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Assessment of the draft National Energy and Climate Plan of Croatia

Accompanying the document

Commission Recommendation

**on the draft integrated National Energy and Climate Plan of Croatia covering the period
2021-2030**

{C(2019) 4411 final}

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1. SUMMARY

Main observations¹

- ✓ The draft integrated National Energy and Climate Plan (NECP) of Croatia builds on the work done on the draft of the Low-Carbon Development Strategy of the Republic of Croatia until 2030 with an outlook to 2050 and the draft Energy Development Strategy of the Republic of Croatia until 2030 with an outlook to 2050. The draft NECP covers all five dimensions of the Energy Union, but the information provided for each dimension varies in length and in detail.
- ✓ Croatia's 2030 target for **greenhouse gas (GHG) emissions** not covered by the EU Emissions Trading System (non-ETS), is -7 % compared to 2005, as set in the Effort Sharing Regulation (ESR)². Croatia projects to overachieve this target with a continuation of current policies. The draft plan indicates the potential for further emission reductions in transport, building and agriculture sectors, without including considerations on which planned level of overachievement could be cost efficient in view of a use for transfers to other Member States. Information and policies to achieve the Land Use Land, Use Change and Forestry (LULUCF)³ no-debit commitment (i.e. emissions do not exceed removals) need still be provided in the final plan.
- ✓ The national contribution for **renewable energy** proposed in the draft plan is set at an ambitious share of 36.4 % of energy from renewable sources in gross final consumption of energy in 2030. This level of ambition is above the share of 32 % in 2030 that results from the formula in Annex II of the Governance Regulation. Most of the increase in the renewable energy production is expected in the electricity sector and additional efforts seem to be necessary in the heating and cooling sector but also in transport sector, where based on the information in the draft plan Croatia would not meet the 2020 and 2030 targets. The final plan would benefit from elaborating further on the policies and measures allowing the achievement of the contribution and on other relevant sectorial measures.
- ✓ The **energy efficiency** contribution is given in both primary energy consumption and in final energy consumption. The level of ambition seems low considering the efforts needed to achieve the EU level 2030 target of 32.5 % and does not fully exploit opportunities for economic modernisation and job creation. The final plan would benefit from outlining the expected savings and a timeframe to the planned policies and measures.

¹ In addition to the notified draft NECP this assessment also considers clarifications received through informal bilateral exchanges, which are part of the iterative process established under the Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

² Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

³ Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU.

- ✓ In order to strengthen **energy security** and reduce energy imports from third countries, Croatia is exploring the possibility to increase the production of domestic hydrocarbon resources. At the same time, Croatia also has plans to diversify natural gas supply routes by constructing an LNG terminal on the island of Krk.
- ✓ The **interconnection level** of Croatia exceeds the 15 % EU level aimed for 2030 and further interconnectors with neighbouring states are considered as part of Croatia's role as an important link between electricity systems of Central and South East Europe in the development of **the internal energy market**. Regarding energy poverty, an assessment of the number of households in energy poverty needs to be considered, allowing to assess the possible need for an indicative objective for reducing energy poverty.
- ✓ As regards **research, innovation and competitiveness**, the draft plan identifies research domains that could potentially receive attention, however, concrete objectives to be achieved by 2030 are not yet included. The ongoing work on the National Development Strategy for the period until 2030 could be an opportunity to further develop concrete objectives for the research, innovation and competitiveness dimension.
- ✓ The draft NECP includes estimates for investment costs for some planned measures, amounting annually to around 0.8 % of GDP with a focus on building renovation, and indications on the use of EU related funding sources. However, it does not yet contain an overall assessment of the **investment needs**, barriers and mechanisms to foster investments thus not yet fully taking advantage of the role NECPs can play in providing clarity to investors and attract additional investments in the clean energy transition. The final plan would also benefit from including an **impact assessment** of planned policies and measures.
- ✓ As no specific **regional cooperation** has taken place while preparing the draft NECP, it should be considered as an important part of finalising the NECP.
- ✓ The final plan would benefit from complementing the analysis of the interactions with **air quality and air emissions** policy with more quantitative information.
- ✓ The final plan would need to include an assessment of **just and fair transition** issues.
- ✓ A list of all **energy subsidies** and actions undertaken and planned to phase them out, in particular for fossil fuels, need to be included in the final plan.
- ✓ As a **good practice**, Croatia can be commended for the **use of voluntary templates** to report on quantitative projection parameters and results as well as on policies and measures.




