ERCST

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Beyond the EU NDC

Assessing efforts to be Europe's climate leaders

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1 Introduction

1.1 Project rationale

The EU's current international climate commitment is for an at least 40% domestic reduction in greenhouse gas (GHG) emissions by 2030, compared to 1990 levels. This commitment was communicated to the UNFCCC in the EU's Nationally Determined Contribution (EU, 2015).

However, there is a strong push to raise the ambition of the -40% target. Many stakeholders are highlighting the necessity to enhance the EU's ambition, voicing willingness and, in some cases, taking action to go 'Beyond the EU NDC'. These stakeholders include Member States, EU institutions, civil society, business, high level policy makers, regions, cities and scientists.

Significant actions and commitments are already being undertaken by Member States, non-state actors (business and civil society), and subnational entities (cities and regions) that go beyond the EU NDC target. This ERCST project seeks to establish a methodology to assess the credibility and additionality of such commitments. Will these commitments help the EU achieve emissions reductions that surpass the proposed targets and go 'Beyond the EU NDC'?

It is important to note that commitments by non-state and subnational actors contribute to climate ambition in various ways, including:

- They help Member States and the EU as a whole reach climate mitigation targets.
- They provide support for more ambitious targets by highlighting willingness from stakeholders to go further than current targets (Hsu et al, 2019a).
- They create space for experimentation and knowledge sharing with regards to which climate mitigations actions work well and can be upscaled (Hsu et, 2018).

While these other positive contributions need to be mentioned and recognized, the project will focus on **climate mitigation commitments and impacts** by non-state and subnational actors.

Subnational and non-state actors can play a significant role with regards to climate mitigation. A NewClimate Institute et al (2019) study assessed the mitigation impacts in the EU of approximately 5,700 cities (nearly 178 million inhabitants), 31 regions (over 98 million people) and 780 companies (over 5.4 trillion USD in revenue) and shows that they could potentially deliver between 110 and 320 MtCO2e emission reductions per year in 2030 – adding between 3.8% and 9.2% in total emission reductions to current national policies[1].

The perspective used throughout this project is a top-down perspective and compares the sum of current commitments by various actors to the EU target. Summing up these commitments could give a better idea of the real EU emission pathway. Aggregating additional Member State, non-state and subnational ambition would show to what level the overall EU ambition can be raised without the need for extra efforts. Such information could significantly impact negotiations on new EU targets and provide clarity on where exactly the EU is currently heading, which will be useful for the EU's long-term climate strategy on decarbonization.

[1] Assuming full implementation of commitments, and no waterbed effects.

A bottom-up approach would be valid, as well, and would show how much additional effort the EU can take, and what that would mean for setting the EU target. During the development phase of any commitment (at the EU, Member State, subnational, or sectoral level) the bottom-up approach could be implemented by assessing what is already being undertaken at these levels. This is especially useful for the development of Member State National Energy and Climate Plans (Member State level strategies on energy and climate measures up to 2030 - NECPs) and the Member State long-term strategies with a perspective of at least 30 years.

A number of studies provide a perspective on current efforts. Modelling by the European Commission (2018a) indicates that current policies would already lead to a 46% emission reduction by 2030, compared with 1990 emission levels. If LULUCF sinks are included, this could even possibly increase to 48% reduction in emissions. The NewClimate Institute et al (2019) estimates that the EU NDC target could be raised to 48% by 2030 as a result of voluntary action performed by the cities, regions and companies they assessed. Sandbag (2019) estimates that current policies could even lead to a 50% emission reduction by 2030 – higher than the European Commission estimate due to coal phase-outs that have been announced since then.

There is currently a lack of coordination and understanding regarding the impact of climate commitments between both the EU institutions and Member States, and subnational and non-state actors. The EU NDC does not, for example, mention non-state actors and their climate commitments (Hsu et al. 2019b). In the draft NECPs, only five EU Member States refer to climate actions by cities and only four mention the EU Covenant of Mayors and its work (Sailler, 2019). An assessment of non-state and subnational mitigation action could aid Member States in understanding the mitigation impacts of efforts undertaken by actors within their territories.

1.2 Raising ambition

There is significant pressure from various EU and international stakeholders for the EU to upgrade its NDC target for 2030 and agree upon a carbon neutrality target for 2050, which would have significant impact on the new 2030 target.

Fifteen EU Member States signed the 'Climate Ambition Alliance Net Zero 2050' pledge during the United Nation Climate Action Summit on September 2019 in New York, which commits them to achieve carbon neutrality by 2050 (Climate Action Summit, 2019).

In addition, the intra-EU process to revisit the EU targets is underway, and although unsuccessful for now, due to lack of support from four Member States, it could lead to an EU-wide climate neutrality target being agreed upon in the near future. In parallel to that process, negotiations are ongoing on a new 2030 target to put the EU firmly on a pathway to carbon neutrality by 2050.

In March 2019, the EU Parliament approved a resolution supporting a 55% reduction target by 2030 and a net-zero mid-century target (European Parliament, 2019). Mrs. von der Leyen, the President-elect of the European Commission, has committed herself to putting forward a plan to increase the EU's target for 2030 to -55% (von der Leyen, 2019).

Civil society is also pushing for higher climate change ambition. Last year, citizens marched in the streets in record numbers – and not just in the EU (The Guardian 2019b). The vast majority of EU

citizens (92%) polled by Eurobarometer in April agreed that the EU should be climate neutral by 2050 (European Commission, 2019a). Businesses are also backing more ambitious targets, with hundreds of companies in Europe signing up to climate change initiatives such as the Science Based Targets (2019) initiative.

These calls for action are underpinned by the latest IPCC Special Reports, especially the 1.5°C Special Report, which highlights the climate change risks that could be avoided and the mitigation required to limiting global heating to 1.5°C, instead of the Paris Agreement 2°C target (IPCC, 2018).

Note that the definition of a new target does not change the rationale underpinning this project nor its results. The same methodology to assess how far the EU is going beyond the current NDC of 40% can also be used to assess how far the EU is going beyond 50% or 55%, should the EU put forward a more ambitious target.

2 Project overview

The "Beyond the EU NDC - Assessing efforts to be Europe's climate leaders" is an ERCST project, made possible by funding from German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety.

The project has three main goals:

1. To develop a methodology for mapping, assessing, quantifying, and aggregating climate mitigation commitments by Member States, non-state actors, and subnational entities. This methodology is then used to assess various climate change commitments by Member States as communicated in their National Energy and Climate Plans (NECPs).
2. To identify examples of best practice climate change policies across various levels.
3. To present and gather feedback on the project methodology and findings from stakeholders across the EU, including from representatives of national, regional, and local governments, and from civil society, business, and EU institutions.

The project therefore focuses on methodology development and stakeholder engagement. The research team has already organised one brainstorming workshop in Brussels in September 2019, and is planning, as part of this project, five workshops across EU capitals during the first two months of 2020.

The project does not seek to aggregate the enormous number of climate mitigation commitments made by all types of stakeholders across the EU.

3 Methodology for assessing 'Beyond the EU NDC'

There is a large body of literature on how to formulate climate commitments to simplify the process of assessing and aggregating them, and on how to do the actual aggregation (including, but not limited to: Hsu et al., 2018; Hsu et al., 2019a; Hsu et al., 2019b; NewClimate Institute, 2017; Roelfsema, 2017; Roelfsema et al, 2018; UNE Emissions Gap Report 2018). The ERCST

research team has built this methodology on the efforts undertaken by numerous institutions and researchers.

This methodology centers around four core questions that any effort to assess and aggregate climate commitments must answer:

1. How can we identify and map commitments?
2. How can we define climate change commitments, based on a limited number of dimensions?
3. How can we assess commitments?
4. How can we aggregate commitments?

The structure of this methodology will follow these four questions serially, as each needs to be answered before the next one can be tackled.

4 How can we identify and map commitments?

The climate mitigation commitments this project focuses on are made at various levels: Member State level, subnational level (including regions and cities), and non-state (civil society and business). When mapping commitments, each of the levels should be focused separately.

In this section, we will elaborate a list of sources that could help achieve this first objective – the list of sources will be expanded using input from stakeholders during the various outreach workshops. It should be noted that beyond the Member State level there are no comprehensive sources that can be considered to cover all climate commitments made at each of the various levels.

4.1 Member States

There are two main sources that this project will use to identify climate commitments: the European Environment Agency (EEA) database on 'Climate change mitigation policies and measures' and the Member State NECPs.

