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COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

Accompanying the document

Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources (recast)

{COM(2016) 767 final}
{SWD(2016) 419 final}

Contents

6. MONITORING AND EVALUATION

The Commission will monitor the transposition of the Revised RES Directive and its implementation in the Member States under the Energy Union Governance process. For this purpose, the Commission will be supported by yearly Member States reporting as described below.

6.1. Reporting by the Member States

Every two years starting from 2021 onwards, Member States will report under the Energy Union Governance process on key monitoring indicators and dimensions, among which:

- progress on the implementation of national trajectories
    - for renewables as a whole
    - in the electricity, heating and cooling, and transport sector;
    - by renewable energy technology
    - if applicable, share of renewable energy in district heating, renewable energy use in buildings, renewable energy produced by cities, energy communities and self-consumers).
- progress on the implementation of policies and measures
    - implementation of heating and cooling and transport measures
    - Specific measures for regional cooperation;
    - Specific measures on financial support for renewable
    - Specific measures on admninistrative procedures, information and training, and grid access
    - Specific measures on the promotion of the use of energy from biomass
- and the following further information:
    - the functioning of the system of guarantees of origin
    - aggregated information on biofuels, renewable transport fuels of non-biological origin, waste-based fossil fuels and electricity placed on the market by fuel suppliers
    - developments in the availability, origin and use of biomass resources for energy purposes;
    - 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;
    - the estimated excess production of energy from renewable sources which could be transferred to other Member States
    - the estimated demand for energy from renewable sources to be satisfied by means other than domestic production until 2030;
    - the development and share of biofuels made from feedstocks listed in Annex IX
    - the estimated impact of the production of biofuels and bioliquids on biodiversity, water resources, water quality and soil quality within the Member State;
    - risks or observed cases of fraud in the chain of custody of biofuels or bioliquids;

- 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;
- the energy produced in buildings, as well as the share of self-consumed energy for electricity and heating and cooling.
- the share of renewable energy in locally generated energy, as well as the renewable capacity and annual generation by energy communities as defined in Article 2 of Directive 2009/28/EC.

6.2. Reporting by the Commission

The Commission will proceed to a compilation of, among others, the elements above to be integrated in the yearly State of the Energy Union Report. It will also asses progress in terms of renewables shares in the EU as a whole against projected trajectory, as well as individual Member States achievements against contributions. On the basis of the elements above, the European Commission will also assess Member States progress in creating renewable enabling framework in all sectors.

A particular focus of the commision report will be cast on the cost-effective deployment of renewable energy, in particular the impact on end consumers and industry. This evaluation shall also assess to what extent the Revised RES Directive has contributed to the achievement of the pledge to make the EU "world number one in renewables", through an analysis of the five key dimensions, *i.e.*:

- citizen empowerement
- energy security
- technology leadership
- overall deployment in each sector
- jobs and added value

For the purpose of the above analyses , the Commission will also promote independent studies and reports, including in collaboration with the industry and the academics, to survey sector-specific aspects of the directive, including the impact on employment, growth, technology imports/export and effect on SMEs.

6.3. Evaluation of the Directive

The Commission will proceed to a fully-fledged evaluation of the impact of the Revised RES Directive in 2025, based on 2023 data. The evaluation report will include, inter alia, an assessment of whether the operational objectives of the Revised RES Directive have been reached, in terms of trajectory towards the 2030 EU-target, as well as in each of the following sectors:

- Electricity
- Heating and cooling
- Transport
- Consumers empowerement

The evaluation report will be developed by the Commission with the assistance of external experts, on the basis of terms of reference developed by the Commission services. Stakeholders will be informed of and consulted on the evaluation report, and

they will also be regularly informed of the progress of the evaluation and its findings. The evaluation report will be made public.

ANNEX 1 - PROCEDURAL INFO

Identification

(1) Lead DG: DG ENER

(2) Agenda planning/WP references: AP 2016/ENER/025

Organisation and timing

The Inception Impact Assessment was published in November 2015.

An online public consultation was launched on 18 November 2015 and remained open until 10 February 2016. The main results of this consultation are provided in a separate annex.

Inter-service group:

An Inter-service group meeting was used comprising the Legal Service, the Secretariat-general, DG Budget, DG Agriculture and Rural development, DG Climate action, DG Communications Networks, Content and Technology, DG Competition, DG Economic and Financial Affairs, DG Employment, Social affairs and Inclusion, DG Energy, DG Environment, DG Financial stability, Financial services and Capital markets, DG Internal market, Industry, Entrepreneurship and SMEs, the Joint Research Centre, DG Justice and Consumers, DG Mobility and Transport, DG Regional and urban development, DG Research and innovation, DG Taxation and Customs Union.

Not all Directorate-generals did participate in each ISG.

Meetings of this ISG were held on: 25 April 2016 and 14 July 2016.

Consultation of the RSB:

The draft IA was submitted to the Regulatory Scrutiny Board (RSB) on 25 July and was discussed at the RSB hearing on 14 September 2016, following which the RSB asked for a revised submission.

The issues raised by the RSB, with the relevant actions undertaken on the text of the Impact Assessment, are summarised in the following table.

Revised Impact Assessment of the revision of directive 2009/28/EC on the promotion of the use of energy from renewable sources	
Issues Raised	**Changes introduced in the revised version**
Support Schemes for RES	
Issue cross cutting to other impact assessments **The two IAs on electricity market design and renewable energy present different assessments about the investment that**	This issue has been addressed in the abstract of this Impact Assessment under "The findings of the RES and MDI Impact Assessments" as well as in section 2.2.1. (driver 1). In addition the document, *'The vision for the EU electricity market in 2030*

the market will provide to support renewable electricity. It is not clear whether a funding gap arises because expected investment is too low, or whether a "safety net" is needed to mitigate the risk that the market might not provide enough investment to reach the EU target on renewables.	*and beyond',* presented together with the MDI IA include the same assessment.
In addition, the state of commercialisation and maturity of the different renewable energy technologies and their differing need (if any) for public support is not addressed.	This issue has been addressed in the abstract of this Impact Assessment under "The findings of the RES and MDI Impact Assessments", as well as in section 2.2.1. (driver 1), 2.2.2. (driver 2) and sections 5.1.1.2 and 5.1.3.2. An analysis for the 2020-2030 period of the required investments and investment gaps for the different technologies is also available in section 5.1.1.2 as well as in Annex 5 (section 1.1.).
It is also unclear how tendering procedures to procure renewable electricity cost-efficiently (and based on the principle of technology neutrality) can address the needs of immature renewable energy technologies and avoid overgenerous support schemes in a rapidly changing environment.	This topic is covered in section 2.2.2 (driver 2). Under option 2 of section 5.1.1, the common framework on support schemes with the 'EU toolkit' aims to address these issues ensuring that the use of tenders keeps support costs to their minimum and by considering the possibility to have technology-specific tenders in certain circumstances (*e.g.* for technology with long term potential).
The IA report also does not explain why new legislative provisions are needed beyond the Commission's current guidelines on energy and environment state aids and their future review in relation to the period after 2020.	This issue is covered in section 2.2.1. (driver 2) and in section 5.1.1.2. new legislative provisions are needed in complementarity with State Aid Guidelines to ensure investor certainty.
Sustainability of Biofuels	
Issue cross cutting to other impact assessments **This IA addresses biofuels while bioenergy as a whole is the subject of another impact assessment. Given that the issues for biofuels are not different from the issues for other sources of bioenergy, the reference to the impact assessment on renewables should**	The sustainability of biofuels, particularly GHG emissions, in addressed in section 2.2.4 and the implications for the existing sustainability criteria, particularly the cap but also the GHG emission saving target, are addressed in section 5.3. The link to the Impact Assessment on bioenergy sustainability is explained in section 1.3.1.

