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Company-focused initiatives mapping analysis and recommendations for an EU Corporate Covenant

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Paolo Bertoldi	Joint Research Centre of the European Commission (Italy) – managed the project and reviewed the report.
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Abstract

DG Energy has proposed to set up an EU Corporate Covenant initiative to encourage companies to step up their contribution to a clean energy transition and related climate objectives as set out in the European Green Deal. As a first step in this process, a comparative analysis of existing Member State (MS), EU and international company-focused voluntary emission reduction and sustainable development-related initiatives was carried out by the JRC to understand their key lessons learned and success factors. Building upon the outcomes of the analysis – and taking into account best practice processes, four potential options for an EU Corporate Covenant were, therefore, developed.

Executive Summary

The EU Directorate-General for Energy (DG ENER) has proposed to develop an EU Corporate Covenant to encourage companies to step up their contribution to a clean energy transition and related climate objectives as set out in the European Green Deal. As a first step in this process, a comparative analysis of existing Member State (MS), EU and international company-focused emission reduction and sustainable development-related initiatives was carried out to understand their key lessons learned and success factors. Building upon the outcomes of the analysis – and taking into account best practice processes, four potential options for an EU Corporate Covenant were, therefore, developed.

Comparative Analysis

A non-exhaustive list of representative MS, EU and international initiatives were included in the analysis. They were compared across a range of criteria, such as type of initiative, target group, topical focus, operational set-up, accountability mechanism and incentives for participation, amongst others.

As the remit of this study was to consider initiatives prioritising emission reduction and sustainable development activities, industry initiatives focused on other topics such as competitiveness and non-energy specific innovation were not included in the analysis. Overall, the majority of initiatives analysed had emission reduction related objectives.

The main outcomes of the analysis highlighted a number of the reviewed initiatives' success factors and lessons learned (see below for examples) that were considered relevant to the development of an EU Corporate Covenant. These success factors and lessons learned included, amongst others:

Key lessons learned

- Small and medium-sized enterprises (SMEs) do not get sufficient attention
- Lack of coordinated approach to the best combination of energy performance and renewable energy measures
- Process improvement support is lacking across the board
- Supply chains remain a daunting challenge
- The separate pushes for renewable energy and energy performance are not aligned

Success factors examples

- Net-zero emissions commitments win the headlines
- Offering the possibility to set commitments before defining targets
- Science-based targets are key to fulfilling net-zero emission commitments
- Energy performance improvement gets the best support on a national level
- Recognition and exposure is of key importance

Reasoning for an EU Corporate Covenant

The results of the comparative analysis showed that there are a number of national and global initiatives already actively encouraging mostly large companies to engage in greenhouse gas emissions (GHG) emission reductions. However, the comparative analysis also highlighted the fact that there is an urgent need to support companies of all sizes and across all sectors not only to set commits but, most notably, to implement the actions required to achieve the commitments.

The development of an EU Corporate Covenant would therefore play an important role in:

- providing an EU-wide approach that supports companies of all sizes to commit to GHG emission reduction and progressively implement a well-prepared action plan;
- supporting the development of more effective national policies by learning from the energy end-user perspective on how current policies help or impede emission reduction activities;
- Supporting accelerated innovation through enhanced collaboration between companies and research institutions and overall increased knowledge and experience sharing.

Options for delivery of an EU Corporate Covenant

Four different potential options for an EU Corporate Covenant, based on varying levels of effort and scope, were developed on the basis of the comparative analysis. While each option can be treated as a standalone approach, they have also been designed so that some or all elements of different options could be combined into a hybrid option. These four options are as follows.

Option 1. Supporting companies to develop accurate clean energy action plans for setting and delivering on their net-zero emission targets through an MS and EU level clean energy advisory service.

Option 2. Focusing on accelerating energy performance and renewable energy commitments as a way to achieve net-zero emission targets and enabling MS develop best practice voluntary agreements to support companies on the ground.

Option 3. Focusing on accelerating energy performance and renewable energy commitments as a way to achieve net-zero emission targets and providing support to companies directly through an EU-wide voluntary agreement programme (VAP).

Option 4. Primarily focusing on accelerating zero emission commitments and associated actions across complete supply chains, with some level of EU-wide training and support.

Recommendations

It is recommended for the effective development and operation of an EU Corporate Covenant to include in its basic scope:

- eligibility for all companies sizes across all industry sectors and a focus on a combination of energy efficiency measures and use of renewable energy;
- a commitment to net-zero emissions across Scopes 1 to 3 for large companies and Scope 1 and 2 for SMEs, and requiring science-based targets and associated annual reporting;
- a minimum support structure that at the very least can guide companies to the available support services (guidance, financing solutions, tools, etc.) most relevant to their needs;
- a range of engagement-based activities to facilitate peer to peer industry networking and information exchange, workshops between policy makers and companies, and collaboration between industry and research;
- a recognition scheme that publishes company commitments and annual reporting but that also highlights exceptional progress towards targets;
- collaboration, where possible, with existing emission reduction-focused initiatives in order to avoid creating duplicate programmes for companies, as well as potentially reduce the level of investment and effort required to develop and operate an EU Corporate Covenant.

Conclusions

The development of an EU Corporate Covenant would be an extremely effective way to more systematically support industry to deliver on its required contribution to the European Green Deal's objective of net-zero emissions by 2050.

Building on the success factors of individual existing initiatives, an EU Corporate Covenant would uniquely provide an EU-wide coordinated emission reduction approach for all company sizes, across all industry sectors, from setting targets, providing guidance on required actions and ensuring high-quality performance monitoring and reporting. An EU Corporate Covenant would therefore play a vital role in helping companies transform commitments into real and effective actions.

1 Background

According to the long-term strategic vision of the European Commission for a prosperous, modern, competitive and climate neutral economy, greenhouse gas emissions must be drastically reduced by 2050. The European Green Deal (EGD) sets an ambitious reduction target of 55% by 2030 compared to 1990, and the objective of achieving net-zero emissions by 2050 is at the heart of the EGD and in line with the EU's commitment to global climate action under the Paris Agreement.

Against this background, DG ENER intends to set-up or strengthen (a) bottom-up voluntary initiative(s) encouraging companies to step up their contribution to a clean energy transition and related climate objectives. The main aim of the initiative will be to deploy available clean energy solutions to accelerate the implementation of energy legislation, and to increase funding and investments in clean energy research and innovation (R&I).

This document covers a comparative analysis of existing company-focused initiatives, following an initial comprehensive mapping exercise of the most relevant existing initiatives, programmes and certification/labelling schemes engaging with companies globally and in Europe. Building upon the comparative analysis of the existing initiatives, different options for each of the core elements of an EU company-focused initiative, covering all business sectors and activities, are then provided.

Box 1. Coverage of the activity

The mapping exercise and subsequent development of different potential options for an EU Corporate Covenant take into consideration all types of companies engaged in both industrial and service-related activities. The term "Industry" is used in this report to cover both types of activities.

2 Mapping methodology

The initial mapping exercise involved comprehensive research into the most relevant existing company-focused voluntary initiatives engaging with companies globally and in the EU. The intention of the mapping exercise was not to develop an exhaustive list of all relevant initiatives but rather to develop a detailed overview of the different types of initiatives relevant to the core objectives of the EU Corporate Covenant and how they compared on an EU and global level.

2.1 Mapping approach taken

The mapping exercise carried out was based on initial online research into a wide range of industry-related initiatives active on a global and EU level and targeting both the service and manufacturing sectors. Taking into account the core objectives of the EU Corporate Covenant, the research focused on identifying the main global or EU level voluntary initiatives that engaged with companies on emission reduction and sustainable development related topics that could be included in the mapping exercise.

On a global level, the initiatives included in the mapping exercise (see Annex 3) represent the majority of those relevant to the core objectives of the EU Corporate Covenant ⁽¹⁾. On an EU level, the majority of industry-related initiatives are country-specific. Therefore the initial research focused on those that could be identified through an English, French and German language-based search. Therefore, only a non-majority representative selection has been included in the mapping exercise.

It should be noted that there is a very wide range of industry initiatives not taken into consideration for this mapping exercise, as their primary focus was not on emission reductions or sustainable development. On an EU level, directorates like DG GROW (the European Commission Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs) actively support a number of such industry initiatives. While not taken into consideration for this particular study, these industry initiatives can, however, still be very relevant for future efforts on promoting the EU Corporate Covenant amongst a wider range of companies.

The mapping exercise itself then involved comparing all of the relevant initiatives based on a detailed set of criteria, as per below:

- type of initiative (see section 2.2 for further details on each initiative type)
- type of organisation leading the initiative (NGO, International Governmental Organisation, Industry and/or Government)
- target group (industry sector and type/size of companies)
- topical focus (emissions reductions or sustainable development)
- overall objective (What the initiative is aiming to achieve)
- scope of member engagement (target setting, knowledge sharing, communication, etc.)
- operational set-up (how it works and how it is financed)
- accountability mechanism (internal/external monitoring, reporting and verification)
- incentives for participation (recognition, technical support, training, etc.)
- concrete results achieved to date (emissions reduced, cost savings, number of signatories, etc.)
- initiative relevance ranking (see section 2.3 for further details on how the ranking system was applied).

⁽¹⁾ Key sources for the global initiatives reviewed were the UNFCCC Global Climate Action portal of cooperative initiatives (<https://climateaction.unfccc.int/views/cooperative-initiatives.html>) and the UNEP Climate Initiatives Platform (<http://climateinitiativesplatform.org>)

Box 2. Scope of the Mapping Exercise

The mapping exercise considered initiatives that focused on either emission reductions and/or sustainable development improvements topics in order to understand in general the different types of company-focused engagement approaches taken by national and international initiatives. Emission reductions is primarily linked to climate change mitigation related activities, such as energy performance improvements, implementation of renewable energy and carbon capture, utilisation and storage (CCUS). Sustainable development considers a broader range of topics as per the UN SDGs and includes climate change related activities along with environmental and societal improvement related activities.

Using these mapping criteria as a basis, a comparative analysis was carried out to identify the most relevant elements from the different types of initiatives that could be taken into consideration for the design of the EU Corporate Covenant. This comparative analysis included identifying the pros and cons of each type of initiative, the lessons learned and the key success factors (see section 3 for further details).

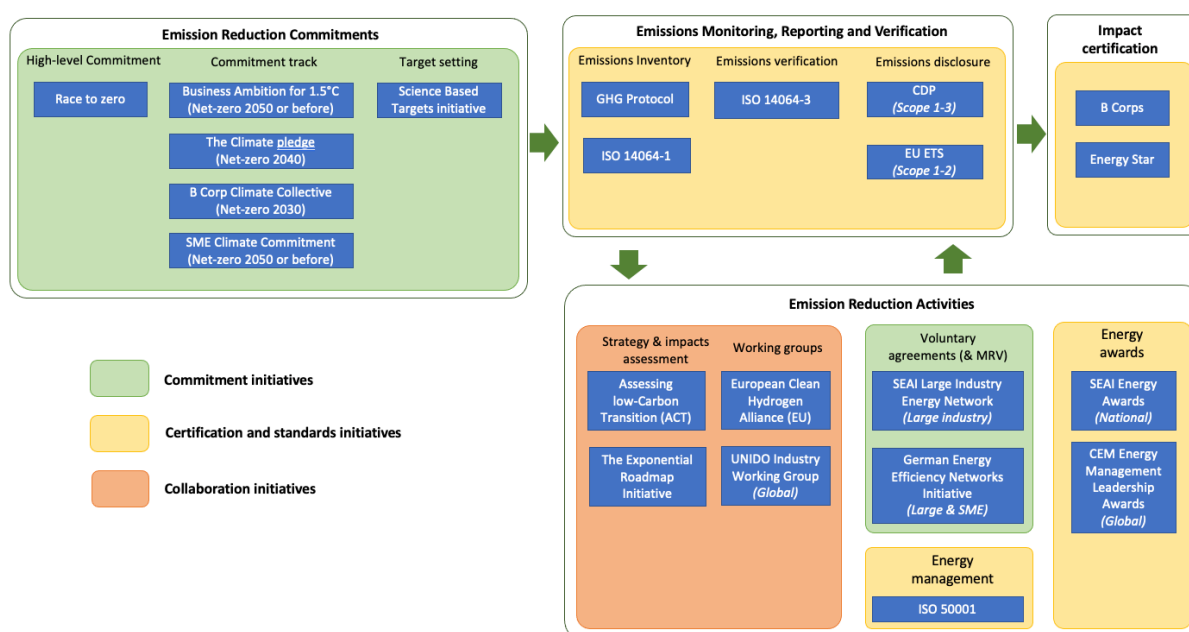
2.2 Types of initiatives explained

In order to better compare initiatives that engaged with companies, the initiatives were grouped by three distinct main types in order to better define their manner of engagement. These initiative types cover emissions reduction or sustainable development commitments and target setting by companies or associations, certification schemes and standards for companies and initiatives focused on industry collaboration. Within each main type of initiative, there are variations in the objectives. Therefore, these main types are further broken down into sub-types.

It should be noted that the definitions of the initiative types and sub-types used to group the different initiatives within the mapping exercise are based only on those initiatives studied.

Figure 1 outlines how the different initiative types interconnect and further details are provided below.

Figure 1. Overview of how examples of the different types of initiatives interact to support net-zero emission commitments.



Source: JRC, 2021.

2.2.1 Commitments & Targets

This initiative type covers both commitments and targets in different forms. Overall, commitments are meant to relate to the intention of a company to undertake emission reduction or sustainable development improvements, whereas a target is set by a company once they have a clearly defined approach on how to fulfil the commitment. Typically, a number of targets (short, medium and long-term) would be set, against which

progress towards commitment fulfilment can be checked. Targets can also change depending on a company's circumstances while still maintaining the same commitment.

The sub-types of commitment and targets are:

— *high-level corporate commitment*

This type of commitment is where a company commits to a set of principles, or is a signatory of a declaration focused on emission reductions or sustainable development. Such a commitment does not typically outline concrete actions that must be undertaken as part of the commitment. This type of initiative is typically not led by the government and is often an international initiative.

— *defined corporate commitment track*

This type of initiative is where individual companies either make a very specific commitment to a defined level of emissions reduction or a specific sustainable development improvement, and which outlines concrete actions. For this mapping exercise, defined corporate commitment track initiatives refer to non-governmental related commitments and, therefore, do not include voluntary agreements between government and industry. These initiatives are active on a global and national level, with global initiatives typically led by an international governmental organisation or NGO, and country-specific initiatives generally led by a business association.

— *corporate target setting*

This type of initiative is essentially where a company builds on an emission reduction or sustainable development commitment by developing an action plan that sets out specific targets along a timeline that outlines how and when the commitment will be achieved.

— *voluntary agreement programmes*

This type of initiative is country-specific and can relate to agreements made between industry and governments to reduce emissions and/or implement specific energy performance improvement measures. Voluntary agreements can also typically combine target setting with some form of knowledge sharing and/or technical assistance initiatives as additional supports to the member companies. A common characteristic of voluntary agreements is the negotiation between government and trade organisations to set the target(s).

As voluntary agreements schemes are well known in the EU and globally, and with considerable experience of the different approaches documented (Cornelis et al., 2018; Klinckenberg and Harmelink, 2017; Rezessy and Bertoldi, 2011)⁽²⁾, a selection of voluntary agreements schemes representing the main types of approaches was included in the mapping exercise. Please refer to Annex 1 for a more detailed overview of examples of voluntary agreement programmes and the important role they have played to date in supporting emission reduction efforts.

— *association level commitments*

This type of initiative is similar to the company level commitment initiative in how it defines commitments, but instead of being made by individual companies, they are made by a business association and apply to the combined, rather than individual, efforts of their members. Association level commitments initiatives cover non-governmental related commitments and are typically led by industry rather than international governmental organisations or NGOs. These initiatives are generally focused on a specific sector and active on both global and national levels.

2.2.2 Certification and Standards

This type of initiative provides emission reduction and/or sustainable development-related certification schemes for individual companies based on documented achievements and/or commitments. For the purposes of this mapping exercise, only government or non-profit certification initiatives were considered. Certification based initiatives, focused on emission reductions and/or sustainable development, are active on a global and national

⁽²⁾ Also cross-referencing the IEA policies database (<https://www.iea.org/policies>).

level. The global-level initiatives are commonly led by an NGO, and the national-level initiatives are led by government entities.

The sub-types of certification and standards are:

- impact certification
- energy awards
- energy performance certification
- emissions inventory standards
- emissions verification standards
- emissions disclosure
- energy management standards.

2.2.3 Collaboration

This type of initiative is more broadly defined than the previous types and relates to what are typically industry-led initiatives that provide their members with the opportunity to work together through working groups or experience-sharing forums on topics related to emissions reduction and/or sustainable development. Generally, a collaboration-based initiative does not require its members to commit to a specific emission reduction or sustainable development. This type of initiative is active on a global level and national level. The global-level initiatives are typically led by an NGO and/or international governmental organisation, while the national-level initiatives are generally led by business associations.

The sub-types of collaboration are:

- *Working Groups*

This type of initiative involves companies engaging with each other and related stakeholders to work on specific emission reduction or sustainable development topics in a collaborative fashion. Typically working group members commit to a certain level of contribution, ranging from expertise, promotion, pilot projects etc.

- *strategy & impact assessments*

This type of initiative provides a supporting framework for companies to help them achieve their commitments and/or targets. Such supporting frameworks typically include guidance on assessing potential actions and their impacts, and on developing comprehensive strategies that underpin commitments and targets.

- *industrial symbiosis*

This type of initiative is where companies located close to each other (e.g. within the same industrial park) agree to work together on a resource-efficiency objective from a business case perspective. While this initiative sub-type is based on a very specific set of boundaries (i.e. it typically only covers a relatively small number of companies in close proximity to each other), it was included to provide an example of how an emission reduction or sustainable development initiative can have a strong focus on supporting business improvement actions. Moreover, even though very narrow in geographical scope and number of companies, the involved companies in a regional industrial symbiosis initiative can include very high potentials to cut GHG emissions, making these initiatives of particular interest. Industrial symbiosis initiatives are generally active on a national level but can also be part of a wider global program. This type of initiative can be led by government entities, international development organisations or industry.

2.3 Initiative relevance ranking explained

As the primary focus of the EU Corporate Covenant is to develop a comprehensive bottom-up engagement approach with companies, a simple ranking system was used as part of the mapping exercise to help note the extent to which a particular initiative might be relevant to the EU Corporate Covenant's core objectives.

This relevance ranking system considered whether the general approach of an initiative might be more relevant to the overall future design of the EU Corporate Covenant or if it was more relevant to one of its potential supporting activities.

2.3.1 Primary relevance

Ranking an initiative as of primary relevance to the EU Corporate Covenant took into account if it was focused specifically on company-level engagement and had as a primary objective to directly encourage specific progress on emission reduction and/or sustainable development improvements through the use of concrete commitments.

2.3.2 Secondary relevance

An initiative of secondary relevance meant that it was more likely, for example, to be based on adhering to a set of principles rather than committing to specific improvement targets, had business association/sector level commitments rather than company-level commitments or that the initiative was based on specific company commitments but did not appear to be very active.

2.3.3 Supporting relevance

In the case where an initiative had a focus on company-level engagement but based itself primarily on a collaboration model to share knowledge and support innovation, this was ranked as an initiative having an approach that could be useful to consider for the EU Corporate Covenant's supporting activities, e.g. a supply chain working group to investigate opportunities to help companies deliver on their Scope 3 emission reduction commitments.