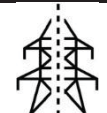
Preparation and submission of the draft plan

Croatia notified its draft National Energy and Climate Plan (NECP) to the European Commission on 28 December 2018.

The draft NECP has been elaborated under the responsibility of the Ministry of Environment and Energy in cooperation with the Energy Institute *Hrvoje Požar*, a state-owned and non-profit scientific institution. It is indicated that there were workshops within the framework of preparation of the draft plan, but full **public consultation** on the draft plan nor specific regional cooperation has not yet taken place.

Overview of the key objectives, targets and contributions

The following table presents an overview of Croatia's objectives, targets and contributions under the Governance Regulation⁴:

	National targets and contributions	Latest available data	2020	2030	Assessment of 2030 ambition level
	Binding target for greenhouse gas emissions compared to 2005 under the Effort Sharing Regulation (ESR) (%)	-8	+11	-7	As in ESR
	National target/contribution for renewable energy: Share of energy from renewable sources in gross final consumption of energy (%)	27.3	20.1	36.4	Above 32 % (result of RES formula)
	National contribution for energy efficiency: Primary energy consumption (Mtoe) Final energy consumption (Mtoe)	8.3 6.9	10.7 7.0	8.2 6.9	Low Low
	Level of electricity interconnectivity (%)	52	102	Not provided	N/A

Sources: EU Commission, *ENERGY STATISTICS*, *Energy datasheets: EU28 countries*; SWD(2018)453; European Semester by country⁵; COM/2017/718; Croatian draft NECP.

2. ASSESSMENT OF THE AMBITION OF OBJECTIVES, TARGETS AND CONTRIBUTIONS AND ADEQUACY OF SUPPORTING POLICIES AND MEASURES

Dimension decarbonisation

Greenhouse gas emissions and removals

Croatia's binding 2030 **national non-ETS emission target** under the Effort Sharing Regulation⁶ is of -7 % compared to 2005. Croatia expects to overachieve its target in the effort sharing

⁴ 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, amending Regulations (EC) No 663/2009 and (EC) No 715/2009 of the European Parliament and of the Council, Directives 94/22/EC, 98/70/EC, 2009/31/EC, 2009/73/EC, 2010/31/EU, 2012/27/EU and 2013/30/EU of the European Parliament and of the Council, Council Directives 2009/119/EC and (EU) 2015/652 and repealing Regulation (EU) No 525/2013 of the European Parliament and of the Council.

⁵ https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-your-country_en.

sectors. With existing measures, which are described in the draft plan, the emission reductions in the effort sharing sectors are projected to 20.6 % by 2030. With additional measures, which are identified in an annexed table, Croatia expects to reduce emissions by 32 %⁷.

The draft plan does not explain whether Croatia intends to use this overachievement, e.g. for possible transfers to other Member States or for coverage of potential LULUCF debits once the accounting rules are applied. With respect to the National Forestry Accounting Plan including the national Forest Reference Level, submitted by Croatia as required by Article 8(3) of the LULUCF Regulation⁸, the Commission has put forward minor technical recommendations requesting action on a limited number of issues, detailed in SWD (2019) 213.

There is a descriptive list of existing policies and measures (some effort sharing sectors and cross sectoral). Estimates of sectoral emission reduction potentials that could be realised with additional measures are provided, but it is not yet explained by which policies they would be achieved.