demonstrate the coherence or the possible differences in policy approach. **In particular, consistency should apply to sustainability criteria, expectations as to the role of bioenergy/biofuels in relation to the overall target for renewables, assumptions on the role of subsidies, and the cost-benefits of any feasible policy at this stage.**	
Address the sustainability of biofuels (and the need to revise the existing sustainability criteria in the RES Directive) in a manner coherent with the approach taken in the IA on bioenergy.	The variable climate performance of conventional biofuels due to ILUC is addressed as part of the problem definition in section 2.2.4 and the options for the future treatment of food-based biofuels, particularly the cap, are assessed in section 5.3. The link to the Impact Assessment on bioenergy sustainability is explained in section 1.3.1.
Explain why the IA report does not distinguish between food-based bioethanol and biodiesel given their different greenhouse gas emissions performance	The difference in GHG performance between food-based bioethanol and biodiesel is explained in section 2.2.4. Furthermore it is also discussed in section 5.3.
Explain why options which require frontloading advanced biofuels which are unlikely going to be mature over the 2020-30 period are not discarded.	As explained in section 2.2.4 several production pathways for advanced biofuels are ready for large scale commercialization provided the right policy framework is in place. Section 5.3 discards Option 0 (baseline) and Option 1 (obligation covering only advanced renewable fuels) for not contributing effectively to the gradual replacement of food based biofuels by advanced biofuels and by not addressing ILUC.
The IA report should look at whether national measures would be more appropriate in respect of subsidiarity, effectiveness and efficiency.	The IA analyses whether national measures would be appropriate to increase renewable in transport in section 5.3. In particular, it finds that Option 0 (baseline), which includes a continuation of national mandates and taxation policies, is projected not to sufficiently develop advanced biofuels which are required to decarbonise transport. It also highlights that both energy based obligations and GHG reduction obligations are widely applied by the Member States and EU measures could thus built on existing administrative

	capacities. Furthermore, section 2.2.2 explains in a footnote the difficulties in making progress on energy taxation at EU-level.
Baseline Scenario	
The content and assumptions of the baseline scenario should be clarified, including the differences between the PRIMES 2016 reference scenario and the scenario extending the "current renewable arrangements". The IA should also explain the implications of the scenarios for the cost of the policies and for the energy mix, in particular on bioenergy, which affects negatively the CO_2 target.	Under section 1.3.2. further clarifications are provided regarding the modelling scenarios considered for assessment of the various policy options and their link with other initiatives. In all policy sections the baseline scenario has been clarified. In the electricity section, a table has been introduced in 5.1, which provides an overview of the scenarios considered for assessing the various policy options. A dedicated section has also been added in Annex 4 to explain in more details the choice of the baseline scenario, and the interactions with the EU Reference Scenario. Additional details have been provided when interpreting the results of the scenario, in particular the impacts on the use of bioenergy in the baseline (CRA) scenario (Section 5.1. – introductory part).
Report Length	
An IA report should not generally exceed 40 pages in length, otherwise its usefulness in the decision making process is impaired. The current report substantially exceeds this limit. A short abstract of the IA report should be presented at the beginning of the revised report. This abstract should cover the main elements of the IA (problems, objectives, options, impacts and trade-offs, how options compare) focussing in on the critical points for political decision-making. It should be approximately 10-15 pages in length.	An abstract/executive summary has been included at the beginning of the revised Impact Assessment. It summarizes its key elements, providing the context of revision of the renewables directive, identifying the problems requiring action, the policy options put forward and the main results of their assessment. Furthermore, the Impact Assessment has also been revised with a view to improve its readability and provide further clarity on problem drivers and their link with policy options. To this end, the following changes are highlighted: - In chapter 2, a problem tree is included providing a link between the problem, its drivers and possible consequences - In chapter 5, under each section, a table

	has been included providing the link between challenges, drivers and policy options - The sections on energy communities and administrative barriers have been included under the electricity sector, as they mostly focus on this sector.
Preferred options	
Many different options are discussed but no preferences are expressed. It is difficult, therefore, to gauge the overall balance and proportionality of the intended approach towards attainment of the EU-level target and to assess coherence with other initiatives and Union policies. While it is not mandatory to express a policy preference, the usefulness of the IA report would be enhanced if preferences were stated or if options that compare less well in the analysis could be discarded.	In all policy sections, a number of options to be discarded have been identified, reducing the number of potentially preferred options.
Subsidiarity and proportionality	
The discontinuation of national targets introduces more uncertainty regarding the collective attainment of the EU-level target and the individual contributions of the Member States. However, the principles of subsidiarity and proportionality remain relevant. The current impact assessment has only investigated options for action at the EU level notwithstanding that national measures may be less costly, more effective or simply more appropriate from a subsidiarity perspective. The IA should look at a wider range of options including action at Member State level particularly in the transport and heating and cooling sectors. Moreover, the extension of the scope of the directive to cover administrative issue for permits and the legal definition of energy communities is questionable on subsidiarity grounds.	To provide further clarity on the need for EU intervention a section on subsidiarity has been included in the abstract and Chapter 3 has been revised. With regard to the **transport section**, as mentioned above, the Impact Assessment analyses whether national measures would be appropriate to increase renewables in transport in section 5.3. In particular, it finds that Option 0 (baseline), which includes a continuation of national mandates and taxation policies, is projected not to sufficiently develop advanced biofuels which are required to decarbonise transport. It also highlights that energy based obligations are widely applied by the Member States and EU measures could thus built on existing administrative capacities. Furthermore, section 2.2.2 refers in a footnote to the difficulties in making progress on energy taxation at EU-level. With regard to **heating and cooling**, as explained in section 5.2.1.1, the heating and cooling obligation scheme is designed

	to reflect a cost-effective set of measures at national level in order to reach a 27% renewables target. In the absence of further EU incentives, it is likely that Member States would fall below this cost-effective share. In section 5.2.1, a range of mitigation measures have been introduced to leave sufficient flexibility for Member States when designing the obligation *i.e.* to limit the burden on small-scale suppliers and ensure proportionality and subsidiarity of the option. On the top of it, the most far-reaching option (option 1) has been disregarded. The option to include a definition of **energy communities** has been introduced as a necessary step to ensure that a certain category of actors, that bring added value in terms of cost-efficient renewable deployment, are able to play a role and compete on equal footing with other market players. Such definition would be based on existing entities (such as SMEs) and will ensure, to the extent possible, that all energy communities across Europe are encompassed. Member States would still have freedom to have their own definition of energy communities, as long as entities falling under the RED definition are granted the right to operate on equal footing within the energy system. This topic is addressed in section 5.1.1. With respect to **administrative procedures**, the relation between the existing measures (current article 13 of the RES Directive), the TEN-E Regulation and the proposed options was made clearer (please see section 5.1.4). Furthermore, clarifications on subsidiarity were added in section 5.1.4, explaining why EU action is required and that the options proposed leave enough freedom for Member States to define the solutions that are best suited for local circumstances. It should be noted that elements of options that are not in line with subsidiarity are pointed out in order to be discarded.
Governance and mid-term review	

Issue cross cutting to other impact assessment **The IA report should explain why it is necessary now to anticipate the potential failure of the envisaged governance system without any evidence or understanding as to why the Union may not be on track to attain the EU's target of 27% renewables in 2030.**	Further explanation is provided in the section concerning links with other initiatives (section 1.3.1). The problem definition and assessment of the options for correcting gaps have been edited to make clearer the roles of the respective initiatives (please see sections 2.2.1, 2.2.3, 5.5.3 and 5.5.4).
The option of having a mid-term review should be considered, which would be based an evaluation of the RES Directive using the information generated by the governance process to assess the causes for any non-attainment and the need for additional measures. Such an evaluation would in any event be required under the Commission's better regulation policy.	The IA report contains options for a review process to address any potential gaps in achieving the target. The options related to review clauses have been revised so that these options are made clearer (please see sections 5.5.3 and 5.5.4).
The report should justify why all sectors (electricity, heating and cooling, transport) should contribute more or less equally to reaching the overall RES target, and it should explain how this would be the most efficient approach.	Section 2.2.2., driver 1, clarifies the expected cost-effective contribution of the various sectors to the overall increase in the RES share by 2030. The Impact Assessment does not conclude that all sectors should contribute more or less equally, but rather according to their potential, which depends on various factors, including evolution of energy demand in the various sectors. Addition details on the model specifications leading to these results can be found in Annex 4.