3 Mapping outcomes

The comparative analysis of the initiatives included in the mapping exercise considered the key differences between initiatives, identified the pros and cons of the main types of initiatives, outlined the lessons learned, success factors and elements which could be replicated or taken into consideration in the design of the EU Corporate Covenant.

3.1 Analysis of key mapping points

The analysis of the key mapping points considered how the same type of initiatives differed from each other when taking into account their geographical reach, target group, scope of commitments and level of reporting and verification.

3.1.1 National versus international initiatives

On a **country level**, all the three main types of initiatives (as described in section 2.2) tend to be led by either industry associations (e.g. Haga Initiative, DSGC, Stiftung 2°, JCLP and BELC) or by the government (e.g. Voluntary Agreements like the Irish LIEN and the US EPA Energy Star certification). Those led by industry associations have a strong focus on collaboration and information sharing, high-level commitments and typically do not have strong external reporting procedures, while those led by government focus on information sharing, strong and specific commitments and clear public reporting structures to verify commitments progress.

All the different types of initiatives that have a **global focus** are often led by NGOs or a partnership among NGOs and international governmental organisations, and such initiatives tend to be cross-sectoral and focused on high-level commitments. International initiatives are also, in some cases, led by business associations and these are generally more sector and/or regionally oriented. Initiatives that are led only by NGOs typically rely heavily on voluntary reporting by individual companies and often do not provide much in terms of specific support to achieve initiative targets (e.g. EP100, WWF Climate Savers). In contrast, initiatives with international governmental organisation partners have more stringent reporting requirements and often also provide additional support or guidance to help companies in their efforts to achieve initiative targets (e.g. Fashion Industry Charter for Climate Action and Science Based Targets). Those international initiatives led by business associations tend to be based on high-level commitments or focus on adhering to a set of principles. In general, these initiatives do not offer a structure for public reporting by individual companies and instead report on the overall initiatives' progress or impact.

3.1.2 Initiative target groups

The majority of the initiatives covered in the mapping exercise have a **cross-sectoral focus**. Those initiatives that had a sector focus were also in general led by business associations. The exception is the UNFCC fashion charter and the Oil & Gas Methane Partnership, both led by international governmental organisations.

While the mapping exercise only included representative initiatives focused on emission reduction and/or sustainable development targets, the initial review of a wider range of industry-related initiatives provided a similar takeaway regarding a predominantly cross-sectoral focus ⁽³⁾.

The target group of the majority of the initiatives analysed was **large companies**, with little difference between national or global level initiatives. Many of the certification type initiatives covered both large companies and SMEs, while the sector-specific initiatives (apart from oil and gas) also covered both company sizes. Importantly though, there seems to be a recent change in the size of companies being targeted by global level initiatives, with the **Science Based Targets initiative** (SBTi) now offering a simplified target setting approach **for SMEs** and the new **SME Climate Hub** providing a global-level emission reduction commitment initiative just for SMEs. In addition to these two recent SME oriented initiatives, only VinylPlus, the Climate Pledge, AIM-PROGRESS and Together for Sustainability have a specific focus on working directly with supply chains on emission reduction and/or sustainable development actions.

⁽³⁾ Key sources for the global initiatives reviewed were the UNFCC Global Climate Action portal of cooperative initiatives (<https://climateaction.unfccc.int/views/cooperative-initiatives.html>) and the UNEP Climate Initiatives Platform (<http://climateinitiativesplatform.org>)

3.1.3 Scope of Commitments

The most common type of initiative covered in the mapping exercise was commitments and targets, which is relatively representative of the typical industry initiative researched, regardless of topical focus or geographical reach.

The commitment and targets initiatives cover a range of different types of approaches that members voluntarily agree to. Excluding the four examples of voluntary agreement programmes included in the mapping exercise, and which are quite specific and described in more detailed in subsequent sections, these approaches include:

- GHG emission reductions (Science Based Targets, Haga Initiative, Climate savers, etc.);
- CO₂ emission reductions (The Climate Pledge, Oil and Gas Climate Initiative, etc.);
- doubling energy productivity (EP100);
- energy efficiency improvement (Caring for Climate, Refrigerants, Naturally!);
- implementing an energy management system (EP100, Industrial Energy Efficiency Accelerator);
- changing to 100% renewable energy (RE100);
- accelerating the transition to electric vehicles (EV100);
- climate change principles (The Chambers Climate Coalition, Corporate Engagement in Climate Policy, etc.);
- sustainable performance principles (Caring for Climate, Responsible Beauty Initiative, etc.);
- increasing recycled plastic and reducing plastic waste (Voluntary industry plastic packaging initiative and VinylPlus).

Of the above different types of commitments, very few stipulate specific actions that need to be carried out. Instead, the focus is on committing to a defined target or set of principles. Taking the commitment initiatives that orientate themselves towards climate change-related topics, it can be said that virtually all of them align their commitments with the Paris agreement, to some degree. However, these commitments can then range from simply declaring support for the goal of the Paris agreement (e.g. The Chambers Climate Coalition) to setting measurable medium and long term targets for achieving net-zero Scopes 1 to 3 GHG emissions by 2050 (e.g. SBTi).

From all of the initiatives engaged in climate change topics, two, in particular, stand out for their approach on clearly outlining structured commitments: the SBTi with its very comprehensive criteria and guidelines for setting net-zero GHG emission targets and the EP100, that focuses on clear energy-saving targets rather than a broader emissions reductions based target. These initiatives differentiate themselves by the fact that they provide the detailed information required to plan and set the targets – practically all of the other related initiatives only detailing the target itself. This is also why now many of the initiatives are starting to link their commitments to the SBTi (e.g. WWF's Climate Savers), i.e. requiring that companies commit in line with the SBTi criteria.

While the EP100 and Industrial Efficiency Accelerator initiatives include specific energy performance and energy management system implementation targets, the **only other initiatives covered in the mapping exercise that have this focus are the voluntary agreement** initiatives. This initiative type also differentiates itself in a similar fashion to the SBTi by providing very clear and structured approach to setting and achieving the agreed energy saving target.

Besides the commitment and voluntary agreement initiatives types, the collaboration and industrial symbiosis initiative types can also base themselves on certain types of commitments. However, these commitments are typically based on agreements to share knowledge and collaborate on shared objectives rather than set specific emission reduction or similar targets. The certification initiatives often use an assessment of performance-to-date to award their certificates, although initiatives like the Energy Star Certification for plants can require the adoption of specific processes like ISO 50001.

Overall, the comparison of the different commitment approaches shows that for emissions reduction commitments, only the global-level SBTi provides clear and comprehensive guidelines for setting and achieving related targets. In a similar fashion, the country-level voluntary agreement initiatives provide the best structure for energy performance commitments.

A recent report by the Oxford University Net zero Network reviewed initiatives with net-zero targets to consider how to promote convergence toward robust standards for such targets across the climate action community (University of Oxford, 2020). The study found that, in general, the greater consensus between the different initiatives was that net-zero targets should aim to cover all GHG and all activities and scopes, to the extent that data allowed. However, differences were then more apparent when it came to how to prioritise different activities across scopes (e.g. whether the focus should be on total emissions, what the areas of direct control should be).

Another area in which the Oxford study identified differences in the approaches of net-zero initiatives was the timeline required to achieve net-zero. While 2050 was the common date by when to have achieved net-zero emissions, the initiatives were noted to differ on:

1. including/setting interim targets aligned to clear net-zero pathways;
2. what timescales to set for actors that could/should reach net-zero before 2050.

Similar convergence and differences were also noted for target elements relating to offsetting, equity, future uncertainties, dependence on other actors, and governance.

3.1.4 Reporting and Verification

While some form of reporting is practically always included in the commitment initiatives, its actual requirement is applied in varying degrees, from basic voluntary reporting and no verification (e.g. EP100) to comprehensive GHG protocol reporting and verification requirements (e.g. Science Based Targets). It is also important to note that for many of the commitment initiatives there is very little verification of the reported progress on target achievements (e.g. EP100). Typically, only those initiatives that have an UN partner or are government-led have verification procedures in place (e.g. country level voluntary agreements, Science Based Targets, Oil & Gas Methane Partnership, Business Ambition for 1.5°C).

Country-level initiatives

On a country level, there are two main different types of industry initiatives. Those led by industry associations (e.g. Haga Initiative, DSGC, Stiftung 2°, JCLP and BELC) or those led by governments (e.g. Network oriented Voluntary Agreements like the Irish Large Industry Energy Network (LIEN), the German Energy Efficiency Network Initiative (IEEN), the Long Term Agreements like those in the Netherlands). Those led by industry associations have a strong focus on collaboration and information sharing and do not have strong external reporting procedures, while those led by the government focus on specific commitments and clear public reporting structures.

International initiatives

On an international level, the industry initiatives are led by non-profits or a partnership between non-profits and international governmental organisations (IGO). Those led solely by non-profits rely heavily on voluntary reporting and often do not provide much in terms of specific support to achieve targets (e.g. EP100, Climate Savers). Those with IGO partners, instead, have more stringent reporting requirements and often also provide additional guidance to help companies in their efforts to achieve their targets (e.g. Fashion Industry Charter for Climate Action, Science Based Targets).

3.2 Summary of key learnings

The following sections outline the key learnings that can be taken from the different initiatives covered in the mapping exercise. Please note that these learnings only relate to these particular initiatives and how their approaches may or may not provide insights towards the development of an EU Corporate Covenant. Therefore, they are not meant to provide a general review of how best to support companies to pursue clean energy solutions.

3.2.1 Pros and cons of different approaches

The table below summarises the main pros and cons identified for the initiatives types covered in the mapping exercise. Note that it is not the individual initiatives that are being compared here but rather the overall group of initiatives classified under the same initiative type.

The main criteria applied in analysing the pros and cons for the types of initiatives included:

- how relevant/adapted the initiatives were for different company sizes and sectors;
- the level of engagement the initiatives had with companies;
- the level of support the initiatives provides companies with;
- how much effort was required by the company, and what they got in return.

Table 1. Overview of pros and cons for the different initiative types covered in the mapping exercise.

Initiative type	Pros	Cons
Commitments		
<i>High-level corporate commitment</i>	Helps draw attention to specific commitment tracks and supports consistency between different commitment criteria.	Very high level and, at the time of writing, lacking ability/resources to ensure consistency between different commitment criteria. Generally, not focused on SMEs.
<i>Defined corporate commitment track</i>	Provides companies with a specific commitment suited to their situation and capabilities.	Currently, very focused on large multinational companies and lacking country-level engagement ability. Generally, not focused on SMEs.
<i>Corporate target setting</i>	Provides companies with guidelines to develop specific targets to support their commitments.	Few initiatives provide adequate levels of guidance to support companies to develop targets based on current/future ability to deliver. Generally, not focused on SMEs.
<i>Voluntary agreement programmes</i>	Provide direct and local support to companies to achieve agreed targets.	Not widely implemented, differing approaches to measuring energy performance, generally not linked to net-zero emission targets.
<i>Association level commitments</i>	Provide sector-oriented approach and support sector-level progress.	Generally, not as ambitious as non-industry led commitments. Individual companies get less focus.
Collaboration		
<i>Working Groups</i>	Actively promote engagement and experience sharing between different companies with sector or cross-sectoral focus.	Typically not connected with targets and therefore often lacking in strong/ambitious outputs. Not many focus on policymaker - industry engagement. Generally, not focused on SMEs.
<i>Strategy & impact assessments</i>	Provide guidance to companies on how to identify opportunities to reduce emissions and develop relevant strategies.	Typically, static document-based and not linked to engagement initiatives nor on the ground activities. Generally, not focused on SMEs.

Initiative type	Pros	Cons
<i>Industrial Symbiosis</i>	Very hands-on approach and supportive of competitive collaboration between companies.	Not widely implemented, typically only suitable for selected group of close proximity companies whose activities can interconnect, to a degree.
Certification and Standards		
<i>Impact certification</i>	Provides companies with internationally recognised sustainability certification.	Typically, a way to improve a CSR image on overall sustainability topics and has the risk of being used instead of more focused commitments. Generally, not focused on SMEs.
<i>Energy awards</i>	Provide companies with recognition for exemplar energy performance improvement projects and leadership.	Often limited to a small group of companies engaged in a specific programme. They do not provide a way to promote overall exemplar progress for all applicable companies.
<i>Energy performance certification</i>	Provides companies with an annual label or certificate recognising a specific level energy performance progress.	Not widely implemented, requires detailed monitoring, reporting and verification (MRV) criteria and related programme management resources related to ensuring high quality.
<i>Emissions inventory standards</i>	Provide companies with a standardised approach to measuring Scope 1, 2 and 3 emissions.	Quite complex standards. Generally, not focused on SMEs.
<i>Emissions verification standards</i>	Provide standardised approach to verifying Scope 1, 2 and 3 emissions. Generally used by certification entities to verify company-level reporting.	Quite complex standards. Generally, not focused on SMEs.
<i>Emissions disclosure</i>	Provides companies with a way to publicly disclose their Scope 1, 2 and 3 emissions and gain recognition through association.	Often complex initiatives requiring a lot of effort from companies to disclose a wide range of information. Generally, not focused on SMEs.
<i>Energy management standards</i>	Provide companies with detailed guidance and criteria to implement an energy management system.	The success of an implemented energy management system is dependent on many factors, with the standard only providing a process. Generally, not focused on SMEs.

Source: JRC, 2021.

3.2.2 Success factors

The main overall success factors identified through the mapping exercise that could be replicated or taken into consideration for the design of new EU led initiative are outlined as follows.

Offering the possibility to set commitments before defining targets

The comparison of initiatives through the mapping exercise showed a clear tendency for enabling emission reduction or sustainable development commitments to be made in advance of defining the specific company targets (e.g. Business Ambitions 1.5°C). This distinction between commitments and targets is important for companies that want to demonstrate their willingness and interest to pursue emission reductions or sustainable development improvements but are not yet in the position to be able to set specific targets.

The benefit of this “easy first step” approach is that more companies are likely to make a general commitment than agree to a specific target. However, once a company is “on board”, it is required to progress to the next step of setting targets within a given period of time, typically long enough for them to develop a comprehensive action plan.

Net-zero emissions by 2050 commitments win the headlines

While sustainable development-related commitments are not uncommon, it is notable the number of initiatives that since quite recently have been set up based on net-zero emissions (e.g. Race to Zero partners), or where initiatives that have updated their commitments to net-zero emissions (e.g. WWF Climate savers). With 120 countries already committed to achieving net-zero emissions by 2050 (UNFCCC, 2020), it is logical that industry-related initiatives are following suit.

Developing science-based targets are key to fulfilling net-zero emission 2050 commitments

Achieving net-zero emissions by 2050 and keeping global warming to 1.5°C requires considerable efforts already by 2030 (45% emissions reduction from 2010 levels according to the IPCC 2018 special report (Rogelj et al., 2019)). The challenge for companies is to understand what range of measures need to be implemented at what stage within a given time frame to be able to achieve net-zero emissions. A science-based approach to setting targets takes into account the emission reduction curve to net-zero emissions by 2050 that is required to keep global warming to 1.5°C. If a company does not take a science-based approach to set targets, they may achieve net-zero emissions by 2050 but not in such a way as to limit global warming to 1.5°C.

Box 3. What science-based targets are?

Simply put, an emissions target is defined as science-based if it is in line with the scale of reductions required to keep the global temperature increase in line with what is set out in the Paris agreement - to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C.

The IPCC (Rogelj et al., 2019) has developed emission reduction trajectories that outline what amount of emissions, and by when, need to be reduced to limit global warming to 1.5°C. Based on this global emission reduction trajectory, related emission reduction pathways can be calculated for a company in a fair and transparent way, taking into account such variables as their sector of activity and location. Setting a science-based target in this way requires an in-depth review of the company's activities and their emissions across all scopes. A detailed action plan must be then developed to outline how the company can achieve near- and medium-term targets along the emission reduction pathway specific to their situation.

Reducing reliance on offsetting and carbon removal is important

Offsetting is a common approach by many companies to advance their progress to zero emissions – e.g. Google states they are carbon neutral since 2007 but has achieved this through offsetting 19 million tCO₂e (Google, 2019). As such, many initiatives restrict offsetting (e.g. SBTi, Race to Zero) as an option for companies to use in achieving their net-zero emission commitments. The IPCC 2018 special report highlights the challenges carbon dioxide removal options would present if included as option to support net-zero emission measures to keep global warming to 1.5°C, as these are not yet proven on the scale required. In the absence of currently available technological solutions, carbon dioxide removal remains a necessary option for some specific industries such as cement and steel production. However, it is clear that the main initiatives do not advocate it as a solution for achieving net-zero emissions when an alternative approach can be taken.

Box 4. What carbon dioxide removal means?

Carbon dioxide removal (CDR), is a process in which carbon dioxide gas (CO₂) is removed from the atmosphere and sequestered for long periods of time in geological, terrestrial, or ocean reservoirs, or in products. Carbon offsetting schemes allow companies to invest in carbon dioxide removal projects not linked to their own activity in order to balance out their own carbon footprints.

Energy performance improvement gets best support on a national level

While international initiatives are heavily focused on commitments and targets, it is the national initiatives that, mainly through voluntary agreement programmes, focus the most on supporting companies to implement measures to deliver on their targets. Not many international initiatives focus on clean energy-related topics, and of those (e.g. EP100, RE100), none provide near the level of direct support that a voluntary agreement programme is shown to provide (e.g. German IEEEN, Irish LIEN).

Recognition and exposure is everything

Virtually all initiatives provide their participants with some form of recognition, ranging from listing them as a member on their website to promoting their case studies to offering awards for exemplar projects or to highlighting commitments made on the international stage. In many cases, considerable investment and effort are requested of a company to participate in an initiative (e.g. committing to net-zero emissions by 2050), and, in return, they look for valuable recognition.

Collaboration between initiatives makes it easier for companies

Importantly, one can start to see a consolidation of the key international industry initiatives, which can help provide much needed clarity for individual companies that are currently struggling to differentiate between the large variety of initiatives competing for their attention. A key player leading the way in this consolidation process is the We Mean Business coalition, led by CDP, BSR, CERES, CLG Europe, The Climate Group, WBCSD and The B-Team. In turn, the We Mean Business coalition is a lead partner with the UN Global Covenant in the Business Ambition for 1.5°C and SBTi.

3.2.3 Lessons learned

The main lessons learned that can be taken from the comparison of the different initiatives and which could be relevant to consider for the EU Corporate Covenant are outlined as follows.

SMEs do not get much attention

Not many initiatives specifically support SMEs, in particular when considering international initiatives and those focused on commitments. While there is a notable effort underway by international commitment type initiatives to include SMEs going forward (e.g. SME Climate Commitment, SBTi), it is to be questioned if their current model of engagement with companies will enable a sufficient level of connection to SMEs to have an impact. On a national level, voluntary agreement programmes based on Energy Efficiency Networks (EENs) stand out as those initiatives most focused on engaging with and support SMEs on the ground.

Lack of coordinated approach to the best combination of energy performance and renewable energy measures

While energy efficiency and renewable energy are often outlined in many initiatives as key steps to achieving net-zero emissions by 2050, there is little focus on ensuring that maximum energy performance improvements are achieved, with a minimum necessary energy demand then covered by renewable energy, i.e. a coordinated clean energy solution. While initiatives based on energy management programmes (e.g. voluntary agreement programmes) typically focus on an overall reduction of energy demand and include renewable energy as a measure, there is little overall evidence of initiatives promoting or supporting coordinated clean energy solutions.

