

# The role of voluntary climate actions and the effects of the changing international framework for Finland

Final report

Anna Laine, Hanna-Mari Ahonen, Anna Pakkala, Iris Mäntylä, Kirsi Noro, Mikko Halonen, Jenni Laininen, Jani Laturi, Pekka Kinnunen, Laura Aalto

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## The role of voluntary climate actions and the effects of the changing international framework for Finland

### Final report

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**Group author** Gaia Consulting Oy, Pellervon taloustutkimus, Perspectives Climate Group, Laininen Law

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#### Abstract

In addition to implementing emission reduction measures within their own value chains, companies and other entities can also undertake voluntary mitigation actions outside their value chains, for example by purchasing carbon credits. When purchasing carbon credits, companies can make various claims, such as offsetting or contribution claims. The guidelines and regulation regarding voluntary mitigation actions are constantly evolving, affecting the framework conditions of these actions and their role in achieving national and international targets. In this report, key factors of change have been analysed, and six possible development directions of the carbon markets have been identified. These identified development pathways include the increasing prevalence of contribution claims, the decline in product carbon neutrality claims, the increasing prevalence of organization-level carbon neutrality claims, the growing popularity of non-credit-based claims, the proliferation of net-zero targets, and the differentiation of carbon credit characteristics. The development pathways of the carbon markets also impact mitigation activities undertaken domestically, and they are generally expected to promote the implementation of mitigation activities in Finland. From the perspective of achieving Finland's national climate targets, the best combination of development directions would be an increase in net-zero targets among Finnish companies and an increase in contribution claims based on domestic carbon credits.

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Yritykset ja muut toimijat voivat omassa arvoketjussaan toteutettujen päästövähennystoimenpiteiden lisäksi toteuttaa vapaaehtoisia ilmastotoimia arvoketjuna ulkopuolella, esimerkiksi ostamalla ilmastoyksiköitä. Hankkiessaan ilmastoyksiköitä toimijat voivat tehdä erilaisia väittämiä, kuten kumoutumis- ja ilmastotukiväittämiä. Vapaaehtoisia ilmastotoimia koskevat ohjeet ja sääntely kehittyvät jatkuvasti, vaikuttaen vapaaehtoisten ilmastotoimien reunaehtoihin ja näiden toimien rooliin kansallisten ja kansainvälisten tavoitteiden saavuttamisessa. Tässä hankkeessa on analysoitu keskeisiä muutostekijöitä ja tunnistettu kuusi mahdollista hiilimarkkinan kehityssuuntaa. Tunnistettuja kehityssuuntia ovat ilmastotukiväittämiä yleistyminen, tuotteiden hiilineutraalisuusväittämiä vähentyminen, organisaatiotason hiilineutraalisuusväittämiä yleistyminen, ei-yksikköpohjaisten väittämiä suosion yleistyminen, nettonollatavoitteiden yleistyminen sekä ilmastoyksiköiden ominaisuuksien eriytyminen. Hiilimarkkinoiden kehityssuunnat vaikuttavat myös kotimaassa toteutettuihin hillintätoimiin, ja niiden arvioidaan pääasiassa edistävän hillintätoimien toteuttamista Suomessa. Suomen kansallisten ilmastotavoitteiden saavuttamisen kannalta paras kehityssuuntien yhdistelmä olisi suomalaisyritysten nettonollatavoitteiden ja kotimaisiin yksiköihin perustuvien ilmastotukiväittämiä lisääntyminen.

**Klausuuli** Tämä julkaisu on toteutettu osana valtioneuvoston selvitys- ja tutkimussuunnitelman toimeenpanoa. (tietokayttoon.fi) Julkaisun sisällöstä vastaavat tiedon tuottajat, eikä tekstisisältö välttämättä edusta valtioneuvoston näkemystä.

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## Rollen för frivilliga klimatåtgärder och utvecklingen av det internationella ramverket ur finskt perspektiv