Consideration of the 2nd Regulatory Scrutiny Board Opinion issued on 4 November

RSB comments	How the Proposal of a recast of the Renewables Directive addresses the RSB comments
B) Overall opinion: NEGATIVE	
The Board acknowledges the improvements in the resubmitted impact assessment report. It provides a useful abstract, an improved problem definition, a better quantified baseline, more details on the options. In particular it establishes the investment gap in renewables for power generation and makes the case for the continuation of market based support	**The assistance of the Board and the guidance offered during the process contributed to an improved problem definition, a better quantified baseline, as well as more details on the options. In particular, the confirmation that the IA clearly establishes the investment gap in renewables for power generation and convincingly makes the case for the**

schemes.	**continuation of market based support schemes is acknowledged.**
However, the Board maintains its negative opinion because the revised report still contains significant shortcomings as listed below:	**The Proposal has been significantly reviewed in order to take into account the concerns expressed by the Board in its opinions, in particular regarding (i) the proportionality of the measures initially foreseen in relation to RES support schemes; and (ii) the proportionality of the measures initially foreseen in the heating and cooling sector..** **Detailed responses are provided below.**
The report fails to assess sufficiently the principles of subsidiarity and proportionality. The case for EU-level legal obligations in several areas is not clear. Options for action at Member State level have not been considered. A different mix of EU and national measures might arguably be more efficient and effective, notably in light of the following: **– the political decision of the European Council to move away from national legally binding targets for renewable energy;** **– the extent to which national measures are already in place;** **– the relatively limited additional efforts required to reach the EU target as compared to the baseline, as well as the generally underestimated trend of renewables growth;** **– the need to ensure coherence with the various climate and energy policy instruments (such as the proposal on effort sharing in sectors not covered by the emissions trading system, energy efficiency and energy performance of buildings and the initiative on electricity market design).**	**There is a fundamental shift in the policy framework for 2030: while the 2020 framework was based on legally binding national targets, allowing Member States large discretion on their national measures, the 2030 framework is based on a legally binding target placed at the level of the European Union. The Union's target can be best achieved through a partnership with Member States combining their national actions supported by a framework of EU measures. Such a mix of national and EU measures will ensure the achievement of the binding nature of the 2030 Union-level target in a cost efficient way.** **Relying solely on national measures would lead to a non-cost efficient and unevenly spread efforts across the EU, leading to an insufficient deployment of renewables in the EU internal energy market falling short of the agreed target. EU level action is necessary to create a robust and stable framework that enables the collective and cost-efficient achievement of the Union's binding objective of at least 27% renewable energy in 2030, with a fair distribution of efforts by Member States.** **This is a minimum target. While the EU is today well on track to achieve its 2020 renewables target, modelling shows that the EU is not on track to meeting the 2030 target. The IA (Reference scenario), which assumptions have been built in close**

cooperation with Member States, points to a likely achievement of 24.3% RES in 2030 on the basis of a continuation of current measures at Member State level. This would not fulfil the legally binding objective of at least 27%.

Moving from 24.3% to the minimum target of 27% requires very substantial additional investments. For RES-E generation only, moving from 24.3% to 27% would require an additional investment of 254 bn EUR over 2021-2030. This figure is the difference between the RES-E investment needs in the Reference scenario (assuming continuation of Member States measures, leading to 24.3%) and the Current Renewables Arrangement (CRA) scenario (assuming by design that the 27% target is met through unspecified additional measures at Member States level, but no additional measures in the recast Directive) – see Annex 5 of the IA.

Against this background, it is important to note that investments in renewables have dropped by more than half since 2011 to $48.8 billion last year. The EU now accounts for only 18%[1] of global total investment in renewables, down from close to 50% only 6 years ago. Uncertainty over the EU and, consequently, national frameworks that will be in place after 2020 is affecting the the project pipeline for after 2020. This calls for the prompt establishment of a clear and stable policy framework to make it possible for the EU to achieve its 2030 targets and its ambition to lead the world on renewables.

The Proposal aims at ensuring that a sufficient mix of measures is in place at EU and national levels to meet the at least 27% target. It also aims at reducing the overall cost of meeting the target through the use of EU-level measures, as illustrated by the reduction in RES-E investment needs

[1] Frankfurter School-UNEP Centre/BNEF, 2016. Global Trends in Renewable Energy Investments 2016, http://www.fs-unep-centre.org

	between the CRA and the EUCO scenarios - see Annex 4 of the IA. **The additional investments need to be triggered through a consistent development of EU renewable energy policy across the EU, leading to a more cost-efficient deployment and a smooth and efficient operation of the internal energy market whilst fully considering the differing resource capacities of the Member States to produce different forms of renewable energy. Where EU measures are proposed, Member States retain a wide flexibility and discretion to further develop renewables in any sector of their economies that suits best their national circumstances and preferences.** **The Commission's Proposal is an integral part of the 2030 Energy and Climate Framework. A single basis for modelling and analysis has been used for all legislative proposals (the Board has already given positive opinions on the Impact Assessments for these), which takes into account cross legislative interactions and builds on the confirmed input of Member States (including their national actions). This has ensured coherence, complementarity and consistency for all proposals. In developing the 'package' there is full consistency across all legislative proposals. Thus, for example, aspects of governance including dialogue, preparation and finalisation of national plans, biannual review and evaluation, recommendations to Member States, and ultimately any legislation revisions are all within the Governance Regulation. Hence there is no accumulation or contradiction in the draft proposals.**
More specifically:	**Detailed explanations are provided below**
Proportionality is particularly relevant for the options in the heating and cooling sector. Impacts and costs of the different obligations have not been assessed against their small contribution to the overall target.	**The legislative proposal has been adjusted following the opinion of the Board. The mandatory nature of the provision has been abandoned; instead, Member States are provided orientations on how to address the untapped potential in the heating and cooling sector.**

On the substance of the Board comment regarding the proportionality of the obligations assessed in the Impact Assessment, it shall be noted that heating and cooling represents 50% of final energy consumption, is essential to the ultimate achievement of the Union's decarbonisation goals, and in fact contributes close to half of the at 27% share RES in 2030.

Modelling shows that, for the heating and cooling sector to cost-effectively contribute to the 27% target, the RES-HC share would reach 27% in 2030 (EUCO27). Continuation of national measures (reference scenario) would lead to a RES-HC share of only 24.7%. In the absence of further incentive post-2020, the current national policies would not be sufficient to reach the long-term decarbonisation goals.

The gap in terms of RES consumption in the H&C sector between 2020 and 2030 is moderate when looked at in *net* terms (+4 Mtoe according to modelling undertaking in this assessment, under EUCO27 scenario). However, such unit of measure does not take into account the fact that energy efficiency improvements are likely to proportionally affect existing RES sources in the sector – for instance, reducing the heat consumption in a house will proportionally reduce the energy consumption attributed to the biomass boiler of this house. This means that, in the absence of new investments, RES consumption in the H&C sector can be estimated to decrease by around 20 Mtoe due to energy efficiency improvements only. The effort required to meet the cost-efficient contribution of RES in H&C is thus around 24 Mtoe (4 + 20 Mtoe), even before taking into account the need to replace existing units reaching the end of their life. This compares to an overall effort required in the electricity sector of c 39 Mtoe (EUCO27), where overall demand will increase over the period.