Currently, even the quite stringent SBTi allows companies to achieve their net-zero emission target through 100% renewable energy without first requiring a maximum reduction of energy demand.

Promotion and support of renewable energy are also often only oriented towards electricity as a renewable energy source (e.g. RE100). Support and guidance on renewable energy as a heat source was found to be lacking overall within virtually all related initiatives.

Process level support is lacking across the board

Anecdotal evidence from a number of company-focused workshops on climate change related topics (UNECE, 2017; UNIDO, 2019; UNIDO, 2020) has highlighted the fact that companies (in this case, primarily multinational manufacturing) lack in-house expertise to fully understand the options available to integrate clean energy solutions into their processes. Importantly, these same companies are active in many different emission reduction and/or sustainable development initiatives but feel that their most practical needs on a process level are still not being addressed. Of the initiatives covered by this mapping exercise, only the voluntary agreement programmes provide companies with some degree of process-level support. However, voluntary agreement programmes overall also vary considerably in how and to what extent they support companies through process level expertise (Cornelis et al, 2018; Klinckenberg and Harmelink, 2017).

Supply chains remain a daunting challenge

Of the initiatives covered by this mapping exercise, very few specifically focus on supply chains – a trend that can be considered as generally representative of most other industry related initiatives ⁽⁴⁾. Those emission reduction or sustainable development initiatives that do orientate themselves towards supply chain tend to be sector-specific and focused on responsible sourcing programmes (e.g. AIM-PROGRESS and Together for Sustainability) or cross-sectoral and focused on emission reporting (e.g. CDP).

Supply chains can very often make up the majority of a company's emissions inventory. On average, 40% to 60% of a manufacturing company's carbon footprint is from its supply chain (CERES, 2010), and this percentage can be much greater, as much as 80%, for a retailer (Brickman and Ungerman, 2008). More recently, CDP notes in their 2019 supply chain report that supply chains produce on average more than five times the emissions than the CDP reporting companies' direct operations (Carbon Trust, 2019a). The challenge not currently being addressed by any initiative in the mapping exercise is how to engage with companies across a complete supply chain and directly support emission reduction actions that have a top-down and bottom-up replication impact in the supply chain hierarchy.

Box 5. What are Emission Scopes?

Scope 1 emissions are direct emissions from owned or controlled sources.

Scope 2 emissions are indirect emissions from the generation of purchased energy.

Scope 3 emissions are all indirect emissions (not included in Scope 2) that occur in the value chain of a company – they cover the product lifecycle upstream and downstream of the company and come from sources that are not owned or controlled by a company.

3.3 Reasoning for an EU Corporate Covenant

Many initiatives encouraging companies to engage in GHG emission reduction already exist on both national and global levels. The global initiatives, in particular, offer large companies and, in some cases, SMEs a way to make internationally recognised emission reduction commitments, set science-based targets and follow a standardised emissions reporting and verification procedure.

However, there are still many fundamental challenges to overcome in order for the industry to be able to achieve the level of emission reductions agreed under the Paris agreement, and which are not sufficiently addressed by the existing initiatives on neither a national nor global level. These include ⁽⁵⁾:

- overcoming the communication and knowledge gap within companies (Shopfloor versus boardroom) and between industry and policy makers;
- addressing the lack of knowledge on emission reduction opportunities and activities amongst both industry and policy makers;

⁽⁴⁾ Key sources for the global initiatives reviewed were the UNFCCC Global Climate Action portal of cooperative initiatives (<https://climateaction.unfccc.int/views/cooperative-initiatives.html>) and the UNEP Climate Initiatives Platform (<http://climateinitiativesplatform.org>)

⁽⁵⁾ Summarising barriers identified in a range of papers (Dzioubinski, 2018; Mac Nulty, 2015; Sorrell et al., 2011; Rohdin and Thollander, 2006; Johansson and Thollander, 2018; Andersson, 2020; Reinaud, Goldberg, 2011) and through industry workshops (UNECE, 2017; UNIDO, 2019; UNIDO, 2020).

- addressing the complexity of achieving coordinated emission reduction activities across the complete supply chain, including in particular working with SMEs;
- sharing policy experiences and knowledge across borders to have a more coordinated and effective EU-wide emission reduction strategy for industry;
- developing the new technologies to extend emission reduction progress beyond the opportunities offered by the current level of technology.

The reality is that to overcome these key types of challenges, extensive engagement is required between companies themselves, as well as between companies and policy makers. The outcomes of industrial energy efficiency events organised by UNIDO, IEA, UNECE and other organisations ⁽⁶⁾ have increasingly highlighted the strong interest of companies to be more involved in policy and program design discussions and, especially, to be able to avail of a BtoB type platform for more effective sharing of experience and knowledge. Therefore, while industry associations remain a valuable interface for general engagement between companies and policy makers, it can be considered advantageous to also create a direct interface between companies (BtoB), and between companies and policy makers (BtoG) to advance more effectively on key emission reduction topics and actions.

There are, therefore, many arguments for the establishment of an EU company-focused voluntary initiative to encourage and support companies to step up their contribution to a clean energy transition and related climate objectives. These can be summarised as follows.

Moving from commitment to action

While strong commitment-based initiatives that work effectively with recognised target setting and reporting structures already exist, there is an urgent need to support companies of all sizes and across all sectors to implement the actions required to achieve the commitments.

There are already a variety of supports available to companies within the EU, in particular on a country level, whether through, for instance, voluntary agreement initiatives, technical assistance programmes and energy efficiency grants. However, country-level supports naturally differ considerably from country to country, and the mapping exercise did not identify many emission reduction focused supports nor any that address actions across a complete supply chain.

An EU Corporate Covenant would therefore be ideally placed to:

- provide companies, in particular SMEs, with the knowledge and support to develop emission reduction strategies that would enable them to set viable commitments through existing initiatives and verify their progress;
- assist companies to access existing supports in their country or available internationally to enable them easily assess their emission reduction opportunities and understand the best practice measures to implement;
- work with other initiatives to further clarify/simplify corporate emission reporting requirements and develop common monitoring, reporting and verification (MRV) guidance to support accurate energy analytics as a basis for advanced emissions reporting;
- facilitate experience and knowledge sharing between companies by topic and/or sector and develop centralised best practice guidance and case studies;
- facilitate experience and knowledge sharing between national and international emission reduction initiatives to help improve the existing action-oriented supports available to companies;
- facilitate supply chain emission reduction activities and initiatives;
- provide companies, in particular SMEs, with recognition for emissions disclosure and emission reductions;

⁽⁶⁾ Examples include: IEA, 2017; UNIDO, 2017; Nagasawa et al., 2017; UNECE, 2017; Cornelis, 2019; UNIDO, 2019.

- provide access to EU financing such as Next Generation EU functions, European Investment Bank, etc.;
- support systematic energy performance benchmarking;
- support companies with knowledge sharing and expertise on financing as well as linking them to the EU Taxonomy.

Developing more effective and transformative country-level policies

Engaging directly with companies through a voluntary company-focused initiative can provide policy makers with a unique insight into the reality of business operations, as well as help them understand more accurately what type of emission reduction opportunities that can be practically pursued in what timeframe. Importantly, direct engagement between companies and policy makers can help highlight more effectively key issues or constraints with existing emission reduction related industrial policies.

Most of the existing global emission reduction initiatives do not have the capacity nor even the remit to develop comprehensive policy recommendations to help increase implementation of emission reduction actions, and this is the case for country-specific policy recommendations, in particular.

An EU Corporate Covenant would therefore be ideally placed to:

- through company level and policymaker exchanges, learn from the perspective of the energy end-users how current policies (supporting and obligatory) help or impede emission reduction activities;
- use the best practice learnings from implemented emission reduction projects as foundations for new policies development recommendations– reducing the time required for new policy pilot phases;
- support cross-border policy experience and knowledge sharing and provide industry feedback to national governments on different policy types;
- work closely with the different actors across the complete value chain to be able to provide country-level and EU policy recommendations for interconnected solutions to reduce emissions across the complete value chain in a coordinated fashion;
- support coordination of international (outside the EU) emission reduction activities and policy developments through experience with value chain programmes;
- through targeted company level topical working groups, provide recommendations for company-size oriented and sector-specific emission reduction policies;
- enable the EU to understand more accurately what types of policies, financing needs, R&I investments, etc. will be required over the next 10, 20 and 30 years to achieve EU emission reduction targets.

Supporting accelerated innovation

Even in the case of initiatives that have a strong collaboration focus with topical working groups addressing specific issues (e.g. UNFCCC's Fashion Charter), the level of innovation output is mostly limited by the lack of R&D inputs. While there are some examples of strong sector-driven technology innovation, in particular the case for the cement and iron & steel sectors, the IEA in its most recent 2020 Clean Energy Innovation report (IEA, 2020) notes that there is still a big gap between net-zero ambitions and the pace of technological progress, particularly in heavy industries (cement, chemicals, steel).

A key point to note about the existing company-focused initiatives reviewed during this study is that most of them did not consider a dedicated engagement approach to better link research institutions with companies through experience and knowledge sharing, let alone collaborative pilot innovation projects. Feedback from such company-focused initiatives as UNIDO's industry working group has indicated that there is a strong interest from companies to have increased collaboration opportunities with research institutions.

An EU Corporate Covenant would therefore be ideally placed to:

- incorporate research institutions into a voluntary company-focused emission reduction initiative to both input into best practice activities and learn from company experiences;
- support piloting of research projects at an earlier stage within company operations;
- facilitate the sharing of information on new technologies and practices with companies;
- incentivise spin-off innovation projects through emission reduction activity experience and knowledge sharing between companies and research institutions;

- provide a platform for research institutions to collaborate together on industry projects and to bring the results of EU research projects directly to interested companies;
- provide information on how to access different types of financing.

4 Preliminary analysis of EU Corporate Covenant options

When designing a new EU Corporate Covenant that would focus on encouraging companies to engage voluntarily in GHG emission reduction activities with a focus on sustainable energy, it is recommended to avoid duplicating relevant existing successful initiatives. Instead, the focus should be on developing an EU Corporate Covenant that brings added value by building upon the efforts and outputs of existing initiatives and actively collaborates with them where possible.

The following sections outline the key elements that would need to be considered in the design of an EU Corporate Covenant and three different options that could be considered for the general approach of such initiative.

4.1 Overview of core initiative elements

The development of the EU Corporate Covenant is in line with the objective of the European Green Deal, supporting the development of a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use.

The primary focus of the EU Corporate Covenant is to encourage companies to step up their contribution to a clean energy transition and related climate objectives by deploying available clean energy solutions (technology and operational). As such, this initiative will actively engage with and support key stakeholders in delivering progress across all of the key Green Deal action areas:

- investing in environmentally-friendly technologies;
- supporting industry to innovate;
- rolling out cleaner, cheaper and healthier forms of private and public transport;
- decarbonising the energy sector;
- ensuring buildings are more energy efficient;
- working with international partners to improve global environmental standards.

The initiative would have an overarching aim to help accelerate the implementation of clean energy and climate legislation and also consider how to promote and advance R&I in this field.

To provide a specific focus to the EU Corporate Covenant, and ensure that its objectives are clear and easily understood, it is suggested that any related messaging centres around emission reductions. As the key EU climate change targets and the main existing initiatives all orientate themselves around emissions reduction, it is therefore important to ensure that any new initiative aligns itself in a similar fashion.

As a result, the following proposed approaches on designing an EU Corporate Covenant are based on setting net-zero emissions commitments and then how to achieve them through the deployment of clean energy solutions.

Box 6. What net-zero emissions mean?

Reaching net-zero emissions for a company means achieving a state in which the activities within the value chain of a company result in no net impact on the climate from greenhouse gas emissions. Carbon removals and/or offsets should only be considered as a complementary method to achieve net-zero emissions if no other viable technical solution is possible.

4.1.1 Initiative scope

Defining the EU Corporate Covenant scope covers types of emissions, range of activities (Scopes 1 to 3), industry sectors, company sizes and location and collaboration with other initiatives.

Types of emissions:

Given that emission reduction efforts to halt global warming relate to all GHG and that all main emission reduction commitment initiatives typically require targets for reducing GHG emissions and not just CO₂ emissions, it is recommended that the EU Corporate Covenant includes all GHG emissions (as detailed in GHG

Protocol Corporate Standard (World Business Council for Sustainable Development and World Resources Institute, 2004) within its basic scope.

While a focus could be on activities relating to CO₂ emission reductions, the EU Corporate Covenant could also then consider how to collaborate with other existing initiatives (e.g. Oil & Gas Methane Partnership) to be able to support companies with their wider GHG emission reduction efforts.

Range of activities (Emission Scopes 1 to 3)

It is highly recommended that the EU Corporate Covenant engage itself to address emissions across all three scopes. Scope 1 and 2 emissions relate to the direct emissions from a company's own activities and the indirect emissions from electricity purchased and used by the company, and are therefore under the direct control of the company.

However, Scope 3 emissions occur from sources that they do not own or control, such as business travel, procurement, waste and water. As previously explained in Section 3.2.3, in many sectors, these emissions make up the majority of a company's emissions inventory. Outside of a company's direct control and generally extremely complex to even calculate accurately, Scope 3 emissions can be said to pose a key challenge towards achieving effective emissions reduction.

Industry sectors

While each industry sector has specific challenges to overcome in achieving net-zero emissions reduction, it is recommended that the overall scope of the EU Corporate Covenant covers all industry sectors, with the option to consider sector-specific elements as the initiative progresses or in collaboration with existing sector oriented initiatives.

The core objective of the EU Corporate Covenant is to engage directly with companies to encourage the deployment of clean energy solutions. Fostering improved connections between companies and policy makers, delivering supply chain solutions, facilitating knowledge sharing, promoting energy management, supporting MRV, etc. are all cross-sectoral activities and will support the foundation of a successful initiative.

Company sizes and location

To be fully able to support companies achieve net-zero emissions, a complete value chain approach is recommended for the EU Corporate Covenant. This means all company sizes would be covered by the initiative. Due to their large numbers and diverse range of activities, SMEs can be complicated to engage with in sufficient numbers to have an effective impact. To best be able to engage with these, it is therefore recommended that an emphasis be placed on engaging with supply chain groups, i.e. a large company with a selected number of suppliers, ideally SMEs. This approach will support stronger replication and upscaling of the initiative's efforts.

When considering the complete value chain, there is also the added complication that many larger companies will have a significant proportion of their supply chain outside the EU. It is therefore recommended to consider the option to include companies from outside the EU if they play an important supply role. Pursuing this option can also be done in collaboration with existing global initiatives, such as UNIDO's Industry Working Group, UNFCCC Fashion Charter and the SME Climate Hub.

4.1.2 Type of initiative

Defining the basic type of EU Corporate Covenant covers commitments, collaboration and certification and standards.

Commitments

Commitment based initiatives focusing on net-zero emissions reduction are already well established on a global level for both large companies and SMEs (e.g. SME Climate Commitment, Business Ambitions for 1.5°C, The Climate Pledge). It is therefore recommended to recognise these commitments where possible through the EU Corporate Covenant to enable companies participating in those also easily join the EU Corporate Covenant.

While it is recommended that the general criteria for engagement in the EU Corporate Covenant be based on entering into a net-zero emissions commitment, an additional level of optional clean energy commitments are recommended to help achieve the overarching net-zero commitment. These clean energy commitments would ideally be linked with implementing an energy management programme, achieving the maximum possible energy performance improvement and ensuring that companies follow the EU Taxonomy in relation to relevant clean energy capital projects. Such commitments could be set in collaboration with existing national voluntary

agreements programmes and could also support the development of new national programmes. It would also be recommended to consider a supply chain-related commitment, e.g. a large company committing to get a minimum number of suppliers committed to net-zero.

Existing net-zero emissions commitment initiatives provide options for timelines between 2030 and 2050. It would be recommended that net-zero emission commitments through the EU Corporate Covenant also provide options for similar time periods.

Recommended net-zero emission commitment criteria (requires stakeholder consultation to finalise):

- net-zero GHG emissions by 2050 the latest, with options to commit by 2030 and 2040. Large company's commitments must be across Scopes 1 to 3 and SMEs across Scopes 1 and 2.
- develop science-based targets (≥ 5 and ≤ 15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant that are based on the energy efficiency first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies:
 - SMEs: as a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions and then measuring them where possible if they make up a significant proportion of their overall emissions;
 - Large companies: targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions and if these are 40% or more of their total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based.

Targets would need to be updated every four years at a minimum – in line with the auditing requirements set by Article 8 of Directive (EU) 2012/27 ⁽⁷⁾.

- recommended joint energy performance and renewable energy commitment criteria (requires stakeholder consultation to finalise):
 - commit to achieving maximum energy performance improvement through the implementation of independently identified opportunities with five years or less payback period across all operations under the company's direct control (i.e. Scope 1 and 2);
 - commit to setting a medium (min five years) and long term (max 15 years) energy performance target that is updated every four years at minimum – in line with EED Article 8 audit requirements;
 - commit to sourcing renewable energy where possible to cover the remaining calculated energy demand after maximum energy performance improvement has been achieved;
 - commit to implementing an energy management system adapted to the size of the company within an agreed period of time of joining the initiative. Training to be completed to ensure sufficiently qualified internal personnel to manage the company's energy management activities (across all facilities and core business areas) within one year of joining the EU Corporate Covenant or proof provided of existing internal expertise;
 - optional additional commitment: commit to setting a 100% renewable energy target across all operations under the company's direct control (i.e. Scope 1 and 2), taking into account predicted maximum energy performance improvements up to the date of the set net-zero emissions target.

Targets

Detailed criteria and guidelines would be required to support the accurate development of science-based emission reduction, energy performance and renewable energy targets. It is recommended to follow a similar procedure to the SBTi, which has developed comprehensive criteria and guidelines for companies to set science-based criteria. While the SBTi focused on emission reduction targets, the overall approach can also be helpful for energy performance and renewable energy targets.

⁷ From here onwards, the Directive (EU) 2012/27 is referenced to as EED, i.e. the EU Energy Efficiency Directive.

Key points to take into account for target setting are as follows (Emission related information is taken directly from SBTi).

— *Science-based targets criteria*

When considering to require targets to be set according to a science-based approach, large companies could be required to adhere to a detailed set of criteria, such as used by the SBTi, while for SMEs a much simpler set of criteria could be applied as a minimum. Current simplified criteria for SMEs from the SBTi and the SME Climate Commitment only require an SME to set a target of reducing absolute Scope 1 and Scope 2 GHG emissions by 50% by 2030 from a base year not more than two years back in time and measuring and reducing Scope 3 emissions where relevant (SME Climate Hub, 2020; SBTi, 2020).

— *Baselines*

It is recommended that all baselines are based on the most recent year with data. This is actually the easiest approach for companies, and it is used by most relevant initiatives (e.g. US DOE Better plants programme, Irish LIEN, SBTi). The end goal is net-zero emissions by 2050. Therefore, targets are set to ultimately achieve this, not to achieve a set reduction compared to a given point in time, as is the case for the clean energy package for 2030.

In the absence of data to provide a baseline within the previous two years, it is recommended to require an audit to produce the data prior to being able to participate in the EU Corporate Covenant.

— *Target Boundaries*

- Emissions

Scope 1 and 2 emission targets should cover at least 95% of company-wide Scope 1 and 2 emissions and should be science-based.

Companies must complete a Scope 3 screening for all relevant and mandatory Scope 3 categories in order to determine their significance as per the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (Simplified guidance on this standard would need to be provided to SMEs).