The EEA database gives a complete overview of Member State policies and measures that have been implemented or planned (EEA, 2019a). However, the NECPs might be a more comprehensive source of information for this project, as they express the Member States' climate strategies and their emission reduction ambition. These strategies might not have been expressed yet in 'planned or implemented policies,' and therefore the EEA database might miss more recent developments.

4.2 Regions and cities

Climate mitigation commitments from these two governance levels could be mapped together, as there are overlaps not only in emission sources, but also in governance structures. Some cities play a dominant role in their respective regions.

In contrast to the Member State, there is no fully comprehensive source readily available that covers all climate mitigation commitments made by cities and regions. It would be necessary to

combine information from various sources, but even this would be unlikely to cover all climate commitments made by regions and cities in the EU.

Sources for mapping and identifying climate commitments by cities and regions include the following initiatives: EU Covenant of Mayors, the Committee of the Regions, CDP, C40 cities, ICLEI, Carbon*n* Climate Registry, Under2 Coalition and Eurocities.

There are two critical issues with regards to using these sources:

1. There is a vast amount of commitments undertaken by subnational actors that are reported through these sources (the EU Covenant of Mayors alone reports nearly 8,000 commitments in the EU).
2. There is a significant likelihood of duplication between these sources, as actors can report their commitments to several of the listed initiatives and can cooperate with different initiatives on different aspects (such as energy efficiency, GHG reporting, transport emissions, climate planning, capacity building, etc.) of their climate strategy.

4.3 Business actors

Businesses are taking climate action and have a strong incentive to report on their climate efforts. The primary sources of information on corporate climate commitments are CDP (formerly the Carbon Disclosure Project) and EU- and Member State-level business and sectoral associations.

A major concern for mapping all corporate climate mitigation commitments throughout the EU is the vast number of commitments made by economic sectors. Globally, over 7,000 companies report their climate, water security, and forest commitments to CDP alone.

A secondary concern is that businesses have mixed incentives with respect to detailed reporting on their climate commitments. On the one hand transparency with regards to climate action provides a signal about their environmental integrity and strategy – which can be a powerful tool to convince consumers and other businesses to engage with them. CDP estimates that the global demand for low-carbon good and services is around 5.5 trillion USD (CDP, 2019a) – more than a quarter of the GDP of the USA in 2018 (BEA, 2019). However, on the other hand, companies also have to be mindful with regards to the competitiveness impacts of providing strategic information.

4.4 Civil society actors

There is currently no comprehensive source for climate mitigation commitments made by civil society actors, even though there is a strong trend by NGOs, universities, schools, etc. to make commitments and elaborate on climate strategies.

Some of the sources that could be used to identify and map civil society commitments include: CAN Europe, European Economic and Social Committee, and the European Environmental Bureau.

The major concerns with regards to mapping civil society climate commitments are the lack of central point for reporting climate commitments and the potentially enormous amount of commitments made by some institution (e.g. schools).

5 How can we define climate change commitments?

Once a commitment has been identified and mapped, it needs to be defined using a limited set of variables. The potential list of 'key aspects' is very long, but a workable methodology should limit the criteria related to definition and assessment as much as possible. This would limit the administrative burden of implementing the methodology.

We propose a limited taxonomy of climate mitigation commitments that focuses on eight key aspects of any commitment. These eight key aspects can be used to assess in the next step of this methodology the level of detail and credibility of climate commitments. The authors of this paper have built upon taxonomy elements used by Hsu et al. (2019b) to develop the taxonomy outlined below.

Note that it is not necessary for each commitment to be reported in detail on each of these eight key areas, but such reporting would add credibility to the commitments, and helps to assess and aggregate climate commitments.

The eight key areas that we propose for the taxonomy are:

- Actor and geographic coverage
- Type of commitment
- Target
- Scope of covered emissions
- Baselines and inventories
- Internal versus external action
- Resources made available
- Timeline

5.1 *Actor and geographic coverage*

A first important variable is which actor is undertaking the commitment, and the geographic scope of the commitment. If the commitment is made by a state actor (country, region, city), then the geographic scope is usually simple to define: within the area administrated by the actor and/or outside that area (for example through the use of international credits). For companies, especially multinationals, which are also active outside the EU, the issue can be more complex: does the commitment cover the entire company, or only specific departments, regional divisions, etc.?

5.2 *Type of commitment*

There are various ways to communicate a climate commitment, with differences in the language used having implications for how the actor is committing itself for the future. A legally binding commitment (such as a National Climate Law) could be considered a strong type of commitment. A declaration of intent or an aspirational target could be considered a weaker type of commitment.

Note that not all actors can make legally binding commitments, this is an option limited to state actors. However, corporations can still make strong commitments by pledging action to

shareholders and implementing robust 3rd party monitoring, reporting and verification (MRV) procedures.

The 'type of commitment' also covers whether the commitment is a climate change mitigation and/or adaptation target.

5.3 Target

The target or goal of a commitment can be expressed in various ways. The key questions are, what is the actual climate commitment, and how is it expressed? Is it expressed in percentage of GHG emissions, in absolute reduction or absorption? Is it a strict GHG commitment, or is it defined in non-GHG units (for example an energy efficiency or renewable energy target)?

5.4 Scope of covered emissions

What is the scope of emissions that are covered by the commitment? Is the commitment limited to:

- Scope 1 emissions: direct emissions from sources owned or controlled by the reporting entity; or includes
- Scope 2 emissions: indirect GHG emissions associated with the production of electricity, heat or steam purchased by the reporting entity; and/or
- Scope 3 emissions: all other indirect emissions, including GHG emissions related to extraction and production of purchased materials, fuels and services, including transport in vehicles, waste disposal etc (IPCC, 2014)

5.5 Baselines and inventories

Closely related to target-setting is the use of baselines and inventories. Is a clear baseline year set? Or are counterfactuals and scenarios (such as business-as-usual scenarios) used to define the commitment? Is there a robust GHG inventory that the commitment is based on?

5.6 Internal versus external action

How will the commitment be reached? It could be reached through internal action on reducing scope 1 emissions or increasing the use of non-fossil fuelled energy. The intent could also be to make use of offsetting mechanisms, international carbon markets and/or invest in climate action outside of the (geographic) scope of the actor making the commitment.

5.7 Resources made available

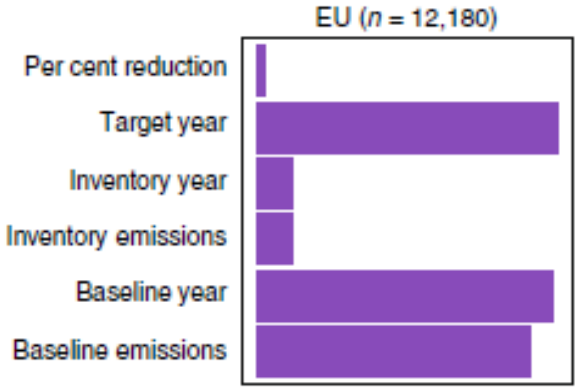
Is there a clear indication of resources that will be committed? These resources could be financial in nature (funds for investment), human (for example a dedicated team to outline strategy and implement climate related efforts) or in terms of governance: have governance structures been adapted or put in place to enable the actor to reach the commitment?

5.8 Timeline

A commitment could contain a timeline, stating by when which indicators will be reached. The timeline can be communicated as a single-year target, a clear emission reduction pathway or as

set of milestones to be reached over time. The timeline is a critical component of a commitment, as it shows how the actor will spread its climate efforts over time. Note that there are already a significant number of indicators for which details are lacking for a significant number of commitments. In Hsu et al. (2019b) an overview is presented of key data missing from reporting under a limited number of selected initiatives (CDP, Global Covenant of Mayors, Under2 Coalition and carbon*n* Climate registry). The results of their analysis can be found in figure 1 below.

Figure 1: key data missing from reporting under selected initiatives



Source: Hsu et al. (2019b)

6 How can we assess commitments?

Once commitments have been identified, mapped and defined, we can start assessing them. The aim is to ensure that only high-quality climate mitigation commitments are aggregated in the third step. Note that while the methodology can be used to limit the subjectivity of the assessment process, this remains a highly subjective process.