Cost-efficiently reaching the target will also require a significant change in the energy mix for the heating and cooling

sector. Between 2020 and 2030, the H&C will need to see: a high uptake of heat pumps (x2 in final consumption); a high deployment of solar thermal (+50% in consumption at residential level); a reduction in overall biomass consumption in the residential sector (-25%); and an uptake in biogas production (up to +2/3).

Currently most Member States have heating and cooling policies in place, mainly focussed on efficiency. However, the instability of the schemes, the technology lock-in due to the absence of specific RES-targeted support along with the uncertainty of continuation of such policies post-2020 means that the EU will not reap the full potential of heating and cooling in meeting the overall RES target cost effectively.

Regardingproportionality and subsidiarity, the Proposal now foresees that Member States shall endeavour to achieve an annual increase of 1% in the share of renewable energy in heating and cooling supply. Member States will decide how to implement this measure. This provision will contribute to reaching cost-effective contribution of the H&C sector (c. 27% RES-H&C share in 2030) towards meeting the overall RES target. Additionally, full flexibility is left to Member States as to the manner by which they will seek to meet this objective.

It can be noted that, where Member States decide to introduce supplier obligations, related costs can be expected to be limited. The IA addresses the administrative burden associated with obligations - for national administrations the implication is very moderate, particularly when combined with e.g. administration of the Article 7 EED measures. In light of additional information from recent studies, the annual additional costs on fossil fuel sales could be around 0.32 €/MWh, which represents around 0.5% of the price of natural gas for households in 2030[2].

[2] EU average. Draft interim results from Fraunhofer.

	Furthermore, the provisions on heating and cooling have been carefully aligned across all the legislative texts. The proposed EED and EPBD focus on new and renovated buildings and individual consumer choice, while RED addresses the large thermal suppliers where consumers are unable to make individual choice. The risk of unintended consequences, such as a worsening of air quality due to the use of biomass has been fully assessed through the policy scenario (EUCO27) on the *Environmental impacts* section of chapter 5.2.1. of the IA and found, focusing on the residential sector, that biomass use remains constant (and even decreases in absolute terms) between 2020 and 2030, thanks mostly to energy efficiency and electrification.
Proportionality is also a consideration regarding the cumulative requirements under the new RES Directive, the Effort Sharing Decision and the revised Energy Union Governance (especially with regard to national trajectories and corrective measures). Together these might be a disproportionate way to deliver the Union's target for renewable energy.	**The Proposal establishes EU-wide measures that are complementary to the new Effort Sharing Regulation (ESR) proposed in July 2016. While the ESR establishes binding GHG emission targets for each Member State without defining how to get there, the Proposal establishes EU-wide measures only in certain sectors covered by the ESD (heating and cooling and transport) where the added value of EU action is demonstrated and where subsidiarity and proportionality principles are respected. This approach is similar to other EU-wide measures impacting sectors covered by the ESD, such as CO2 emission standards for new cars and vans, or restrictions on fluorinated industrial gases. This approach has also been accepted and successful with respect to 2020 targets where despite an effort sharing decision[3] with binding national targets, it was decided to have dedicated legislation for renewables.** **As part of the investment requirements for the period 2020 – 2030, a number of trajectories have been examined. The assessment confirms that a clear profile of demand, across all technologies, would**

[3] Reference to legislative act

	result in a consistent stream of investments, allow for industrialisation of the supply chain, continued cost reduction, whilst supporting jobs and growth in the renewables sector. Combined this also has a positive impact on greenhouse gas emission reductions. **Should corrective measures be needed to make sure the EU as whole achieves the target this would be done through the Energy Union Governance.**
The existing state aid guidelines already address most of the issues that the IA report examines and already acknowledge the 2030 climate and energy targets. It is not clear, therefore, why the IA addresses the design of public support schemes for renewable electricity.	**The legislative proposal has been adjusted following the opinion of the Board, in close cooperation with DG COMP and the Legal Service, in order to ensure that provisions contained in the Proposal are fully compatible with and complementary to State aid rules and do not impinge on EC competencies in the field of State aid.** **The proposed principles are general principles requiring the use (where needed) of market-based and cost-effective schemes. This is fully consistent with the new market design and helps to minimise costs for tax payers and electricity consumers. The provisions further support the investor certainty over the 2021-2030 period created by the regulatory framework of the Directive.** **Industry, regulators and several Member States have stressed the need for a stable regulatory framework to ensure the cost-effective achievement of the renewable at least 27% target. Some stakeholders stressed the need for a strenghtened ETS price signal, full integration of renewables in the market and, if needed, market based renewables support, encouraging common rules to be developed in the Directive. These rules should also allow Member States to develop the renewable technologies needed for instance for diversification reasons, and ensure that Member States retain the capacity to determine their energy mix, as per the Treaty. The same Member States finally stress that the basic requirements of support schemes for Europe need to be agreed in the Council and the European Parliament, which will build legitimacy**

and public acceptance for the market integration agenda. The Proposal builds on national support schemes and does not introduce an EU support scheme for renewables, leaving Member States discretion on how to incentivise renewables. On the other hand, the Proposal does provide clarity that support schemes can be used if needed and sets out general principles in line with the objective of the market design initiative to integrate renewables in the electricity market and in line with the overall objective to achieve decarbonisation at least costs to consumers.

The principles also respect subsidiarity as they do not interfere with Member States' right to determine their energy mix.

If follows directly from the Treaty that the Commission must ensure that State aid does not distort the internal market to an extent contrary to the common interest. It also follow directly from the Treaty that Member States shall promote the development of renewable forms of energy and have the right to determine their energy mix.

The Commission provides a clear and predictable framework on how it assesses State aid schemes in its State aid guidelines. The Commission in its assessment is bound by its guidelines and reviews them regularly after consultation of Member States and stakeholders in order to adapt them to market developments.

Additionally and crucially, the state aid guidelines and existing legislation have not been designed to prevent retroactive changes impacting the economics of existing projects, and harming investor's confidence in the soundness of the European framework in support of renewables. The Proposal introduces a specific provision aimed at preventing the use of such retroactive changes.

Finally, the Proposal introduces a requirement on Member States to open support to cross-border participation

	which will ensure that renewables are increasingly deployed where their potential and other conditions are most favourable – again leading to most cost-effective support (see Section 5.1.1 of the IA).
Moreover, the sustainability of biofuels and their potential contribution to the Union-level target is unclear. The issues have not been assessed in the same way as for other forms of bioenergy in the related impact assessment on bioenergy sustainability. Possible changes to the sustainability criteria of biofuels might be appropriate, but this has not been assessed.	**Building on the analysis developed in the IA to the ILUC Directive, this Impact Assessment assesses a number of options for strenghtening the existing sustainability framework for biofuels, including by extending and further reducing the existing cap on food-based biofuels to the period after 2020 in order to minimise ILUC emissions.** **At the same time, the IA on bioenergy assessed options for strengthening the overall sustainability criteria for bioenergy, including a new sustainabilty criteron for forest biomass (used also for biofuel production) and an extension of the sustainability criteria to biomass used for heat and power.**
Finally the report does not provide sufficient clarity concerning the preferred set(s) of options and associated policy trade-offs to facilitate decision-making by the College of Commissioners.	**The impact of each option has been analysed in the Impact Assessment, providing a basis for a comparison of the impacts of the different options analysed. The Impact Assessment did not present a set of preferred options, as allowed under the current practice.**
(C) Main requirements for adjustment	
(1) In relation to renewable electricity, the IA should explain why new legal provisions are needed on how to design state aid schemes beyond what exists already in the Commission's state aid guidelines on energy and the environment (e.g. tendering obligations and opening of tenders to EEA).	**See above.**
(2) The text should better explain how a single uniform (technology-neutral) approach to auctions/tenders for supporting renewable electricity will be able to accommodate the different situations of the various RES technologies. Conversely, if technology-specific tenders are permitted, how would these avoid over-generous subsidies (particularly given the intention to prevent retroactive action by Member	**The Board has confirmed that the IA establishes the investment gap in renewables for power generation and makes the case for the continuation of market based support schemes.** **It should be noted in this context that the Proposal, in view of the Board's opinion relating to a possible duplication between the Proposal and State aid rules, does not**