If a company's relevant and mandatory Scope 3 emissions are 40% or more of total Scope 1, 2, and 3 emissions, a Scope 3 target is required for large companies and recommended for SMEs.

Scope 3 targets should cover at least two thirds of total mandatory Scope 3 emissions as defined in Table 5.4 of the GHG Protocol Scope 3 standard (World Resources Institute and World Business Council for Sustainable Development, 2011). Scope 3 targets need not be science-based but should be measurable and clearly demonstrate how a company is addressing the main sources of value chain GHG emissions in line with current best practices.

- Energy performance and renewable energy

Target should be set to cover all operations under the company's direct control (i.e. Scope 1 and 2) and be at the facility level. For energy performance targets, indicators should be based on regression analysis.

— *Offsetting and carbon removals*

Offsetting and carbon removals should be restricted to a minimum as an option for target setting except in the cases where no technological alternative currently exists. An optional criteria to set for offsetting could be based on that applied by the SBTi criteria as follows:

"The use of offsets must not be counted as emissions reduction toward the progress of companies' science-based targets. The SBTi requires companies set targets based on emission reductions through direct action within their own operations and/or their value chains. Offsets are only considered to be an option for companies wanting to finance additional emission reductions beyond their science-based targets."

Science Based Targets initiative, 2021

Collaboration

It is recommended that incentivising and supporting collaboration should be an underlying function of the EU Corporate Covenant. If commitments can be managed to a large extent by external initiatives, there is considerable scope to be able to focus primarily on supporting the achievement of these commitments in the short, medium and long term. Support is necessary in the first place to provide companies of all sizes with the knowledge and guidance to develop an action plan to be able to commit to a net-zero emissions target.

Providing a facility to enable experience and knowledge sharing between companies, experts and policy makers will then be a key step towards providing companies with the guidance, supports (financial & technical) and knowledge (capacity building) required to be able to implement the necessary measures to achieve the targets. Technical working groups ranging from high-level emission reduction strategy development to research integration into operations to sector-specific technology solutions would play a key role in supporting the collaboration efforts of the EU Corporate Covenant.

The efforts of the EU Corporate Covenant should aim to build collaboration between companies whether through working groups or supply chain projects (e.g. companies sharing the same supply chain agreeing to the same emission reduction based procurement criteria), in addition to bringing together companies with policy makers and supporting organisations such as research institutes and financial institutions. To ensure best use is made of existing supports to industry, the EU Corporate Covenant should include promoting and supporting the activities of other initiatives providing emission reduction supports to companies, whether national government (e.g. voluntary agreements, energy audit programmes) or international (e.g. Assessing low-Carbon Transition (ACT)) initiatives.

Certification and standards

As a wide range of sustainable development and energy-related certification and standards already exist, it is recommended that the EU Corporate Covenant focus, at least initially, on providing a format of recognition to companies succeeding in their emission reduction activities. Such recognition can cover, for instance, EU-wide energy awards in a similar fashion to the Clean Energy Ministerial global energy Management Leadership awards, supply chain awards (e.g. based on the proportion of supply chain committed to net-zero) and SME specific awards (emission reduction and/or energy awards).

Should a certification scheme be preferable at a later stage, it is recommended to keep this as simple as possible by linking it to above average progress on emission reduction targets and using a simple two- to three-level scale. It would also be recommended to link such a certification scheme to the SBTi to be able to develop a common procedure on how to determine above average progress on emission reductions.

It is recommended that the EU Corporate Covenant provide a platform through which companies can publicly disclose their emission inventory. Such a platform for disclosures would be important for SMEs to have a way to promote their progress on emission reduction.

4.1.3 Monitoring, reporting and verification (MRV)

Defining the MRV of the EU Corporate Covenant covers existing emission MRV processes, energy performance and renewable energy MRV guidelines and reporting disclosure.

For all types of targets, reporting should be required on an annual basis, and verification options for larger companies could be considered every four years in line with EED Article 8 audit requirements. All reporting would be publicly disclosed through the EU Corporate Covenant.

While requiring annual reporting, in particular of SMEs, might seem onerous to impose on SMEs, it is important to keep in mind that improving energy performance in a cost-effective manner relies heavily on good quality energy analytics. Any company wanting to achieve net-zero emissions, regardless of its size, will only be able to do so with a solid data-based approach, the implementation of which is essentially motivated by the target setting and annual reporting criteria.

An accurate and comprehensive energy analytics approach can be categorised into various levels of energy data collection details. Figure 2 below describes an example of energy data collection levels for a production company, but an adjusted approach can be applied to any type of company.

Figure 2. An example of the different levels of energy data collection.

Level 4	Lighting	Space heating & cooling	Compressed air	Ventilation		Production processes 1	Production processes 2	Production processes 3
	Pumping	Internal transportation	Tap hot water				Production processes 4	Production processes 5
Level 3	Lighting	Space heating & cooling	Compressed air	Ventilation			Production processes	
	Pumping	Internal transportation	Tap hot water					
Level 2				Support processes		Production processes		
Level 1					Site level			

Source: Thollander et al., 2020.

It should be noted that if companies, and indeed also MS, do not know where energy is used beyond level 1 detailed in Figure 2 above, a proactive approach towards a clean energy transition is likely to come at a much higher effort and cost. Research from the IEA shows that among industrial SMEs, no common way of categorizing data beyond level 1 exists (Thollander et al., 2020). Furthermore, even among energy-intensive industries, knowledge beyond level 2 seldom exists (Anderson, 2020). This highlights the need for a harmonized framework of energy data collection taxonomies for the different business sectors that would enable effective standardised energy data collection methodologies beyond levels 1 and 2. The development of such a framework would further support the effectiveness of the EU Corporate Covenant in helping companies achieve cost-effective net-zero emissions.

Specific reporting requirements are outlined for each target type below.

Emissions MRV

- Emissions monitoring and reporting would be required on an annual basis according to a recognised approach, e.g. GHG Protocol (World Business Council for Sustainable Development and World Resources Institute, 2004) ISO 14064-1, and the EU ETS MRV guidelines (DG Clima, 2017).
- Verification options, as used by current reporting and disclosure initiatives (e.g. CDP), could be considered for larger companies (e.g. according to ISO 14064-3) for initial inventory used for target setting and then every four years, in parallel to energy audits as per EED Article 8 audit requirements.
- The base year for setting the emissions reduction target would have to be the most recent year for which data are available. The most recent completed GHG inventory would have to be not earlier than two years prior to the year of emission targets submission.
- Emissions MRV procedures used for recognised external emission reduction initiatives (e.g. SBTi, CDP) would be also accepted.

It is also recommended that the EU Corporate Covenant provide comprehensive guidance and tools to support companies follow each of the monitoring and reporting steps, in particular guidance adapted for SMEs (e.g. US EPA Centre for Corporate Climate Leadership, Carbon Trust Carbon Footprint calculator for SMEs).

Energy performance and renewable energy MRV

- Energy performance and renewable energy monitoring and reporting would be required on an annual basis according to a recognised approach (e.g. ISO 50006).
- Baseline energy performance and renewable energy data used for target setting would have to be not earlier than two years prior to the year of emission targets submission.

- Verification options (e.g. certified audits according to EN16247 or ISO 50002) could be considered for determining the baseline used for target setting and then every four years, as per EED Article 8 audit requirements.
- Energy performance monitoring would be required on a process level (equivalent to level 3 or 4 audit, depending on company size) covering all significant energy usage and would be required to be implemented within two years of joining the initiative. Process level energy data would have to be used to develop facility-level energy performance reporting.
- Energy performance indicators would have to be based on regression analysis to the extent possible.

4.1.4 Cooperation opportunities with the Covenant of Mayors

One area, in particular, which could be explored as a cooperation model between the Corporate Covenant and the Covenant of Mayors, is in relation to the coordination of SME implementation networks as part of an overall Energy Efficiency Network (EEN) programme. Existing EEN programmes, such as the German IEEN that has a strong emphasis on SMEs, have shown how voluntary agreements and associated support structures for specific groups of interested companies can be largely decentralised, funded and managed by a variety of organisations not necessarily connected to any government body. In cases where there is a lack of an industry clean energy support structure in an MS, it is possible to consider that the EU could work directly with Covenant of Mayor cities to implement EENs on a municipality scale.

4.1.5 Organisational set-up

Defining the organisational set-up of the EU Corporate Covenant covers the EU Commission role, levels of participation, financing model and partnerships.

The role of the EU Commission would be as the lead organisation partnering as required with MS, EU and international initiatives to support the delivery of support to companies. Developing early-stage partnerships with key stakeholders and aggregators such as business associations, MS energy agencies, existing climate commitment initiatives, initiatives providing training, technical assistance programmes and working groups, research institutions, and alike, would therefore be key to the success of the initiative. This approach would be essential to get buy-in from organisations that would be able to increase the impact of the EU Corporate Covenant and also to reassure companies that the EU Corporate Covenant is not so much yet another initiative to add to an already long list but more an overarching initiative that also connects the dots between existing relevant initiatives.

However, to what extent the EU Commission would manage different elements of the initiative itself or assign them to external parties and/or MS would have to be decided upon based on the choice of option and available resources. It is therefore recommended to expand on this section after stakeholder consultations.

Companies joining the EU Corporate Covenant would be able to participate in the initiative's activities according to their level of interest and commitment. While the levels of optional participation could only be determined after the finalisation of the initiative's design, an example of possible participation levels is described below.

Levels of company participation:

Stage 1 participation: Commitment to an emission reduction target, avail of support through EU Corporate Covenant to finalise emission reduction targets (typically two-year period maximum) and develop an action plan, partake in knowledge sharing facility, disclose annual emissions.

Stage 2 participation: Stage 1 plus commit to clean energy targets, receive support through national energy management-related programmes and be eligible for energy awards.

Stage 3 participation: Stage 2 plus engagement in technical working groups, tailored supply chain projects and be eligible for exemplar emission reduction progress certification.

5 Options for EU Corporate Covenant approach – Transforming commitments into action

5.1 Core assumptions applied to the Corporate Covenant options

Taking into account the opportunities for an EU Corporate Covenant outlined in Section 3.3 and using the core initiative elements identified in Section 4.1, four options for a targeted approach by an EU Corporate Covenant are proposed below. For each option, the following key basic assumptions apply.

- The core mission of the initiative is to support companies implement the best practice clean energy solutions (technology and operational) needed to achieve net-zero emissions targets through a business case approach.
- Being part of the EU Climate Pact, the initiative is designed with simplicity in mind, meaning minimal administration requirements for both the initiative lead and participating companies.
- Initial deployment of the initiative is through a pilot phase that enables companies and other stakeholders to play a key role in finalising the priority supports and services to be provided through the initiative.
- The initiative strives to collaborate insofar as possible with existing international and national initiatives to avoid duplication of efforts and reduce multiple-initiative fatigue for companies, help improve the range of existing support for companies and support national efforts.
- The initiative maintains a dynamic and up-to-date database of best practice sector-specific emission reduction and clean energy-related information (guidance, case studies and tools) and supports (training, financial assistance, networks and technical assistance).
- A continuous improvement strategy underlines all of the initiative's activities, meaning participants' feedback will be essential to adapt and improve the initiative over time.
- In addition to being part of the EU Climate Pact, another core driver for companies to participate in the initiative is to be most competitively placed, with access to the most effective and proven solutions, to deal with current and future emissions reduction policies and consumer sustainability demands.
- The activities of the initiative will take into account the EU Taxonomy to ensure that any related investment in clean energy solutions initiated by the work of the initiative will be in line with the taxonomy.
- Where possible, collaboration opportunities with the Covenant of Mayors (CoM) will be explored in relation to supporting outreach campaigns, facilitating/supporting EENs and delivering certain types of supports to companies, in particular SMEs. Direct collaboration with the CoM would be expected to take the form of facilitating engagement with interested cities, which would then be the cooperating partners for specific activities. To determine the extent to which collaboration and cooperation opportunities might exist, the CoM will be consulted throughout the development of the EU Corporate Covenant to ensure opportunities are identified in a timely fashion.

5.2 Recommended Corporate Covenant preparatory phases

To support the set-up and operation of each of the different options proposed for the EU Corporate Covenant, a number of preparatory activities are recommended as follows.

- Developing early-stage partnerships with key stakeholders and aggregators such as cities, business associations, MS energy agencies, existing climate commitment initiatives, initiatives providing training, technical assistance programmes and working groups, research institutions, and alike. This approach aims to get buy-in from organisations that would be able to increase the impact of the EU Corporate Covenant and also to reassure companies that the EU Corporate Covenant is not so much yet another initiative to add to an already long list but more an overarching initiative that also connects the dots between existing relevant initiatives.
- Carry out a mapping of existing EU and MS energy efficiency and renewable energy supports, such as technical guidance, training, technical assistance and financing solutions. As these would be intended as a practical support for companies, mapping of policies, while important, would be less the focus.

- Development of the basic support structure for companies wanting to take part in the EU Corporate Covenant. This support structure would be adapted to SMEs and large companies and include:
 - detailed participation criteria with associated guidance documents and tutorials;
 - criteria for setting science-based targets for SMEs and large companies and related guidance;
 - guidance on carrying out an emissions inventory (including Scope 3 screening) and associated calculators with default sectoral data for SMEs;
 - guidance on measuring energy performance baselines and associated calculators with for SMEs;
 - guidance on developing implementation action plans and associated templates for SMEs;
 - an overview of existing EE and RE supports (e.g. technical guidance, training, technical assistance and financing solutions) available on an EU and MS level.

Note: It is recommended, where possible, to collaborate with other initiatives whenever related criteria and guidance already exist.
- Development of a comprehensive promotional campaign on MS and EU levels in collaboration with the initiative's partners. Targeted outreach to companies through trusted intermediaries would be crucial to getting companies interested in the initiative.

5.3 The Corporate Covenant options

The four options described in the following sections outline different approaches to incentivising companies to make net-zero emission commitments and in turn supporting them to implement the best practice clean energy solutions to achieve their short-, medium- and long-term targets.

The options proposed are based on varying levels of effort and scope, were developed on the basis of the comparative analysis. While each option can be treated as a standalone approach, they have also been designed so that elements of each option could be combined into a hybrid option. In particular, Option 1 is proposed in a way that could work as an initial starting phase for the EU Corporate Covenant, with Options 2 and 3 offering different approaches for a comprehensive action implementation support structure that could be envisaged for a follow up phase as the initiative becomes established. Option 4 then outlines a supply engagement oriented approach that could be considered as an additional element to any of the other options.

Option 1: Supporting companies through coordinated advisory services

Supporting companies to develop accurate clean energy action plans for setting and delivering on their net-zero emission targets through an MS and EU level clean energy advisory service.

Option 2: Supporting companies through MS Voluntary Agreement Programmes

Focusing on accelerating energy performance and renewable energy commitments as a way to achieve net-zero emission targets and enabling MS to develop best practices voluntary agreements to support companies on the ground.

Option 3. Supporting companies through an EU Voluntary Agreement Programme

Focusing on accelerating energy performance and renewable energy commitments as a way to achieve net-zero emission targets and providing support to companies directly through an EU-wide voluntary agreement programme.

Option 4. Supporting companies through supply chain engagement

Primarily focusing on accelerating zero emission commitments and associated actions across the complete supply chain, with some level of EU-wide training and support.

5.3.1 Option 1: Supporting companies through coordinated advisory services

Summary

Support companies to develop accurate clean energy action plans for setting and delivering on their net-zero emission targets through an MS and EU level clean energy advisory service. Key elements include:

- developing a comprehensive network of partner organisations engaged in clean energy activities on an MS, EU and international level;
- providing an online clean energy advisory service, enhanced by optional in-person advisory services offered by partner organisations;
- collaborating with existing EEN programmes to trial large company-led networks for their supply chain SMEs;
- using the lessons learned from an initial operation phase to expand the initiative either based on this option's activities and/or those outlined in the subsequent options.

Description

This option for an EU Corporate Covenant would focus on supporting companies of all sizes during the early stages of setting accurate and ambitious emissions reduction targets on the basis of comprehensive clean energy action plans. This option can also be considered as a potential precursor to the other subsequent options 2 to 4. It is being proposed as a relatively simple approach, with minimal development of new support structures and focusing on the early stages of support to companies that join the EU Corporate Covenant. These would include:

- awareness building on the importance of a solid energy analytics process;
- guidance on developing comprehensive medium to long term clean energy action plans;
- guidance on developing an accurate monitoring and reporting process;
- improving access to existing implementation supports offered by MS, EU and international organisations (e.g. financing, working groups, training, technical assistance, etc.).

The main structure that this option would use to provide these supports to companies would be in the form of a clean energy advisory service. This advisory service would be centred around an online platform, with optional in-person advisory services depending on collaborations with relevant partner organisations. The online platform would provide companies with a tailored method for developing a clean energy action plan and a structured MRV process adapted to their specific operations, and provide direct links to the existing supports (e.g. financing, working groups, training, etc.) available to them.

Developing partnerships with organisations (MS, EU and international) that have existing clean energy initiatives (e.g. commitments, financing, working groups, training, etc.) would therefore be a crucial building block for this option both before and ongoing after the launch of the initiative. These partnerships would benefit from the association with the EU as well as the opportunity to have added impact through collaborative efforts. The benefit to the EU Corporate Covenant would be to have access to important outreach channels as well as to be able to offer participating companies a wider range of supports and advisory services.

While the clean energy advisory service will provide companies with external support, this option would also consider how to improve engagement, and subsequent collaborative efforts, between companies. Again, avoiding the need for considerable investment into the EU Corporate Covenant support structure, this option would aim to collaborate with existing clean energy-related industry technical working groups. This approach would help support active engagement between the EU Corporate Covenant participants, in particular amongst large companies, based on the types of technical working groups currently active.

In addition to collaborating with existing technical working groups, this option would seek to also collaborate with existing EENs. The purpose of such a collaboration would be to trial EENs led by large companies and made up of a group of SMEs from the large company's supply chain. The outcome of such a trial would be used to determine the viability of market-driven EENs to help address the complexity of decarbonising supply chains.

A key aspect of this option would be to review the success factors and lessons learned after an initial operational phase. This review would be used to expand and/or improve this option's activities as well as potentially support the development of the activities detailed in options 2 to 4.

Companies would receive recognition through public disclosure of progress on net-zero emissions targets, with exemplar progress and/or above-average commitments (e.g. SMEs committing to Scope 3 net-zero emissions) receiving special recognition (e.g. badging system) and appropriate facetime in EU events, social media, etc.

The EU Corporate Covenant could collaborate with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but associated with companies participating in the EU Corporate Covenant.

Initiative Scope

- emission reduction commitments
- energy performance commitments
- renewable energy commitments
- scopes 1 to 2 and Scopes 1 to 3 emissions
- cross-sectoral
- large companies and SMEs.

Participants

This EU Corporate Covenant option would orientate itself towards individual companies of any size, where a company can be considered:

- consisting of a single facility
- a corporate group and all of its facilities under direct control (not including subsidiaries).

