general assessment of completeness and, any other elements of the national GHG inventory report needed to prepare the Union GHG inventory report;
- (n) information of the Member State's intentions to make use of the flexibilities in Article 5(4) and (5) and Article 7(1) of Regulation (EU) 2018/842 and of the use of revenues under Article 5(6) of that Regulation.

A Member State may request to be granted a derogation by the Commission from point (c) of the first paragraph to apply a different methodology from that specified in Part 3 of this Annex where the methodology improvement required cannot be achieved in time for the improvement to be taken into account in the GHG inventories for the period from 2021 to 2030, or where the cost of the methodology improvement would be disproportionately high compared to the benefits of applying such methodology to improve accounting for emissions and removals due to the low significance of the emissions and removals from the carbon pools concerned. Member States wishing to benefit from this derogation shall submit a reasoned request to the Commission by 31 December 2020, indicating by which time the methodology improvement could be implemented, the alternative methodology proposed or both, and an assessment of the potential impacts on the accuracy of accounting. The Commission may request additional information to be submitted within a specific, reasonable time period. Where the Commission considers that the request is justified, it shall grant the derogation. If the Commission rejects the request, it shall give reasons for its decision.

Part 2

The GHGs to be covered are:

- Carbon dioxide (CO₂)
- Methane (CH₄)
- Nitrous Oxide (N₂O)
- Sulphur hexafluoride (SF₆)
- Nitrogen trifluoride (NF₃)

Hydrofluorocarbons (HFCs):

- HFC-23 CHF₃
- HFC-32 CH₂F₂
- HFC-41 CH₃F
- HFC-125 CHF₂CF₃
- HFC-134 CHF₂CHF₂

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- HFC-134a CH₂FCF₃
- HFC-143 CH₂FCHF₂
- HFC-143a CH₃CF₃
- HFC-152 CH₂FCH₂F
- HFC-152a CH₃CHF₂
- HFC-161 CH₃CH₂F
- HFC-227ea CF₃CHF₂CF₃
- HFC-236cb CF₃CF₂CH₂F
- HFC-236ea CF₃CHFCHF₂
- HFC-236fa CF₃CH₂CF₃
- HFC-245fa CHF₂CH₂CF₃
- HFC-245ca CH₂FCF₂CHF₂
- HFC-365mfc CH₃CF₂CH₂CF₃
- HFC-43-10mee CF₃CHFCHF₂CF₃ or (C₅H₂F₁₀)

Perfluorocarbons (PFCs):

- PFC-14, Perfluoromethane, CF₄
- PFC-116, Perfluoroethane, C₂F₆
- PFC-218, Perfluoropropane, C₃F₈
- PFC-318, Perfluorocyclobutane, c-C₄F₈
- Perfluorocyclopropane c-C₃F₆
- PFC-3-1-10, Perfluorobutane, C₄F₁₀
- PFC-4-1-12, Perfluoropentane, C₅F₁₂
- PFC-5-1-14, Perfluorohexane, C₆F₁₄
- PFC-9-1-18, C₁₀F₁₈

Part 3

Methodologies for monitoring and reporting in the LULUCF sector

Geographically explicit land-use conversion data in accordance with the 2006 IPCC Guidelines for national GHG inventories.

Tier 1 methodology in accordance with the 2006 IPCC guidelines for national GHG inventories.

For emissions and removals for a carbon pool that accounts for at least 25-30 % of emissions or removals in a source or sink category which is prioritised within a Member State's national inventory system because its estimate has a significant influence on a country's total inventory of GHGs in terms of the absolute level of emissions and removals, the trend in emissions and removals, or the uncertainty in emissions and removals in the land-use categories, at least Tier 2 methodology in accordance with the 2006 IPCC guidelines for national GHG inventories.

Member States are encouraged to apply Tier 3 methodology, in accordance with the 2006 IPCC guidelines for national GHG inventories.