A commitment can only be included in the aggregation step of the methodology if it fulfils two central requirements: it is **credible and additional**. Therefore, climate commitments are to be assessed along two axes:

1. Is the commitment credible?

   The level of credibility of a climate commitment can be considered important for how serious the commitment should be taken, and on whether it is feasible that it will be reached. To assess how credible a commitment is, we should focus on the short- and, if feasible, long-term credibility of the commitment.

2. Is the commitment additional?

   A central issue in the assessment of climate commitments is whether a commitment is additional, e.g. representing additional climate ambition beyond the EU NDC's target. To assess whether a commitment is (partially) additional or not, we will use the concept of 'level of credibility of additionality.'

6.1 Is the commitment credible?

Credibility is a core issue of any climate commitment, as it represents the level of trust others have in the actor reaching its target. This is especially critical in the international context. Parties to the UNFCCC have declared their National Determined Contributions (NDCs), and trust in the NDCs is a central issue when it comes to:

a. reaching our global climate mitigation target, and
b. the ratchet-up mechanism for ambition under the Paris Agreement.

If Parties' NDCs are not credible, they will neither be perceived as helping the international community reach the Paris Agreement target, nor will they help convince other Parties to make more ambitious NDCs.

In the context of the EU and this project, credibility is also critical as only credible commitments should be counted towards progress 'Beyond the EU NDC'. It is important to note that there is, of course, no enforcement mechanism for voluntary climate commitments in the EU – any actor is free to announce climate commitments, and cannot legally be held accountable for not reaching it. The main exception are state actors, especially Member States, which can make legally binding climate commitment if they choose to do so. However, legally binding climate commitments can still be scaled back by future policy makers.

The credibility of a commitment can be examined from the point of view of its short-term and long-term credibility.

6.1.1 Short-term credibility

The short-term credibility of a commitment can be assessed along five axes:

a. Type of commitment

This criterion for short-term credibility is closely related to the second key area in our taxonomy described above. The type of commitment is closely linked to its credibility, as a legally binding commitment should be seen as more credible than a climate pledge or a declaration of intent.

Also, the target needs to be a GHG emission reduction target in order for it to be considered throughout this exercise.

b. Concretization of commitment

This criterion is closely linked to various areas from the taxonomy – a commitment which has a high level of detail is deemed more credible than one that does not. This includes issues such as establishing emission baselines, clear timetables, workable action plans and announcing concrete emission reduction measures to meet that commitment.

However, a commitment might be first declared with a lower level of detail, with the intent to flesh it out over time as the actor's climate strategy is developed. This increases the degree of credibility of the commitment over time.

c. Technological viability

The technological viability of a commitment can be assessed through three questions:

- Has the actor done an in-depth analysis on technological feasibility?
- Does the technology to reach the commitment exist and is it ready to be deployed?
- Is the commitment technically viable in the proposed time frame?

d. Monitoring and compliance

A climate change commitment can only be very credible if a mechanism is in place to monitor progress and verify compliance in the target year(s). Such a mechanism would need defined indicators to assess progress and check compliance.

Robust MRV systems increase the level of trust third parties have in a climate commitment, and help ensure accountability.

e. Governance

This criterion is closely related to the last key area from the taxonomy. It centres on whether or not the necessary governance mechanisms have been developed and operationalized and are supported at the highest levels of decision making. The governance structure for the climate commitment (how it is made and how it is tracked) is critical to its credibility and potential success.

This criterion can also be seen as a bridge to long-term credibility. A well institutionalized commitment in the short term could be perceived as having more long-term credibility – it might be deemed more likely to be maintained and achieved in the longer term.

6.1.2 Long-term credibility

Long-term credibility of a commitment can be split into two axes: a) social and political sustainability or b) economic sustainability. However, there is no way to provide an accurate, objective prediction on how the sociopolitical climate may change in a region. In essence, every commitment is at risk of long-term changes in social and/or political sentiments. Similarly, it is not practical to provide an adequate prediction of economic health. For this reason, long-term credibility concerns were omitted from the scoring criteria. That being said, while it is not practical to include these aspects to the methodology, it is important to still recognise these concerns.

a. Social and political sustainability

The long-term social and political sustainability of a climate commitment hinges on whether there is broad support for the continuation of the measures among relevant stakeholders. In the case of a company the stakeholders could be members of the board of directors, shareholders, employees and customers. In a civil society organisation (CSO) stakeholders include those the CSO seeks to represent, its membership, employees and/or volunteers. For state actors in the EU context the main relevant stakeholder is the electorate.

This issue of social political sustainability translates into whether the commitment is likely to be crowded out if budgets shrink, or side-lined by other issues in local politics, board rooms, etc.

In addition, social sustainability also implies social acceptance of potential costs and changes to the status quo that are necessary to reach the climate commitment. Note that assessing complex issues such as social acceptance of policies in the longer term is a very complex exercise in general. There are further limitations when assessing social acceptability through a 'snapshot exercise such as this methodology described.

b. Economic sustainability

While political sustainability is more a question of will and support, the economic sustainability is linked to the potential economic advantages or disadvantages related to the climate commitment.

A climate change commitment could present a competitive advantage if there are, for example, strong first mover advantages, and/or climate change is an important issue is for customers of a given company. On the other hand, perceived carbon leakage concerns and negative impacts on (state) budgets – in the short AND longer term – could undermine the longer-term economic sustainability of the commitment.

6.1.3 Implementing credibility criteria for assessing commitments

Though both short-term and long-term credibility criteria were described, only short-term credibility will be used to assess the credibility of a commitment. It is far too presumptuous to ascribe an assessment for long-term commitments based merely on an action plan or similar document. Even with further examination of the political, economic, and social environment of the country, region, and/or firm where the commitment is focused, it is impossible and impractical to offer a reliable prediction of the future state of these assessment criteria.

Therefore, a set of five criteria were defined to assess the credibility of a commitment. The approach described so far can be operationalized to assess commitments by scoring each commitment on each of the five criteria, with a score of low, medium or high. The table below gives an overview of how various examples could be scored using these criteria.

Table 1: Example of how criteria could be used to 'score' likelihood of reaching commitments

Credibility criteria	Low	Medium	High
Type of commitment	Declaration of intent or aspirational goal, no clear mitigation perspective	Pledge	Legally binding mitigation commitment
Concretization of commitment	No emissions baselines nor workplan	Vague workplan, baseline and inventories used, but lack of clarity on methodologies and scenarios	Clear workplan, built on strong baselines, inventories, robust emission scenarios and timetable
Technological viability	No assessment made of necessary technologies, their costs and development horizon	Technology in R&D phase, with no clear indication on when it would be economically viable to deploy	Technology mature and ready to be rolled out. Commitment contains clear assessment on challenges and opportunities of proposed technologies
Monitoring and compliance	No strong monitoring system in place, plus lack of a compliance mechanism	Either lack of strong monitoring system or strict compliance mechanism	Strong MRV system in place, coupled with a strict and transparent compliance mechanism
Governance	No governance mechanisms for commitment have been developed or implemented	Governance mechanisms are weak and/or not supported by highest decision-making levels	Strong governance mechanisms in place, with review provisions and strong support from highest decision-making levels

Source: Elaboration by the author

Each credibility criterion will be assessed qualitatively as 'low,' 'medium,' or 'high' and then converted to a numerical score. Criteria that are designated a low score are awarded zero points, medium scores are awarded one point, and high scores are awarded two points for a minimum possible score of zero and a maximum possible score of ten. The total score for the credibility of each commitment is the sum of the individual scores for each criterion.

We will use the following scheme to score the overall credibility of a commitment:

- High: Total score of 8 or higher
- Medium: Total score between 4 and 8
- Low: Total score of 4 or less

6.2 Is the commitment additional?

The additionality of a commitment is critical from the perspective of aggregating climate efforts. In order for a commitment to be additional, it needs to add ambition to the current EU NDC target.

However, the additionality of a commitment is challenging to assess, in particular before it has been achieved. Therefore, we do not propose to assess additionality directly, but rather focus on the 'level of credibility of additionality' of the commitment: what level of confidence do we have in additionality of the commitment?

To judge additionality in the EU context, we need to take a closer look at how the current EU NDC target has been transposed. The NDC economy-wide target has been split up into two separate targets (European Commission, 2019c):

- The Emission Trading Scheme (ETS) target for ETS sectors (power sector, aviation and industry) of -43% by 2030 compared to 2005. This target is set at the EU level, and implemented through one EU level policy: the EU ETS.
- The Effort Sharing Regulation (ESR) target non-ETS sectors (transport, agriculture, buildings, waste and some industry) of -30% by 2030 compared with 2005. This target has been translated into Member State level targets. Member States are responsible for reaching their own ESR targets.