Commitments

(see section 4.1.2 for further details on commitments and targets criteria)

All participating companies would have to commit to:

- net-zero GHG emissions by 2050 the latest, with options to commit by 2030 and 2040. Large companies commitments must be across Scopes 1 to 3 and SMEs across Scopes 1 and 2;
- develop science-based targets (≥ 5 and ≤ 15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant based on the energy efficiency first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies:
 - SMEs: As a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions and then measuring them where possible if material to their overall emissions;
 - Large companies: Targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions, and if these are 40% or more of their total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based.
- commitment to achieving **maximum energy performance improvement** through the implementation of independently identified opportunities with five years or less payback period as a key method to achieve net-zero emissions;
- commitment to **implement an energy management system** adapted to the size of the company within two years of joining the EU Corporate Covenant;
- commitment to source **renewable energy to cover the remaining energy demand** after maximum energy performance improvement has been achieved;
- optional commitment: commit to setting a 100% renewable energy target across all operations under the company's direct control (i.e. Scopes 1 and 2), taking into account predicted maximum energy performance improvements up to the date of the set net-zero emissions target.

Monitoring, reporting and verification (MRV)

(see section 4.1.3 for more details)

— Emissions:

- emissions monitoring and reporting would be required on an annual basis;
- verification options could be considered for larger companies in relation to the initial inventory used for target setting and then every four years in parallel to energy audits – as per EED Article 8 audit requirements.

— Energy performance and renewable energy:

- energy performance and renewable energy monitoring and reporting would be required on an annual basis;
- verification options could be considered for larger companies to determine the baseline used for target setting and then every four years – as per EED Article 8 audit requirements;
- energy performance monitoring would be required on a process level. Process level energy data would have to be used to develop facility-level energy performance reporting;
- energy performance indicators would have to be based on regression analysis to the extent possible.

Public disclosure of emissions, energy performance and renewable energy would be required on an annual basis through the EU Corporate Covenant.

How it would work

1. Encouraging companies to join the EU Corporate Covenant

As a commitment to net-zero emissions is the key driver to incentivise companies to commit to energy performance and renewable energy commitments, it is recommended that the EU Corporate Covenant collaborate with a range of relevant partners to engage in an extensive campaign to draw attention to the business case for companies in committing to net-zero emissions. A key communication message would be that when a company commits to net-zero emission, the setting of subsequent energy performance and renewable energy targets is essentially a practical step towards getting support through the EU Corporate Covenant.

2. Delivery of support to participating companies

Delivery of the EU Corporate Covenant advisory support service would be through an EU online platform offering MS level guidance, with optional in-person advisory services provided by partner organisations at the MS, EU or international level. The collaborative technical working groups would be delivered by partner organisations on an MS, EU or international level. The collaboration with existing EEN would be delivered on an MS level.

3. Monitoring, reporting and verification

All companies will be required to monitor data and report progress based on the EU Corporate Covenant's criteria (see section 4.1.3). All participating companies will have their annual progress towards their targets publicly disclosed through the EU Corporate Covenant. Submission of verified reporting data can be through recognised national programmes (e.g. voluntary agreement programme) or directly to the EU Corporate Covenant.

4. Recognition for participating companies

Companies would receive recognition through public disclosure of progress on targets, with exemplar progress receiving special recognition (e.g. badging system or similar). Companies would also receive recognition for above-average commitments, such as net-zero by 2040 or 2030 and SMEs committing to Scope 3 net-zero emissions.

5. Continuous improvement and connection to related programmes

The EU Corporate Covenant would use country- and EU-level workshops and surveys, as well as feedback from technical working groups, as key sources of information to ensure that the EU Corporate Covenant takes a continuous improvement approach in its engagement with companies. The success factors and lessons learned would be reviewed after an initial operational phase and used to expand and/or improve this option's activities as well as potentially support the development of the activities detailed in options 2 to 4.

6. International collaboration

The EU Corporate Covenant could collaborate insofar as possible with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but associated with companies participating in the EU Corporate Covenant.

Key activities/outputs

- An EU led **clean energy advisory service** based on a core online platform, with optional in-person advisory services depending on collaborations with relevant partner organisations. The online platform would provide companies with a tailored method for developing a clean energy action plan and a structured MRV process adapted to their specific operations, and provide direct links to the existing supports (e.g. financing, working groups, training, etc.) available to them. The in-person advisory services will be independently provided by partner organisations but coordinated by the EU and delivered according to an agreed charter.
- Developing a comprehensive **network of partner organisations** engaged in clean energy activities on an MS, EU and international level. While important to have in place before the launch of the EU Corporate Covenant, this would be an ongoing activity to ensure the widest network of partners. This network of partners will be crucial to providing optional in-person advisory services, improving the range of supports available to companies and supporting a continuous outreach campaign.
- **Large company led EENs** in collaboration with partner MS organisations operating existing EEN programmes. This work will be primarily led by the collaborating MS organisations with EU oversight on progress and outcomes. The purpose of this activity would be to trial EENs led by large companies and made up of a group of SMEs from the large company's supply chain. The outcome of such a trial would be used to determine the viability of market-driven EENs to help address the complexity of decarbonising supply chains.
- Clean energy **technical working groups** in collaboration with partner organisations already engaged in such activities. This activity would support active engagement between the EU Corporate Covenant participants, in particular amongst large companies.
- Annual national and EU level **workshops** to inform participating companies of initiative updates and receive feedback.
- An online **community space** for experience and knowledge sharing and access to expert advice on key cross-sectoral and sector specific topics.
- An emissions and clean energy on-track **progress recognition scheme**.

5.3.2 Option 2: Supporting companies through MS Voluntary Agreement Programmes (VAPs)

Summary

Support companies achieve their net-zero emission targets through energy performance and renewable energy measures and enable MS to develop best practice voluntary agreements. Key elements include:

- using a core net-zero emission commitment to deliver self-driven engagement by companies in clean energy solutions;
- ensuring companies improve their energy performance in parallel to switching to renewable energy;
- providing EU-wide coordination on capacity building and knowledge sharing;
- supporting MS develop best practice voluntary agreement programmes to be able to provide technical assistance adapted to local conditions and improve implementation of legislation;
- providing an approach that can be adapted to any company size.

Description

This option for an EU Corporate Covenant would focus on developing a coordinated EU and MS effort to incentivise maximising energy performance improvements and then meeting the remaining energy demand through renewable energy, insofar as technically possible, as the approach to deliver on net-zero emission commitments. All company sizes would be considered under this initiative. Commitments would be made

directly with EU Corporate Covenant for net-zero emissions, energy performance and renewable energy, with the relevant targets set over the short, medium and long-term. Delivery of the initiative would be through combined EU and MS-level support structure.

Energy performance and renewable energy targets would be required to be aligned such that the maximum energy performance is achieved, with only the minimum remaining energy demand covered by renewable energy ⁽⁸⁾. That is to avoid companies focusing primarily on renewable energy sources without maximising energy performance to meet their net-zero emission targets.

This initiative would directly support participating companies at the country and EU level:

- training on energy management systems, MRV, best practice clean energy solutions for core processes and behaviour change (e.g. supporting the integration energy performance into business decision making);
- knowledge sharing through technical working groups (topical and sectoral), workshops, community spaces and an intelligent knowledge database (assessment of needs to provide tailored information and tools);
- implementation support (technical assistance) through existing and new national voluntary agreement programmes and collaboration with international technical assistance programmes (for companies outside the EU but part of an EU based group);
- benchmarking between companies within the same corporate group (process-level KPIs) as well as within the same sector (facility-level KPIs).

The EU Corporate Covenant would work with MS to improve and/or develop tailored national voluntary agreement programmes ⁽⁹⁾ led by industry associations and/or governments, that could then be the primary structure through which to support companies locally. It should be noted that new MS-level voluntary agreement programmes does not necessarily require large funding support to be put in place. For example, some existing EEN programmes, like the German IEEN, require little government funding to function, as companies contribute financially, and the individual networks are typically managed by non-governmental organisations. There is even a case to be made that individual networks within an overall EEN programme could be led and managed by Energy Service Companies (ESCOs), large companies with supply chains, and also cities/municipalities. For the latter EEN management option, there are good opportunities to develop cooperation with interested cities through the Covenant of Mayors.

Existing and new national voluntary agreement programmes would then be in the position to support companies achieve targets set with the EU Corporate Covenant as well as support companies not yet ready to engage in net-zero emission targets but willing to progress towards them in the future. As EENs generally form a key element of voluntary agreement programmes, the establishment of implementation-based EENs (e.g. the German IEEN) would be promoted for SMEs, while information-based EENs (e.g. Irish LIEN) would be promoted for larger companies.

All of the EU Corporate Covenant activities would endeavour to incentivise clean energy innovation by gathering lessons learned and company feedback to support collaboration with R&I programmes.

Companies would receive recognition through public disclosure of progress on net-zero emissions targets, with exemplar progress and/or above-average commitments (e.g. SMEs committing to Scope 3 net-zero emissions) receiving special recognition (e.g. badging system) and appropriate facetime in EU events, social media, etc. Companies would also be eligible to take part in an annual EU-wide annual energy awards programme promoting exemplar and innovative projects.

The EU Corporate Covenant could collaborate insofar as possible with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but part of an EU-based group.

⁽⁸⁾ In the case of some industries, such as cement and steel production, the reduction of emissions cannot be entirely achieved through energy performance improvements and renewable energy. Therefore, these specific targets may not cover all actions required to achieve net-zero emissions.

⁽⁹⁾ The EU LTA UPTAKE project can be used as a simple example for how MS can be supported to develop voluntary agreement programmes tailored to local condition but building on best practice experience. More information available at <https://ec.europa.eu/energy/intelligent/projects/en/projects/eu-lta-uptake>.

Initiative Scope

- emission reduction commitments
- energy performance commitments
- renewable energy commitments
- Scopes 1 to 2 and Scopes 1 to 3 emissions
- cross-sectoral
- Large companies and SMEs .

Participants

This EU Corporate Covenant option would orientate itself towards individual companies, where a company can be considered:

- consisting of a single facility
- a corporate group and all of its facilities under direct control (not including subsidiaries).

Commitments

(see section 4.1.2 for further details on commitments and targets criteria)

All participating companies would have to commit to:

- net-zero GHG emissions by 2050 the latest, with options to commit by 2030 and 2040. Large companies commitments must be across Scopes 1 to 3 and SMEs across Scopes 1 and 2;
- develop science-based targets (≥ 5 and ≤ 15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant based on an energy efficiency-first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies:
 - SMEs: as a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions and then measuring them where possible if material to their overall emissions;
 - Large companies: targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions, and if these are 40% or more of their total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based.
- achieving **maximum energy performance improvement** through the implementation of independently identified opportunities with five years or less payback period as a key method to achieve net-zero emissions.;
- **implementing an energy management system** adapted to the size of the company within two years of joining the EU Corporate Covenant;
- sourcing **renewable energy to cover the remaining energy demand** where possible after maximum energy performance improvement has been achieved;
- optional commitment: commit to setting a 100% renewable energy target across all operations under the company's direct control (i.e. Scope 1 and 2), taking into account predicted maximum energy performance improvements up to the date of the set net-zero emissions target.

Monitoring, reporting and verification (MRV)

(see section 4.1.3 for more details)

Emissions:

- emissions monitoring and reporting would be required on an annual basis;
- verification options could be considered for larger companies in relation to the initial inventory used for target setting and then every four years in parallel to energy audits – as per EED Article 8 audit requirements.

Energy performance and renewable energy:

- energy performance and renewable energy monitoring and reporting would be required on an annual basis;
- verification options could be considered for larger companies to determine the baseline used for target setting and then every four years– as per EED Article 8 audit requirements;
- energy performance monitoring would be required on a process level. Process level energy data would have to be used to develop facility-level energy performance reporting;
- energy performance indicators would have to be based on regression analysis to the extent possible.

Public disclosure of emissions, energy performance and renewable energy would be required on an annual basis through the EU Corporate Covenant.

How it would work

1. Encouraging companies to join the EU Corporate Covenant

As a commitment to net-zero emissions is the key driver to incentivise companies to commit to energy performance and renewable energy commitments, it is recommended that the EU Corporate Covenant engage in an extensive consumer-oriented campaign to draw attention to the need for companies to commit to net-zero emissions. Such a campaign would be designed to encourage consumer-facing companies to make the first step of publicly committing to a net-zero target. These companies would then in turn play an important role in incentivising their supply chain companies also commit to a net-zero emission target.

With a net-zero target set by companies, the energy performance and renewable energy targets are essentially a practical step towards getting support through the EU Corporate Covenant.

2. Delivery of support to participating companies

Delivery of the EU Corporate Covenant supports would be on a country-level but based on a uniform EU-wide approach on technical assistance, training, MRV, and knowledge sharing. Where possible, delivery of supports would be through existing MS structures, for example:

- voluntary agreement programmes for MRV, technical working groups, technical assistance;
- energy efficiency networks (Implementation or information) for technical assistance and MRV;
- SME energy audit programmes for technical assistance and MRV;
- training institutes for certified training programmes;
- business associations to manage technical working groups.

Where there are no, or a lack of, suitable MS structures in place, the EU Corporate Covenant would work with the government, training institutes and business associations to put in place structures to support country-level training, technical assistance and knowledge sharing programmes based on the EU Corporate Covenant approach.

The EU Corporate Covenant would directly provide on-line training programmes in all languages, EU level technical working groups that focus on bringing together national-level working group outputs, an EU level online community space, an EU level benchmarking programme and an EU-level knowledge database.

3. Monitoring, reporting and verification

All companies will be required to monitor data and report progress based on the EU Corporate Covenant's criteria (See section 4.1.3). All participating companies will have their annual progress towards their targets publicly disclosed through the EU Corporate Covenant. Submission of verified reporting data can be through recognised national programmes (e.g. voluntary agreement programme) or directly to the EU Corporate Covenant.

4. Recognition for participating companies

Companies would receive recognition through public disclosure of progress on net-zero emissions targets, with exemplar progress and/or above-average commitments (e.g. SMEs committing to Scope 3 net-zero emissions) receiving special recognition (e.g. badging system) and appropriate facetime in EU events, social media, etc. Companies would also be eligible to take part in an annual EU-wide annual energy awards programme promoting exemplar and innovative projects.

5. Continuous improvement and connection to related programmes

The EU Corporate Covenant would use country- and EU-level workshops and surveys, as well as feedback from technical working groups, as key sources of information to ensure that the EU Corporate Covenant takes a continuous improvement approach in its engagement with companies. Lessons learned, experience from companies implementing best practice clean energy solutions and collaboration with R&I programmes would be used to ensure the initiative provides top most up to date and adapted support to companies to achieve their short- to long-term targets.

6. International collaboration

The EU Corporate Covenant could collaborate insofar as possible with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but associated with companies participating in the EU Corporate Covenant.

Key activities/outputs

- A uniform EU-wide **training programme** on target setting, emission inventory and reporting, energy performance MRV, energy management systems, clean energy technology solutions, energy management systems and behaviour change (e.g. supporting the integration energy performance into business decision making processes). This training programme would be provided as an online option through the EU Corporate Covenant, and, where possible, as an in-person option through country-level training institutions. Where possible, this training programme will align/collaborate with existing training and certification programmes.
- **Technical working groups** focused on key cross-sectoral topics (e.g. behaviour change, MRV) and sectoral topics (e.g. process-specific energy performance) that will focus on working with companies to learn how best to support them through specific clean energy solutions and thereby also provide a foundation for future innovation. These technical working groups would be delivered on a national and EU level.
- Supporting the development of new **national voluntary agreement programmes** within MS without existing programmes. As networks generally form a key element of voluntary agreement programmes, the establishment of implementation-based networks (e.g. German IEEN) would be promoted for SMEs, while information-based networks (e.g. Irish LIEN) would be promoted for larger companies. A key approach to supporting the development of implementation-based EENs would be to ensure they are provided as an energy service, thus developing a market-driven support structure (Paramonova et al., 2015; Rohde et al., 2020).
- Provision of **technical assistance** (e.g. subsidised audits, external experts to accompany Energy Management System (EnMS) implementation) through existing and new national voluntary agreement programmes and collaboration with international technical assistance programmes (for companies outside the EU but part of an EU based group).
- A dynamic **knowledge database** for relevant clean energy information (guidance, case studies and tools) and supports (training, financial assistance, networks and technical assistance). A self-assessment tool would provide a tailored list of the database's most appropriate information and supports based on a company's activity, size and location. The development of this database would bring together existing information and support services as well as identify where new information and support services need to be developed.
- **Development of the required resources** (guidance, case studies, tools and training) for the database in the cases where existing resources are not provided through existing international or national initiatives, e.g. an EnMS toolkit for SMEs.
- Annual national and EU level **workshops** to inform participating companies of initiative updates and receive feedback.
- An online **community space** for experience and knowledge sharing and access to expert advice on key cross-sectoral and sector-specific topics.
- An exemplar EU-wide energy performance improvement **awards programme**.
- An emissions and clean energy on-track **progress recognition scheme**.

5.3.3 Option 3: Supporting companies through an EU Voluntary Agreement Programme

Summary

Support companies achieve their net-zero emission targets through a dedicated EU-wide voluntary agreement programme adapted to the main levels of energy use. Key elements include:

- delivering implementation-based EENs that are provided as an energy service for SMEs and information-based EENs for large companies;
- ensuring companies reduce their energy demand to a minimum in parallel to switching to renewable energy;
- providing EU-wide coordination on capacity building and knowledge sharing.

Description

In a similar fashion to option 2, this EU Corporate Covenant option would incentivise a tailored mix of energy performance improvements and uptake of renewable energy as the approach to deliver on net-zero emission commitments. However, where option 2 had the dual purpose of supporting companies achieve their EU Corporate Covenant targets and MS develop/improve **national** voluntary agreement programmes, this EU Corporate Covenant option would focus on developing a single **EU-wide** voluntary agreement programme. This EU voluntary agreement programme would consider all company sizes down to SMEs with semi-high energy use. It would directly manage support to companies on all levels, from commitments to training to technical assistance.

This EU voluntary agreement programme would require net-zero emission, energy performance and renewable energy commitments. The setting of relevant targets would be as for option 2.

In order to best support companies based on their particular energy use, this EU voluntary agreement programme would be designed as an umbrella programme covering distinct target groups through 4 sub-programmes. Covering SMEs and large companies, the latter would be differentiated by their energy demand levels, e.g. service-oriented activities in comparison to steel production:

1. SMEs (with a particular emphasis on those in supply chains)
2. Large company decarbonisation (medium to low energy demand)
3. Large company decarbonisation+ (high energy demand)
4. Large company decarbonisation extreme (very high energy demand).

While a single design would be used for the EU voluntary agreement programme and overall administration managed on an EU level (e.g. DG Energy), the operation of the programme could be assigned to a national entity, such as the MS energy agency. This division of responsibility between overall administration and on-the-ground would be possible for target groups 1 to 3. However, for very high energy demand companies, programme operation would always be on an EU level.

This EU voluntary agreement programme would directly support participating companies through:

- training (as per option 2);
- knowledge sharing (as per option 2);
- technical assistance for SMEs would be through the form of implementation-based EENs and for large companies through information-based EENs. Collaboration would be developed with international technical assistance programmes to support companies outside the EU but part of an EU based group;
- benchmarking (as per option 2);

Amongst possible financing support options would be the active promotion of existing financial incentives (e.g. SME audit subsidies, tax allowances) available in MS to participants.

All of the EU voluntary agreement programme activities would endeavour to incentivise clean energy innovation by gathering lessons learned and company feedback to support collaboration with R&I programmes.

Companies would receive recognition through public disclosure of progress on net-zero emissions targets, with exemplar progress and/or above-average commitments (e.g. SMEs committing to Scope 3 net-zero emissions) receiving special recognition (e.g. badging system) and appropriate facetime in EU events, social media, etc.

Companies would also be eligible to take part in an annual EU-wide annual energy awards programme promoting exemplar and innovative projects.