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Part 4

Inventory indicators

Indicator title	Indicator
TRANSFORMATION B0	Specific CO ₂ emissions of public and auto-producer power plants, t/TJ CO ₂ emissions from public and auto-producer thermal power stations, kt divided by all products — output by public and auto-producer thermal power stations, PJ
TRANSFORMATION E0	Specific CO ₂ emissions of auto-producer plants t/TJ CO ₂ emissions from auto-producers, kt divided by All products output by auto-producer thermal power stations, PJ
INDUSTRY A1.1	Total CO ₂ intensity — iron and steel industry, t/million euro Total CO ₂ emissions from iron and steel, kt divided by gross value added — iron and steel industry
INDUSTRY A1.2	Energy-related CO ₂ intensity — chemical industry, t/million euro Energy-related CO ₂ emissions chemical industries, kt divided by gross value added — chemical industry
INDUSTRY A1.3	Energy-related CO ₂ intensity — glass, pottery and building materials industry, t/million euro Energy-related CO ₂ emissions glass, pottery and building materials, kt divided by gross value added — glass, pottery and buildings material industry
INDUSTRY A1.4	Energy-related CO ₂ intensity — food, drink and tobacco industry, t/million euro Energy-related CO ₂ emissions from food, drink and tobacco industry, kt divided by gross value-added — food, drink and tobacco industry, million euro (EC95)
INDUSTRY A1.5	Energy-related CO ₂ intensity — paper and printing industry, t/million euro Energy-related CO ₂ emissions paper and printing, kt — Gross value-added — paper and printing industry, million euro (EC95)
HOUSEHOLDS A0	Specific CO ₂ emissions of households for space heating, t/m ²

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	CO ₂ emissions of households for space heating divided by surface area of permanently occupied dwellings, million m ²
SERVICES B0	Specific CO ₂ emissions of commercial and institutional sector for space heating, kg/m ² CO ₂ emissions from space heating in commercial and institutional, kt divided by Surface area of services buildings, million m ²
TRANSPORT B0	Specific diesel related CO ₂ emissions of passenger cars, g/100 km
TRANSPORT B0	Specific petrol related CO ₂ emissions of passenger cars, g/100 km

ANNEX VI

POLICIES AND MEASURES INFORMATION IN THE AREA OF GHG EMISSIONS

Information to be included in the reports referred to in Article 18:

- (a) a description of their national system for reporting on policies and measures, or groups of measures, and for reporting on projections of anthropogenic GHG emissions by sources and removals by sinks pursuant to Article 39(1) or information on any changes made to that system where such a description has already been provided;
- (b) updates relevant to their long-term strategies referred to in Article 15 and progress in implementing those strategies;
- (c) information on national policies and measures, or groups of measures, and on implementation of Union policies and measures, or groups of measures, that limit or reduce GHG emissions by sources or enhance removals by sinks, presented on a sectoral basis and organised by gas or group of gases (HFCs and PFCs) listed in Part 2 of Annex V. That information shall refer to applicable and relevant national or Union policies and shall include:
 - (i) the objective of the policy or measure and a short description of the policy or measure;
 - (ii) the type of policy instrument;
 - (iii) the status of implementation of the policy or measure or group of measures;
 - (iv) indicators used to monitor and evaluate progress over time;
 - (v) where available, quantitative estimates of the effects on emissions by sources and removals by sinks of GHGs broken down into:
 - the results of *ex ante* assessments of the effects of individual or groups of policies and measures on the mitigation of climate change. Estimates shall be provided for a sequence of four future years ending with 0 or 5 immediately following the reporting year, with a distinction between GHG emissions covered by Directive

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- 2003/87/EC, Regulation (EU) 2018/842 and Regulation (EU) 2018/841,
- the results of *ex post* assessments of the effects of individual or groups of policies and measures on the mitigation of climate change where available, with a distinction between GHG emissions covered by Directive 2003/87/EC, Regulation (EU) 2018/842 and Regulation (EU) 2018/841;
- (vi) available estimates of the projected costs and benefits of policies and measures, as well as estimates of the realised costs and benefits of policies and measures;
- (vii) all existing references to the assessments of the costs and effects of national policies and measures, to information in the implementation of Union policies and measures that limit or reduce GHG emissions by sources or enhance removals by sinks and to the underpinning technical reports;
- (viii) an assessment of the contribution of the policy or measure to the achievement of the long-term strategy referred to in Article 15;
- (d) information on planned additional national policies and measures, or groups of measures, envisaged with a view to limiting GHG emissions beyond their commitments under Regulation (EU) 2018/842 and Regulation (EU) 2018/841;
- (e) information regarding the links between the different policies and measures, or groups of measures, reported pursuant to point (c) and the way such policies and measures, or groups of measures, contribute to different projection scenarios.