States).	**include any provisions related to the use of tenders.**
3) The approach presented in the IA is primarily to deliver the 27% EU renewables target with EU-level instruments. While the revised report raises subsidiarity-related issues in the context of providing "flexibility" for implementing the EU instruments, options for Member State action should also be considered.	**The IA builds on the assumption that current EU and Member States policies and measures will only lead to 24.3% in 2030. The IA has considered a number of options across the different sectors (heating and cooling, transport, electricity). Member States have full flexibility to select and implement actions in sectors most appropriate to their situation. EU instruments are proposed only for actions in which operators can trade between themselves, across borders, and across sectors in order to meet the EU-level binding target collectively and cost-efficiently in view also of long term technological development for decarbonisation of the economy. The approach retained in the proposal creates a European framework which supports Member States, particularly in heating and cooling, and in transport. This can subsequently be complemented by further action at Member State level.**
(4) The report should better justify the proportionality of the obligations in the heating and cooling sector: **– The report should analyse likely costs and benefits to justify the level of the particular renewable fuel obligation imposed on fuel suppliers.** **– The report should assess the administrative burden associated with certification regarding district heating and fuel obligations in particular for SMEs. .** **– The risk of unintended consequences should be analysed, such as a worsening of air quality due to the use of biomass instead of clean fuels such as natural gas.** **– The report should better consider consistency with other legislation on energy efficiency, non-ETS GHG emissions reduction and new proposals on the energy efficiency of buildings (EPBD). Article 13 of the existing RES Directive already obliges Member States to ensure that their national buildings codes promote a minimum level of renewables for near-zero energy buildings and buildings undergoing a major**	**The legislative proposal has been adjusted following the opinion of the Board. The mandatory nature of the provision has been abandoned; instead, Member States are provided orientations on how to address the untapped potential in the heating and cooling sector.** **On the substance of the Board comment regarding the proportionality of the obligations assessed in the Impact Assessment, it shall be noted that heating and cooling represents 50% of final energy consumption, is essential to the ultimate achievement of the Union's decarbonisation goals, and in fact contributes close to half of the at 27% share RES in 2030.** **Modelling shows that, for the heating and cooling sector to cost-effectively contribute to the 27% target, the RES-HC share would reach 27% in 2030 (EUCO27). Continuation of national measures (reference scenario) would lead to a RES-HC share of only 24.7%. In the absence of further incentive post-2020, the current**

renovation. In addition, the envisaged revision of the EPBD aims to promote "own production" of renewable energy as a way to meet near-zero energy standards for buildings. In addition, each Member State also has a different target for greenhouse gas emission reduction in the non-ETS sector, which might imply less stringent obligations to reduce greenhouse gas emissions.	**national policies would not be sufficient to reach the long-term decarbonisation goals.** **The gap in terms of RES consumption in the H&C sector between 2020 and 2030 is moderate when looked at in *net* terms (+4 Mtoe according to modelling undertaking in this assessment, under EUCO27 scenario). However, such unit of measure does not take into account the fact that energy efficiency improvements are likely to proportionally affect existing RES sources in the sector – for instance, reducing the heat consumption in a house will proportionally reduce the energy consumption attributed to the biomass boiler of this house. This means that, in the absence of new investments, RES consumption in the H&C sector can be estimated to decrease by around 20 Mtoe due to energy efficiency improvements only. The effort required to meet the cost-efficient contribution of RES in H&C is thus around 24 Mtoe (4 + 20 Mtoe), even before taking into account the need to replace existing units reaching the end of their life. This compares to an overall effort required in the electricity sector of c 39 Mtoe (EUCO27), where overall demand will increase over the period.** **Cost-efficiently reaching the target will also require a significant change in the energy mix for the heating and cooling sector. Between 2020 and 2030, the H&C will need to see: a high uptake of heat pumps (x2 in final consumption); a high deployment of solar thermal (+50% in consumption at residential level); a reduction in overall biomass consumption in the residential sector (-25%); and an uptake in biogas production (up to +2/3).** **Currently most Member States have heating and cooling policies in place, mainly focussed on efficiency. However, the instability of the schemes, the technology lock-in due to the absence of specific RES-targeted support along with the uncertainty of continuation of such policies post-2020 means that the EU will not reap the full potential of heating and cooling in meeting the overall RES target**

cost effectively.

Regarding proportionality and subsidiarity, the Proposal now foresees that Member States shall endeavour to achieve an annual increase of [1]% in the share of renewable energy in heating and cooling supply. Member States will decide how to implement this measure.

This provision will contribute to reaching cost-effective contribution of the H&C sector (c. 27% RES-H&C share in 2030) towards meeting the overall RES target. Additionally, full flexibility is left to Member States as to the manner by which they will seek to meet this objective.

It can be noted that, where Member States decide to introduce supplier obligations, related costs can be expected to be limited. The IA addresses the administrative burden associated with obligations - for national administrations the implication is very moderate, particularly when combined with e.g. administration of the Article 7 EED measures. In light of additional information from recent studies, the annual additional costs on fossil fuel sales could be around 0.32 €/MWh, which represents around 0.5% of the price of natural gas for households in 2030[4].

Furthermore, the provisions on heating and cooling have been carefully aligned across all the legislative texts. The proposed EED and EPBD focus on new and renovated buildings and individual consumer choice, while RED addresses the large thermal suppliers where consumers are unable to make individual choice. The risk of unintended consequences, such as a worsening of air quality due to the use of biomass has been fully assessed through the policy scenario (EUCO27) on the *Environmental impacts* section of chapter 5.2.1. of the IA and found, focusing on the residential sector, that biomass use remains constant (and even decreases in absolute terms) between 2020 and 2030, thanks mostly to energy efficiency and

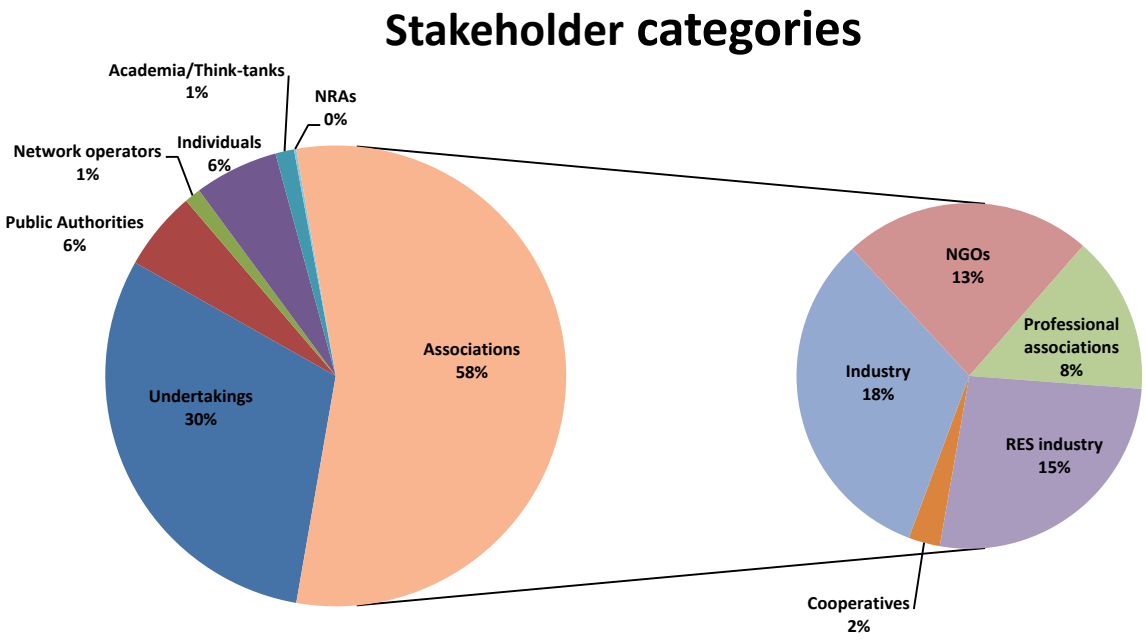
[4] EU average. Draft interim results from Fraunhofer.