The EU Corporate Covenant could collaborate insofar as possible with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but part of an EU based group.

Participants

The participants for the EU voluntary agreement programme are differentiated by the sub-programme type:

1. SME decarbonisation EEN
 - SMEs can participate on an individual basis or as part of an SME group (for example min 5 SMEs from the same supply chain and in collaboration with a large company as a key supply chain procurer)
2. Large company decarbonisation EEN
 - Large companies with medium to low energy demands
3. Large company decarbonisation+ EEN
 - Large companies with high energy demands
4. Large company decarbonisation extreme EEN
 - Large companies with very high energy demands.

Commitments

(see section 4.1.2 for further details on commitments and targets criteria)

All participating companies would have to commit to:

- net-zero GHG emissions by 2050 the latest, with options to commit by 2030 and 2040. Large companies commitments must be across Scopes 1 to 3 and SMEs across Scopes 1 and 2;
- develop science-based targets (≥ 5 and ≤ 15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant based on an energy efficiency-first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies:
 - SMEs: as a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions and then measuring them where possible if material to their overall emissions;
 - Large companies: targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions, and if they are 40% or more of total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based;
- achieving **maximum energy performance improvement** through the implementation of independently identified opportunities with five years or less payback period as a key method to achieve net-zero emissions;
- sourcing **renewable energy to cover the remaining energy demand**, where possible, after maximum energy performance improvement has been achieved;
- **implementing an energy management system** adapted to the size of the company within two years of joining the EU Corporate Covenant;
- optional commitment: commit to setting a 100% renewable energy target across all operations under the company's direct control (i.e. Scope 1 and 2), taking into account predicted maximum energy performance improvements up to the date of the set net-zero emissions target.

Specific sub-programme commitments are as follows:

— large company decarbonisation and decarbonisation+

- in-house procurement routines should be deployed which comply with Life Cycle Cost (LCC) calculations aiming for the least carbon-emitting tested technology and process when undertaking new investments;

— large company decarbonisation extreme

- in-house procurement routines should be deployed which comply with LCC calculations aiming for the least carbon-emitting technology and process when undertaking new investments;
- engage to keep carbon dioxide removal to a minimum by pursuing the best available technology solutions to reduce CO₂ emissions where energy performance and renewable energy solutions are not technically viable.

Optional commitment for large companies:

— engage in organising EEN network meetings for their participating supply chain SMEs, procure required experts to manage the meetings, and provide guidance to the participating SMEs.

Monitoring, reporting and verification (MRV)

(see section 4.1.3 for more details)

Emissions:

- emissions monitoring and reporting would be required on an annual basis;
- verification could be considered for larger companies for target setting and then every four years in parallel to energy audits – as per EED Article 8 audit requirements.

Energy performance and renewable energy:

- energy performance and renewable energy monitoring and reporting would be required on an annual basis;
- verification could be considered for larger companies to determine the baseline used for target setting and then every four years – as per EED Article 8 audit requirements;
- energy performance monitoring would be required on a process level. Process level energy data would have to be used to develop facility-level energy performance reporting;
- energy performance indicators would have to be based on regression analysis to the extent possible.

Public disclosure of emissions, energy performance and renewable energy would be required on an annual basis through the EU Corporate Covenant.

How it would work

1. Encouraging companies to join the EU voluntary agreement programme

As for option 2.

2. Delivery of support to participating companies

Delivery of the EU voluntary agreement programme would be on an EU level (e.g. through DG ENER) with possible operational collaboration with MS entities (e.g. MS energy agency). The primary focus of the voluntary agreement programme would be to provide implementation- (for SMEs) and information- (for large companies) based EENs within each member state.

The structure of the EENS would be to facilitate technical working groups, experience sharing, and in the case of implementation-based EENS, technical assistance for audits and energy management system implementation.

The umbrella EU voluntary agreement programme would facilitate training (online and through training institutes), knowledge management and sharing, EU-level technical working groups that focus on bringing together EEN working group outputs, an online community space and an EU-wide benchmarking programme.

3. Monitoring, reporting and verification

As for option 2.

4. Recognition for participating companies

As for option 2.

5. Continuous improvement and connection to related programmes

As for option 2.

6. International collaboration

As for option 2.

Key activities/outputs

- An **EU voluntary agreement programme** with four sub-programmes for different company sizes based on their energy demand levels. Based on EENs deployed in each MS and operated on-the-ground by either DG ENER or the MS energy agency. The EENs would be implementation-based networks (e.g. German IEEN) for SMEs and information-based networks (e.g. Irish LIEN) for larger companies. A key approach to supporting the development of implementation-based EENs would be to ensure they are provided as an energy service, thus developing a market-driven support structure (Paramonova et al., 2015; Rohde et al. 2020).
- A uniform EU-wide **training programme** on target setting, emission inventory and reporting, energy performance MRV, energy management systems, clean energy technology solutions, energy management systems and behaviour change (e.g. supporting the integration energy performance into business decision making processes). This training programme would be provided as an online option through the EU voluntary agreement programme, and, where possible, as an in-person option through country-level training institutions. Where possible, this training programme will align/collaborate with existing training and certification programmes.
- **Technical working groups** focused on key cross-sectoral topics (e.g. behaviour change, MRV) and sectoral topics (e.g. process-specific energy performance) that will focus on working with companies to learn how best to support them through specific clean energy solutions and thereby also provide a foundation for future innovation. These technical working groups would be delivered on a national and EU level.
- Provision of **technical assistance** (e.g. subsidised audits, external experts to accompany EnMS implementation) through implementation-based EENs and collaboration with international technical assistance programmes (for companies outside the EU but part of an EU based group).
- A dynamic **knowledge database** for relevant clean energy information (guidance, case studies and tools) and supports (training, financial assistance, networks and technical assistance). A self-assessment tool would provide a tailored list of the database's most appropriate information and supports based on a company's activity, size and location. The development of this database would bring together existing information and support services as well as identify where new information and support services need to be developed.
- **Development of the required resources** (guidance, case studies, tools and training) for the database in the cases where existing resources are not provided through existing international or national initiatives, e.g. an EnMS toolkit for SMEs.
- Annual national and EU level **workshops** to inform participating companies of initiative updates and receive feedback.
- An online **community space** for experience and knowledge sharing and access to expert advice on key cross-sectoral and sector-specific topics.
- An exemplar EU-wide energy performance improvement **awards programme**.
- An emissions and clean energy on-track **progress recognition scheme**.

5.3.4 Option 4: Supporting companies through supply chain engagement

Summary

Incentivise exponential uptake of net-zero commitments across the complete value chain and support the implementation of clean energy solutions to achieve the specific targets set. Key elements include:

- working with large companies sharing the same supply chain to develop uniform sustainability procurement criteria;
- providing large companies with the guidance and tools with which to support their supply chain companies comply with sustainability procurement criteria and commit to net-zero emissions;
- providing EU-wide coordination on capacity building and knowledge sharing to support companies of all sizes implement clean energy solutions to achieve their net-zero emissions.

Description

This EU Corporate Covenant option would specifically focus on incentivising commitments to net-zero emissions across complete supply chains. The primary approach of this EU Corporate Covenant would be to support engagement between large companies sharing the same supply chains, as well as between these companies and the different tiers of their supply chains. All company sizes would be considered under this initiative. Commitments would be made directly with EU Corporate Covenant for net-zero emissions, with the relevant targets set over the short-, medium- and long-term. Delivery of the initiative would be through a combined EU and MS-level support structure.

A particular emphasis of this initiative is to achieve increased uptake of net-zero emission commitments by focusing on efforts that lead to upscaling impacts. As a result, this initiative would aim to engage with three different company supply chain-related target audience groups through a combined top-down and bottom-up approach. These target audience groups are:

1. groups of large companies sharing the same supply chain

Objective: support the development of sustainable procurement criteria that would incentivise suppliers to commit to net-zero emissions as a way to achieve competitive advantages (CDP, 2019¹⁰);

2. an individual large company with a group of SMEs from its supply chain

Objective: enable supply chain SMEs to set net-zero emission targets and develop clean energy action plans with support from large procuring companies;

3. a group of SMEs, with an emphasis on those in supply chains

Objective: through targeted training and knowledge sharing activities and providing access to existing technical assistance and financial incentives enable SMEs to set net-zero emission targets and develop clean energy action plans that will help them improve their competitiveness, particularly within supply chains.

The work of the initiative would be delivered through tailored technical working groups that bring together the three different target audience groups based on shared sectors and activities.

The initiative would also aim to support participating companies and impacted supply chain companies through the following key clean energy oriented activities:

- training on energy management practices, MRV, best practice clean energy solutions for core processes and behaviour change (e.g. supporting the integration energy performance into business decision making processes);
- knowledge sharing through technical working groups (topical and sectoral), workshops, community spaces and an intelligent knowledge database (assessment of needs to provide tailored information and tools);

⁽¹⁰⁾ The CDP 2019/2020 supply chain report highlights that almost all (95%) of CDP supply chain members said suppliers showing environmental leadership are more competitive, meaning that there are clear benefits for suppliers who are taking action to meeting buyer expectations.

- collaboration with MS and international clean energy programmes to ensure participating companies have the best possible access to existing technical assistance and financial incentives;
- benchmarking between companies within the same corporate group (process-level KPIs) as well as within the same sector (facility-level KPIs).

All of the EU Corporate Covenant activities would endeavour to incentivise clean energy innovation by gathering lessons learned and company feedback to support collaboration with R&I programmes.

Companies would receive recognition through public disclosure of progress on net-zero emissions targets, with exemplar progress and/or above-average commitments (e.g. SMEs committing to Scope 3 net-zero emissions) receiving special recognition (e.g. badging system) and appropriate facetime in EU events, social media, etc.

The EU Corporate Covenant could collaborate with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but part of an EU based group.

Initiative Scope

- emission reduction commitments
- Scopes 1 to 3 emissions
- cross-sectoral and sector-specific
- large companies and SMEs.

Participants

This EU Corporate Covenant would orientate itself towards a group-level participation model. The participants would include:

- groups of large companies sharing the same supply chain (minimum two companies)
- a large company with a minimum number of SMEs from its supply chain
- SMEs, with particular emphasis on those in supply chains.

Commitments

(see section 4.1.2 for further details on commitments and targets criteria)

All participating companies would have to commit to:

- net-zero GHG emissions by 2050 the latest, with options to commit by 2030 and 2040. Large companies commitments must be across Scopes 1 to 3 and SMEs across Scopes 1 and 2;
- develop science-based targets (≥ 5 and ≤ 15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant based on an energy efficiency-first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies:
 - SMEs: as a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions and then measuring them where possible if material to their overall emissions;
 - large companies: targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions, and if they are 40% or more of total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based.

Specific target group commitments are as follows:

- groups of large companies sharing the same supply chain
 - would be required to implement procurement criteria within two years of joining the initiative that target achieving a complete tier 1 and 2 supply chain committed to net-zero emissions by 2030;
 - would be required to support their supply chain companies with access to the required training and guidance to set and achieve their net-zero commitments without negative economic impact;

- individual large company with SMEs from their supply chain
 - to participate in the initiative, the large company would be required to bring a minimum number of SMEs from its supply chain willing to commit to net-zero emissions;
 - the large company would be required to provide their supply chain SMEs with required training and guidance to set their targets and develop a comprehensive clean energy 5-year action plan.

Monitoring, reporting and verification (MRV)

(see section 4.1.3 for more details)

- emissions monitoring and reporting would be required on an annual basis;
- verification options could be considered for larger companies in relation to the initial inventory used for target setting and then every four years in parallel to energy audits – as per EED Article 8 audit requirements;
- public disclosure of emissions would be required on an annual basis through the EU Corporate Covenant.

How it would work

1. Encouraging companies to join the EU Corporate Covenant

As a commitment to net-zero emissions is the key driver to incentivise companies to commit to energy performance and renewable energy commitments, it is recommended that the EU Corporate Covenant engages in an extensive consumer-oriented campaign to draw attention to the need for companies to commit to net-zero emissions. Such a campaign would be designed to encourage consumer-facing companies make the first step of publicly committing to a net-zero target.

2. Delivery of support to participating companies

Delivery of the EU Corporate Covenant is through:

- tailored technical working groups to support engagement between the different supply chain players to deliver:
 - the development of climate-neutral procurement criteria that would incentivise suppliers to commit to net-zero emissions as way to achieve competitive advantages,
 - the development of a large company delivered support programme to enable supply chain SMEs to set net-zero emission targets and develop clean energy action plans;
- the provision of on-line training programmes in all languages, an EU level knowledge database, an EU-level online community space, an EU-level benchmarking programme and collaboration with existing national and international technical assistance programmes, in-person training and financial incentives.

3. Monitoring, reporting and verification

All companies will be required to monitor data and report progress based on the EU Corporate Covenant's criteria (See section 4.1.3). All participating companies will have their annual progress towards their targets publicly disclosed through the EU Corporate Covenant. Submission of verified reporting data can be through recognised external initiatives (e.g. SBTi, CDP) or directly to the EU Corporate Covenant.

4. Recognition for participating companies

Companies would receive recognition through public disclosure of progress on targets, with exemplar progress receiving special recognition (e.g. badging system or similar).

5. Continuous improvement and connection to related programmes

The EU Corporate Covenant would use country and EU-level workshops and surveys, as well as feedback from technical working groups, as key sources of information to ensure that the EU Corporate Covenant takes a continuous improvement approach in its engagement with companies. Lessons learned, experience from companies implementing best practice clean energy solutions and collaboration with R&D programmes would be used to ensure the initiative provides top most up to date and adapted support to companies to achieve their short to long term targets.

6. International collaboration

The EU Corporate Covenant could collaborate insofar as possible with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform) to provide support to companies outside the EU but associated with companies participating in the EU Corporate Covenant.

Key activities/outputs

- Tailored sector- and activity-oriented **technical working groups** to support the development of sustainable procurement criteria and coordinate large company support to their supply chain to enable negative impact compliance with these criteria focused on key cross-sectoral topics (e.g. behaviour change, MRV) and sectoral topics (e.g. process-specific energy performance) that will focus on working with companies to learn how best to support them through specific clean energy solutions and thereby also provide a foundation for future innovation. These technical working groups would be delivered on a national and EU level.
- A uniform EU-wide **training programme** on target setting, emission inventory and reporting, energy performance MRV, energy management systems, clean energy technology solutions, energy management systems and behaviour change (e.g. supporting the integration energy performance into core business operations and decisions). This training programme would be provided as an online option through the EU Corporate Covenant and, where possible, as an in-person option through country-level training institutions. Where possible, this training programme will align/collaborate with existing training and certification programmes.
- Provision of **implementation support** through collaboration with existing technical assistance and financial incentive programmes. National programmes include, for example, voluntary agreement programmes, subsidised audits, tax allowances and national cleaner production centres. International programmes (primarily collaborated with to support companies outside the EU but part of an EU-based group) include, for example, the UNIDO technical cooperation programme.
- A dynamic **knowledge database** for relevant clean energy information (guidance, case studies and tools) and supports (training, financial assistance, networks and technical assistance). A self-assessment tool would provide a tailored list of the database's most appropriate information and supports based on a company's activity, size and location. The development of this database would bring together existing information and support services as well as identify where new information and support services need to be developed.
- **Development of the required resources** (guidance, case studies, tools and training) for the database in the cases where existing resources are not provided through existing international or national initiatives, e.g. an EnMS toolkit for SMEs.
- Annual national and EU-level **workshops** to inform participating companies of initiative updates and receive feedback.
- An online **community space** for experience and knowledge sharing and access to expert advice on key cross-sectoral and sector-specific topics.
- An emissions on-track progress recognition scheme.

6 Recommendations and conclusions

6.1 Recommendations

Recommendations for the basic structure of an EU Corporate Covenant

The four options for an EU Corporate Covenant outline in detail the different approaches such an initiative could take. However, the outcome of the comparative analysis highlighted a number of core elements that are recommended in all cases to be included in the basic structure of an EU Corporate Covenant. These are:

- the initiative should be designed with all company sizes in mind and be applicable to all industry sectors;
- a commitment to net-zero GHG emissions (Scopes 1 to 3 for large companies and Scope 1 and 2 for SMEs) should be the basic starting point for every participating company to be in line with the core objective of the European Green Deal;
- a net-zero commitment should then be linked with a requirement to set science-based targets and provide annual performance reporting;
- clean energy targets should be based on a combination of energy efficiency measures and the use of renewable energy, taking into account the principle of energy efficiency first but not in isolation;
- a minimum support structure should be provided through the EU Corporate Covenant that at the very least can guide companies to the available support services (guidance, financing solutions, tools, etc.) that are most relevant to their specific approach on achieving their net-zero emission targets. Such a support structure should be adapted to SMEs and large companies.

Recommendations for the baseline activities of an EU Corporate Covenant

Aside from providing companies with a clear approach to make an emission reduction commitment, set targets and report on progress, an EU Corporate Covenant provides an ideal opportunity for a number of activities that can directly support policy developments and research and innovation, as well as collaboration between companies. It is therefore recommended that an EU Corporate include the following basic range of activities as part of its core remit:

- facilitation of peer to peer industry engagement through a minimum of online workshops and networking, but also ideally through regular in-person events;
- facilitation of targeted workshops between policy makers and companies in order to provide policy makers with insights into the reality of business operations, as well as help them understand more accurately what emission reduction opportunities can be practically pursued in what timeframe;
- support increased collaboration between industry and research to help the industry better identify and evaluate innovative technologies. Such a collaboration could potentially include industry hosting field validation testbeds, in such a way as being currently trailed by the U.S. Department of Energy's Advanced Manufacturing Office (U.S. Department of Energy, 2021);
- operation of a recognition scheme that publishes company commitments and annual reporting, but that also highlights exceptional progress towards targets.
- Continue to expand and update the mapping of industry initiatives used for the comparative analysis, as this can be a useful support to companies wishing to potentially engage with additional initiatives and/or simply get clarity on different emission reduction activities relevant to their sector.

Recommendations regarding the collaboration of an EU Corporate Covenant with other initiatives

It is recommended to collaborate where possible with existing emission reduction focused initiatives in order to avoid creating duplicate programmes for companies as well as potentially reduce the level of investment and effort required to develop and operate an EU Corporate Covenant.

Importantly, due to the fact that the Scope 3 emissions of companies can often be connected to supply chains outside of the EU, collaboration with similar international initiatives would help provide companies with a more effective global approach to deal with Scope 3 emission reductions. A collaboration-based approach in operating an EU Corporate Covenant could generate substantial buy-in from organisations able to increase the impact of the EU Corporate Covenant. Building an EU Corporate Covenant upon a strong foundation of collaboration with

other initiatives would also reassure companies that the EU Corporate Covenant is not yet another initiative to add to an already long list but more an overarching initiative.

6.2 Conclusions

The results of the comparative analysis showed that there are a number of national and global initiatives already actively encouraging companies to pursue GHG emission reductions. The global initiatives, in particular, offer large companies and, in some cases, SMEs, a way to make internationally recognised emission reduction commitments, set science-based targets and follow a standardised emissions reporting and verification procedure.

However, the comparative analysis also highlighted the fact that there is an urgent need to support companies of all sizes and across all sectors not only to set verified emission reduction targets but, most importantly, implement the clean energy actions required to achieve the targets. Those initiatives providing a good combination of targets, technical assistance and reporting tend to be government-led initiatives, such as national voluntary agreement programmes. Some industry association-led initiative provides a target-based approach backed up by a strong information sharing structure. Yet, voluntary agreement programmes are only active in a few countries, with considerable variation in scope, while industry association-led initiatives are typically sector-focused and without strong reporting requirements.