ANNEX VII

PROJECTIONS INFORMATION IN THE AREA OF GHG EMISSIONS

Information to be included in the reports referred to in Article 18:

- (a) projections without measures where available, projections with measures, and, where available, projections with additional measures;
- (b) total GHG projections and separate estimates for the projected GHG emissions for the emission sources covered by Directive 2003/87/EC and by Regulation (EU) 2018/842 and the projected emissions by sources and removals by sinks under the Regulation (EU) 2018/841;
- (c) the impact of policies and measures identified pursuant to point (a) of Article 18(1). Where such policies and measures are not included, this shall be clearly stated and explained;
- (d) results of the sensitivity analysis performed for the projections and information on the models and parameters used;
- (e) all relevant references to the assessment and the technical reports that underpin the projections referred to in Article 18(4).

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ANNEX VIII

INFORMATION ON NATIONAL ADAPTATION ACTIONS, FINANCIAL AND TECHNOLOGY SUPPORT PROVIDED TO DEVELOPING COUNTRIES AND AUCTIONING REVENUES

Part 1

Reporting on adaptation actions

Information to be included in the reports referred to in Article 19(1):

- (a) the main goals, objectives and institutional framework for adaptation;
- (b) climate change projections, including weather extremes, climate-change impacts, assessment of climate vulnerability and risks and key climate hazards;
- (c) adaptive capacity;
- (d) adaptation plans and strategies;
- (e) monitoring and evaluation framework;
- (f) progress made in implementation, including good practices and changes to governance.

Part 2

Reporting on support provided to developing countries

Information to be included in the reports referred to in Article 19(3):

- (a) information on financial support committed and provided to developing countries for the year X-1, including:
 - (i) quantitative information on public and mobilised financial resources by the Member State. The information on financial flows is to be based on the so-called 'Rio markers' for climate change mitigation-related support and climate change adaptation-related support and other tracking systems introduced by the OECD Development Assistance Committee;
 - (ii) qualitative methodological information explaining the method used to calculate the quantitative information, including an explanation of methodology for quantifying their data, and, where relevant, other information on the definitions and methodologies used to determine any figures, in particular for information reported on mobilised financial flows;
 - (iii) available information on activities by the Member State related to public-funded technology transfer projects and capacity-building projects for developing countries under the UNFCCC, including whether the technology transferred or capacity-building project was used for mitigating or adapting to the effects of climate change, the recipient country, where possible the amount of support provided, and the type of technology transferred or capacity-building project;

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- (b) available information for the year X and subsequent years on the planned provision of support, including information on planned activities related to public-funded technology transfer projects or capacity building projects for developing countries under the UNFCCC and on technologies to be transferred and capacity-building projects, including whether the technology transferred or capacity-building project is intended for mitigating or adapting to the effects of climate change, the recipient country, where possible the amount of support to be provided, and the type of technology transferred or capacity-building project.

Part 3

Reporting on auctioning revenues

Information to be included in the reports referred to in Article 19(2):

- (a) information on the use of revenues during the year X-1 generated by the Member State by auctioning allowances pursuant to Article 10(1) of Directive 2003/87/EC, including information on such revenue that has been used for one or more of the purposes specified in Article 10(3) of that Directive, or the equivalent in financial value of that revenue, and the actions taken pursuant to that article;
- (b) information on the use, as determined by the Member State, of all revenue generated by the Member State by auctioning aviation allowances pursuant to Article 3d(1) or (2) of Directive 2003/87/EC, which shall be provided in accordance with Article 3d(4) of that Directive;

Auctioning revenues not disbursed at the time a Member State submits a report to the Commission pursuant to Article 19(2) shall be quantified and reported in reports for subsequent years.