	electrification. -
(5) This impact assessment takes a different approach to that which assessed directly the sustainability of other forms of bioenergy in relation to their possible contribution to the Union's 27% target. The revised IA remains primarily focused on how to deliver a particular volume of renewable energy in the transport sector but does not address the sustainability of biofuels directly including the important issue of indirect land use change (and associated greenhouse gas emissions). It is not clear whether food-based biofuels should contribute to the Union's 2030 target. Consideration should be given to an additional policy option that addresses the deficiencies in the current sustainability criteria (i.e. absence of Indirect Land Use Change) and which would apply equally to all biofuels (advanced and food-based).	**Building on the analysis carried out in the IA to the ILUC Directive, this IA analysed further options for mitigating the ILUC impacts of food-based biofuels in the period post-2020. The analysis shows that such impacts can be effectively mitigated by introducing a progressive reduction in the share of food-based biofuels that can count against the 2030 RES target on top of existing sustainability criteria for biofuels. In this way, the Proposal clarifies the role of food-based biofuels in the post-2020 period. Furthermore, the IA analyses options for increasing the GHG savings requirement to ensure optimal climate performance of advanced biofuels.**
(6) The coherence and proportionality of the measures intended under the present initiative and under the energy governance and RES options related to the delivery of the EU's 27% target should be better explained. Assuming the new legal obligations are adopted, and taking into account the commitments under the Effort Sharing Decision, the report needs to demonstrate the need for the linear increasing trajectory for the period 2020-2030 as well as the possible corrective measures under the governance framework	**The Proposal establishes EU-wide measures that are complementary to the proposed Effort Sharing Regulation (ESR). While the ESR establishes binding GHG emission targets for each Member State without defining how to get there, the Proposal establishes EU-wide measures only in certain sectors covered by the ESR (heating and cooling and transport) where the added value of EU action is demonstrated and where subsidiarity and proportionality principles are respected. This approach is similar to other EU-wide measures impacting sectors covered by the ESR, such as CO2 emission standards for new cars and vans, or restrictions on fluorinated industrial gases.** **As part of the investment requirements for the period 2020-2030, a number of trajectories have been examined. The assessment confirms that a clear profile of demand, across all technologies, would result in a consistent stream of investments, allow for industrialisation of the supply chain, continued cost reduction, whilst supporting jobs and growth in the renewables sector. Combined this also has**

	a positive impact on greenhouse gas emission reductions. **As regards trajectories, the Proposal does not establish any binding trajectories on Member States. The Governance Proposal establishes a need to define indicative Member States ambition levels including indicative trajectories that correspond to their national circumstances and preferences. Without being binding on Member States a linear EU-wide trajectory will help track progress towards the achievement of the EU-wide target.** **Should corrective measures be needed to make sure the EU as whole achieves the target this would be done through the Energy Union Governance. Instead, the Proposal defines a set of balanced measures across the different sectors to allow Member States to deliver the target collectively and cost efficiently on the EU level target.**
(D) Procedure and presentation	
While the report is still very long, adding the abstract has improved the presentation of relevant information.	**Acknowledged**

ANNEX 2 - STAKEHOLDER CONSULTATION

This public consultation was launched on 18 November 2015 and remained open until 10 February 2016. The Commission received in total 614 replies. 340 replies were sent by national and EU-wide associations, accounting for 58% of the replies. Out of these, 110 came from industry associations (18% of total replies) and 90 were submitted by the renewable energy industry (15%). Moreover, there were 186 replies directly from undertakings (30%). A total of 19 national governments and 22 regional or local authorities also participated in this consultation. To note the significant participation by individual citizens, energy cooperatives and NGOs.



The detailed assessment of the replies confirms broad consensus amongst respondents on a number of the elements put forward in the public consultation, including *inter alia* the need for a stable and predictable EU legal framework for renewables, the importance of defining complementary measures in the new directive to ensure the achievement of the at least 27 % binding target and the relevance of developing a market fit for renewables. However, stakeholders are divided on other issues, such as on the geographical scope of support schemes and the exposure of renewables to market conditions (*e.g.* priority dispatch and balancing responsibilities).

1. General framework for renewable energy policies

Ensuring stability, transparency and predictability for investors

Respondents from all stakeholder categories stress the need for a robust legal framework that can replace key features of the RES Directive, such as national binding targets which were considered crucial to achieve the 2020 objectives. Likewise, 73% of respondents consider that the current directive has been successful in helping to achieve the EU

energy and climate objectives. Nevertheless, more than 90%[5] of respondents believe that the renewable energy potential at local level is still underexploited.

When defining the future legislative framework for the period after 2020, several topics stand out as important for stakeholders, most notably:

- Strategic planning of renewable energy at national level required by the EU, which 95% of respondents from across all stakeholder categories consider as important/very important to improve investor confidence.
- Member States consulting on, and adopting, renewable energy strategies that serve as the agreed reference for national renewable energy policies and projects (93% of respondents consider it as important/very important).
- Yet, this measure should be completed by strong guidance from the EC (78% of respondents qualify it as important or very important) and rely on the best practices identified within the RES Directive (for 87% of respondents).

Stakeholders stress that retroactive changes to support schemes should be prevented. Other elements are identified as important to improve the stability of investments; these include the removal of administrative barriers, further market integration and a reinforced investment protection regime going beyond the Energy Charter Treaty. Several respondents also insist on the necessity to ensure a quick implementation of the 2030 Renewables Directive, well ahead of 2021, in order to give timely policy signals and an outlook to investors.

Regarding national energy and climate plans, more than 80 % of respondents support the different tentative elements suggested to be included in the plans. This includes *inter alia* renewable energy trajectories and policies up to 2050, specific technology relevant trajectories for renewable energy up to 2030 and measures to be taken for increasing flexibility of the energy system and for achieving market coupling and integration.

Complementary measures to achieve the at least 27 % binding EU renewable target

Having a robust legal framework enshrined in the Renewables Directive is considered key to achieving the at least 27% EU renewable energy target by 2030. The majority of respondents favour preventive measures to avoid a gap in target achievement, but also see a need for implementing corrective actions if this happens to be the case. Some stakeholders, such as Energy Regulators, highlight the need to ensure consistency of any complementary measures with national support schemes.

There is wide consensus amongst stakeholders around measures such as EU-level support to research, innovation and industrialisation of innovative renewable energy technologies (for 91 % of respondents[6]) and for EU-level financial support to renewable energy, such as, for instance, a guarantee fund to support renewable projects (80 % of respondents are in favour).

Enhanced EU level regulatory measures are also supported by 72 % of respondents. Member States' respondents further believe that sharing best practices, information and updated guidelines would be useful to improve chances of target achievement.