The development of an EU Corporate Covenant would therefore be an extremely effective way to more systematically support industry to deliver on its required contribution to the European Green Deal's objective of net-zero emissions by 2050. Building on the success factors of individual existing initiatives, an EU Corporate Covenant would uniquely provide an EU-wide coordinated emission reduction approach for all company sizes, across all industry sectors, from setting targets, providing guidance on required actions and ensuring high-quality performance monitoring and reporting. An EU Corporate Covenant would therefore play a vital role in helping companies transform commitments into real and effective actions.

References

- Andersson, E., 'Enabling industrial energy benchmarking: Process-level energy end-use, key performance indicators, and efficiency potential', *Linköping Studies in Science and Technology*, Dissertation No. 2076, Linköping University, Linköping, 2020.
- B Lab United Kingdom, *How to Declare a Climate Emergency & Take Climate Action: A playbook for business*, B Lab UK, 2019.
- Brickman C., Ungerman, D., *Climate Change and Supply Chain Management*, McKinsey Quarterly, July, 2008.
- Carbon Trust, *Cascading Commitments: Driving ambitious action through supply chain engagement*, CDP, 2019.
- CDP, *CDP Supply Chain: Changing the chain – Making environmental action in procurement the new normal*, CDP, 2019.
- Carbon Trust, *SME Carbon Footprint Calculator*, available at <https://www.carbontrust.com/resources/sme-carbon-footprint-calculator>.
- CERES, *The 21st Century Corporation: The Ceres Roadmap for Sustainability*, CERES, 2010.
- Cornelis, E., Grossin, L., Palmaerts, S., 2018. 'History and prospect of voluntary agreements on industrial energy efficiency in Europe', *eccee Industrial Summer Studies Proceedings*, 1 Policies and Programmes to Drive Transformation, 2018.
- Cornelis, E., *Round Table Meetings with the Food & Beverage Sector – Conclusions*, European Commission Directorate-General for Energy, 2019.
- Cornelis, E., *Shaping a Sustainable Industry – Guidance for Best Practices & Policy Recommendations*, Publications Office of the European Union, 2020.
- Directive 2012/27/EU of the European Parliament and of the Council on Energy Efficiency.
- Dzioubinski, O., *Overcoming barriers to investing in energy efficiency*, Energy Efficiency Global Forum 2018, UNECE, 2018.
- DG CLIMA, *The Monitoring and Reporting Regulation – General guidance for installations*, European Commission, 2017.
- Falk J. et al., *The 1.5°C Business Playbook*, Exponential Business, 2020.
- Falk, J., Gaffney, O., Bhowmik A. K., Bergmark P., Galaz V., Henningsson S., Höjer M., Jacobson L., Jónás K., Klingensfeld D., Kåberger T., Loken B., Lundén D., Malmmodin J., Malmqvist T., Olausson V., Pearce A., Pihl E., Shalit T., *Exponential Roadmap 1.5.1*, Future Earth, Sweden, 2020.
- Farsan, A., Chang, A., Kerkhof, A., Cserna, B., Yan, C., Rangel Villasana, F., Labutong, N., *Value Change in the Value Chain: Best Practices in Scope 3 Greenhouse Gas Management*, Science Based Target initiative and Navigant and the Gold Standard, 2018.
- Google, *Google Environmental Report 2019*.
- IEA, *Energy Management Systems and Digital Technologies for Industrial Energy Efficiency and Productivity*, workshop 12-13 December 2017, Paris, France.
- IEA, *Energy Technology Perspectives Special Report on Clean Energy Innovation*, 2020.
- Johansson, M., Thollander, P., 'A review of barriers to and driving forces for improved energy efficiency in Swedish industry: recommendations for successful in-house energy management', *Renewable and Sustainable Energy Reviews*, 82 (Part 1), 2108, pp. 618-628.
- Klinckenberg, F., Harmelink, M., *Effectiveness of Energy Efficiency Voluntary Agreements*, 4E Energy Efficient End-use Equipment – IEA Technology Collaboration Programme, 2017.
- Lawrence, A., Nehler, T., Andersson, E., Karlsson, M., Thollander, P., 'Drivers, barriers and success factors for energy management in the Swedish pulp and paper industry', *Journal of Cleaner Production*, Vol. 223, issue 2, Elsevier Ltd., 2019, pp. 67-82.
- Levin, K., Rich, D., Ross, K., Fransen, T., Elliott, C., *Designing and communicating net-zero targets* [Working Paper], World Resources Institute, 2020.
- Mac Nulty, H., *Energy efficiency in the steel sector: Why it works well, but not always*, OECD, 2015.

Ministry for the Environment, *Measuring Emissions: A Guide for Organisations. 2020 Quick Guide*, Wellington: Ministry for the Environment, 2020.

Nagasawa, T., Pillay, C., Beier, G., Fritzsche, K., Pougel, F., Takama, T., The, K., Bobashev, I., *Accelerating clean energy through Industry 4.0*, UNIDO, 2017.

Paramonova, S., Ivner, J., Thollander, P., 'Outsourcing industrial energy management: Industrial energy efficiency networks provided as an energy service', *Outsourcing: Strategies, Challenges and Effects on Organizations*, Linköping University, 2014, pp. 71-98.

Paramonova, S., Thollander, P., 'Energy efficiency potentials for different motor system levels – An empirical study of PFE implemented energy efficiency measures', *Motor Summit 2014 Proceedings*, Zurich, Switzerland, 14–15.

Paramonova, S., Thollander, P., 'Ex-post impact and process evaluation of the Swedish energy audit policy programme for small and medium-sized enterprises', *Journal of Cleaner Production*, Vol. 135, Elsevier Ltd, 2016, pp. 932-949.

Paramonova, S., Thollander, P., Ottosson, M., 'Quantifying the extended energy efficiency gap - evidence from Swedish electricity-intensive industries', *Renewable & Sustainable Energy Reviews*, Vol. 51, Elsevier Ltd, 2015, pp. 472-483.

Reinaud, J., Goldberg, A., *The Boardroom Perspective: How Does Energy Efficiency Policy Influence Decision Making in Industry?*, OCED/IEA, 2011.

Rezessy, S., Bertoldi P., 'Voluntary agreements in the field of energy efficiency and emission reduction: review and analysis of experiences in the European Union', *Energy Policy*, Vol. 39, issue 11, 2011, pp. 7121-9.

Rogelj, J., D. Shindell, K. Jiang, S. Fifita, P. Forster, V. Ginzburg, C. Handa, H. Kheshgi, S. Kobayashi, E. Kriegler, L. Mundaca, R. Séférián, and M.V. Vilariño, 'Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development', *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*, 2019.

Rohde, C., Durand, A., Neusel, L., 'Energy efficiency networks: latest developments in Germany and in the world', *eccee Industrial Summer Studies Proceedings*, 1 Policies and Programmes to Drive Transformation, 2020.

Rohdin P, Thollander, P., 'Barriers to and Driving Forces for Energy Efficiency in the Non-energy Intensive Manufacturing Industry in Sweden', *Energy*, Vol. 31, issue 12, 2006, pp. 1836-1844.

Science Based Targets initiative, *Science Based Targets Call to Action Target-Setting Letter for Small and Medium-Sized Enterprises*, Science Based Targets initiative, 2020.

Science Based Targets, SBTi Criteria and Recommendations TWG-INF-002 Version 4.2, 2021.

SME Climate Hub, *About the SME Climate Commitment*, SME Climate Hub, 2020.

Sorrell, S., Mallett, A., Nye, S., *Barriers to industrial energy efficiency: A literature review*, UNIDO, 2011.

Thollander, P., Karlsson, M., Rohdin, P., Rosenqvist, J., Wollin, J., Introduction to Industrial Energy Efficiency - Energy Auditing, *Energy Management and Policy Issues*, Elsevier Ltd. , 2020.

Thollander, P., Rohde, C., Kimura, O., Helgerud, H., Realini, A., Maggiore, S., Cosgrove, J., Johansson, I. , *A review of energy efficiency policies for small and medium-sized manufacturing enterprises from around the world*, 2019 ACEEE Summer Study on Energy Efficiency in Industry, Portland, 12-14 August 2019.

UNECE, *Workshop: Policy Maker Meets the Engineer*, 18 January 2017.

UNIDO, *Industry Working Group Kick-off Workshop*, 7-8 May 2019.

UNIDO, *IWG Special Working Groups' kick-off workshops*, June 2020.

University of Oxford, *Mapping of current practices around net zero targets*, University of Oxford, 2020.

UNFCCC, *Race to Zero campaign*, 2020, available at <https://unfccc.int/climate-action/race-to-zero-campaign>, last accessed 01 September 2021.

U.S. Department of Energy, *2021 Industrial Technology Validation Pilot*, 2021, available at <https://betterbuildings.solutioncenter.energy.gov/better-plants/industrial-technology-validation-pilot>, last accessed 01 September 2021.

U.S. EPA Centre for Corporate Climate Leadership, *Guide to Greenhouse Gas Management for Small Business & Low Emitters*, 2020.

U.S. EPA Centre for Corporate Climate Leadership, *GHG Inventory Development Process and Guidance*, available at <https://www.epa.gov/climateleadership/center-corporate-climate-leadership-greenhouse-gas-inventory-guidance>, last accessed 19 January 2021.

Waide P., Brunner C., 'Energy-Efficiency Policy Opportunities for Electric Motor-Driven Systems', *Energy Efficiency Series*, IEA, 2011.

Wakabayashi, M., 'Voluntary business activities to mitigate climate change: Case studies in Japan', *Energy Policy*, Vol. 63, 2013, pp. 1086–1090.

Wakabayashi, M., Arimura, T., 'Voluntary agreements to encourage proactive firm action against climate change: an empirical study of industry associations' voluntary action plans in Japan', *Journal of Cleaner Production*, Vol. 112, 2016, pp. 2885–2895.

World Resources Institute and World Business Council for Sustainable Development, *Corporate Value Chain (Scope 3) Accounting and Reporting Standard*, World Resources Institute and World Business Council for Sustainable Development, 2011.

World Resources Institute and World Business Council for Sustainable Development, *The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard*, World Business Council for Sustainable Development, Switzerland, 2004.

List of abbreviations and definitions

CoM	Covenant of Mayors
DG ENER	European Commission Directorate-General for Energy
EEN	Energy Efficiency Network
EGD	European green deal
EnMS	Energy Management System
GHG	greenhouse gases
MRV	Monitoring, reporting and verification
PFE	Programme for Improving Energy Efficiency in Energy Intensive Industries
R&I	Research and Innovation
SBTi	Science Based Targets initiative
SDGs	United Nation's Sustainable Development Goals
VAP	Voluntary agreement programme

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Annexes

Annex 1 – Concise overview of the four proposed Corporate Covenant options

Table 2. Concise overview of the four proposed Corporate Covenant options

Option	Option 1: Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
Summary	<p>This option is based on an EU Corporate Covenant that is led on an EU level and delivered in collaboration with MS, EU and international organisations.</p> <p>The main objectives are:</p> <ul style="list-style-type: none"> — accelerating the implementation of energy performance and renewable energy measures; — providing a clean energy business advisory programme accessible on an EU and MS level and focused on assisting companies to develop clean energy action plans and access any existing EU and MS supports (training, financing, working groups, etc.); — developing large company-led implementation-based EENs in collaboration with existing MS EEN programmes. 	<p>This option is based on an EU Corporate Covenant led on an EU level, and all technical supports are then primarily delivered by MS through national voluntary agreement programmes.</p> <p>The main objectives are:</p> <ul style="list-style-type: none"> — accelerating the implementation of energy performance and renewable energy measures; — supporting the improvement/development of MS voluntary agreement programmes that provide technical assistance adapted to local conditions and the size of the company; — providing EU-level coordination on MS delivered capacity building; — providing EU delivered knowledge -sharing facilities. 	<p>This option is based on an EU Corporate Covenant led on an EU level and all technical supports then delivered through EU-level voluntary agreement programmes in collaboration with MS organisations.</p> <p>The main objectives are:</p> <ul style="list-style-type: none"> — accelerating the implementation of energy performance and renewable energy measures; — providing a range of EU voluntary agreement programmes that deliver technical assistance adapted to the size and energy demand levels of a company; — providing EU-delivered capacity building programmes and knowledge-sharing facilities. <p>In addition to the overall commitment, participation criteria are focused</p>	<p>This option is based on an EU Corporate Covenant led and delivered at the EU-level. MS-level collaboration opportunities can play an important role but are not a compulsory element of this option.</p> <p>The main objectives are:</p> <ul style="list-style-type: none"> — accelerating zero emission commitments across complete supply chains; — supporting engagement between key groups of companies across different supply chain tiers to incentivise self-driven implementation of clean energy solutions; — providing EU delivered capacity building programmes and knowledge sharing facilities. <p>In addition to the overall commitment, participation criteria are focused primarily on engagement requirements.</p>

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
	In addition to the overall commitment, participation criteria are focused primarily on energy performance requirements.	In addition to the overall commitment, participation criteria are focused primarily on energy performance requirements.	primarily on energy performance requirements.	
Target audience	<ul style="list-style-type: none"> — SMEs — Large companies 	<ul style="list-style-type: none"> — SMEs — Large companies 	<ul style="list-style-type: none"> — SMEs, with an emphasis on those in supply chains — Large companies differentiated by their level of energy demand 	<ul style="list-style-type: none"> — SMEs, with an emphasis on those in supply chains — Large companies participating through a group of companies sharing the same supply chain — An individual large company with a group of SMEs from its supply chain
Standard participation criteria	<ul style="list-style-type: none"> — Commit to net-zero GHG emissions across Scopes 1 to 3 for large companies and Scopes 1 and 2 for SMEs by 2050 the latest, with options to commit by 2030 and 2040. — Develop science-based targets (≥5 and ≤15 years, based on 1.5°C trajectory) within 18 months of joining the EU Corporate Covenant based on an energy efficiency-first principle. Targets must be based on a baseline from within the last two years. Target setting criteria are differentiated for SMEs and large companies: <ul style="list-style-type: none"> • <u>SMEs</u>: as a minimum, targets must be based on halving emissions by 2030. While Scope 3 net-zero emissions is not a requirement, SMEs must commit to screening their Scope 3 emissions, and then measuring them where possible if material to their overall emissions; • <u>large companies</u>: targets must be set for Scope 1 and 2 emissions according to the 1.5°C trajectory application to their sector. Companies must complete a Scope 3 screening for all relevant Scope 3 emissions, and if these are 40% or more of their total emissions, a Scope 3 target is required. This Scope 3 target does not have to be science-based. 			

Option	Option 1: Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
Initiative specific participation criteria	<p>All participating companies will be required to commit to:</p> <ul style="list-style-type: none"> — achieving maximum energy performance improvement through the implementation of independently identified opportunities with five years or less payback period; — sourcing renewable energy, where possible, to cover the remaining energy demand after maximum energy performance improvement has been achieved; — implementing an energy management system adapted to the size of the company within two years of joining the EU Corporate Covenant; — <u>optional additional commitment:</u> setting a 100% renewable energy target across all operations under the company's direct control (i.e. Scope 1 and 2), taking into account predicted maximum energy performance improvements up to the date of the set net-zero emissions target. 	As for option 1	As for option 1	<p>Large companies participating through a group of companies sharing the same supply chain will be required to:</p> <ul style="list-style-type: none"> — implement procurement criteria within two years of joining the initiative that target achieving a complete tier 1 and 2 supply chain committed to net-zero emissions by 2030; — support their supply chain companies with access to the required training and guidance to set and achieve their net-zero commitments without negative economic impact. <p>A large company participating as an individual company with a group of SMEs from its supply chain will be required to:</p> <ul style="list-style-type: none"> — bring a minimum number of SMEs from its supply chain willing to participate in the EU corporate covenant; — provide its supply chain SMEs with required training and guidance to set their targets and develop a comprehensive clean energy 5-year action plan

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
Primary activity	<p>This option would focus on working with MS, EU and international organisations to provide companies with the necessary guidance to develop clean energy action plans based on accurate energy analytics and access existing project implementation supports.</p> <p>This work would include:</p> <ul style="list-style-type: none"> — developing a comprehensive network of partner organisations engaged in clean energy activities on an MS, EU and international level. This work would be ongoing before and after the launch of the initiative; — provide an online and potentially in-person (through partner organisations) clean energy advisory service to guide companies on best practice clean energy action plans, MRV and how/where to access any existing implementation supports (guidance, training, financing, ...); — collaborating with existing EEN programmes to integrate large company led networks for their supply chain SMEs; 	<p>This option would focus on working with MS to improve and/or develop national voluntary agreement programmes that would provide technical support to companies to help them achieve their energy performance targets.</p> <p>The voluntary agreement programmes would be required to be of two basic types:</p> <ul style="list-style-type: none"> — <u>implementation-based EENs</u>: These would be designed as an energy service for SMEs, providing information sharing and technical assistance for audits and clean energy measures implementation; — <u>information-based EENs</u>: These would be designed for large companies to support best practice information sharing and technical working groups 	<p>This option would focus on developing an EU voluntary agreement programme that would provide technical support to companies to help them achieve their energy performance targets.</p> <p>Where possible, the programme would be operated on an MS level in collaboration with an MS organisation (e.g. energy agencies). The voluntary agreement programme would consist of four sub-programmes based on a company's size and level of energy demand:</p> <ul style="list-style-type: none"> — <u>SME EEN</u>: an implementation-based EEN that would be designed as an energy service for SMEs, providing information sharing and technical assistance for audits and clean energy measures implementation; — <u>3 large company EENs</u>: information-based EENs that would be designed for large companies to support best practice information sharing and technical working groups, and differentiated by: <ul style="list-style-type: none"> • decarbonisation EEN - large companies with 	<p>This option would focus on developing and managing EU-level technical working groups to support supply chain engagement and collaboration. These technical working groups would be of two types:</p> <ul style="list-style-type: none"> — <u>procurement criteria</u>: large companies sharing the same supply chain working together to develop universal climate-neutral procurement criteria that would incentivise their suppliers to commit to net-zero emissions as a way to achieve competitive advantages; — <u>SME support programme</u>: large companies and supply chain SMEs working together to develop a large company-delivered support programme that would assist supply chain SMEs to set net-zero emission targets and develop clean energy action plans.