In the **transport sector electromobility** is supported via financial incentives. Soft measures like information and training are also mentioned, to promote low emission vehicles. More details would be welcome for all modes on how alternative fuels policies will be further developed. Policies on the alternative fuels infrastructure are not described in sufficient detail. The aggregated scenarios provide for an emission reduction potential in transport of 85 kt CO₂eq by 2030, around one tenth of the projected potential in effort sharing sectors.

Larger emission reduction potentials are projected for agriculture, buildings and for F-gases, with more than 200 kt CO₂eq by 2030 each. For **buildings**, these are underpinned with some detail on the planned building renovation measures. The final plan would benefit from a more detailed list and description of the main concrete mitigation actions considered for the decarbonisation of the agriculture sector.

The draft plan includes policies in the **LULUCF** sector aimed at improving monitoring, reporting and planning activities by 2020.

Croatia refers to climate change **adaptation** as one of the decarbonisation objectives. The draft plan makes reference to the ongoing process for the adoption of the adaptation strategy, without presenting adaptation goals and policies and measures.

Renewable energy

Croatia expects to reach a renewable energy share of 36.4 % in gross final consumption of energy in 2030, and proposes this share as its contribution towards the 2030 EU target with an indicative trajectory in line with the reference points of 18 % by 2022, 43 % by 2025 and 65 % by 2027.

⁶ Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

⁷ It is noted that for calculating these emission reductions, Croatia uses currently a 2005 effort sharing emission estimate of 19.3 Mt. There is a relevant difference with the Commission's published Effort Sharing Decision 2005 base year data of 17.4 Mt (SWD(2018)453 final, Table 4), Using the latter would lead to lower reduction values. Differences to be reflected in the estimates used in the final NECP could arise due to recent GHG emission inventory updates.

⁸ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

The overall contribution of 36.4 % is above the result of the formula contained in Annex II of the Governance Regulation which expects Croatia to reach 32 % in 2030. The draft plan provides a good overview of the national renewable objectives and trajectories, for example the renewable energy contribution of each technology in absolute values (ktoes) for each year (2020–2030) is provided. A similar approach for the estimated sector shares should be followed in the final plan.

The renewable energy shares in the **electricity** sector is planned to be 63.8 % in 2030, with hydropower contributing the largest share. Increased electricity production in solar PV and wind energy will provide an additional 35 % contribution to the overall renewable electricity generation compared to the 21 % contribution expected in 2020.

In the **heating and cooling** sector the renewable energy share is indicated to be 35.3 %, in 2030, which is less than 2 percentage point higher than the 33.7 % expected in 2020. Solid biomass remains the main renewable fuel in the sector accounting for 87 % of renewable energy consumption. The role of waste heat and cold remains unclear. The draft NECP is missing a clear description, including measures, of how Croatia intends to increase renewable energy in heating and cooling by an indicative 1.3 percentage points as an annual average calculated for the periods of 2021 to 2025 and 2026 to 2030, respectively. Although Croatia mentions that it intends to integrate more renewable energy under its policy to develop efficient district heating and cooling, measures to achieve at least 1 percentage point annual average indicative increase are not provided by the draft plan.

Croatia aims at reaching a 13.2 % share of renewable energy in the **transport sector** by 2030, mainly from biofuels. Starting from a low share in 2020 the phasing-in of renewable energy in transport will have to be accelerated over the period 2020–2030. The respective 2020 and 2030 targets of 10 % and 14 % of energy from renewable sources in the transport sector will not be met, according to the draft plan. Croatia does acknowledge the need to transpose the obligations in the transport sector and to reach the 14 % target in 2030. The draft plan provides the contribution of each expected energy technology, but the final plan would benefit from addressing the applicable multipliers and the sub-target for advanced biofuels in accordance with Articles 25-27 of Directive 2018/2001.⁹

Specifically on energy communities and self-consumption only dissemination of information to the general public is mentioned in the draft plan under the planned policies and measures related to the enabling frameworks to develop renewable energy self-consumption and promoting renewable energy communities. Other aspects of the enabling framework, including administrative procedures should also be elaborated further in the final plan.