[5] Amongst those who have an opinion on the question itself

[6] Amongst those who have an opinion on the question itself

Respondents' support for other complementary measures is also high, reaching 67 % for EU-level requirements on market players to include a certain share of renewable energy, and 49 % for EU-level incentives such as an EU-wide or regional auction of renewable energy capacities.

Furthermore, all stakeholders touch on the need for enhanced infrastructure investments and highlight the importance of smart grids and storage systems.

Support schemes

Regarding the geographical scope of support schemes, there is a wide variety of opinions across the stakeholder community. While the preferred option by stakeholders (34 %) is a gradual alignment of national support schemes through common EU rules, there is some willingness (17 %) to move further and consider a progressive opening of national support schemes to energy producers in other Member States under some conditions such as, for instance, obligation of physical delivery of the electricity, or having a bilateral cooperation agreement in place. The reasons given to sustain this position generally lie on the fact that the natural conditions of the location in terms of abundancy of the resource (wind or sun) are only one element to be looked at to minimize the cost of deployment of renewable energy (*e.g.* grid issues, market development). As for Member States, those generally believe that cross-border participation to support schemes should be on a voluntarily basis. Overall, the development of a concrete framework for cross border participation is generally welcomed.

Moving towards even further integration by introducing a EU-wide level support scheme, or a regional support scheme, is supported by 24 % and 12 % of the respondents respectively, while keeping national level support schemes that are only open to national renewable energy producers is the preferred option for 13 % of the respondents. Several respondents highlight some possible risks and political sensitivities associated with schemes entailing further integration, as those could imply citizens in one Member State having to contribute to renewables' development in another Member State.

Respondents largely consider that support mechanisms should encourage greater market responsiveness, resulting in gradually decreasing support levels as technologies become mature. Several respondents regard regional cooperation and consultation as a useful method to reduce differences and facilitate convergence amongst national support schemes.

2. Empowering consumers

Self-consumption

There is a strong support for additional EU action for empowering energy consumers and local authorities. The vast majority of replies (84%) support stronger EU rules guaranteeing that consumers have the possibility to produce and store their own renewable heat and electricity and participate in all relevant energy markets in a non-discriminatory and simple way, including through aggregators. Many respondents support increasing short-term market exposure for self-consumption systems, by valuing surplus electricity injected into the grid at the wholesale market price. However, a number of renewables' generators highlight that market-based support schemes are still needed for small-scale self-consumption systems during the transition towards a

reformed market design. Several respondents support facilitated access to finance for local initiatives on renewable energy.

Moreover, the majority supports the introduction of clearer principles for ensuring that network tariffs support the transition to a more prosumer-centric system. While TSOs, DSOs and some Member States support a strong capacity-related element in tariffs as it is considered more cost-reflective, cooperatives believe that volumetric tariffs are, instead, needed.

Information disclosure to consumers

An easily understandable Guarantees of Origin (GO) system is considered an important factor to drive market demand for renewable energy by enabling consumer choice. A large consensus between respondents exists on the fact that the GO system is a key tool of disclosure of energy sources to consumers and, with few exceptions, that it should be strengthened. In addition, there is support for the extension of GOs to all energy generation types (including information on carbon intensity) and its full operation across-borders. Some opposing views between stakeholders exist as regards whether full disclosure should be mandatory or voluntary, and several stakeholders raise the problem of excessive administrative burden.

3. Decarbonising the heating and cooling sector

There is an overwhelming consensus about the need to remove barriers hampering the deployment of renewable heating and cooling. A high number of respondents, including Member States and renewable energy industry regard the absence of a functioning heat market as an important barrier. The vast majority of respondents see the lack of energy strategies and planning at the national and local levels (for 84% of stakeholders), the lack of targeted financial resources and financing instruments (for 80% of stakeholders) and the lack of electricity market design supporting demand response as very important, or important, barriers. Moreover, measures to enhance decentralised energy and self-consumption and thermal storage in buildings and district systems is perceived as an appropriate (78% of respondents consider it important/very important). The majority of respondents is in favour of a mandatory minimum use of energy in nearly zero-energy buildings (67% of respondents consider this important/very important) and a renewable heating and cooling obligation (for 61% of respondents this is important/very important). Various stakeholders mention the need for a strong alignment of the relevant European directives (*i.e.* the Energy Efficiency Directive, the Energy Performance of Buildings Directive and the RES Directive).

4. Adapting market design and removing barriers

Building a market fit for renewables

There is general consensus about the need to evolve towards a market fit for renewables along the lines outlined in the new Energy Market Design Consultative Communication. Most stakeholders support the cross-border integration of short-term markets as a key tool to facilitate renewable energy generators to trade their imbalances. A high number of respondents[7] consider either important or very important to have a fully harmonised gate

[7] Amongst those who have an opinion on the question itself

closure time for intraday markets across the EU (82%), lower thresholds for bid sizes (80 %), shorter trading intervals (77%) or regulatory measures to enable thermal and electrical storage (77%).

In addition, stakeholders identify as crucial to ensure the liquidity in these markets and guarantee the absence of price caps/exposure to market prices. Several stakeholders also highlight the necessity of equally addressing storage markets and demand side response.

Finally, the ETS improvement is a major priority for most of the stakeholders to further drive investments in renewable energy.

Balancing responsibilities, grid connexion and priority dispatch

Stakeholder views diverge with respect to the degree of exposure of renewable energy generation to market conditions.

As regards balancing responsibilities of generators, stakeholders reveal different positions: while 59 % of respondents consider that, in principle, everyone should have full balancing responsibilities, the remaining 41 % state that exemptions are still needed. In the view of the latter, exemptions should remain in place until the maturity of short-term markets can guarantee that renewable energy producers are not being discriminated. An important number of stakeholders also emphasize that small-scale renewable energy installations and early demonstration projects should not be subject to balancing responsibilities.

Stronger EU rules to remove grid regulation and infrastructure barriers are considered instrumental for renewable energy deployment. A high number of respondents[8] consider it either important or very important to have stronger EU rules regarding the treatment of curtailment, including compensation rules (77%), transparent and foreseeable grid development (87%) and predictable and transparent connection procedures (89%), which are identified as even more important than strengthening rules on obligation/priority of connection for renewables.

As regards priority dispatch, 54 % of respondents consider that merit order dispatch is sufficient, while 46 % consider that some exemptions for renewables are still necessary given that markets are not mature. Key stakeholders such as Energy Regulators stress the need to keep priority access for renewables especially in case of network congestions while agreeing that dispatching on the basis of merit order is sufficient.

Administrative barriers

Simplifying administrative permitting procedures are perceived as an untapped potential for reducing costs of renewable energy technology roll-out. Stakeholders identified the creation of a one stop shop (*i.e.* a national single permitting authority) at national level as a centrepiece of simplified administrative procedures (for 79% of stakeholders). Harmonising permitting procedures appears to be less of a priority for stakeholders even if still important. Amongst stakeholders, there is strong consensus that permitting procedures should be managed at national level.

[8] Amongst those who have an opinion on the question itself

As regards EU action on renewable energy training and certification, mutual recognition of certifications between Member States has been identified as the key priority by a majority of stakeholders (83%).

Public acceptance of renewables

The necessity of tabling measures to improve public acceptance of renewables was addressed by key stakeholders. Half of the respondents mention the importance of involving citizens and local communities in the development of renewable energy projects, also through awareness campaigns and public dialogue emphasising the contribution of renewables to achieving climate goals, energy security, and local growth. Involving the general public through investments and co-ownership (*e.g.* cooperatives) is also widely mentioned as a driver to increase public acceptance alongside decreasing costs of renewable energy technology.

