Subnational and non-state climate action in the EU

An overview of the current landscape, emission reduction potential and implementation

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Summary

This study aims to obtain enhanced understanding of subnational (e.g. cities and subnational regions) and non-state (e.g. companies) actors' action on GHG emissions reductions in the European Union (EU). Specifically, we present an overview of findings in the recent literature on (i) landscape of sub/non-state action, (ii) interactions between EU policy making and sub/non-state actors, (iii) potential GHG emissions reductions additional to the reductions expected under national policies, and (iv) progress towards their own short- to mid-term targets and long-term goals. This report focuses on the EU, where sub/non-state climate action is significant (Chan et al., 2018).

The recent landscape analyses on sub/non-state climate action in the EU show that roughly 40% of the EU's 2016 total GHG emissions has been covered by short- to mid-term (2020–2030) targets of individual actors, including cities, regions and companies. These actors have control over their own GHG emissions; their targets might therefore have direct mitigation impact. A large majority of subnational actors has 2020 targets, and many are in the process of formulating 2030 targets. The number of net-zero emissions pledges is also increasing rapidly among the EU sub/non-state actors; as of October 2020, subnational net-zero targets already cover 36% of the EU's total population. The underlying ambition of sub/non-state net-zero announcements made to date, however, varies and requires careful examination on their effectiveness.

In addition to individual actors, over 130 international cooperative initiatives (ICIs), which are partnerships of sub/non-state actors, national governments and/or international organisations, focus on GHG mitigation in the EU across all sectors. Many ICIs have highly aspirational and ambitious targets, and the majority of ICIs in the EU aims for indirect impacts, by, for example, knowledge dissemination, consulting governments and lobbying. We show that some major ICIs, such as the EU Covenant of Mayors, operate hand-in-hand with the EU policymakers on target-setting and implementation.

We observe different ways sub/non-state actors interact with national or EU-level policymakers, due to different nature of sub/non-state actors' targets. On the one hand, individual actors and ICIs that aim for direct, on-the-ground impact may respond to national or EU policy, but their targeted GHG emission levels may be more ambitious than levels generated by current policies alone. On the other hand, sub/non-state actors that aim for indirect impact, mainly ICIs, submerge in the broader policy context and depend on far-stretching collaboration with national and EU-level policymakers.

Emerging literature suggests that the sub/non-state actors could make significant contributions to GHG emission reductions in the EU. This mitigation potential can however not be isolated from national or EU-level climate ambitions; the GHG emission reductions can only be realised in coordination with national and EU-level policies. We show that symbiosis and interaction are crucial elements for target realisation by state actors, as well as sub/non-state actors. Considerable uncertainty exists around the additional mitigation potential of sub/non-state actors as the broader policy context contributes to outcomes of sub/non-state actions, but the high GHG emission reduction potential shows that there is willingness to act on the ground and that more ambition is possible. In sum, the GHG emission reduction potential symbolises the importance of enhanced collaboration and wide coordination to realise ambitious climate targets.

So far, we have found limited information about the progress of sub/non-state climate actors toward their targets and goals, especially in terms of GHG emissions reductions. Substantial outputs have been delivered by initiatives aiming for indirect contributions to GHG emission reductions, but the result on GHG emissions reductions is challenging to measure. That said, the literature indicates that individual European cities have made good progress towards their 2020 targets. The UNFCCC Global Climate Action Portal has been working on the collection of indicators to track progress of sub/non-state climate action; we expect more progress assessments will become available in the near future.

Acknowledgements

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Abbreviations

CAMDA	Climate Action Methodology Data and Analysis
CoM	Covenant of Mayors
EC	European Commission
ETIP	European Technology and Innovation Platform
ETIP PV	European Technology and Innovation Platform for Photovoltaics
EU	European Union
GFEI	Global Fuel Economy Initiative
ICI	International Cooperative Initiative
L&G	Lean and Green
NAZCA	Non-state Actor Zone for Climate Action
SBTi	Science Based Targets initiative
Sub/non-state actor	Subnational or non-state actor
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

The Paris climate agreement adopted in 2015 recognised “non-Party stakeholders” mainly comprised of subnational actors (e.g. cities and regions) and non-state actors (e.g. businesses, investors and civil society organisations) as key contributors to achieve its long-term temperature goal (UNFCCC, 2015). Previously seen more as an alternative or complementary to the UNFCCC process, sub/non-state actors are considered today as a core element under the “catalytic and facilitative” post-Paris regime (Hale, 2016).

The universe of bottom-up climate action is already large and continues to grow. Just counting actions reported to the UNFCCC Global Climate Action Portal, there are over 18,000 sub/non-state actors representing more than 27,000 actions as of October 2020 (UNFCCC, 2020). Correspondingly, the literature suggests that the potential impact of sub/non-state climate action on greenhouse gas (GHG) emissions reductions is significant, even though considerable uncertainty exists (Hsu et al., 2020a). The existing literature covers the potential emission reductions of a range of sub/non-state actions (Kuramochi et al., 2020; Lui et al., 2020; Roelfsema et al., 2018). Only a few studies available assessed the actual or expected implementation of the pledges that sub/non-state actors made (Hale et al., 2020; Hsu et al., 2020a).

This study aims to obtain enhanced understanding of sub/non-state actors’ action on GHG emissions reductions in the European Union (EU). Specifically, we present an overview of findings in the recent literature on (i) landscape of sub/non-state action, (ii) interactions between EU policy making and sub/non-state actors (iii) potential GHG emissions reductions additional to the reductions expected under national policies, and (iv) progress towards their own short- to mid-term targets and long-term goals. This report focuses on the EU, where sub/non-state climate action is significant (Chan et al., 2018).