ANNEX IX

ADDITIONAL REPORTING OBLIGATIONS

Part 1

Additional reporting obligations in the area of renewable energy

The following additional information shall, unless otherwise stated, be included pursuant to point (c) of Article 20:

- (a) the functioning of the system of guarantees of origin for electricity, gas and heating and cooling from renewable sources, the levels of issuance and cancellation of guarantees of origin and the resulting annual national renewable energy consumption, as well as the measures taken to ensure the reliability and protection against fraud of the system;
- (b) amounts of biofuels, biogas renewable transport fuels of non-biological origin, recycled carbon fuels and renewable electricity consumed in the transport sector and, where relevant, their greenhouse saving performance, distinguishing between fuels produced from different types of food and feed crops and each type of feedstock listed in Annex IX to Directive (EU) 2018/2001;

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- (c) developments in the availability, origin and use of biomass resources for energy purposes;
- (d) changes in commodity prices and land use within the Member State associated with its increased use of biomass and other forms of energy from renewable sources;
- (e) the estimated excess production of energy from renewable sources which could be transferred to other Member States so that these comply with Article 3(3) of Directive (EU) 2018/2001 and achieve the national contributions and trajectories referred to in point (a)(2) of Article 4 of this Regulation;
- (f) where applicable, the estimated demand for energy from renewable sources to be satisfied by means other than domestic production until 2030, including imported biomass feedstock;
- (g) the technological development and deployment of biofuels made from feedstocks listed in Annex IX to Directive (EU) 2018/2001;
- (h) where available, the estimated impact of the production or use of biofuels, bioliquids and biomass fuels on biodiversity, water resources, water availability and quality, soils and air quality within the Member State;
- (i) observed cases of fraud in the chain of custody of biofuels, bioliquids and biomass fuels;
- (j) information on how the share of biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates;
- (k) electricity and heat generation from renewable energy in buildings, including disaggregated data on energy produced, consumed and injected into the grid by solar photovoltaic systems, solar thermal systems, biomass, heatpumps, geothermal systems, as well as all other decentralised renewables systems;
- (l) where applicable, the share of renewable energy in district heating, as well as the renewable energy produced by cities and renewable energy communities;
- (m) primary supply of solid biomass (in 1 000 m³, except with regard to point (1)(b)(iii), which will be provided in tonnes)
 - (1) Forest biomass used for energy production (domestic production and import)
 - (a) Primary biomass from forest used directly for energy production
 - (i) Where available, branches and tree tops (reporting is voluntary)
 - (ii) Where applicable, stumps (reporting is voluntary)
 - (iii) Round wood (split into industrial roundwood and fuelwood)
 - (b) Where applicable, forest-based industry co-products used directly for energy
 - (i) Where applicable, bark
 - (ii) Chips, sawdust and other wood particles

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- (iii) Where applicable, black liquor and crude tall oil
 - (c) Where available, post-consumer wood used directly for energy production
 - (d) Processed wood-based fuel, produced from feedstocks not accounted under point (1)(a), (b) or (c):
 - (i) Where applicable, wood charcoal
 - (ii) Wood pellets and wood briquettes
- (2) Where available, agricultural biomass used for energy production (domestic production, import and export)
 - (a) Energy crops for electricity or heat (including short rotation coppice)
 - (b) Agricultural crop residues for electricity or heat
- (3) Where available, organic waste biomass for energy production (domestic production, import and export)
 - (a) Organic fraction of industrial waste
 - (b) Organic fraction of municipal waste
 - (c) Waste sludges
- (n) final energy consumption of solid biomass (amount of solid biomass used for energy production in the following sectors):
 - (1) Energy sector
 - (a) Electricity
 - (b) Combined heat and power
 - (c) Heat
 - (2) Industry sector internal (consumed and autoproduced electricity, CHP and heat)
 - (3) Direct final consumption residential
 - (4) Other

Part 2

Additional reporting obligations in the area of energy efficiency

In the area of energy efficiency, the following additional information shall be included pursuant to point (c) of Article 21:

- (a) major legislative and non-legislative policies, measures, financing measures and programmes implemented in year X-2 and X-1 (with X as the year when the report is due) to achieve their objectives referred to in point (b) of Article 4 which promote energy service markets, improve the energy performance of buildings, measures to