Dimension energy efficiency

Croatia sets its national **energy efficiency contributions** in both primary energy consumption (8.2 Mtoe) and final energy consumption (6.9 Mtoe). However, after clarifications with the Croatian authorities, as part of the iterative process the values for primary energy consumption have been corrected compared to those included in the draft plan, as they included also fuels used for non-energy purposes. The target is set at a level that would allow the country to decrease its consumption only marginally by 1.6 % from their primary energy consumption in 2017 and by 1.1 % for final energy consumption. The factors and conditions that could affect its primary and

⁹ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (Text with EEA relevance.).

final energy consumption and hence the level of ambition are not described in detail in the draft plan. On the other hand, the target for 2030 is set at a lower level (-18.7 %) as compared to Croatia's 2020 energy efficiency target expressed in primary energy. However, the target was set at a quite unambitious level and is currently broadly overachieved. For final energy consumption the level proposed for 2030 is very close to the 2020 target (-1.6 %). Overall, the contributions of Croatia seems therefore to be of low ambition considering the need to increase efforts at the EU level to collectively reach the Union's 2030 energy efficient targets.

The national target is set on the basis of the projections of the With Additional Measures (WAM) scenario, which foresees a steady linear increase in energy consumption over the next decade (and a decline from 2030 onwards).

The increase in economic activity is mentioned as a factor influencing the future trend in energy consumption. Therefore, it is noted that the forecasted annual increase in GDP between 2 % and 3.3 % for the next decade (as reported in Annex I part 2) is not in line with the recommended projections of the 2018 Ageing Report¹⁰ according to which real GDP is expected to grow annually between 0.6 % and 1 %.

Croatia provided a list of 16 regulatory and non-regulatory measures addressing energy efficiency. The regulatory measures are linked to the implementation of the Energy Efficiency Directive¹¹ and Energy Performance of Buildings Directive¹², while the non-regulatory ones are mainly grants or financial schemes based on national funds or the European Regional Development Fund (ERDF). The measures are presented in a descriptive way, and in most cases there is sufficient information to understand, if they are existing or planned ones. However, the lack of a quantitative impact assessment makes it difficult to evaluate, if they will be sufficient to achieve the national energy efficiency goals. Croatia also submitted a draft of Annex 2, which includes preliminary information about the future implementation of Article 7 of the Energy Efficiency Directive¹³.

The key measure foreseen in the draft plan is the Energy Obligation Scheme, which has been recently adopted. This instrument was already foreseen to be adopted to fulfil the obligations of Article 7 of the Energy Efficiency Directive¹⁴ in the period up to 2020, but now it is expected to be the cornerstone of the Croatian energy efficiency policies after 2020. Two new (additional) measures planned for the period post 2020 target the improvement of the energy performance of buildings and promoting the renovation of existing multi-apartment buildings, single-family buildings and public buildings, to be achieved through economic measures. For all these programs quantitative goals are provided. The building sector would also be addressed thanks to the continuation of the existing measures to increase the number of Nearly Zero Energy Buildings (NZEBs). Amongst the new measures, there is a fiscal incentive to companies to promote the adoption of energy management schemes. New regulatory measures would also be

¹⁰ https://ec.europa.eu/info/publications/economy-finance/2018-ageing-report-economic-and-budgetary-projections-eu-member-states-2016-2070_en.

¹¹ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency as amended by Directive (EU) 2018/2002.

¹² Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings as amended by Directive (EU) 2018/844.

¹³ 2012/27/EU on energy efficiency.

part of the policy framework to improve the performance of public lighting, alongside already existing measures. Voluntary measures, such as green public procurement are foreseen, as well as behavioural ones focusing on awareness raising to address all consumption sectors.