Among different sub/non-state actors, we distinguish between individual sub/non-state actors, e.g. cities, subnational regions, civil society, international organisations and businesses, from international cooperative initiatives (ICIs). ICIs refer to broad coalitions made up of national governments, sub/non-state actors that are operating across national borders and outside the UNFCCC process to incentivise action by many actors (Hsu et al., 2020a, 2018). There are many forms of ICIs—some focus exclusively on sub/non-state actors while others also engage national governments (Hsu et al., 2020a).

2 Landscape of non-state and subnational action in the EU

2.1 Landscape of climate action by individual cities, regions and companies in the EU

A substantial number of cities, regions and companies in the EU have set climate targets for different timeframes. Quantifiable commitments by individual sub/non-state actors in the EU covered 1.5 $GtCO_2e$/year altogether, or almost 40 percent of the EU’s total GHG emissions in 2016 (Kuramochi et al., 2020).[1] Of these individual sub/non-state actors, a large share of targets is from cities (Figure 1). The majority of these targets are set for 2020, which can be explained by the high levels of adoption of the 2020 EU Covenant of Mayors (CoM) target. Many CoM cities are in the process of renewing their targets to 2030 or beyond (Kona et al., 2018; NewClimate Institute et al., 2019). Subnational actors in the EU have an average GHG mitigation target of 47% below 1990, with target years ranging from 2020 to 2050, as laid out in their local climate plans published until December 2019 (Salvia et al., 2021). The

[1] Including emissions from land-use, land-use change and forestry.

novel announcements of net-zero targets are not considered in this average mitigation target – the ambition would become higher if done so.

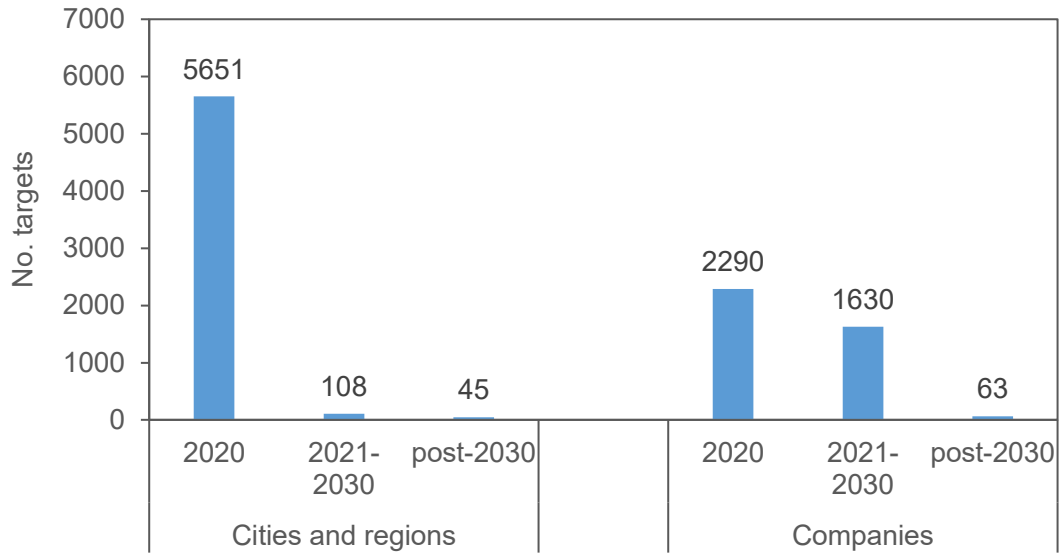

Figure 1: Number of subnational and non-state actors' targets by target year in the European Union. Source: NewClimate Institute et al. (2019)

Following the recent trend, a growing number of sub/non-state actors have set or have pledged to develop net-zero targets (reducing greenhouse gas emissions so much that remaining emissions are balanced out by removals through e.g. forestry) (Figure 2). Globally, net-zero targets from sub/non/-state actors cover 880 million people and 10 $GtCO_2e$. European cities and regions with net-zero targets cover over 162 million people (36 percent of the EU population). Subnational actors in Sweden and Spain are frontrunners with net-zero targets covering more than 70 percent of the countries' population. For example, Copenhagen and Glasgow intend to be carbon neutral by 2025 and 2030, respectively (Data-Driven EnviroLab & NewClimate Institute, 2020).

However, the increase of net-zero targets should be treated with caution. Imprecise terminology around net-zero may lead to unclear target emission levels, implementation has yet to follow, and there are numerous risks related to offsetting under net-zero ambitions. To illustrate, it is often unclear what share of emissions and emission scopes are covered by the net-zero targets, "net-zero emissions" and "carbon neutrality" are frequently used interchangeably and actors may use carbon offsetting to reach their net-zero target (NewClimate Institute and Data-Driven EnviroLab, 2020).