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- utilise energy efficiency potentials of gas and electricity infrastructure and heating and cooling, improve information and qualification, other measures to promote energy efficiency;
- (b) the cumulative amount of energy savings achieved through Article 7 of Directive 2012/27/EU in years X-3 and X-2;
 - (c) the amount of savings achieved by policy measures aimed at alleviation of energy poverty in line with Article 7(11) of Directive 2012/27/EU;
 - (d) where applicable, the amount of savings achieved in accordance with point (c) of Article 7(4) of Directive 2012/27/EU;
 - (e) progress in each sector and reasons why energy consumption remained stable or was growing in year X-3 and X-2 in final energy consumption sectors;
 - (f) total building floor area of the buildings with a total useful floor area over 250 m² owned and occupied by the Member States' central government that, on 1 January in year X-2 and X-1, which did not meet the energy performance requirements referred to in Article 5(1) of Directive 2012/27/EU;
 - (g) total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in year X-3 and X-2 referred to in Article 5(1) of the Directive 2012/27/EU or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6) of Directive 2012/27/EU;
 - (h) number of energy audits carried out in in year X-3 and X-2. In addition, the total estimated number of large companies in their territory to which Article 8(4) of Directive 2012/27/EU is applicable and the number of energy audits carried out in those enterprises in the year X-3 and X-2;
 - (i) applied national primary energy factor for electricity and a justification if this is different from the default coefficient referred to in footnote (3) of Annex IV to Directive 2012/27/EU;
 - (j) number and floor area of new and renovated nearly zero-energy buildings in year X-2 and X-1, as provided in Article 9 of the Directive 2010/31/EU, where necessary based on statistical sampling;
 - (k) the internet link to the website where the list or the interface of energy services providers referred to in point (c) of Article 18(1) of Directive 2012/27/EU can be accessible.

ANNEX X

UNION BIOENERGY SUSTAINABILITY REPORT

The EU bioenergy sustainability report on energy from biomass to be adopted biennially by the Commission together with the State of the Energy Union report pursuant to point (d) of Article 35(2), shall contain as a minimum the following information:

- (a) the relative environmental benefits and costs of different biofuels, bioliquids and biomass fuels, the effects of the Union's import policies thereon, the security of

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- supply implications and the ways of achieving a balanced approach between domestic production and imports;
- (b) the impact of the production and use of biomass on sustainability in the Union and in third countries, including impacts on biodiversity;
 - (c) data and analysis of current and projected sustainable biomass availability and demand, including the impact of increased demand for biomass on biomass using sectors;
 - (d) the technological development and deployment of biofuels made from feedstocks listed in Annex IX to Directive (EU) 2018/2001, and an assessment of the feedstock availability and resource competition taking into account the principles of the circular economy and the waste hierarchy established in Directive 2008/98/EC;
 - (e) information on, and analysis of, the available scientific research results regarding indirect land-use change in relation to all production pathways, accompanied by an assessment of whether the range of uncertainty identified in the analysis underlying the estimations of indirect land-use change emissions may be narrowed and the possible impact of Union policies, such as environment, climate and agricultural policies, may be factored in;
 - (f) in respect of both third countries and Member States that are a significant source of biofuels, bioliquids and biomass fuels consumed within the Union, on national measures taken to respect the sustainability criteria and GHG saving criteria set out in Article 29(2) to (7) and (10), of Directive (EU) 2018/2001, for soil, water and air protection; and
 - (g) aggregated information from the database referred in Article 28(2) of Directive (EU) 2018/2001.

In reporting on GHG emission savings from the use of biomass, the Commission shall use the amounts reported by Member States in accordance with point (b) of Part 1 of Annex IX to this Regulation, including the provisional mean values of the estimated indirect land-use change emissions and the associated range derived from the sensitivity analysis as set out in Annex VIII to Directive (EU) 2018/2001. The Commission shall make data on the provisional mean values of the estimated indirect land-use change emissions and the associated range derived from the sensitivity analysis publicly available. In addition, the Commission shall evaluate whether and how the estimate for direct emission savings would change if co-products were accounted for using the substitution approach

ANNEX XI

VOLUNTARY SCHEMES IN RESPECT OF WHICH THE COMMISSION HAS ADOPTED A DECISION PURSUANT TO ARTICLE 30(4) OF DIRECTIVE (EU) 2018/2001