Beyond the measures proposed related to **buildings**, the information provided on the renovation of the national stock of residential and non-residential buildings, both public and private, into a highly energy efficient and decarbonised building stock by 2050 is limited by the absence of specific milestones, measurable progress indicators, estimation of expected energy savings and wider benefits¹⁵.

The plan would benefit from covering measures that contribute towards more efficient organisation of the mobility system and thus towards improved energy efficiency and emissions reductions (e.g. incentivising multimodality and modal shift, etc.). More details on the measures planned related to intelligent transport systems, digitalisation and automation would also be welcome.

Dimension energy security

The draft plan identifies a need for diversification of delivery routes and for an increase of gas storage capacity. It suggests further exploitation of hydrocarbon deposits in Slavonia and the Dinarides and gas deposits in the Southern Adriatic. The draft plan recognizes the need for the Krk LNG terminal to be completed.

In the electricity sector the draft plan refers to the challenges faced both in conventional generation (idle or non-operational capacity), in generation from renewable energy (fluctuation of climatic conditions), as well as in the areas of system balancing and ancillary services. It further refers to several goals, such as the creation of new, flexible and competitive generation units (for all needs of the system), diversification of energy sources, a high level of cross-border exchanges through a robust and well-interconnected system, geographical distribution of generation. Croatia has shared the power from a nuclear reactor with Slovenia since 1981 but the long-term commitment to nuclear energy is unclear.

With regards to electricity interconnection, in addition to the provided information about the available and planned interconnection routes and their capacity, the final plan would benefit from additional data on the current use of the interconnections, in order to better establish the link towards the desired security goals and targets.

Dimension internal energy market

The draft plan gives a good overall description of the current state and the foreseen developments in Croatia, especially in terms of infrastructure, where e.g. several Projects of Common Interest (PCIs) are planned, such as an electricity interconnector between Croatia and Bosnia and Herzegovina. The draft plan notes that the interconnection level of Croatia already exceeds the 15 % EU level aimed for 2030 even before the planned investments on new interconnection capacity.

¹⁵ The inclusion of policies and measures relating to the long-term renovation strategy to support the renovation of the national stock, provided by Article 2a of Directive 2010/31/EU on the Energy Performance of Buildings as amended by Directive 2018/844, was not required for the draft NECP due to the later transposition of the EPBD set for 10 March 2020.

As competitive markets are a key enabler for other dimensions of the Energy Union, objectives related to the further development of wholesale and retail market competition and corresponding measures and timelines merit being included in the final plan. In the areas of retail markets and system flexibility, the draft plan sets out several high-level qualitative objectives related to switching rates, activating and aggregating consumers as well as increasing the selection of suppliers and envisages conducting an analysis on the potential of flexibility services and demand response.

Regarding **energy poverty**, an assessment of the number of households in energy poverty needs to be considered, e.g. as part of the preparations of national Programme for Elimination of Energy Poverty, which would allow assessing the possible need for an indicative objective for reducing energy poverty.

Dimension research, innovation and competitiveness

The current level of public and private research and innovation spending is provided in good detail up to 2017. There is also a general identification of research domains that could receive attention after 2020. This forms a good basis for identifying research, innovation and competitiveness objectives to be achieved by 2030. Also several funding possibilities are considered in the draft plan that could be further elaborated in the final plan.

The NECP would benefit from presenting a comprehensive analysis on where the low-carbon technologies sector, including for decarbonizing energy and carbon-intensive industrial sectors, is currently positioned in the global market, highlighting areas of competitive strengths and potential challenges. Measurable objectives for the future should be defined on that basis, together with policies and measures to achieve them, making appropriate links to enterprise and industrial policy.

As regards the **Strategic Energy Technology (SET) Plan**, Croatia notes that the link between European and national efforts has yet to be developed, and that it aims to do so through thematic working groups.