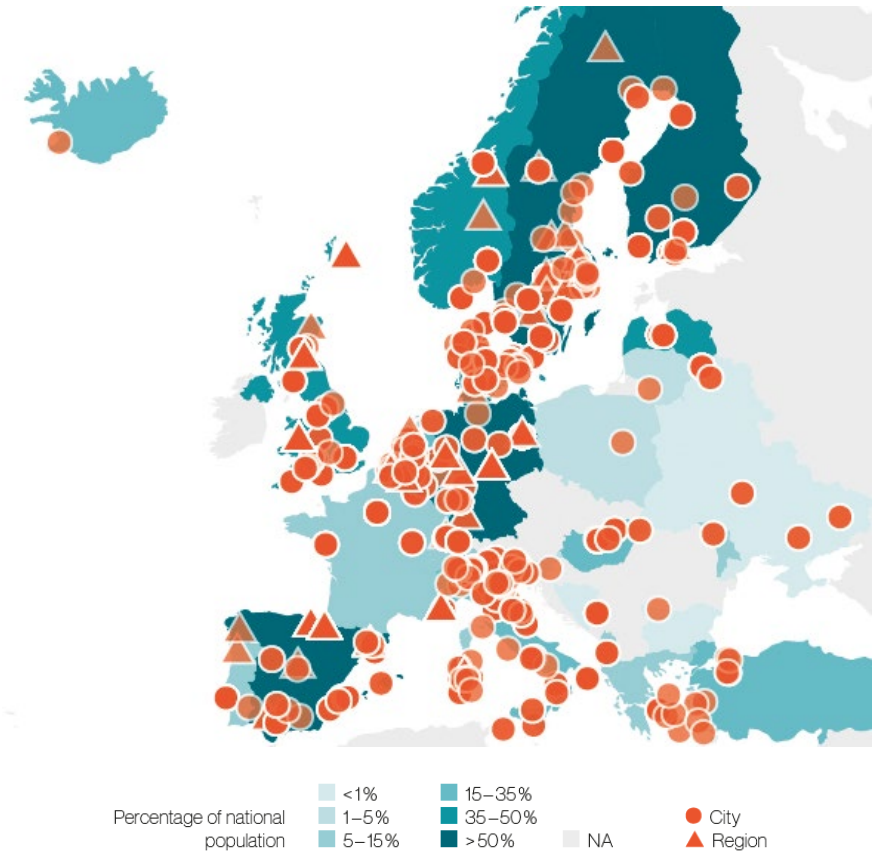

Figure 2: Map of cities and regions pursuing net-zero emissions (for countries coloured grey, no net-zero targets were recorded) Source: Data-Driven EnviroLab and NewClimate Institute (Data-Driven EnviroLab & NewClimate Institute, 2020)

2.2 Landscape of ICIs in the EU

In addition to individual sub/non-state actors, there are many ICIs in the EU. ICIs originally emerged as one of complementary approaches to internationally negotiated top-down targets under the UNFCCC process to enhance global climate action and often have longer term vision consistent with global climate goals on their focus sectors (Widerberg and Pattberg, 2015). They cover a variety of sectors and have divergent targets and ambitions. The European Commission (EC) contributes to ICIs' activities by being e.g. a signatory member, a funder, and/or a convener.

Due to their diverse backgrounds, ICIs hold a variety of core functions. These functions can range from campaigning, to norm and standard setting (Chan et al., 2018). For knowledge dissemination, for example, workshops or regular publications may be expected. In the EU, roughly 60% of the 131 mitigation-related ICIs have knowledge dissemination as one of their core functional foci, followed by policy planning and capacity building (Figure 3).

ICIs' functions can relate to direct or indirect impact. On the one hand, **direct impact** may be generated by, for example, technical 'on the ground' implementation or product development. ICIs can have targets related to technical innovation that can be implemented directly, or act as a convening platform for ambitious target-setting for their members (see Section 5.1). On the other hand, ICIs may aim for **indirect impact** by, for example, lobbying, policy planning or knowledge dissemination. Members of such ICIs may not have direct control over emissions, or aim for changes in policies and need to interact with policymakers (Chapter 3 for an assessment of additionality in relation to interaction between sub/non-state actors and governments and Section 5.2 for the reported progress of these type of targets). Many ICIs are found to have more than one type of function and targeted impact (Chan et al.,

2018). Therefore, the additionality of the potential impact might differ. In the EU, the three most common functional foci of mitigation-focused ICIs are related to indirect impact and roughly 30% of ICIs aim for direct impact with technical on-the-ground implementation and standard setting (Figure 3).