Please note that both ETS phase 4 and the ESR start in 2021. We are simplifying this discussion by not analysing ETS phase 3 and the Effort Sharing Decision (ESD), both of which end on December 31st, 2020.

Note that the EU NDC target is fully domestic. This implies that any action in third countries (though climate finance, capacity building, technology transfer or other support for climate projects) is additional, but does not count towards the NDC target. In this project, international efforts by EU actors will therefore not be counted towards going 'Beyond the EU NDC'.

There are important implications for additionality inherent in both the ETS and ESR frameworks that are discussed in detail below.

6.2.1 Additionality with respect to the EU ETS.

The EU ETS is a cap-and-trade system. The overall cap is set, and it is up to installations covered by the system to obtain allowances (EUAs) to cover their emissions. Operators of installations can obtain allowances through free allocation (e.g. handed out by the regulator), at auction (e.g. sold by the regulator) or in the secondary market (e.g. sold by anyone who wishes to do so).

Due to the nature of the EU ETS, there is a very strong waterbed effect that can undermine the additionality of any climate commitment announced by the operators of an EU ETS installation.

Any climate commitment by an ETS installation that leads to reduced emissions frees up space for other installations to increase their emissions. The cap is not adapted to take stock of climate efforts by operators of installations or additional Member State measures in ETS sectors. Either the ambitious installations can sell its surplus allowances on the secondary market, allowing

other installations to use the permits and therefore not causing an overall reduction in emissions, or the ambitious installation will buy less allowances in the primary or secondary market and leaving extra allowances to be used by other installations.

For example, the EU steel industry hypothetically announces a coal phase out for all installations still using coal-fired furnaces. However, the emission reductions from this commitment remain available to be used by an expanding aviation sector. The aviation operators start to buy the EUAs from the steel sector and use them for their own compliance.

Of course, from an environmental perspective it is necessary that Member States and operators undertake climate action, such as coal-phase outs, however these actions will not necessarily reduce emissions in the long run through waterbed effects.

As such, any commitment under the EU ETS can only be additional if it is coupled with a corresponding cancellation of allowances. This holds both for Member States and for installations covered by the EU ETS.

The EU ETS currently has three cancellations mechanisms in place:

1. Article 12 of the EU ETS Directive gives Member States the right to voluntarily cancel allowances starting in 2021 to compensate for the closure of electricity generation capacity in their territory due to additional national measures, e.g. coal phase outs (European Union, 2018a)
2. Holders of allowances can request the Member State they are located in to cancel allowances, also per Article 12 of the EU ETS Directive. Since 2008, nearly 346.000 EUAs have been voluntarily cancelled using this mechanism. This is however a fairly minor amount, as the EU ETS cap for installations (not including aviation) for 2019 alone was over 1,85 billion EUAs (European Commission, 2019d)
3. The Market Stability Reserve includes an automatic cancellation mechanism. Starting in 2023, any allowances held in the reserve above the previous year's auction volume will be invalidated (European Commission, 2019e). However, this mechanism is only slated to start in 2023, and the MSR intake rate is partial and slow.
   Analysts predict that the MSR's cancellation mechanism will be insufficient to compensate for emission reduction trends and, especially, planned coal phase outs. Sandbag estimates that the ETS surplus in 2030 could therefore be significantly larger than it currently is (Sandbag, 2019). This implies that the MSR cancellation mechanism cannot currently be counted on to automatically ensure the full additionality of climate commitments by actors covered by the EU ETS.

To be clear, as the EU ETS is a cap-and-trade mechanism, the waterbed effect is intended. The design of the EU ETS is focused on cost-effective decarbonisation, which means installations with cheaper abatement potential decarbonise first and create space for those installations with more expensive emission reductions. These same market forces however ensure a perfect waterbed effect for any voluntary climate commitments unless they are coupled to a voluntary cancellation mechanism.

Therefore, the incorporation of voluntary cancellation under any commitments in the ETS sectors is necessary before they can be assessed as (partially) additional.

6.2.2 Additionality with respect to the ESR

The ESR has similar waterbed effects. The ESR target for the EU (-30% by 2030 compared with 2005) is split up into Member State targets varying between keeping emissions in non-ETS sectors constant (-0% for Bulgaria) and -40% for Sweden and Luxembourg. The variation between targets takes both GDP per capita levels in Member States and the cost-effectiveness of abatement in the non-ETS sectors (transport, agriculture, buildings, waste and some industry) into account.

The Member States have the responsibility to reach their ESR target, and have full autonomy to implement national measures to do so. However, this creates a waterbed effect at the national level: voluntary action by a non-state or subnational actors gives the Member State and other actors room to reduce efforts elsewhere in the non-ETS sectors.

Indeed, any action by sub-national and non-state actors in the ESR sectors counts towards the relevant Member State's ESR compliance at the EU level.

This waterbed effect could be used unintentionally by Member States – the voluntary commitment in essence helps the Member State reach its ESR target. But it could also be used intentionally: a Member State could cynically use voluntary action by others within its territory to reduce its own climate efforts.

In either case, the additionality of the voluntary mitigation commitment is problematic. For example, a major city in country A implements a phase-out of fossil-fueled transportation within the city limits. However, country A uses these emission reductions to compensate for downscaling action on limiting methane emissions from the agricultural sector.

The ESR regulation also allows for trading between Member States. A country can choose to transfer ESR-units (so-called Annual Emission Allocations – AEAs) to other Member States, under two conditions.

- First, for 2021-2025, maximum 5% of a Member States AEAs can be transferred, this increases to max 10% for 2026-2030.
- Second, Member States which are overachieving their ESR target can transfer their surplus AEAs to other Member States (taking the transfers under the first point and other flexibility mechanisms into account) (European Union, 2018b).

This implies a second ESR-waterbed effect: overachievement through ambitious action by Member State or non-state or subnational entities, can be used to compensate underachievement by another Member State. For example, a major city in country A phases out fossil-fueled transportation within the city limits, and country A does not scale back any climate efforts elsewhere. However, country A sells these excess emission reductions to country B, which can then compensate for a lack of climate action when it comes to reducing emissions from residential buildings.

This second waterbed effect is intended, and is aimed at ensuring that the cheapest emission reductions are done first to maintain cost-effectiveness of decarbonization efforts.

There are therefore two waterbed effects in the ESR which have significant implications for the additionality of climate commitments in the non-ETS sectors: the first is an intra-Member State waterbed effect, the second is an inter-Member State waterbed effect.

Member States play an important role in addressing both these waterbed effects, and incentivizing climate action by non-state and subnational actors. The intra-Member State waterbed effect can be undermined by a clear Member State strategy to only use voluntary commitments to *over*achieve its target. The inter-Member State waterbed effect can be addressed through Member State-level commitments to not sell (all) their surplus AEAs to underachieving Member States.

6.2.3 Additionality in UNFCCC context

The Kyoto Protocol defined additionality for projects under the Clean Development Mechanisms – CDM as follows (Article 6, UNFCCC 1998):

"Any such project which provides a reduction in emissions … that is additional to any that would otherwise occur"

This meant that projects could only create emission reduction credits if the project would not have been financed without the ability to generate credits. Testing this definition of additionality proved challenging, as it was by nature counterfactual (UNFCCC, 2019 and PMR, 2016).

The rulebook on Article 6 of the Paris Agreement has as yet not been finalised, however discussions on the additionality of projects and emission reductions has been a core component of the negotiations. The UNFCCC decision adopting the Paris Agreement does mandate that Art 6.4 uses a similar definition as the CDM does on additionality (UNFCCC, 2015). However, there are also proponents of implementing a different definition: regulatory additionality. This implies that projects that are additional to the ambition and measures described in the host country's NDC or additional to the Paris Agreement targets themselves are considered additional.

The concrete mechanisms for ensuring additionality under Article 6.4 are still under negotiation, but it seems probable that a supervisory board will be established that will define 'tests' for additionality in a manner comparable to the CDM.

6.2.4 Additionality and assessing 'Beyond the EU NDC'

Significant efforts have been undertaken by various institutions and researchers to assess the additionality of non-state and subnational climate commitments. Among the most comprehensive assessments we include Hsu et al (2018), Roelfsema (2017), NewClimate Institute, (2017) and NewClimate Institute (2019).