5. Increase the renewable energy use in the transport sector

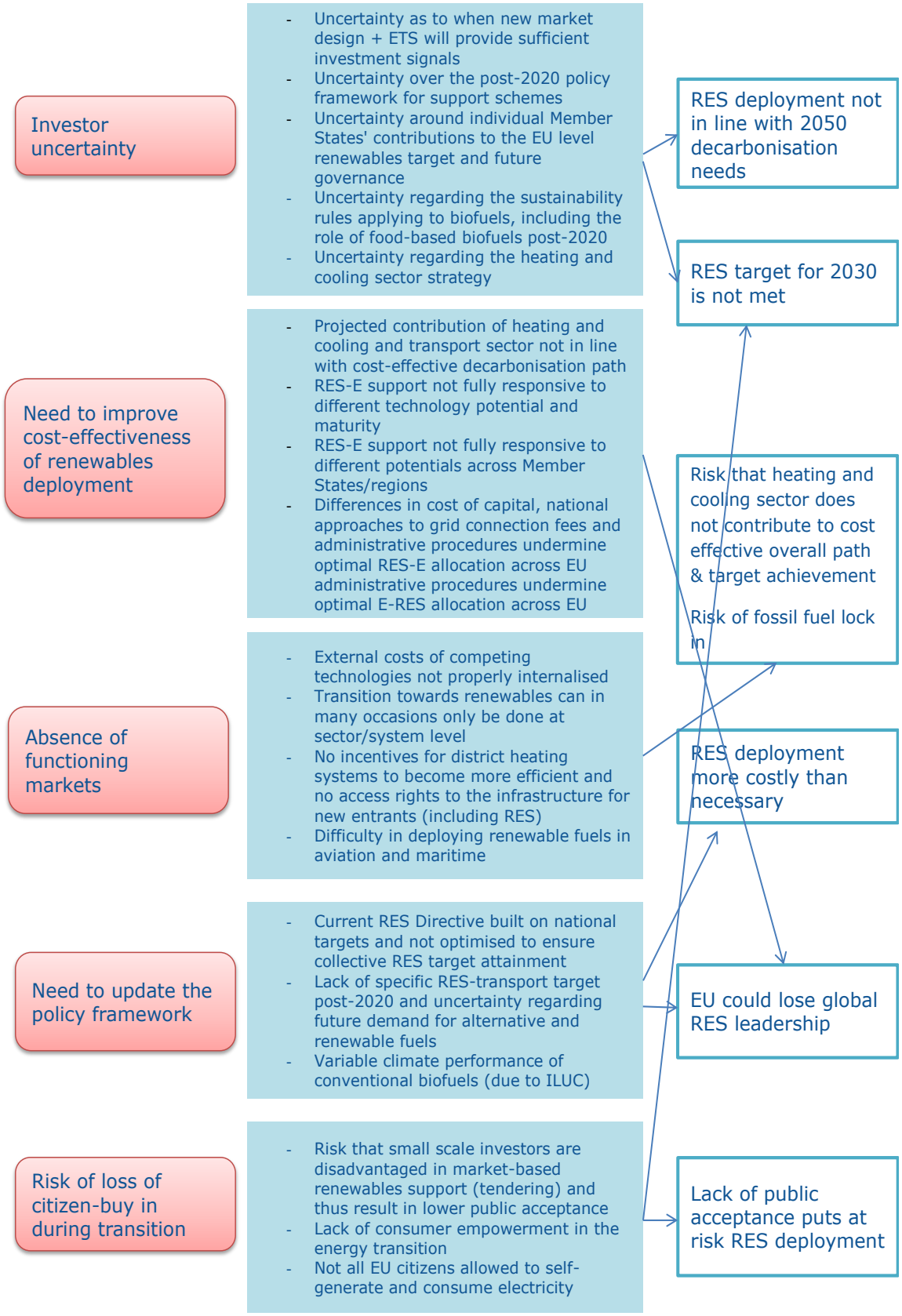
According to many respondents, the main barrier to increasing renewable energy in transport is the lack of a stable policy framework for after 2020, the long debate about biofuels, and the high price of electric vehicles. In order to promote the consumption of sustainable renewable fuels in the EU transport sector and increasing the uptake of electric vehicles, 80% of respondents consider increased incorporation obligations to be effective or very effective.

Further, a large majority regards a higher degree of harmonisation of the support mechanisms, or an obligation at EU level to be effective or very effective (81% and 75% of respondents, respectively). Targeted financial support for the deployment of innovative low-carbon technologies was considered to be effective, or very effective, for 77% of respondents.

Finally, the great majority of stakeholders (87%) show strong support to facilitating access to alternative fuel infrastructure, such as electric-vehicle charging points.

ANNEX 3 - PROBLEM DRIVERS MATRIX

	Electricity	Heating & cooling	Transport	Governance
Reduce investor uncertainty	- Consolidated framework: EU toolkit for support schemes	- Mainstream renewables: obligation on heating and cooling	- Increase renewables: obligation on renewable fuels	- 2020 Baseline - Trajectory towards 2030 target - Avoid and fill delivery gap
Improve cost-effectiveness	- Consolidated framework: tendering design principles - Reducing cost of capital - Administrative simplification	- Facilitate renewables in district heating and cooling: Energy performance		
Create functioning market	- Consolidated support framework: market-based design principles - Consolidated framework: energy communities	- Facilitate renewables in district heating and cooling: Access rights	- Increase renewables: obligation in aviation and maritime	
Update regulatory framework	- Coordinated regional approach		- Increase renewables: phase-out of food based biofuels	- Avoid an ambition gap - Avoid and fill delivery gap
Ensure citizen buy-in	- Empower consumers: self-consumption and storage-consumption - Consolidated support framework: fair tendering for small producers - Disclose information on electricity generation	- Facilitate renewables in district heating and cooling: Consumer rights - Trace origins of renewable fuels in heating and cooling	- Trace origins of renewable fuels in transport	


Investor uncertainty
- Uncertainty as to when new market design + ETS will provide sufficient investment signals
- Uncertainty over the post-2020 policy framework for support schemes
- Uncertainty around individual Member States' contributions to the EU level renewables target and future governance
- Uncertainty regarding the sustainability rules applying to biofuels, including the role of food-based biofuels post-2020
- Uncertainty regarding the heating and cooling sector strategy
Need to improve cost-effectiveness of renewables deployment
- Projected contribution of heating and cooling and transport sector not in line with cost-effective decarbonisation path
- RES-E support not fully responsive to different technology potential and maturity
- RES-E support not fully responsive to different potentials across Member States/regions
- Differences in cost of capital, national approaches to grid connection fees and administrative procedures undermine optimal RES-E allocation across EU administrative procedures undermine optimal E-RES allocation across EU
Absence of functioning markets
- External costs of competing technologies not properly internalised
- Transition towards renewables can in many occasions only be done at sector/system level
- No incentives for district heating systems to become more efficient and no access rights to the infrastructure for new entrants (including RES)
- Difficulty in deploying renewable fuels in aviation and maritime
Need to update the policy framework
- Current RES Directive built on national targets and not optimised to ensure collective RES target attainment
- Lack of specific RES-transport target post-2020 and uncertainty regarding future demand for alternative and renewable fuels
- Variable climate performance of conventional biofuels (due to ILUC)
Risk of loss of citizen-buy in during transition
- Risk that small scale investors are disadvantaged in market-based renewables support (tendering) and thus result in lower public acceptance
- Lack of consumer empowerment in the energy transition
- Not all EU citizens allowed to self-generate and consume electricity
RES deployment not in line with 2050 decarbonisation needs
RES target for 2030 is not met
Risk that heating and cooling sector does not contribute to cost effective overall path & target achievement
Risk of fossil fuel lock in
RES deployment more costly than necessary
EU could lose global RES leadership
Lack of public acceptance puts at risk RES deployment