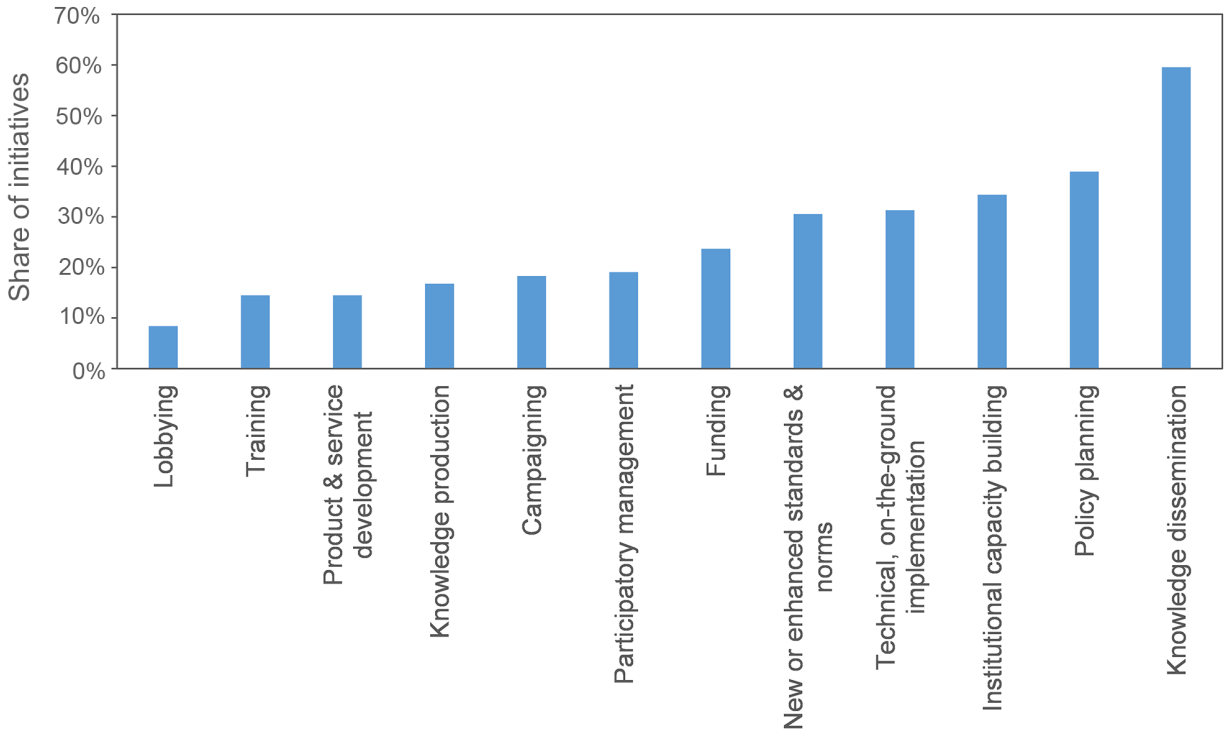

Figure 3: Functional foci of 131 mitigation-focused ICIs in the EU. The three most important foci are considered for this figure (German Development Institute / Deutsches Institut für Entwicklungspolitik et al., 2020).

3 How EU policymaking interacts with sub/non-state actors

National governments interact with sub/non-state actors in different ways. This interaction partially determines to what extent sub/non-state action is additional to national climate policies (Hale et al., 2018). In the EU, policymakers often interact with sub/non-state actors under orchestration, delegation, consultation and advocacy (Figure 4). As shown below, these ways of interaction can generate a valuable combination of novel policy approaches, on the ground experience and high ambition (Jänicke and Wurzel, 2019).

One way the EU and sub/non-state actors interact is through **orchestration**. Under orchestration, national governments call on sub/non-state actors to increase their action by making use of nationally convened platforms and resources (Hale et al., 2018). The additionality of orchestrated non/sub-state action varies – it depends on sub/non-state actors' interpretation and corresponding action implementation of platforms. One example of EU orchestration is the **EU Covenant of Mayors** (CoM)[2] initiative, which was launched by the EU in 2008 with the ambition to gather subnational governments that voluntarily commit to realising and exceeding the EU climate targets (EU Covenant of Mayors, n.d.). To support the EU achieving its NDC target, the EU CoM requires local governments to either commit individually or collectively to the CO_2 reduction target of 40% compared to the inventory base year by 2030 (EU Covenant of Mayors, 2020; Kona et al., 2018).

[2] The EU Covenant of Mayors is a major mitigation-related ICI for cities and the most relevant one in the EU. Other cities ICI, such as Eurocities and Energy Cities closely linked to the CoM, in various ways.

Another example of platforms orchestrated by the EC are the nine **European Technology and Innovation Platforms** (ETIPs). The ETIPs are industry-led fora, including stakeholders from innovation processes, that develop a strategic research and innovation agenda and are consulted during the preparation of the framework program. ETIPs are expected to have close links and interactions with Member States governments. They deliver the input to policymakers to increase ambition – additionality of direct impact may be negligible but are crucial for high ambition in innovation-related themes, nonetheless.

Closely related to orchestration, the EU Commission does not implement measures by itself but rather **delegates** the implementation of EU-level climate policy to MSs and sub/non-state actors, for example by tasking sub/non-state actors with specific targets (Hale et al., 2018). Sub/non-state actors can therefore strengthen the implementation of climate policies (Hsu et al., 2020a). Orchestrated sub/non-state action may have delegation as the underlying reason. For example, CoM signatories may set targets in line with EU-wide targets. Delegated sub/non-state climate action can result in limited additional emission reductions but is often required for successful implementation. In addition, European sub/non-state actors, of which CoM signatories, have shown to increase the ambition of delegated targets, leading to additional potential impact (Bertoldi et al., 2020).

Finally, the EC may **consult** with sub/non-state actors on national climate policy, or sub/non-state actors may advocate certain policy changes. In the light of the ETIPs, the EC consults with experts and stakeholders from business and industry about innovation and ways to increase ambition. Another example of EC consulting with sub/non-state actors is the **Global Fuel Economy Initiative** (GFEI). The initiative states that *"around 70 countries have developed fuel economy policies with our support. We take an evidence-based approach, working with policymakers and stakeholders to understand the issues each country faces and to establish a national fuel economy baseline"* (Global Fuel Economy Initiative, 2020), including EU countries. Furthermore, EU policymakers have shown to frequently organise roundtable conversations and other events to consult with stakeholders and experts, including a regional event as part of the UNFCCC Talanoa Dialogue in 2018 (Hale et al., 2018). The Netherlands is one example where the national government consults with NGOs, companies, financial institutions and other organisations while establishing possible reduction measures in varying sectors to help realise economy-wide climate targets (NewClimate Institute et al., 2019).

In return, sub/non-state actors and especially ICIs may aim for indirect impact through, for example, campaigning and lobbying. With this type of interaction, **advocacy**, ICIs highly depend on implementation by national or EU-level government (Hale et al., 2018; Hermwille, 2018). The additional impact in terms of mitigation potential of advocacy is hard to determine – if not, impossible. Consultation and advocating are however both of substantial value, as these ways of interaction can lead to novel policy approaches and are an example of the symbiotic relation between governments and sub/non-state action.

In sum, non/sub-state action can take on different roles in the EU and different modes of interaction. While some actions have a larger role during the EU policy design phase, others include active encouragement of target implementation. These interaction patterns are crucial for the success of sub/non-state action, as well as state action. On the one hand, orchestrated and delegated sub/non-state action might achieve additional impact when members voluntarily increase ambition. On the other hand, consultation and advocacy may generate novel and more efficient policy approaches. Hence, determining the additional climate impact of sub/non-state actors is complicated and the described interaction patterns show that impact may be generated in various ways.