We would approach additionality in the context of this project as the 'level of confidence in the additionality of a commitment', which is a subjective approach.

The level of confidence is defined using a scaled approach, from 'low level' of confidence to 'high level' of confidence.

An example of a commitment with a 'high level' of confidence in terms of additionality would be a Member State climate law, that enshrines targets for the Member State that are more ambitious than that Member State's ESR target. An example of a commitment with 'low confidence', is a Member State phasing out coal with a declaration that there will be no cancellation of EUAs linked to the phase out.

Five criteria can be used to determine the 'level of confidence in the additionality of a commitment'. Each commitment would be assessed on all five of these criteria to determine how high the level of confidence is in the additionality of the commitment. The five criteria are:

- Ambition of the commitment
- Management of the waterbed effect
- Supply chain overlap
- Geographic overlap
- Geographic scope

a. Ambition of the commitment

The mitigation ambition of the commitment should be compared with the current EU NDC target – only commitments that are more ambitious in terms of emission reductions than the EU NDC target can be considered additional.

However, the EU NDC target has been disaggregated across policy measures (ETS and ESR) and among Member States (ESR). This implies that the ambition of the commitment needs to be compared with the highest possible level of disaggregation of the NDC target.

For ETS sectors, this implies comparing the ambition of the commitment with the EU-wide ETS target of -43% by 2030 compared to 2005. However, that would mean comparing all commitments in ETS sectors with one ETS target – there would be no differentiation between the ambition baseline of various sectors. For example, the ambition of a commitment in the power sector, industry or the aviation sector would be compared with the same -43% by 2030 compared with 2005.

For ESR sectors, there is a comparable issue. Comparing all voluntary commitments with the relevant Member State's ESR target implies a lack of differentiation between expectations and contributions from various sectors (for example transport or waste management).

This is a controversial element of the methodology. There are differences in expectations in terms of climate mitigation by 2030 by various ESR and ETS sectors. So, **what should the ambition of a climate commitment be compared with**? Which expectations in terms of sectoral contributions should be used – European Commission Impact Assessments of sectoral roadmaps? There are various options available for (sectoral) baselines with which to compare the ambition of a commitment.

It should also be noted that the EU NDC target year is 2030 – there is currently no post-2030 EU target to compare commitments. One solution for commitments with a time horizon beyond

2030 is to assume a linear trend of the emission reductions implied by the commitment. What that trend would deliver by 2030 can be compared with the relevant 2030 target to assess additionality in terms of ambition level.

Since the IPCC 1.5°C Special Report (IPCC, 2018), there has been a surge of climate neutrality commitments by cities, regions, companies and Member States. All carbon neutrality pledges by 2050 or before should be considered more ambitious than the EU NDC target, as there is currently no EU climate neutrality target.

b. Management of Waterbed effects

Waterbed effects in the ETS and ESR are critical when it comes to assessing additionality. Waterbed effects need to be taken into account by actors making climate commitments, as otherwise their emission reductions might lead to weakened climate constraints for all other actors. This might result in no additional emission reductions, and undermine the motivation of actors undertaking climate commitments.

The EU climate framework has the potential for perverse impacts of voluntary commitments. For example, a coal phase-out in Member States with significant coal fired capacity could have large impacts on the price in the EU ETS – thereby reducing the incentives to decarbonise for other installations covered by the ETS.

Note, again, that the waterbed effect is a core principle behind the functioning of the EU ETS and the ESR, aiming to deliver cost-effective decarbonization through the use of market mechanisms and carbon trading. However, it becomes an important issue in the context of the additionality of voluntary commitments.

The waterbed effects inherent to the ETS and ESR frameworks can be 'punctured' though. In the ETS sectors voluntary cancellation mechanisms are available, both for operators of installations and Member States. In addition, the MSR's invalidation process could be strengthened. In the non-ETS sectors, Member States play an important role and could, for example, raise their own ESR ambition on par with voluntary measures by subnational and non-state commitments or promise to not (fully) transfer their surplus of AEAs to other Member States.

c. Supply chain overlap

Supply chain overlap occurs when the same emissions are tackled and claimed from both a supply and demand perspective (Hsu et al, 2019b). Two commitments (one on the supply side, one on the demand side) could then be associated with the same emission reductions. Both commitments in this case can then not be assessed as being fully additional, as this would lead to double counting of emission reductions.

Two examples:

- An association of construction companies pledges to use more climate friendly building materials, but at the same time cement producers commit to reducing the GHG-component of their products.
- Car manufacturers phase out production and sales of fossil-fuelled cars, while cities and regions phase out fossil-fuelled cars from their jurisdiction at the same time.

d. Geographic overlap

Actors in one geographic area could also make climate commitments that focus on the same emissions, which again could lead to double counting as two or more commitments could be associated with the same reductions.

Two examples:

- A Member State commits to a higher target for non-ETS sectors, to be reached through reducing emissions from the LULUCF sector. However, a region in that same Member State announces a separate target for expanding carbon sinks (for example through a reforestation target).
- A city commits to reducing transport emissions, but at the same time local taxi companies and vehicle leasing companies pledge to shift to electric vehicles.

It should be noted that nearly all commitments from non-state and subnational actors overlap with either the EU-wide ETS target, or Member State level ESR targets. Only commitments with respect to international maritime and aviation emissions do not overlap at all.

Geographic overlap can be mitigated by measures at the highest governance levels. For ETS sectors this could be done, for example, through reviewing the annual reduction in the cap (the Linear Reduction Factor), strengthening the MSR's invalidation process or through Member States voluntarily cancelling EUAs from the auctioning calendar. For non-ETS sectors Member States could, for example, raise their own ESR ambition or commit to not (fully) transferring their surplus of AEAs to other Member States.

e. Geographic scope

The EU NDC target is a fully domestic target: the pledged emission reductions are to be achieved through only domestic action within the territory of the EU Member States. Actors could, however, communicate mitigation actions outside the EU, such as climate finance, capacity building or technology transfer commitments. Another example is offsetting domestic EU emissions through international credits.

Any climate action outside the EU should therefore not be considered additional to the EU NDC target. However, it should be noted that international climate action by EU actors should be welcomed and encouraged for a variety of reasons, including promoting climate action, capacity building and technology transfer while supporting sustainable development. International commitments could be assessed for additionality in the future if the EU NDC were to be expanded to include an international pillar on top of the domestic target.

Table 2: Example of how criteria could be used to 'score' level of confidence in the additionality

Additionality criteria	Low	Medium	High
Ambition of the commitment	Commitment is not a related to climate change mitigation. Commitment is significantly below relevant (sectoral) target	Commitment is close to relevant sectoral target	Mitigation commitment is significantly higher than the relevant (sectoral) target
Waterbed effects	Commitment will be used by MS to limit necessity for purchasing AEAs as MS is behind on ESR targets ETS sector action that is not compensated by a cancellation policy	MS does not commit itself to full voluntary cancellation of EUAs or AEAs due to climate action by non-state, subnational or national actors	MS commits to voluntary cancellation of EUAs to limit waterbed effects of industry action in ETS sectors in the country, uses voluntary action by non-state and/or subnational entities to raise MS-level ambition, or sets internal-ESR targets higher than those in ESR decision while declaring not to sell AEAs
Supply chain overlap	Actors on demand and supply side have commitments covering the same emissions, without any form of coordination	Scope 1 emissions under commitment A might be scope 2 and/or scope 3 emissions under commitment B and/or C	Demand and supply actors coordinate climate action Actions improving energy efficiency and investing in renewable energy
Geographic overlap	Full geographic overlap between commitments	Partial geographic overlap between commitments (for example through commitment by an actor active in more than one Member State)	Action in international aviation or EU maritime transportation sector
Geographic scope	Commitment leads to climate action outside of the EU, for example through offsetting	Commitment will be partially reached by emission reductions in the EU, and partially by climate action abroad	Commitment implies emission reductions in the EU itself

Source: Elaboration by the author

The approach to score additionality is identical to the approach for credibility. Each additionality criterion will be assessed qualitatively as 'low,' 'medium,' or 'high' and then converted to a numerical score. Criteria that are designated a low score are awarded zero points, medium scores are awarded one point, and high scores are awarded two points for a minimum possible score of zero and a maximum possible score of ten. The total score for the additionality of each commitment is the sum of the individual scores for each criterion.