3. COHERENCE, POLICY INTERACTIONS AND INVESTMENTS

Overall, the draft plan does not allow for a detailed assessment on the coherence and interlinkages. Some examples of interlinkages are highlighted, but e.g. the coherence and interlinkages between the policies and measures in the security of supply and decarbonisation dimensions should be further elaborated in the final plan.

It is not clear from the draft plan whether the **energy efficiency first principle** was considered, although there are measures that address the potential to increase efficiency in the energy supply system. In particular, there is a new economic measure to increase the efficiency of district heating systems infrastructure that presents a significant potential both for efficiency and for the deployment of renewable energy. As for the power sector, the measures presented are already existing ones and they were identified in "Assessment of Potential for Increasing Energy Efficiency of the Electricity Infrastructure" prepared by the Croatian Energy Regulatory Agency. The measures identified by the Agency (2 out of 3 to be financed through the European Structural and Investment Funds (ESIF) have the potential of increasing energy efficiency of the electricity infrastructure for the period from 2016 to 2025. However, for gas infrastructure no specific measures are foreseen.

The draft plan does not consider **coherence of adaptation** in the decarbonisation dimension with other dimensions of the Energy Union. There is no information on how climate change risks might affect energy supply (e.g. wildfires and storms destroying biomass resources and power networks, availability of hydro power). Information is also lacking on adaptation co-benefits for energy efficiency, such as in the thermal management of buildings.

For some of the actions announced (e.g. promoting bioenergy, fast-growing species afforestation, pumped-storage hydro) an assessment of their impacts on environment and biodiversity would benefit the final plan. Considering the relevance for greenhouse gas emission reductions, the final plan could reflect the interactions with the **circular economy**. The plan hardly refers to circular economy action plans or roadmaps, but presents waste preventive measures and action to achieve recycling targets.

Even though a common legislation regulates GHG and **air pollutants** in Croatia (the Air Protection Act), the draft plan lacks quantitative information on the interactions with air quality and air emissions policy.

The draft plan does not provide any elements on a socially **just and fair transition**. This would be relevant and could be integrated throughout by considering social and employment impacts, e.g. shifts in sectors/industries and skills impacts, distributional effects (including on energy poverty) and revenue recycling.

The draft NECP does not contain an overall assessment of the **investment needs** and expenditures, market risks and barriers or other relevant information. However, some estimates of investment costs for 11 planned transport, building efficiency and energy security related measures have been provided as part of the draft NECP or the policies and measures annex. These amount to around EUR 4 billion for the period 2021-30, or annually around 0.8 % of current GDP, the majority for building renovation. Many of these measures shall be co-financed by European Structural and Investment Funds or EU ETS related revenues. A description of support schemes will be spelled out in the National Development Strategy 2030, which currently is being elaborated. The final NECP would benefit from describing how Croatia intends to make use of its share of the Modernisation Fund as well as other free allowances from the ETS (up to 30 million allowances in total, corresponding to EUR 600 million for a carbon price of EUR 20/t)¹⁶. Some investment needs could partly be covered by EU funds, such as cohesion policy funding, notably in line with the investment analysis for 2021-2027 of the 2019 European Country Semester Report for Croatia and with other relevant legislation.

Links with the European Semester

Identifying financing needs and securing the necessary funding will be key to deliver on energy and climate objectives. The Commission had addressed that question as part of the 2019 European Semester process. Based on the 2019 Country Report for Croatia, published on 27 February 2019¹⁷, the European Commission's recommendation for a Council recommendation for Croatia issued on 5 June 2019¹⁸, in the context of the European Semester, highlights in

¹⁶ The figure is based on the amounts established in Directive (EU) 2018/410 and is subject to various uncertainties, such as the possibility to transfer allowances available pursuant to Article 10c to the Modernisation Fund.

¹⁷ Commission SWD(2019) 1010 final.

¹⁸ COM(2019) 511 final.

particular the need to invest in ‘sustainable urban and railway transport, energy efficiency, renewables and environmental infrastructure’. When preparing its overview of investment needs and related sources of finance for the final plan, Croatia should take into account these recommendations and links to the European Semester.