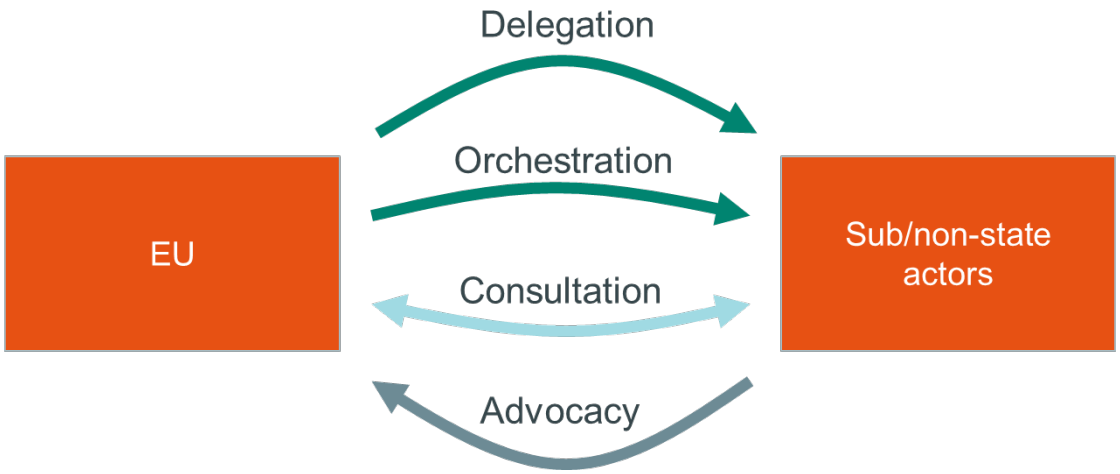

Figure 4: Ways EU policymakers interact with sub/non-state actors.

4 Potential impact of sub/non-state action in the EU

4.1 Collective GHG mitigation ambition

To date, there are only a few studies published in the scientific literature that quantified the emissions reductions that could be delivered by sub/non-state actors in addition to existing or planned national policies (Hsu et al., 2020a). These studies often assess a selection ICIs' targets (for example, see Lui et al. (2020), Roelfsema et al. (2018) and Hsu et al. (2015)) or estimate the aggregate potential of individual actors' targets (e.g. Kuramochi et al. (2020))[3].

A recent study shows that, if fully implemented and not displacing action elsewhere, individual sub/non-state actors' GHG mitigation targets could deliver emissions reductions of 110 to 320 $MtCO_2$/year in 2030, leading to levels 3.8% to 9.2% below the projected emissions under current EU-level policies (Kuramochi et al., 2020).[4] Another study shows that EU signatories of the ICI CoM could reach an emission level of roughly 1.4 tCO_2e per capita in 2050, based on current target projections, which is line with a 2°C global temperature pathway (Kona et al., 2018).

The ambition levels and aspirational goals of ICIs in the EU are substantial. Lui et al. (2020) quantified the aggregate ambition of selected 17 ICIs, which would be equivalent to 15% to 22% of 1990 levels including LULUCF in 2030 (accounting for overlap between ICIs). The collective ambition would be even larger if the potential emissions reductions from the Science Based Targets initiative (SBTi) and RE100 were included; Lui et al. (2020) provided them only on the global level because there was not enough data to attribute the companies' potential emissions reductions across countries. The Lui et al. study should be considered as a "what-if" scenario analysis because it quantified aspirational goals for many ICIs, which are often a coalition of likeminded highly ambitious entities.

[3] Please see the Introduction section on the distinction between individual sub/non-state actors and ICIs.

[4] Note that the current national policies scenario projections used in Kuramochi et al. (2020) is taken from Kuramochi et al. (2018), which projected 32% to 43% below 1990 levels in 2030, excluding LULUCF. The upper end projection was based on EEA (2017), which quantified existing measures on a member state level but did not assume full implementation of EU-level policies.

4.2 Additionality of sub/non-state action compared to EU-level policies

The GHG emission reduction potentials presented above are substantial but require several important caveats. These caveats are mainly related to the notion of additionality: to what extent can these emission reduction potentials be seen as additional to current policies, and how can they be interpreted besides additionality?

The first caveat is related to the definition of potential emissions reductions in the literature. Not all sub/non-state actors can deliver the quantified potential GHG impact on their own, which especially applies to ICIs that engage with national governments and aim for indirect impact (see Sections 3 and 5.2). The large mitigation potential of ICIs cannot be isolated from national or EU-level climate ambitions; the potentials can only be realised in coordination with national and EU-level policies. Several ICIs have national governments as signatories and/or implementation partners and depend on enhanced action by their national government signatories to realise their mitigation ambition. The additional value of these ICIs may not be accurately reflected by the estimate of their GHG emission reduction potential, but rather by the required interactions and symbiosis with national or EU governments. Therefore, the emissions reductions estimated for ICIs are not directly comparable to the emissions reductions under (current or planned) national policies.

Other two caveats are more related to the uncertainties on the quantification methods and assumptions. First, an important caveat to presented studies is that they did not distinguish baseline emissions between sub/non-state actors with GHG targets and those without GHG targets. It is possible that sub/non-state actors that have GHG emission reduction targets and have signed up to international networks may have already been under favourable conditions for emissions reductions (e.g. emissions already in decline, have plenty of resources, etc.) (Hsu et al., 2020a). This could mean that the real GHG emission reduction potential is lower and the targets are less additional to current policies than assumed. Kuramochi et al. (2020) shows that a 10% lower baseline emissions can reduce the estimated GHG impact for the EU in 2030 from 110 to 320 $MtCO_2$/year to 0 to 190 $MtCO_2$/year.