We will use the following scheme to score the overall additionality of a commitment:

- High: Total score of 8 or higher
- Medium: Total score between 4 and 8
- Low: Total score of 4 or less

Note that it is worthwhile to communicate and implement every credible voluntary commitment, whether or not they are considered highly additional or not. Every actor needs to take action to address climate change, and every meaningful commitment should be welcomed. It is only in the context of assessing how far current voluntary climate commitments can take us in terms of emission reductions by 2030 that the additionality of commitments becomes a core issue.

6.3 Conclusion of assessing commitments:

Above we have considered two important sets of criteria on which assess whether a commitment can be considered to go 'Beyond the EU NDC'. One set of criteria related to the credibility of commitments, and one set of criteria on the 'level of confidence in the additionality' of commitments.

Only commitments that are deemed credible ***and*** (partially) additional should be counted as going 'Beyond the EU NDC' and taken into the aggregation step of the methodology. Therefore, the two sets of criteria need to be combined to determine whether a commitment is credible and (partially) additional.

As commitments need to be both credible and additional, any commitment that scores low on either set of criteria receives a low Overall Score. Commitments that scored high on both sets of criteria receive a high Overall Score. The remaining commitments have a medium Overall Score. Table 3 below provides an overview of this.

Table 3: Combining the criteria for credibility and additionality into one Overall Score

Credibility of the commitment	Level of confidence in additionality	Overall 'score'
Low	Low	Low
	Medium	
	High	
Medium	Low	Low
	Medium	Medium
	High	
High	Low	Low
	Medium	Medium
	High	High

Source: Elaboration by the author

This leads to three possible Overall Scores for each climate commitment:

- **Low** (low level of credibility AND/OR additionality)
- **Medium** (at least medium on credibility AND additionality)
- **High** (high on credibility AND additionality)

It should be noted that the process of providing answers on each of the criteria for each climate mitigation commitment made in the EU would be extremely labour intensive and is highly subjective.

7 How can we aggregate commitments?

Once commitments have been assessed, the final step is the aggregation of commitments. This would present stakeholders in and outside the EU with a picture of what is really happening in the EU's on decarbonization, and to the level to which the EU NDC target could be raised without needing additional measures.

This step of the methodology necessitates two phases:

1. Quantifying the commitments in metrics comparable to the EU NDC
2. Aggregating the commitments

At this point in the methodology, each commitment has received an Overall Score on how credible ***and*** additional it is. Those commitments that did not have an Overall Score of 'low' on

additionality and credibility are taken forward in this step, limiting the burden of the aggregation step by filtering out some of the potentially tens of thousands of voluntary climate commitments.

7.1 Quantifying the commitments in metrics comparable to the EU NDC

The EU NDC target is a single year target (2030), expressed in percentage decrease of absolute emissions (at least -40%), compared to the baseline year (1990). In an ideal world, all climate commitments are expressed in the same manner as to simplify the aggregation of mitigation commitments (as well as the assessment of commitments).

However, there is no format or template for all actors to follow when communicating voluntary commitments – though there are significant efforts underway to increase alignment, especially for business stakeholders and cities.

Commitments that are not communicated in the same manner as the EU NDC (% of emission reduction by 2030, compared with 1990) need to be translated into the same form. There are various metrics that need to be aligned:

- Target metric
- Target year
- Baseline
- Geographic coverage

7.1.1 Target metric

The EU NDC target metric is tonnes of CO2e. Metrics that can be expected to be used for commitments include not only GHG-related metrics (absolute, relative or intensity-based), but also energy efficiency targets (absolute, relative or intensity-based), renewable energy targets (absolute or relative), carbon sinks (percentage forest cover, hectares of land managed etc) and a wide variety of metrics related to transportation, including vehicles use, kilometres driven, types and ages of vehicles, penetration of electric vehicles (absolute or relative).

Most of these metrics can be recalculated in terms of CO2e emission reductions using IPCC guidelines (IPCC, 2016) or the assessment guides from the Institute for Climate Action Transparency (ICAT, 2019).

7.1.2 Target year

The EU NDC target is a 2030 single year target. It is however possible that the target year will change in the coming year, or that an additional 2050 target will be agreed by the EU.

Commitments with target years before 2030 would need to be projected to 2030. This could be done using linear trends. Those with a target year beyond 2030 also need to be projected to 2030. This could be done through assuming a linear emission reduction pathway and assess how many emission reductions the commitment would imply by 2030.

7.1.3 Baselines

The baseline for the EU NDC target is 1990 emissions. Climate commitments with other baselines would need a projection of the baseline used onto 1990, or the baseline used should be compared with emissions in the year that the projection was made.

To project baselines between years, EU-wide average growth rates for emissions could be used, or even Member State specific growth rates. The EEA's annual Trends and projections in Europe reports are a good source for these growth factors (EEA, 2018).

7.1.4 Geographic coverage:

The EU NDC target is economy wide, and covers nearly all emissions within the EU's territory, with the exception of international aviation and maritime transport, which are not covered by the Paris Agreement and the EU NDC. However, transnational actors, such as multi-national companies, might make commitments across various jurisdictions. This complicates the aggregation effort somewhat, as only climate efforts within the EU should be counted towards (over)reaching the EUs international climate commitments.

An index for economic activity could be used to allocate climate efforts to the respective countries a corporation is active in, and that are included in the scope of its climate mitigation commitment. Different variables for economic activity could be used: production, value added generated, employees, sales, etc

Note that there is already significant literature on how to convert different types of climate commitments into a uniform standard. In this regard the comprehensive work from the Institute for Climate Action Transparency should be highlighted (ICAT, 2019).

Two initiatives have reporting tools that are, largely, in line with the metrics and definitions used in the EU NDC.

1) The EU Covenant of Mayors has an extensive set of guidance document on how municipalities can produce a so-called Sustainable Energy and Climate Action Plans (SECAP). These SECAPs are explicitly touted as tools to help go beyond the EUs current climate targets (JRC, 2018).

The EU Covenant of Mayors also has a detailed template that municipalities must use to submit their climate commitments. This ensures that signatories to the EU Covenant of Mayors initiative (nearly 8000 in the EU alone) submit comparable and aggregable commitments, in a uniform manner. The template uses metrics such as CO2e emission reductions and clear timetables (2020, 2030 or longer-term). This simplifies comparing the commitments by Covenant of Mayor members with the EU NDC (EU Covenant of Mayors, 2019).

In addition, a three-piece guidebook was published by the EU's Joint Research Centre to help municipalities to develop SECAPs. Many of the guidebook's chapters centre on increasing the credibility of climate commitments, covering topics that include adjusting administrative structures, building support from stakeholders, setting emission baselines, developing emission reduction targets, setting up emission inventories etc (JRC, 2018).

2) CDP uses an extensive questionnaire for corporations seeking to make commitments or disclose progress. The questionnaire can be used to score the corporations progress and be used

to track progress against other business initiatives (such as We Mean Business, 2019 and CDP, 2019b).

The questionnaire gives corporations the freedom to express their commitment in various ways (intensity target, absolute target, target year, etc.), but also asks for all the necessary information to translate the climate target in an absolute CO2e decrease by a target year.

Therefore, the problem of quantifying commitments in a manner comparable to the EU NDC is already mitigated for members of these two large initiatives on reporting and tracking climate commitments.

7.2 Aggregating the commitments

Once all commitments, deemed both credible and (partially) additional, are expressed as how "*many tonnes of CO2e are going to be reduced by 2030, when compared to 1990, within the EU*" they need to be aggregated.

The concern then becomes how to sum up the additional CO2e emission reductions which have been identified, mapped, assessed and quantified in previous steps.

In order to sum them up, the individual commitments need to be discounted for their credibility and additionality. We propose to use factors to move ahead with aggregating commitments:

- Commitments with a combined **medium** score would be only counted partially in this step (factor: 50%)
- Commitments with a combined **high** score would be fully counted in this step (factor: 100%)

This would limit the possibility of overestimating the actual additional climate ambition that is expressed through the identified, mapped, assessed and aggregated commitments.

Finally, the total number of additional emission reductions needs to be seen in the context of the EU NDC target of at least -40%. In 1990 EU's GHG emissions were approximately 5,65 billion tonnes of CO2e (EEA, 2019b), which the EU is committed to decrease to approximately 3.96 billion tonnes of CO2e by 2030.

The last step would require calculating the percentage of 1990 GHG emissions represented by additional and credible climate commitments by Member States, subnational entities and non-state actors.