A breakdown of energy prices and a description of **energy subsidies**, particularly fossil fuels (section 4.6.iv) are also missing. Based on internationally used definitions, energy subsidies, including subsidies for fossil fuels and renewable energy were identified in Croatia in the Commission report on Energy Prices and Costs in Europe¹⁹. It would be important that the final plan includes a description of energy subsidies as well as the national policies, timelines and measures planned to phase out energy subsidies, in particular fossil fuel subsidies (section 3.1.3.iv).

4. REGIONAL COOPERATION

No specific regional cooperation has yet taken place. It should be considered as an important part of finalising the NECP e.g. in the context of the cooperation within the Central and South-Eastern Europe Energy Connectivity (CESEC) High-Level Group which already discussed the draft NECPs early 2019. The aim of the group is to coordinate efforts to facilitate cross-border and trans-European projects that diversify gas supplies to the region, as well as to implement harmonised rules, which should fit well with the supply diversification priorities of Croatia. The scope of CESEC was broadened in 2017 to also cover renewable energy and energy efficiency.

This forum could facilitate further regional cooperation as there is significant potential to further cooperate in the internal energy market and energy security areas including when assessing system adequacy as foreseen in the Electricity Regulation²⁰. This will become even more important in the light of increasing shares of renewable energy and corresponding need for system flexibility. This is also valid as regards security of supply in the gas sector and the functioning of the gas market.

The development of renewable energy as well as regional cooperation in the research and innovation dimension could facilitate the pursuit of common projects, including in the area of low carbon technology development.

In May 2017, the Clean Energy for EU Islands Initiative was launched, aiming at accelerating the clean energy transition by helping islands reduce their dependency on energy imports and making better use of locally available renewable energy sources. It also provides a forum for exchange of best practices and aims to promote modern and innovative energy systems and reduce greenhouse gas emissions on islands. Although Croatia is a signatory to the political declaration for this initiative, it has not mentioned this in the draft plan. Croatia could consider doing so in its final plan, and enhance cooperation with other Member States and island regions facing similar challenges and opportunities, including in areas such as interconnection, clean transport, system integration of local renewable production, specific demand response opportunities, for example

¹⁹ Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions: Communication on strengthening Europe's energy networks, COM(2019) 1.

²⁰ Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity.

from desalination plants or cooling loads, and the cost-effective deployment of energy storage systems.

Croatia could further explore the cross-border potential of a coordinated energy and climate policy notably in the Adriatic with the aim of reducing the region's carbon footprint and implementing an ecosystem approach. In this regard, an assessment of the macro-regional aspects would further enrich the analysis and provide solid basis for regional cooperation in the future.

5. COMPLETENESS OF THE DRAFT PLAN

Information provided

The submitted draft NECP is consistent with the template for national energy and climate plans²¹. In addition, Croatia has provided the voluntary templates on policies and measures and on quantitative projection parameters and results. National contributions and targets for 2030 are available for GHG emission reduction, renewable energy and energy efficiency. However there are important elements missing from the draft plan such as a complete impact assessment of the planned policies and measures and the overview of investment needs that are foreseen for the final plan.

Concerning the **decarbonisation dimension** the draft plan lacks information on the estimation of annual **greenhouse gas emission** reduction trajectory for the period 2021–2030 under the Effort Sharing Regulation²² and while providing LULUCF projections, it does not yet apply the accounting rules set out in the LULUCF Regulation²³, e.g. the Forest Reference Level for managed forests.

Most of the elements required on **renewable energy** are provided, including sectoral and technology-specific yearly trajectories. Also bioenergy trajectories disaggregated between heat, electricity and transport in Mtoe. However, trajectories on biomass supply, by feedstocks and origin and trajectories for forest biomass, an assessment of its source and impact on the LULUCF sink are missing from the draft plan. Planned capacities are generally described but are not split between new capacities and repowering.