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
	<ul style="list-style-type: none"> — collaborating with initiatives managing existing clean energy technical working groups to integrate potential EU Corporate Covenant participants. <p>After an initial phase of operation, the lessons learned would be used to support the development of such primary activities as detailed in options 2 to 4, as well as the development of harmonized energy data collection taxonomies to support accurate energy performance reporting.</p>		<p>medium to low energy demands;</p> <ul style="list-style-type: none"> • decarbonisation+ EEN - large companies with high energy demands; • decarbonisation extreme EEN - large companies with very high energy demands. 	
Supporting activities	<p>Collaborating, where possible, with existing initiatives on an EU, MS or international level, the EU Corporate Covenant would provide EU managed:</p> <ul style="list-style-type: none"> — knowledge sharing through technical working groups, workshops, online community spaces and an intelligent knowledge database. 	<p>The EU Corporate Covenant would work with MS to provide MS managed:</p> <ul style="list-style-type: none"> — training programmes (online and in-person); — knowledge sharing through technical working groups, workshops, online community spaces; — technical assistance (e.g. subsidised audits, external experts to accompany EnMS implementation, etc.) 	<p>Collaborating where possible with existing initiatives on an EU or MS level, the EU Corporate Covenant would provide EU-managed:</p> <ul style="list-style-type: none"> — training programmes (online and in-person); — knowledge sharing through technical working groups, workshops, online community spaces and an intelligent knowledge database; — an EU-wide benchmarking programme. 	<p>Collaborating where possible with existing initiatives at the EU or MS level, the EU Corporate Covenant would provide EU-managed:</p> <ul style="list-style-type: none"> — training programmes (online and in-person); — knowledge sharing through technical working groups, workshops, online community spaces and an intelligent knowledge database; <p>Benchmarking between companies within the same corporate group</p>

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
		The EU Corporate Covenant would provide an EU intelligent knowledge database.		(process-level KPIs) as well as within the same sector (facility-level KPIs).
Recognition for participants	Participating companies would receive the following recognition: <ul style="list-style-type: none"> — listing as a participating company on the EU Corporate Covenant website and appropriate facetime in EU events, social media. etc.; — if an SME commits to Scope 3 net-zero emissions, then this is noted as an additional effort alongside their standard participant listing; — if an SME commits to net-zero emissions by 2040 or 2030, then this is noted as an additional effort alongside their standard participant listing; — recognition for exemplar progress towards emissions and clean energy targets (e.g. through a badge system or similar scheme) based on the annual public disclosure process. 	As for option 1 plus: <ul style="list-style-type: none"> — Companies be eligible to take part in an annual EU-wide annual energy awards programme promoting exemplar and innovative projects. 	As for option 1 plus: <ul style="list-style-type: none"> — Companies be eligible to take part in an annual EU-wide annual energy awards programme promoting exemplar and innovative projects. 	As for option 1.

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
Monitoring and reporting	<p>Emissions:</p> <ul style="list-style-type: none"> — emissions monitoring and reporting would be required on an annual basis. <p>Energy performance and renewable energy:</p> <ul style="list-style-type: none"> — energy performance and renewable energy monitoring and reporting would be required on an annual basis; — Where applicable, energy performance monitoring would be required on a process level. Process-level energy data would have to be used to develop facility-level energy performance reporting; — Energy performance indicators would have to be based on regression analysis to the extent possible. <p>Public disclosure of emissions, energy performance and renewable energy would be required on an annual basis through the EU Corporate Covenant.</p> <p><u>Note:</u> Verification options could be considered for larger companies to determine the baseline used for target setting and then every four</p>	As for option 1	As for option 1	<ul style="list-style-type: none"> — Emissions monitoring and reporting would be required on an annual basis. — Verification options could be considered for larger companies in relation to the initial emissions inventory used for target setting and then every four years– as per EED Article 8 audit requirements. — Public disclosure of emissions would be required on an annual basis through the EU Corporate Covenant. — <u>Initiate a development of harmonised taxonomies for reporting of energy end-use.</u>

Option	Option 1. Supporting companies through coordinated advisory services	Option 2: Supporting companies through MS Voluntary Agreement Programmes	Option 3: Supporting companies through an EU Voluntary Agreement Programme	Option 4: Supporting companies through supply chain engagement
	years – as per EED Article 8 audit requirements.			
International connection	The EU Corporate Covenant could collaborate with international training, knowledge sharing and technical assistance initiatives (e.g. UNIDO, UNEP, UNITAR, Green Industry Platform, ...) to provide support to companies outside the EU but associated with companies participating in the EU Corporate Covenant.			

Annex 2 – Voluntary agreement programmes in Germany, Japan and Sweden and research findings from those

Japan

The world oldest know Voluntary Agreement Programme, the Japanese Keidanren, founded in 1996, is led by the leading comprehensive business association in Japan, Keidanren. In 2012, 114 industrial associations had joined, including Keidanren non-members. Keidanren covers approximately 80% of greenhouse gas emissions from the industrial and energy conversion sectors of the country and approximately half of national emissions (Wakabayashi, 2013). Each plan included numerical targets for either energy consumption or CO₂ emissions over the five-year period from 2008 to 2012 to meet the national target set under the Kyoto Protocol.

A study by Wakabayashi and Arimura (2016) of the Keidanren showed that the level of Voluntary means that the companies or rather the trade associations themselves develop the voluntary plans. The study concludes that there is very little impact or effect on companies with 3,000 employees or more (Wakabayashi and Arimura, 2016). That is because they are voluntarily fighting global warming regardless of the VAPs, or they are forced to do so by social pressures (Wakabayashi and Arimura, 2016). In contrast, small and medium-sized enterprises (SMEs), which tend to lag behind in global warming countermeasures by nature, may be encouraged by the VAP, thus leading to the fact that they show no effectiveness of the Keidanren for companies with more than 3 000 employees, while it served well for smaller firms (Wakabayashi and Arimura, 2016). This contradicts, for example, studies by the Swedish VAP PFE that really served the participating large companies in deploying measures. The latter had a requirement for EnMS certification, Keidanren does not.

Germany

The German federal government introduced eco-taxation ("Ökosteuern") in Germany which raised the fuel taxes and put a tax on electricity. Later, the eco-taxation was revised for the industry to ensure long-term industrial competitiveness for the German energy-intensive industry. A tax exemption was introduced for energy-intensive industries and companies under heavy international competition. In order for the exemption to be in line with EU state tax regulations, the industry had to perform something to be able to receive a reduced tax level. This was operationalized by a VAP to bring down energy intensity levels by 1.3 % per year and the requirement for individual companies to deploy a certified energy management system (Thollander et al., 2019). This led to a very high deployment of German ISO 50 001 certifications, approx. 8,300 certifications in 2017 – compared with the US, which had 77 certifications (ISO 2018).

The main driver in the German VAP thus seems to be the tax deduction.

Sweden

The Swedish PFE-program ran for two 5-year periods: 2015-2019 and 2010-2014. The program demanded the certification of a standardized energy management system, deployment of all measures with a pay-back of less than three years. The first two years in a program period, the company must undertake an energy audit. Further, procurement in the company needs to deploy LCC (Life Cycle Cost) routines. If participating, the PFE participants had a full tax deduction on the Swedish electricity tax of 0.5 Swedish öre/kWh. The first period of the programme resulted in a saving of 1.45 TWh/year, and 1.43 TWh/year in the second period. The program had approx. 100 participants which used about 100 TWh/year of the total Swedish industrial energy use of about 150 TWh.

The main driver in the Swedish VAP thus seems to be the tax exemption.

VAP research findings

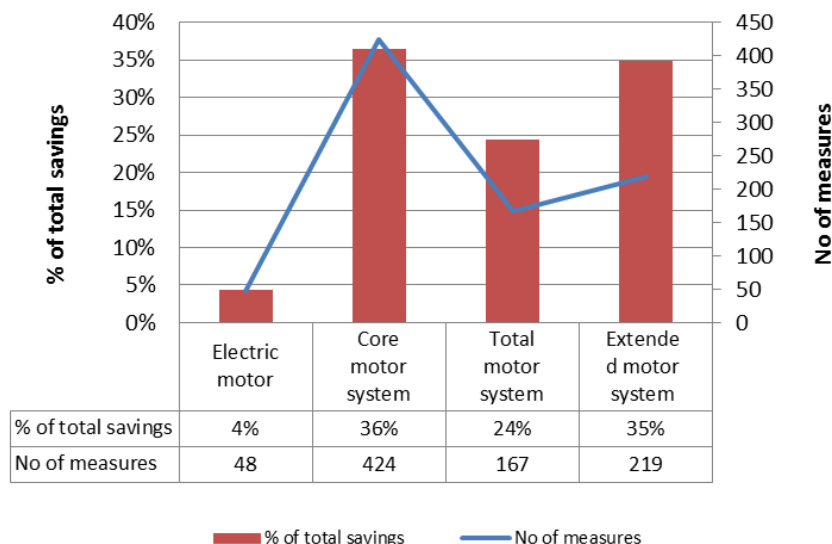
By adopting the categorization of electricity-saving measures of motor system by Waide and Brunner (2011), adopted energy efficiency measures from the Swedish VAP for electricity-intensive companies were analyzed. Waide and Brunner (2011) defined three levels of motor system for energy efficiency improvements:

- electric motor
- core motor system
- total motor system.

In the study by Paramonova (2014), yet one more level was included, called the Extended motor system which includes measures such as energy management and operative actions, which lie outside the total motor system.

In total, around 850 energy efficiency measures were categorized with a total energy saving potential of approximately 600 GWh/year. Results showed that implemented energy efficiency measures in levels 3 and 4 represented almost half of the total number of measures (Figure 1). (Paramonova, 2014)

Figure 3. Number of measures and % of total energy savings for different system levels.



Source: Paramonova, 2014.

It was also shown that the specific energy savings reached (kWh per measure) increases with higher system levels (Paramonova, 2014).

What the study indicates is that through a VAP, not only stand-alone energy efficiency measures are deployed but also measures that demand through process knowledge that is oftentimes only possessed by process engineers in-house of the company. A paper on drivers and barriers for energy management by Lawrence et al. (2019), seems to further underlie this important aspect, e.g. the second and fourth largest drivers respectively where “Access to internal competence with knowledge of the processes” and “Knowledge of daily operations” and the fourth largest barrier was “High complexity of production processes”.

Looking into the deployed measures from a management versus technical energy efficiency perspective, Paramonova et al. (2015) showed that about 61% of the energy efficiency measures deployed could be related to the implementation of new technology while the rest emanate from management and operational-related energy efficiency measures.

Furthermore, evaluation of the Swedish VAP showed that 86.5% of the deployed energy efficiency measures emanate from the three processes Production processes (62%), Pumping (18.5%) and Steam (6%) (Paramonova et al., 2015). For the national Swedish Energy Audit Program on the contrary, results were quite the opposite, where these three measures showed deployment levels of 22, 1 and zero per cent respectively for the processes Production Processes, Pumping and Steam (Paramonova and Thollander, 2016). In conclusion, a VAP delivers major savings in the form of production-related energy efficiency measures (86.5% in the Swedish VAP), while an energy audit program mainly delivers energy savings among the support processes (77%) (Paramonova et al., 2015, Paramonova and Thollander, 2016).

In a newly defended PhD-dissertation, it was shown that despite the Swedish very energy-intensive pulp and paper industry, a very low level of internal benchmarking and monitoring was deployed, this despite the fact that the sector had been using a standardized energy management system for 15 years (Andersson et al, 2020).

These three perspectives combined, i.e., classifying deployed energy efficiency measures from a VAP using Waide and Brunner (2011)’s classification and by distinguishing between implementation of new technology and operation and management-related measures from a VAP, as well as distinguishing between production process and support process-related energy efficiency measures respectively, provides insights into what can be expected from a VAP.

A VAP with energy management components, compared with a stand-alone energy audit program, seems to deliver high impact among the production processes, energy audit programs deliver mostly measures from the support processes.

A VAP with energy management standard as main component seems key but needs to be complemented by additional benchmarking components in order to drive in-house knowledge creation of the in-house energy system.

A large share of deployed measures emanates from operational no or low-cost measures.

Additionality of a new EU VAP

Unlike stand-alone energy audit programs and policies and regulative policies, the adoption of more complex clean energy solution measures as well as measures related to management and operations (not investments in new technology) is very promising, indicating that the adoption of an EU VAP, will provide additional impact in EU's strive towards Economy decarbonization. A successfully implemented VAP, unlike e.g. stand-alone energy audit programs where an external expert audits the company and propose measures to deploy, will lead to decarbonization measures being deployed to a high extent by in-house process engineers, that else would remain unexploited. Further, these measures seem to have a significantly higher impact per measure than measures on level 1 and level 2 following Waide and Brunner's (2011) categorization (see figure 3).

Annex 3 – List of the initiatives included in the mapping exercise

Table 3. List of the initiatives included in the mapping exercise

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Certification and Standards						
CDP	CDP	Certification and Standards	Emissions disclosure	Cross-sectoral	Global	Emission reduction
CEM Energy Management Leadership Awards	Clean Energy Ministerial (CEM)	Certification and Standards	Energy awards	Cross-sectoral	Global	Emission reduction
Certified B Corporation	B Lab	Certification and Standards	Impact certification	Cross-sectoral	Global	Sustainable development
Energy Star Plant Certification	US EPA	Certification and Standards	Energy performance certification	Cross-sectoral	US, Canada	Emission reduction
GHG Protocol	WRI, WBCSD	Certification and Standards	Emissions inventory standards		Global	Emission reduction
Gold Standard	Gold Standard Foundation	Certification and Standards	Impact certification	Cross-sectoral	Global	Sustainable development
SEAI Sustainable Energy Awards	Sustainable Energy Authority of Ireland (SEAI)	Certification and Standards	Energy awards	Cross-sectoral	Ireland	Emission reduction
Collaboration						
AIM-PROGRESS	AIM	Collaboration	Working Groups	FMCG	Global	Sustainable development
Assessing low-Carbon Transition (ACT)	ADEME CDP	Collaboration	Strategy & impact assessments	Cross-sectoral	Global	Emission reduction
Climate Change Commission	Enterprises pour environment (EPE)	Collaboration	Working Groups	Cross-sectoral	France	Emission reduction

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Dutch Sustainable Growth Coalition (DSGC)	Dutch Sustainable Growth Coalition (DSGC)	Collaboration	Working Groups	Cross-sectoral	Netherlands	Emission reduction
Eco-industrial parks	UNIDO, Ministry of Planning and Investment of Vietnam	Collaboration	Industrial Symbiosis	Cross-sectoral	Vietnam	Sustainable development
ERT Energy Transition & Climate Change	European Round Table for Industry (ERT)	Collaboration	Working Groups	Cross-sectoral	Europe	Emission reduction
Grupo Crecimiento Verde	Grupo Crecimiento Verde (Spanish Group for Green Growth)	Collaboration	Working Groups	Cross-sectoral	Spain	Emission reduction
Industrial Energy Efficiency Accelerator	UNIDO	Collaboration	Working Groups	Cross-sectoral	Global	Emission reduction
Industry Working Group (IWG)	UNIDO	Collaboration	Working Groups	Cross-sectoral	Global	Emission reduction
Japan Climate Leaders' Partnership (JCLP)	Japan Climate Leaders' Partnership (JCLP)	Collaboration	Working Groups	Cross-sectoral	Japan	Emission reduction
Kalundborg Symbiosis	Kalundborg Municipality's Department for Development	Collaboration	Industrial Symbiosis	Cross-sectoral	Denmark	Sustainable development
SOS 1.5	WBCSD	Collaboration	Strategy & impact assessments	Cross-sectoral	Global	Emission reduction
Stiftung 2° - German Businesses for Climate Protection	Stiftung 2° - German Businesses for Climate Protection	Collaboration	Working Groups	Cross-sectoral	Germany	Emission reduction
Value Chain Risk to Resilience	BSR	Collaboration	Strategy & impact assessments	Cross-sectoral	Global	Emission reduction

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Commitments & Targets						
Action Plan for a Low-carbon Society	Keidanren	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Japan	Emission reduction
Alliance of CEO Climate Leaders	WeForum	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
B Corp Climate Collective	B Corp	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
Better Plants Challenge	US DOE	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	US	Emission reduction
Business Ambition for 1.5°C	UN Global Compact WeMeanBusiness Science Based Targets	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
Business Environmental Leadership Council (BELC)	C2ES	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global / US	Emission reduction
Caring for Climate	UN Global Compact & UNEP	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
Circular Plastics Alliance	European Commission, DG Grow	Commitments & Targets	High-level corporate commitment	Plastics	EU	Sustainable development
Climate Savers	WWF	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
Corporate engagement in climate policy	WeMeanBusiness (UN Global Compact WRI WWF CERES The Climate Group CDP)	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Courtauld Commitment 2025	Wrap	Commitments & Targets	Association level commitments	Food and beverage	UK	Sustainable development
Dutch Green Deal	Netherlands Ministry of Infrastructure and Environment	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Netherlands	Sustainable development
Energy Efficiency Agreement for industry	Finnish government and industry associations	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Finland	Sustainable energy
Energy-Efficiency-Networks Initiative (IEEN)	Federal Ministry for Economic Affairs and Energy and the Federal Ministry for Environment	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Germany	Emission reduction
EP100	Climate Group Alliance to Save Energy	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
European Clean Hydrogen Alliance	European Commission, DG Grow	Commitments & Targets	High-level corporate commitment	Cross-sectoral	EU	Emission reduction
EV100	Climate Group	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
Fashion Industry Charter for Climate Action	UNFCCC	Commitments & Targets	Defined corporate commitment track	Textile	Global	Emission reduction
GCCA Sustainability Charter	Global Cement and Concrete Association	Commitments & Targets	Defined corporate commitment track	Cement	Global	Sustainable Development
Haga Initiative	Haga Initiative	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Sweden/Global	Emission reduction
Large Industry Energy Network (LIEN)	Sustainable Energy Authority of Ireland (SEAI)	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Ireland	Emission reduction

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Long Term Agreements (LTA) - Non ETS	Ministry of Economic Affairs, Agriculture and Innovation	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Netherlands	Emission reduction
Oil & Gas Methane Partnership	Climate and Clean Air Coalition (OGMP)	Commitments & Targets	Defined corporate commitment track	Oil and Gas	Global	Emission reduction
Oil and Gas Climate Initiative (OGCI)	Oil and Gas Climate Initiative (OGCI)	Commitments & Targets	High-level corporate commitment	Oil and Gas	Global	Emission reduction
Ökosteuern Voluntary Agreement Programme	German Federal government	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Germany	Emission reduction
PFE-program	Swedish Energy Agency	Commitments & Targets	Voluntary agreement programmes	Cross-sectoral	Sweden	Emission reduction
Race to Zero	UNFCCC	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
RE100	Climate Group, CDP	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
Refrigerants, Naturally!	Refrigerants, Naturally!	Commitments & Targets	High-level corporate commitment	Food retail	Global	Emission reduction
Responsible Beauty Initiative	Responsible Beauty Initiative	Commitments & Targets	High-level corporate commitment	Cosmetics	Global	Sustainable development
Science Based Targets	CDP United Nations Global Compact World Resources Institute WWF	Commitments & Targets	Corporate target setting	Cross-sectoral	Global	Emission reduction
SME Climate Commitment	SME Climate Hub	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction

Initiative Name	Lead Organisation(s)	Type	Sub-type	Sector	Geographical focus	Topical focus
Task Force on Climate-related Financial Disclosures (TCFD) Commitment	Climate Disclosure Standards Board (CDSB)	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
The chambers Climate Coalition	International Chamber of Commerce	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
The Climate Pledge	Amazon and Global Optimism	Commitments & Targets	Defined corporate commitment track	Cross-sectoral	Global	Emission reduction
Together for Sustainability (TfS)	Together for Sustainability (TfS)	Commitments & Targets	Defined corporate commitment track	Chemicals	Global	Sustainable development
VinylPlus	VinylPlus	Commitments & Targets	Association level commitments	Plastics	EU	Sustainable development
Voluntary industry plastic packaging initiative	A.I.S.E. (International Association for Soaps, Detergents and Maintenance Products)	Commitments & Targets	Association level commitments	Plastics	EU	Sustainable development
WeMeanBusiness	WeMeanBusiness	Commitments & Targets	High-level corporate commitment	Cross-sectoral	Global	Emission reduction
World steel Sustainable Development Charter & Steel Champions	World Steel	Commitments & Targets	High-level corporate commitment	Iron and Steel	Global	Sustainable development

Source: JRC, 2021.

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