Second, individual actors' targets, as quantified by Kuramochi et al. (2020), often aim for direct impact on local GHG emissions. Some ICIs operate in a similar way – for example, SBTi and RE100 have individual companies as signatory members. These sub/non-state targets may lead to significant additional GHG emission reductions, but Kuramochi et al. (2020) assumed that they will not displace climate action elsewhere. For example, this would be important in the context of the EU ETS – a sub/non-state action targeting emissions that are covered by the EU ETS could only deliver additional emission reductions on the EU-wide level when this also leads to a decrease of the EU ETS emissions cap or (temporary) removal of allowances. In broader terms, the aggregation studies described above did not evaluate individual sub/non-state actors' targets whether and/or to what extent they are additional to existing policies on a sector-level[5].

In sum, the calculated mitigation potential of sub/non-state climate actors holds significant value, even though with considerable uncertainty. First, the number of sub/non-state actions is large and continuously growing, indicating the significance of climate action and crucial willingness to act on the ground. Second, sub/non-state action can help identify areas or sectors where more ambition is possible, by different ways of interacting with national policy-makers, as shown in Section 3. Third, it can enhance EU or national governments' confidence, by strengthening implementation of national climate policy and engaging local stakeholders. Therefore, the significance of sub/non-state action is not in the reduction potential per se – the presented values symbolise climate policy potential of all relevant actors and underlines the importance of national governments collaborating with sub/non-state

[5] Note that this caveat not only applies to the EU ETS, but also to a certain extent in the Effort Sharing sectors.

action. A better alignment of sub/non-state action with national policies can help realising and strengthening national targets in a timely manner (Hermwille, 2018; Hsu et al., 2020a).

5 ICIs' progress towards target realisation in the EU

There are large differences among sub/non-state actors regarding the extent of and reporting on progress in the EU. Overall, limited evidence is found of sub/non-state actors' progress on direct outcomes in terms of GHG emission reductions, but many sub/non-state actors deliver significant outputs that aim for policy changes and other indirect outcomes. Perhaps unsurprisingly, progress of initiatives that aim for such indirect outcomes is harder to track and presented less frequently than progress towards direct outcomes. Below, progress of major climate actions by sub/non-state actors is discussed in terms of their targets. We assess reported progress on targets specifically – in what way and/or to what extent these targets relate to GHG emission reductions is not part of the analysis. The selection of actions serves as a small sample of the diverse landscape of climate action in the EU, previously indicated as ICIs with a high potential impact on GHG emissions (Hsu et al., 2019; Lui et al., 2020; Roelfsema et al., 2018).

5.1 ICIs engaging only with individual sub/non-state actors

Many signatory companies of **RE100**[6] are on track to meet RE100's target to only buy renewable electricity, with a minimum eligibility criterion of 60% of electricity purchases being renewable by 2030. In addition, the **industry and business** initiatives illustrate in its most recent annual report that membership is increasing – with 263 signatory companies as of October 2020 (RE100 et al., 2019). If RE100 members were a country, they would be the 21st largest electricity consumer in the world, after Indonesia and before South Africa, covering 228 TWh in 2018 (RE100 et al., 2019). A large share of these members is headquartered in the EU. RE100's members need to report on their achievement and are booking significant progress – one third of the members consume 75 percent or more renewable electricity (Figure 5). In Europe, RE100 members self-generated 109 GWh renewable electricity in 2018 (RE100 et al., 2019). This progress of self-generation can be partially additional to national policies, as it directly increases the share of RE generation in the electricity mix and RE100 operates independently from state governments. In addition, RE100 members have identified regulatory requirements and policy interventions as the least important or relevant drivers for renewable electricity sourcing as opposed to drivers such as management of GHG emissions and corporate social responsibility (RE100, 2019). This does not mean that all progress of RE100 is additional to EU policy per se, but signatory companies play an important role in strengthening implementation.