8 Assessing the current Member State commitments

The draft NECPs were published at the beginning of 2019, and have been reviewed by many actors – including, as mandated, by the European Commission, which has sent comments to the various Member States. This section will provide a short overview of assessments by other institutes.

In addition, this section contains an assessment and aggregation of the final NECPs that were released earlier this year as a means to test the methodology described in this paper. Using the methodology, the research team assessed the credibility and additionality a selected NECP to demonstrate an example of how to apply the methodology. Please refer to Section 10 of this report for the NECP assessment results.

For a number of criteria this is a trivial exercise – Member State commitments communicated in the NECPs should follow the Governance Regulation (European Commission, 2018b) stipulations, and should not have any difficulties passing the credibility criteria on how concrete the commitments are, whether they are technically viable and the implementation of strong MRV, compliance and governance mechanisms. With respect to the additionality criteria, supply chain and geographic overlap, and geographic scope should not be issues as Member State targets are at a sufficiently high level of governance.

However, other credibility and additionality criteria will need to be checked thoroughly, especially the mitigation ambition of commitments, and whether Member States are planning to address potential waterbed effects in the ETS and non-ETS sectors.

The goal of the assessment of the final NECPs will provide a clear indication of where the NECPs are taking the EU in terms of emission reductions by 2030: is the EU going 'Beyond the EU NDC', and if so, how far?

There are already indications that there will be significant changes to various NECPs. Three Member States (Finland, Ireland, and the United Kingdom) have unveiled new mid-century strategies (ECF, 2019), and the German government agreed a new climate package in September 2019. In addition, 15 Member States[2] pledged at the UN Climate Action Summit in September to reach net zero emission by 2050 under the Climate Ambition Alliance: Net Zero 2050 initiative (Climate Action Summit, 2019).

The European Commission Communication "United in delivering the Energy Union and Climate Action - Setting the foundations for a successful clean energy transition" (European Commission, 2019b) contains an overview of how the draft NECPs match up to the 2030 target.

The Net Zero 2050 project by Climact and Ecologic Institute for the European Climate Foundation (ECF, 2019) assessed the individual NECPs from a net-zero by 2050 perspective, while the PlanUp (2019) project assessed ten draft NECPs: five of them with a focus on decarbonisation efforts in

[2] Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom

the transport, agriculture and buildings sector, and five others with additional analysis on overall ambition. This assessment builds upon these three sources.

European Climate Foundation (ECF) (2019) concludes that draft NECPs are not only insufficiently ambitious, but also lack details with respect to policies, investments and financing needed. The ECF assessment highlights that the draft NECPs fall short on credibility.

It should be noted that the Member States have a relatively large amount of freedom when it comes to presenting their NECPs. While the Covenant of Mayors uses a very detailed template to gather commitments, the guidance that was available to Member States on how to formulate their NECPs was relatively limited to the Governance of the Energy Union and Climate Action Regulation (European Commission, 2018b). Member States are mandated to follow this guidance, but that guidance cannot compare with the strict and rigid tools used by various initiatives, for example by the EU Covenant of Mayors, that significantly simplify comparing and assessing the various commitments.

8.1 NECPs and economy-wide 2030 targets

ECF's (2019) assessment of the NECPs shows that 14 Member States[3] have an economy-wide emission reduction target stipulated in their NECP. In addition, Poland and Italy also include economy-wide emission projections for 2030 – however, these are not considered as targets. Five NECPs are highlighted as having ambitious economy-wide targets: Sweden, Romania, United Kingdom, Latvia, and Germany.

Note that these findings do not take the element of additionality into account; ECF did not elaborate on the additionality of these commitments and the likelihood of countries using voluntary cancellation or limiting transferring to compensate for national policies or commitments by non-state and subnational actors.

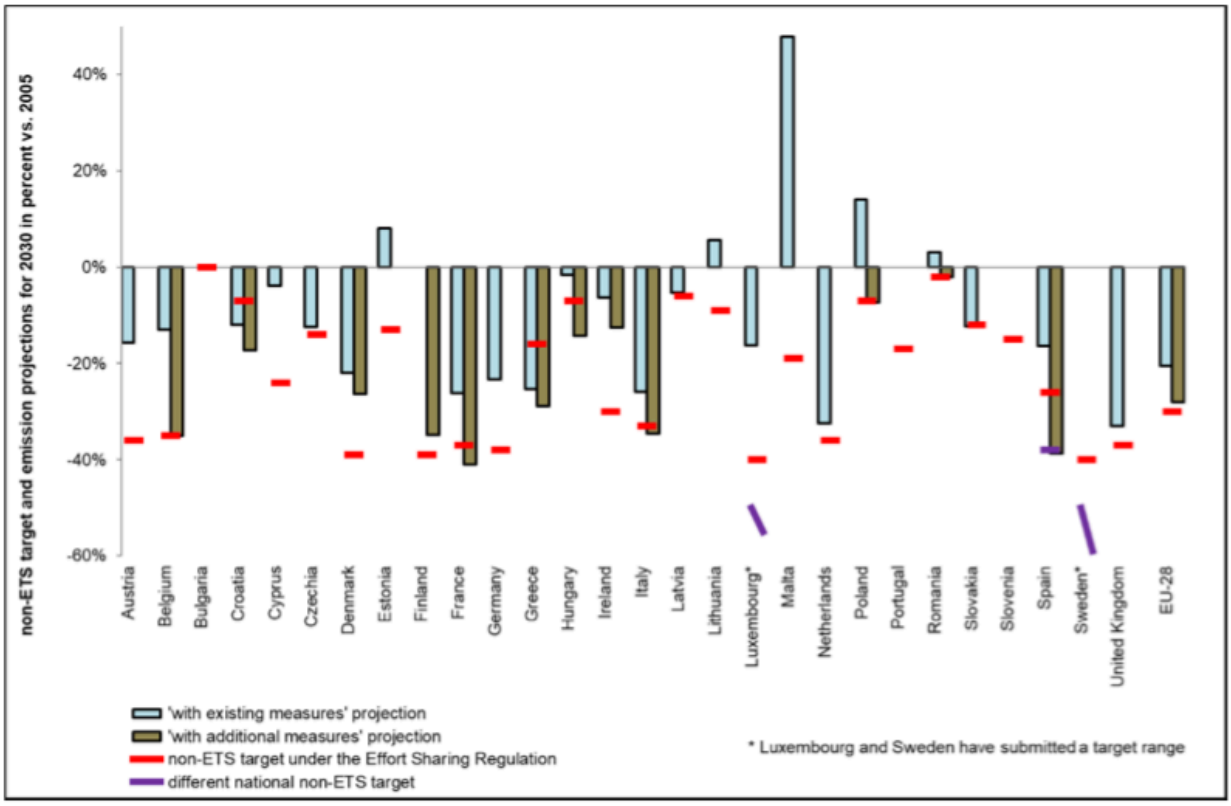
However, a Sandbag modelling of the current ambition of policies in the EU and its Member States indicates that the EU is on track for 50% emission reductions by 2030 compared to 1990 levels (Sandbag, 2019).

8.2 NECPs and the ESR sectors

For the ESR sectors, the Commission's conclusion is that the draft NECPs only deliver 28% emission reductions by 2030—2% less than the target.

[3] Spain, Sweden, Netherlands, Estonia, Portugal, France, Latvia, Germany, Lithuania, Czech Republic, Hungary, Ireland, Romania, and the United Kingdom.

Figure 2: Commission calculations on Member State NECPs and ESR targets (excluding LULUCF sector)



Source: European Commission (2019b)

This figure contains a number of interesting conclusions on Member States going 'Beyond the EU NDC' in the ESR sector. There are large differences between the emission reductions to be reached using 'existing measures' (e.g. policies already in place) and using 'additional measures' (e.g. policies that are announced or planned but are not implemented yet).

The Commission estimates that only three Member States are on track to reach their ESR targets through 'existing measures': Croatia, Greece, and Slovakia. When projecting the impacts of 'additional measures' communicated in the draft NECPs France, Hungary, Italy, and Spain would also (over)achieve their ESR targets.

All other Member States either did not provide a sufficiently detailed draft NECP for the Commission to project the impacts of existing and/or additional measures, or they were announcing packages of ESR sector climate measures that were deemed insufficient to reach their national ESR targets by the European Commission.