The report on voluntary schemes in respect of which the Commission has adopted a decision pursuant to Article 30(4) of Directive (EU) 2018/2001, to be adopted biennially by the Commission together with the State of the Energy Union report pursuant to point (e) of Article 35(2) of this Regulation, shall contain the Commission's assessment of, as a minimum, the following:

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- (a) the independence, modality and frequency of audits, both in relation to what is stated on those aspects in the scheme documentation, at the time the scheme concerned was approved by the Commission, and in relation to industry best practices;
- (b) the availability of, and experience and transparency in the application of, methods for identifying and dealing with non-compliance, with particular regard to dealing with situations or allegations of serious wrongdoing on the part of members of the scheme;
- (c) transparency, particularly in relation to the accessibility of the scheme, the availability of translations in the applicable languages of the countries and regions from which raw materials originate, the accessibility of a list of certified operators and relevant certificates, and the accessibility of auditor reports;
- (d) stakeholder involvement, particularly as regards the consultation of indigenous and local communities prior to decision making during the drafting and reviewing of the scheme as well as during audits and the response to their contributions;
- (e) the overall robustness of the scheme, particularly in light of rules on the accreditation, qualification and independence of auditors and relevant scheme bodies;
- (f) where available, market updates of the scheme, the amount of feedstocks and biofuels certified, by country of origin and type, the number of participants;
- (g) the ease and effectiveness of implementing a system that tracks the proofs of conformity with the sustainability criteria that the scheme gives to its member(s), such a system intended to serve as a means of preventing fraudulent activity with a view, in particular, to the detection, treatment and follow-up of suspected fraud and other irregularities and where appropriate, number of cases of fraud or irregularities detected;
- (h) options for entities to be authorised to recognise and monitor certification bodies;
- (i) criteria for the recognition or accreditation of certification bodies;
- (j) rules on how the monitoring of the certification bodies is to be conducted;
- (k) ways to facilitate or improve the promotion of best practices.

ANNEX XII

NATIONAL INVENTORY SYSTEMS

Information referred to in Article 37 includes the following:

- (a) data and methods reported for activities and installations under Directive 2003/87/EC for the purpose of preparing national GHG inventories in order to ensure consistency of the reported GHG emissions under the EU ETS and in the national GHG inventories;
- (b) data collected through the reporting systems on fluorinated gases in the relevant sectors established pursuant to Article 20 of Regulation (EU) No 517/2014 for the purpose of preparing national GHG inventories;
- (c) emissions, underlying data and methodologies reported by facilities under Regulation (EC) No 166/2006 for the purpose of preparing national GHG inventories;

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- (d) data reported under Regulation (EC) No 1099/2008;
- (e) data collected via the geographical tracking of land areas in the context of existing Union and Member State programmes and surveys, including the LUCAS Land Use Cover Area frame Survey and the Copernicus Programme.

ANNEX XIII

CORRELATION TABLE

Regulation (EU) No 525/2013	This Regulation
Article 1	Article 1(1)
Article 2	—
Article 3	—
Article 4	Article 15
Article 5	Article 37(1), (2) and(6); Annex XII
Article 6	Article 37(3) and (7)
Article 7	Article 26(3), (4), (6) and (7); Annex V
Article 8	Article 26(2) and (7)
Article 9	Article 37(4) and (5)
Article 10	Article 40
Article 11	—
Article 12	Article 39
Article 13	Article 18(1)(a) and Article 18(3) and (4); Annex VI
Article 14	Article 18(1)(b) and Article (2), (3) and (4); Annex VII
Article 15	Article 19(1); Annex VIII, Part 1
Article 16	Article 19(3) and Annex VIII, Part 2
Article 17	Article 19(2), (4) and (5); Annex VIII, Part 3
Article 18	the second subparagraph of Article 17(2)
Article 19	—
Article 20	—
Article 21	Article 29(1)(c) and Article 29(5) and (7)
Article 22	—
Article 23	Article 41(1)(d), (e), (f), (g) and (h)
Article 24	Article 42

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Article 25	—
Article 26	Article 44(1)(a) and Article 44(2), (3) and (6)
Article 27	—
Article 28	Article 57
Article 29	—