[6] https://www.there100.org/

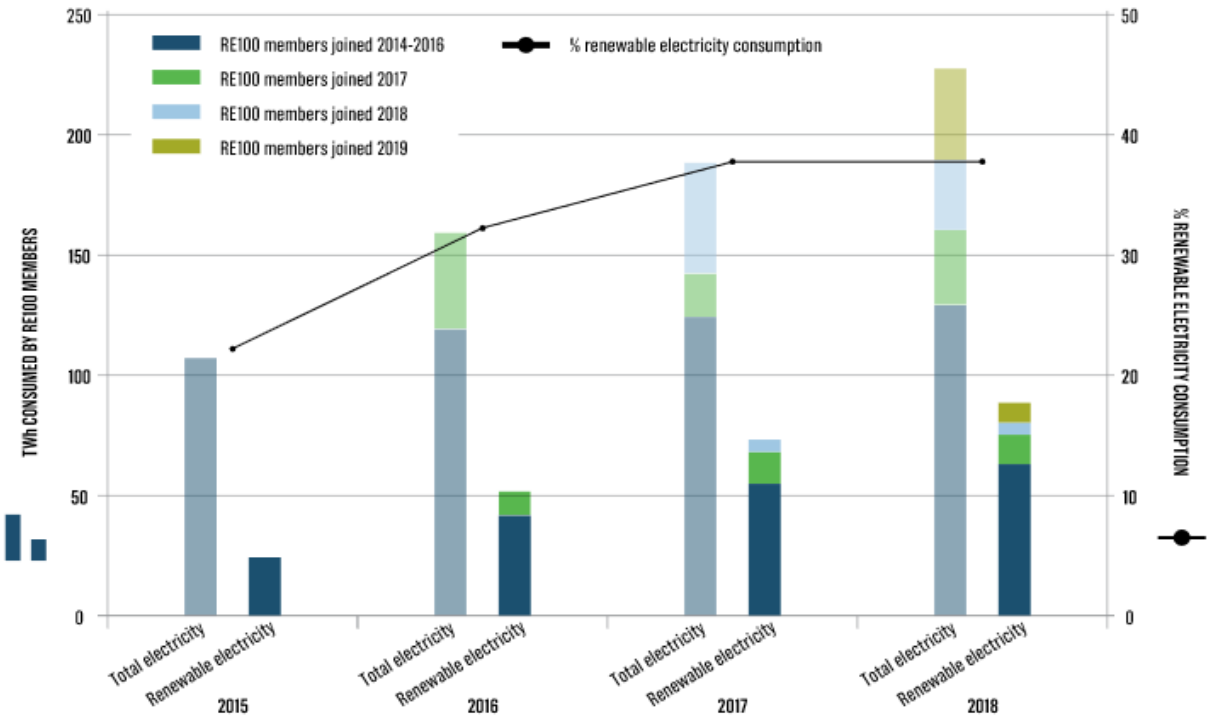

Figure 5: Progress of RE100 members to 100% renewable electricity. Source: RE100, The Climate Group and CDP (RE100 et al., 2019).

Roughly the same applies to the signatories of the **Science Based Targets initiative** (SBTi)[7]. The industry and business focused initiative aims to mobilise the private sector to set GHG emission reduction targets in line with the Paris Agreement. SBTi provides sector-level details on ambitious target-setting, to encourage members to set decarbonization targets that are in line with a 1.5 °C pathway. SBTi has reported on substantial progress in membership – an increase of more than 300 members in a year, reaching over a thousand signatory companies mid-2020 (SBTi, 2020). 516 companies committed to SBTi are from Europe, of which 253 have set targets (SBTi, 2020). European high-emitting businesses that signed up for SBTi include, for example, thyssenkrupp, Royal DSM and HeidelbergCement. This growing membership number and numerous outputs in terms of webinars, guidance documents, protocols etc. are promising, but SBTi rarely reports on progress of target realisation (Science Based Targets initiative, 2019). In relation to existing governmental climate actions, these outputs may however be crucial in achievement of (inter)national climate targets – SBTi offers tools to industry and business actors to reduce their ecological footprint and therefore may strengthen implementation. Moreover, also SBTi mainly operates independently from national governments.

Lean and Green (L&G)[8] is a European **transport** initiative that aims to reduce emissions from heavy-duty vehicles, with more ambitious targets than the current EU heavy-duty targets. The number of signatory companies has been increasing since its launch in 2008 and members have made substantial progress up to now. Two-thirds of the 458 surveyed signatory companies indicated confidence about reducing their GHG emissions from logistics with 50% by 2030, which is higher than the EU target of 30% reduction from 2030 onwards (European Commission, 2020; Lean & Green, 2019). L&G's progress therefore strengthens EU policy implementation and is an example of potential collaborative climate action of government and sub/non-state actors.

[7] https://sciencebasedtargets.org/
[8] https://lean-green.eu/

Cities and regions in the EU are slowly but seemingly steadily progressing towards target realisation. Of the **EU Covenant of Mayors**[9], 60% of the signatory cities are on track to meet their 2020 mitigation targets, assuming linear projection of emission reduction achievements since 2018 (Hsu et al., 2020b). Although CoM cities mainly have targets of 20-25% emission reductions and many do not have targets for after 2020, many signatory cities are renewing targets to 2030 or beyond and ambitions of targets are rising, as described in Section 2.1 (Kona et al., 2018; NewClimate Institute et al., 2019). In addition, CoM signatory cities are well on their way to reach their 2020 target and possible over-achieving it – assuming linear interpolation between the 2005 monitoring data and the targeted emission level (Figure 6). Besides CoM, **C40** is a large city ICI. European C40 cities are all part of the CoM, under which their progress is being tracked. On a global scale, C40 has reported that more than half of their member cities are expected to peak their emissions by the end of 2020 (C40, 2019).