The sections of the draft plan dedicated to the **energy efficiency** dimension largely follow the required structure as defined by the Governance Regulation. The draft plan includes an overview of the planned measures on energy efficiency, which are foreseen for the period 2020–2030. Additional information on the timeline for implementation of the measures and their expected impacts is needed in the final plan. The draft plan does not include the key elements of the long-term renovation strategy²⁴, but only the future expectations concerning new and renovated

²¹ Annex I of the Regulation (EU) 2018/1999 on the Governance of the Energy Union and Climate Action.

²² Regulation (EU) 2018/842 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030.

²³ Regulation (EU) 2018/841 on greenhouse gas emissions and removals from land use, land use change and forestry.

²⁴ Indicative milestones for 2040, 2050, the domestically established measurable progress indicators, an evidence-based estimate of the expected energy savings and wider benefits and the contribution of the renovation of buildings to the Union's 2030 energy efficiency target.

buildings (annual rate of renovation of 1.6 %). Information on the cost-optimal minimum energy performance requirements (Article 5 of the EPBD²⁵) is also missing.

While the draft plan sets out a general policy objective for **energy security** dimension of ensuring secure and stable supply of energy, more information on the gas import dependency and sources and the potential of domestic production should be provided. Also information on the foreseen lifetime of the existing reactor and the long-term supply of nuclear fuel would enrich the final plan. The final plan could also address issues like electricity generation adequacy, including on demand response and storage, preventive action and emergency plans for gas and oil stocks and emergency procedures, risk preparedness plans as well as measures for cybersecurity.

As regards **internal market**, the draft plan contains only limited information on core quantitative parameters for the functioning of the national retail and wholesale gas/electricity markets. Additional information on the aspects listed under market integration is required, in particular on competition at the wholesale level, non-discriminatory participation of renewable energy, system flexibility and objectives for energy poverty. On infrastructures, calculation methods for the 15 % interconnection levels are not provided.

The draft plan identifies research domains that could potentially receive attention, but concrete **research, innovation and competitiveness** objectives to be achieved by 2030 are missing. As regards cooperation under the Strategic Energy Technology (SET) Plan, Croatia outlines its plans for developing policies and measures. No financing measures have yet been defined.

Robustness of the Croatian draft National Energy and Climate Plan

Most of the required elements of the **analytical basis** are addressed in the draft plan. The draft plan contains both a With Existing Measures (WEM) and a With Additional Measures (WAM) scenario. Assumptions and results related to the with existing measures scenario are reported using the voluntary templates.

The with existing measures projection largely covers the five dimensions of the Energy Union, The with additional measures projection currently focusses on GHG emissions. For the with existing measures and with additional measures projections, additional information would be desirable on (i) primary energy consumption, (ii) energy-related investment needs for the overall economy, (iii) GHG emissions from international aviation, (iv) non-GHG air pollutants, and (v) levels of electricity exchange per partner.

The model based projections are generally presented in a **transparent** way. All key parameters have been provided, including sources, and different models are mentioned in the draft plan. A more detailed description of the overall modelling approach would enrich the analytical basis of the draft plan.

The key model parameters are partly calibrated to the EUROSTAT figures for the base year 2015. The draft plan follows the EU ETS carbon price assumptions recommended by the Commission, complemented by its own assumptions for international fossil fuel prices.

Some of the required elements of the **impact assessment** of planned policies and measures are present. The final plan would need to include the assessment of macroeconomic impacts and, to

²⁵ Directive 2010/31/EU on the energy performance of buildings.

the extent feasible, the health, environmental, employment and education, skills and social impacts, including just transition aspects. A list of planned additional measures has been provided with the information on the inclusion of measures in the with existing measures or with additional measures scenario, but some measures seem not to be attributed to any scenario. Croatia expects an update of GHG projections to happen prior to the publication of the final plan.