### Slutrapport

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#### Referat

Utöver de åtgärder för utsläppsminskningar som genomförs i den egna värdekedjan kan företag och andra aktörer genomföra frivilliga klimatåtgärder utanför sin värdekedja, till exempel genom att köpa koldioxidkrediter. Vid upphandling av koldioxidkrediter kan operatörer göra olika påståenden, såsom påstående om uppvägning av utsläpp och påstående om stöd till nationella klimatmål. Riktlinjer och reglering kring frivilliga klimatåtgärder utvecklas ständigt, vilket påverkar förutsättningarna för frivilliga klimatåtgärder och deras roll i uppnående av nationella och internationella klimatmål. Detta projekt har analyserat centrala faktorer för förändringar och identifierat sex möjliga utvecklingstrender för koldioxidmarknaden. Utvecklingen kan leda till en ökning av påståenden om klimatstöd, minskning av påståenden om koldioxidneutralitet för enskilda produkter, ökning av påståenden om koldioxidneutralitet på organisationsnivå, ökning i popularitet för icke- enhetsbaserade utsläppsminskningpåståenden, samt ökning av nettonollmål och en differentiering av egenskaperna för olika klimatenheter. Koldioxidmarknadens utvecklingstrender påverkar de åtgärder som genomförs i Finland, a priori på ett befrämjande sätt. Från finskt perspektiv, skulle ett optimalt scenario innehålla en ökning av nettonollmål bland finländska företag samt en ökning an påståenden om stöd till nationella klimatmål, baserat på inhemska klimatenheter.

**Klausul** Den här publikation är en del i genomförandet av statsrådets utrednings- och forskningsplan. (tietokayttoon.fi) De som producerar informationen ansvarar för innehållet i publikationen. Textinnehållet återspeglar inte nödvändigtvis statsrådets ståndpunkt

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## GLOSSARY

Term	Description
<b>Carbon credit</b>	In this report, a carbon credit refers to a mitigation outcome that equals one tonne of carbon dioxide equivalent (tCO <sub>2</sub> e), meets the minimum criteria for carbon credits and is certified by a carbon crediting programme. The term can also cover an emission allowance equal to one tonne of carbon dioxide equivalent, such as in the EU Emissions Trading System (EU ETS) <sup>1</sup> . In this report, however, emissions allowances are always referred to separately. According to established practice in carbon markets, a carbon credit is generated in a registry.
<b>Carbon crediting programme; certification scheme (used in EU contexts)</b>	A programme providing a framework for registering mitigation activities and certifying their mitigation outcomes.  Programmes that are consistent with good practices are independently managed, require compliance with the minimum criteria for carbon credits, issue carbon credits and monitor their transfers and uses.
<b>Carbon dioxide removal, carbon removal (hereinafter referred to as 'carbon removal')</b>	Carbon dioxide removals, commonly known as 'carbon removals', refer to approaches that remove carbon dioxide (CO <sub>2</sub> ) from the atmosphere by technological means and through carbon sequestration in the land use sector, i.e. the agriculture, forestry and other land use (AFOLU) sector.  Carbon removals may sometimes simply be referred to as 'removals' in cases such as greenhouse gas inventories and EU documents.
<b>Carbon neutrality claim</b>	An offsetting claim that covers the carbon footprint of a specific source in full.

<sup>1</sup> Emissions allowances are not subject to the same minimum credit criteria because they do not need to be specifically certified. As the competent authority grants them against a binding emission cap, there is no need to assess additionality or baseline for an individual emission allowance.

Term	Description
<b>Carbon neutrality, climate neutrality, greenhouse gas neutrality</b>	At the global level, the Intergovernmental Panel on Climate Change (IPCC) defines carbon neutrality, or net zero CO <sub>2</sub> emissions, as a state of balance between CO <sub>2</sub> emissions and CO <sub>2</sub> removals. In addition to CO <sub>2</sub> emissions, carbon neutrality may also refer to other greenhouse gas (GHG) emissions. By way of example, Finland's carbon neutrality targets also cover emissions of other greenhouse gases alongside carbon dioxide <sup>2</sup> . At an organisational level, carbon neutrality typically means that the organisation's residual (CO <sub>2</sub> and possibly other GHG) emissions are offset by carbon credits <sup>3</sup> .
<b>Carbon sequestration</b>	Carbon sequestration is a process where carbon-containing substances, such as carbon dioxide, are captured and stored mainly in biogenic carbon pools. <sup>4</sup>
<b>Contribution claim, impact claim, climate finance claim</b>	A claim that specific voluntary mitigation action contributes to achieving global or national climate targets. This can involve the use of carbon credits that represent mitigation outcomes counted as part of tracking and accounting of the national climate targets or a specific country (Nationally Determined Contributions, or NDCs for short, and/or other national mitigation targets). Even if a mitigation outcome is counted as part of tracking and accounting of the host country's national climate targets, double claiming is avoided because the claimant does not count the mitigation outcome towards emissions offsetting. While a contribution claim can also be related to supporting mitigation activities that do not generate carbon credits, this report focuses on claims based on carbon credits.