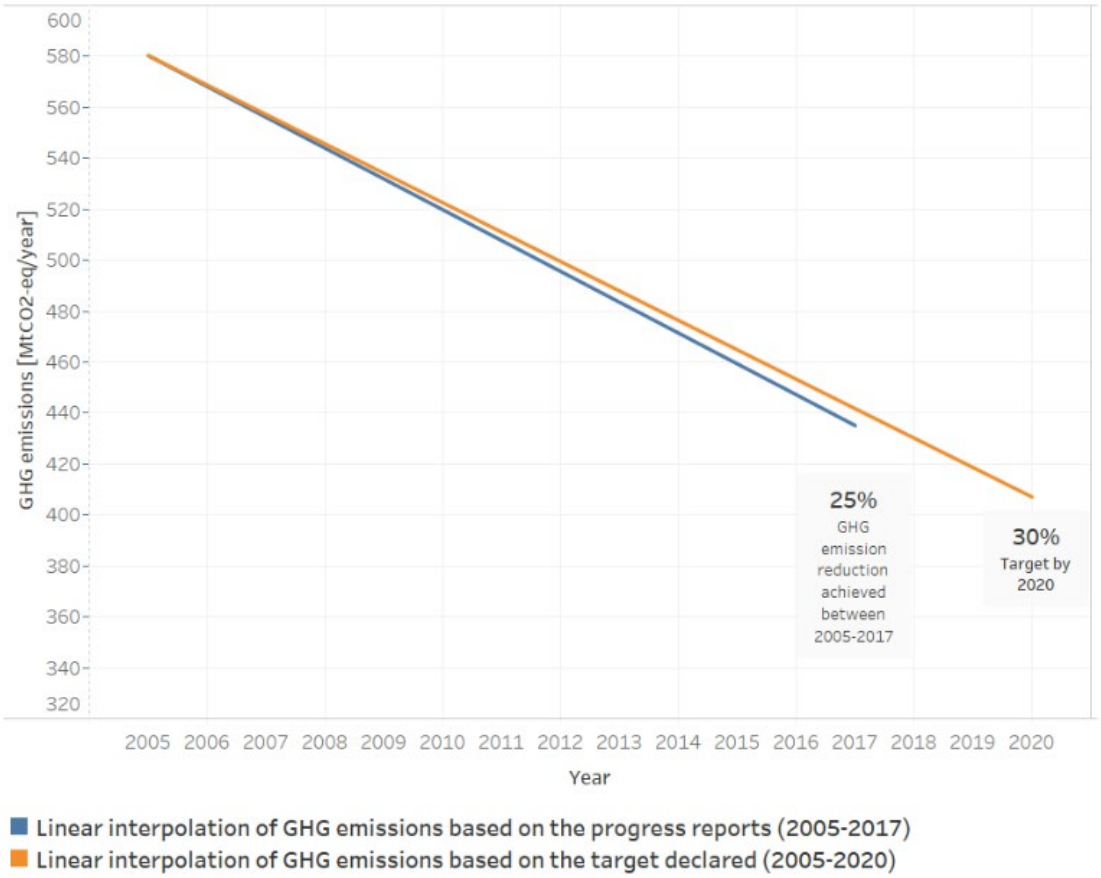

Figure 6: GHG emissions from CoM signatories in the baseline year (2005), in the monitoring year (2017) and in 2020. Source: Bertoldi et al. (Bertoldi et al., 2020).

[9] https://www.covenantofmayors.eu/

5.2 ICIs engaging with both sub/non-state actors and national governments

The **Global Fuel Economy Initiative**'s (GFEI)[10] main target is to halve fuel use in the **transport** sector. GFEI describes their collaboration with local experts to assess the vehicle fleet in the national context that result in tailored policy options for each country, based on assessments of the vehicle fleet and national context (Global Fuel Economy Initiative, 2020). GFEI therefore depends on national policy implementation for target realisation. Because of its close interaction with local policymakers, progress of direct emission reductions is complicated, if not impossible, to measure. However, GFEI regularly publishes policy summaries, illustrating the most important developments towards a green fuel economy. In addition, GFEI described their positive impact on EU fuel economy standards[11]. Based on the initiative's high number of relevant outputs, it can progress towards positive impact in the EU. However, it remains uncertain to what extent these activities can be translated into substantive progress of emission reductions.

The **European Technology and Information Platform on Photovoltaics** (ETIP PV)[12] is active in all facets of developing PV implementation in Europe, but most notably in the area of information sharing and knowledge assimilation. ETIP PV aims for improvements such as an increase of PV module efficiency by at least 35% compared to 2015. Although ETIP PV does not report progress on its outcomes and impact, it holds a regularly updated publication page with in-depth articles on PV technologies and closely interacts with the European Commission – as explained under Section 3 (ETIP PV, 2020). As the EU founded the ETIPs, ETIP PV may have a shortcut to policy planning and therefore its progress towards the intended indirect impact may be substantial. However, based on the available information, this progress cannot be directly translated into progress of emission reductions – similar to GFEI.

6 Way forward

The numbers and types of sub/non-state actors in the EU are expanding and literature assessing their potential or delivered GHG impact is emerging. The findings of this report suggest that sub/non-state actors in the EU could make significant contributions to EU-wide climate action by both implementing the EU's climate targets and taking lead in setting higher ambition.

With the increasing importance of sub/non-state actors in the EU climate policy, the findings of this report also call for the need for further research on a number of issues.

First, understanding of the types of GHG impact expected (direct or indirect) from different sub/non-state climate actions could be enhanced. The framework for categorisation of ICIs developed by Chan et al. (2018) would be a good starting point.

Second, the GHG impact quantification of sub/non-state climate action could consider individual national policies more explicitly. For the EU in particular, previous GHG impact assessment studies on EU sub/non-state climate action did not assess the overlaps between the climate actions of individual EU cities, regions and companies, and the EU ETS. Such overlap analyses on individual policy level would be important in the future research.

Third, it is crucial to assess progress of sub/non-state climate action in terms of GHG emissions reductions delivered. There has been strong momentum for enhanced tracking of sub/non-state climate action—the COP25 decision in 2019 requested to enhance the effectiveness of the UNFCCC Non-State

[10] https://www.globalfueleconomy.org/
[11] https://www.globalfueleconomy.org/blog/2018/december/progress-on-eu-fuel-economy-standards-for-2030
[12] https://etip-pv.eu/

Actor Zone for Climate Action (NAZCA) platform by e.g. tracking sub/non-state climate action. The UNFCCC secretariat, in cooperation with the Climate Action Methodology Data and Analysis (CAMDA) stakeholder community[13], is collecting target achievement indicators for both individual sub/non-state actors and ICIs. Once completed, such a dataset will help advance research on the GHG impact of sub/non-state climate action. A log frame developed specifically for tracking progress of sub/non-state climate action by Hale et al. (Hale et al., 2020) would be useful for such research.

Fourth is the assessment on the alignment of sub/non-state action across governance scales. This can contribute to reaching targets in a timely manner, with sufficient and strong implementation on the ground. As demonstrated in this study, innovative governance approaches may arise from extensive collaboration between sub/non-state actors and EU policymakers, but to ensure this, enhanced understanding of the complicated interaction patterns and related opportunities is required (Hsu et al., 2020a).

[13] https://camda.global

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