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- (1) Consistency to be ensured with long-term strategies pursuant to Article 15.
- (2) In accordance with Regulation (EU) No 347/2013 of the European Parliament and of the Council of 17 April 2013 on guidelines for trans-European energy infrastructure and repealing Decision No 1364/2006/EC and amending Regulations (EC) No 713/2009, (EC) No 714/2009 and (EC) No 715/2009 (OJ L 115, 25.4.2013, p. 39).
- (3) When planning those measures, Member States shall take into account the end of life of existing installations and the potential for repowering.
- (4) In accordance with Article 2a of Directive 2010/31/EU.
- (5) In accordance with Article 18 of Directive 2012/27/EU.
- (6) In accordance with Article 8 of Directive 2012/27/EU.
- (7) In accordance with Articles 12 and 17 of Directive 2012/27/EU
- (8) In accordance with Article 19 of Directive 2012/27/EU.
- (9) In accordance with Article 15(2) of Directive 2012/27/EU.
- (10) Policies and measures shall reflect the energy efficiency first principle.
- (11) Consistency shall be ensured with the preventive action and emergency plans under Regulation (EU) 2017/1938 of the European Parliament and of the Council of 25 October 2017 concerning measures to safeguard the security of gas supply and repealing Regulation (EU) No 994/2010 (OJ L 280, 28.10.2017, p. 1) as well as the risk preparedness plans under Regulation (EU) 2018/2001 [as proposed by COM(2016) 862 on risk-preparedness in the electricity sector and repealing Directive 2005/89/EC].
- (12) Policies and measures shall reflect the energy efficiency first principle.
- (13) Other than the PCI Regional Groups established under Regulation (EU) No 347/2013.
- (14) Other than the PCI Regional Groups established under Regulation (EU) No 347/2013.
- (15) In accordance with Article 15(8) of Directive 2012/27/EU.
- (16) See Part 2 for a detailed list of parameters and variables to be reported in Section B of the Plan.
- (17) Current situation shall reflect the date of submission of the national plan (or latest available date). Existing policies and measures encompass implemented and adopted policies and measures. Adopted policies and measures are those for which an official government decision has been made by the date of submission of the national plan and there is a clear commitment to proceed with implementation. Implemented policies and measures are those for which one or more of the following applies at the date of submission of the integrated national energy and climate plan or the integrated national energy and climate progress report: directly applicable European legislation or national legislation is in force, one or more voluntary agreements have been established, financial resources have been allocated, human resources have been mobilised.
- (18) The selection of exogenous factors may be based on the assumptions made in the EU Reference Scenario 2016 or other subsequent policy scenarios for the same variables. Besides, Member States specific results of the EU Reference Scenario 2016 as well as results of subsequent policy scenarios may also be a useful source of information when developing national projections with existing policies and measures and impact assessments.
- (19) In accordance with Article 14(1) of Directive 2012/27/EU.
- (20) This reference business as usual projection shall be the basis for the 2030 final and primary energy consumption target which is described in 2.3 and conversion factors.
- (21) With reference to overviews of existing transmission infrastructure by Transmission System Operators (TSOs).
- (22) With reference to national network development plans and regional investment plans of TSOs.
- (23) With reference to overviews of existing transmission infrastructure by TSOs.
- (24) With reference to national network development plans and regional investment plans of TSOs.
- (25) Planned policies and measures are options under discussion and having a realistic chance of being adopted and implemented after the date of submission of the national plan. The resulting projections

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- under section 5.1.i shall therefore include not only implemented and adopted policies and measures (projections with existing policies and measures), but also planned policies and measures.
- (26) For the plan covering the period from 2021 to 2030: For each parameter/variable in the list, trends over the years 2005-2040 (2005-2050 where appropriate) including for the year 2030 in five-year intervals shall be reported both in Section 4 and 5. Parameter based on exogenous assumptions v modelling output shall be indicated.
- (27) As far as possible, reported data and projections shall build on and be consistent with Eurostat data and methodology used for reporting European statistics in the relevant sectoral law, as European statistics are the primary source of statistical data used for reporting and monitoring, in accordance with Regulation (EC) No 223/2009 on European statistics.
- (28) Note: all projections are to be performed on the basis of constant prices (2016 prices used as base year)
- (29) The Commission will provide recommendations for key parameters for projections, at least covering oil, gas, and coal import prices as well as EU ETS carbon prices.

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