In terms of going 'Beyond the EU NDC,' only three states have set more ambitious national targets than those contained in the Effort Sharing Regulation:

- Spain (-38% compared to ESR target of -26%)
- Luxembourg (-50% compared to ESR target of -40%)
- Sweden (-50% compared to ESR target of -40%) (ECF, 2019)

However, these targets can only be deemed additional dependent on pledges by these member States to not (fully) transfer their overachieved emission reductions to underachieving Member States. The other 25 member States had by the start of 2019 not implemented a more ambitious national ESR target.

The main PlanUp (2019) findings for the ten countries they assessed in detail with respect to extra ambition for the ESR sectors are:

- Spain: -38% by 2030 compared to 2005 (-12% on top of their -26% ESR target)
- Poland: -7% by 2030 compared to 2005 (equal to ESR target)
- Italy: -34.6% by 2030 compared to 2005 (-1.6% on top of their -33% ESR target)
- Hungary: no specific ESR target
- Romania: -2% by 2030 compared to 2005 (equal to ESR target)
- Finland: -39% by 2030 compared to 2005 (equal to ESR target – to be reached through flexibility mechanisms including trading)
- Portugal: no specific ESR target, but an economy-wide target of -45% to -55% (ESR target is -17%)
- Germany: -38% by 2030 compared to 2005 (equal to ESR target) – will change significantly in the final NECP
- France: -37% by 2030 compared to 2005 (equal to ESR target) – draft plan does foresee a slight overachievement through the implementation of 'additional measures', though current measures indicate a shortfall of 11%
- Sweden: -50% to -59% by 2030 compared to 2005 (-10 %to -19% on top of their -40% ESR target). PlanUp indicates that part of this additional ambition will be met using flexibility mechanisms and ETS credits – undermining the additionality of these commitments.

Note that these findings do not take the element of additionality into account – PlanUp did not conclude on the additionality of most these commitments and the likelihood of countries with surpluses in ESR sectors transferring these surpluses to other countries.

8.3 NECPs and the ETS sectors

The Commission Communication highlights that there is a limited number of policies announced by Member States to reduce emissions from ETS sectors. In the power sector, the Commission mentions that nine Member States are looking at phasing out coal for electricity generation. However, these commitments cannot be assessed as additional, as the Commission indicates that there is a lack of clarity on whether these Member States will puncture the waterbed effect by voluntarily cancelling EUAs from the auction calendar.

On the decarbonization of industry, the Commission Communication indicates that there is a lack of commitments in this area in the NECPs (European Commission, 2019b).

The main PlanUp (2019) findings for the five countries they assessed in detail with respect to extra ambition for the ETS sectors are:

- Spain: -60% by 2030 compared to 2005 (-17% on top of the EU wide -43% ETS target)

- Poland: no specific target for ETS sectors
- Italy: -55.9% by 2030 compared to 2005 (-12.9% on top of the EU wide -43% ETS target). Note that this is a projection, not an actual target (ECF, 2019).
- Hungary: no specific target for ETS sectors
- Romania: -43.9% by 2030 compared to 2005 (-0.9% on top of the EU wide -43% ETS target)

Note that these findings do not take the element of additionality into account – PlanUp did not conclude on the additionality of most these commitments and the likelihood of countries using voluntary cancellation to compensate for national policies or commitments by non-state and subnational actors.

9 Examples of best practices

Based on workshops organised by the project team in five capitals across the EU in Q1 2020, a limited number of examples of best practices in terms of non-state and subnational climate action were gathered.

As previously mentioned in this report, the Covenant of Mayors and the EU's Joint Research Centre (JRC) have established a set of reporting guidelines that localities can follow to create robust Sustainable Energy and Climate Action Plans (SECAP). In some cases, SECAPs are being used as part of the national planning process. Italy, for example, will build upon its regional cooperation using regional SECAPs to ensure a more comprehensive national plan. The Climate and Energy Reporting Guidelines recommend targets and timelines that are in-line with those at the national-level (for example, targets for 2030 that are equivalent to the NDC). This allows for easy harmonisation among the regions that use SECAPs, and for simple integration into Member State NECPs.

In France, national and regional cooperation is an integral component of climate planning, and processes have been developed to ensure the coordination between the Member State and local levels of government. Regional Climate, Air, and Energy Action Plans (Schémas Régional du Climat, de l'Air et de l'Energie, or SRCAEs) are developed by each of France's 26 regions together with the national government to create a set of guidelines for climate action that are to be updated every five years. SRCAEs are often very broad in their design and are intended to be used as guidance measures rather than detailed roadmaps. There is no internal effort sharing with mandatory targets. Rather, regions put forward ambition which are aggregated at the national level with the goal of driving progress toward the national-level target.

In Finland, efforts have been made to engage cities and civil society to coordinate efforts for a common commitment. The Towards Carbon Neutral Municipalities (Hinku) Network is an effort by the Finnish Environment Institute (SYKE) to help cities and regions reach an 80% reduction in emissions by 2030 versus 2007 levels. The Network, which currently includes over 70 cities across four regions, assists its members in working with business and local residents to achieve these reductions. SYKE and the Network lends support to members of planning, calculating, and communicating plans.

10 Sample Assessment: Italy Final NECP

The project team used the methodology presented in this paper to assess a final NECP to provide a proof-of-concept demonstrating the applicability of the methodology. For demonstrative purposes, the final NECP for Italy was assessed. The following text and Tables 4 to 7 summarise the results from this assessment.

Based on the methodology outlined in this report, NECPs by default are considered strong commitments in many of the assessment criteria. They are legally binding and are supposed to have clear workplans and scenarios to justify meeting their proposed targets. Due to required biannual progress reports and adherence to EU Governance Regulations, NECPs have strong MRV measures and require well-defined roadmaps.

While NECPs are expectedly strong in terms of credibility, there is less certainty on how they might score on the additionality criteria. NECPs have no expectation to offer emissions reductions that are 'additional' to the NDC as they are only required to meet this minimum threshold, and so closer consideration should be made to this part of the assessment. In the case of Italy's NECP, expected (read: projected) reductions in both ETS and ESR sectors are more ambitious than the current targets. Based on the scenarios for 2030 described in the Italian NECP, there is an expected reduction in ETS emissions of 55.9% compared to 1990 levels versus the target 43% reduction (12.9% more ambitious than the ETS target). For ESR sectors, the expected reduction in emissions is 34.6% compared to 2005 levels versus the target 33% reduction compared with 2005 levels (1.6% more ambitious than the ESR target). This is an example of the high potential for subjective decision-making that is required to assess commitments. A projection is not the same as a concrete target, and in this case prevented a maximum score for this category.

The level of detail of the commitment will dictate the ease of scoring for many categories. In the case of the Italian NECP, there is a clear a workplan for the transport sector, including a 2030 target for share of RES and efficiency in this sector. Assessing waterbed effects, however, is the most difficult criteria to assess. There is no mention of a planned cancellation of allowances at any point in the NECP, nor any indicated intention to limit the purchase of allowances to support ESR or ETS sectors.

Table 4: Taxonomy for Italy NECP

Area	Definition
Actor and geographic coverage	Italy Member State level
Type of commitment	National Energy and Climate Plan
Target	EU NDC (40% reduction compared to 1990 levels)
Scope of covered emissions	Clearly defined emissions from Scopes 1, 2, and 3
Baselines and inventories	EU established baselines for NDC
Internal versus external action	Mainly internal action, some regional cooperation
Resources made available	Reports sector-specific investment requirements
Timeline	EU NDC target for 2030

Table 5: Assessment of credibility for Italy NECP

Criteria	Score
Type of commitment	High (2)
Concretization of commitment	High (2)
Technological viability	High (2)
Monitoring and compliance	High (2)
Governance	High (2)
Total	High (10)

Table 6: Assessment of additionality for Italy NECP

Criteria	Score
Ambition of the commitment	Medium (1)
Waterbed effects	Medium (1)
Supply chain overlap	High (2)
Geographic overlap	High (2)
Geographic scope	High (2)
Total	High (8)

Table 7: Overall Score for Italy NECP

Credibility of the commitment	Level of confidence in additionality	Overall 'score'
Low	Low	Low
	Medium	
	High	
Medium	Low	Low
	Medium	Medium
	High	
High	Low	Low
	Medium	Medium
	High	High

1. A credibility score of 'High' is awarded based on the score from Table 5.	2. An additionality score of 'High' is awarded based on the score from Table 6.	3. An overall score of 'High' is awarded based on the combined scores for credibility and additionality.

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