- 2 Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O) and fluorinated greenhouse gases (HFCs, PFCs, SF<sub>6</sub> and NF<sub>3</sub>).
- 3 Intergovernmental Panel on Climate Change. (2022). van Diemen, R., Matthews, J.B.R., Möller, V., Fuglestvedt, J.S., Masson-Delmotte, V., Méndez, C., Reisinger, A., & Smenov, S. (eds.). (2022). Annex I: Glossary. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Shukla, P.R., Skea, J., Slade, R., Al Khourdajie, A., van Diemen, R., McCollum, D., Pathak, M., Some, S., Vyas, P., Fradera, R., Belkacemi, M., Hasija, A., Lisboa, G., Luz, S., & Malley, J. (eds.)). Cambridge University Press. doi: 10.1017/9781009157926.020. Available in English at: [https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC\\_AR6\\_WGIII\\_Annex-I.pdf](https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Annex-I.pdf).
- 4 Finnish Innovation Fund Sitra. (2018). Mitä nämä käsitteet tarkoittavat? – Hiilen sidonta. (*What do these terms mean? – Carbon sequestration.*) Available in Finnish at: <https://www.sitra.fi/artikkelit/mita-nama-kasitteet-tarkoittavat/>.

Term	Description
<b>Mitigation activity</b>	An intervention to reduce greenhouse gas emissions or enhance carbon removals, aiming to mitigate climate change.
<b>Mitigation outcome</b>	A reduction in greenhouse gas emissions or an increase in carbon removals equal to one tonne of carbon dioxide equivalent (CO <sub>2</sub> e or CO <sub>2</sub> -eq).
<b>Monitoring</b>	Monitoring the emissions and mitigation outcomes of a mitigation activity and calculating these in keeping with specific quantification methodologies.
<b>Net zero</b>	At the global level, the IPCC defines net zero as a synonym to carbon neutrality <sup>5</sup> . There is no established definition for net zero at an organisational level. The Science Based Targets initiative defines corporate net zero as a situation in which a company has reduced its direct and indirect emissions in line with the 1.5°C target, achieved its 1.5°C-aligned long-term target by reducing emissions in its own value chain (i.e. without the use of credits based on mitigation outcomes achieved outside the value chain), and offset any residual emissions with permanent carbon removals (within or beyond its value chain) <sup>6</sup> .
<b>Offsetting claim</b>	<p>A claim that the climate harm caused by emissions from a certain source (organisation, product, service) is counterbalanced as a result of cancelling a number of carbon credits equal to the emissions in question. A credible offsetting claim requires that the mitigation outcomes underlying the credits are not counted as part of any other purpose, such as towards any country's national climate targets. An offsetting claim can cover all or part of emissions from the source. A carbon neutrality claim is an offsetting claim covering emissions from the source in full. Double claiming is avoided by only counting the mitigation outcome towards the claimant.</p> <p>'Compensation' has traditionally referred to offsetting the climate harm caused by emissions.</p>

5 Intergovernmental Panel on Climate Change. (2021). Frequently Asked Questions, FAQ 1.3. Available in English at: [https://report.ipcc.ch/ar6wg3/pdf/IPCC\\_AR6\\_WGIII\\_FAQ\\_Chapter\\_01.pdf](https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_FAQ_Chapter_01.pdf).

6 Science Based Targets initiative. (2023). SBTi Corporate Net Zero Standard. Available in English at: <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>.

Term	Description
<b>Offtake agreement</b>	Offtake agreements are used by the parties to agree on the sale of products yet to be manufactured. In carbon markets, the producers and buyers of mitigation outcomes often agree on the price and number of carbon credits to be purchased in advance.
<b>Technological removals, industrial carbon removals, engineered carbon removals</b>	Carbon capture either from biogenic sources (such as bioenergy) or directly from the atmosphere and permanent storage of captured carbon.
<b>Validation</b>	An ex-ante assessment performed by an independent third party of the compliance of the mitigation activity with minimum criteria prior to its implementation.
<b>Verification</b>	An ex-post evaluation performed by an independent third party of the quantity of mitigation outcomes achieved during the monitoring period and quantified in keeping with the minimum criteria after the mitigation activity has been implemented.
<b>Voluntary mitigation action</b>	This report focuses on voluntary mitigation actions to reduce emissions or enhance carbon removals supported by producing or purchasing carbon credits that meet the minimum criteria.

## ABBREVIATIONS

Term	Description
<b>A6.4ER</b>	Article 6.4 Emission Reduction (a carbon credit generated by the mechanism established under Article 6.4 of the Paris Agreement)
<b>BECCS</b>	Bioenergy with carbon capture and storage
<b>CCQI</b>	Carbon Credit Quality Initiative
<b>CCS</b>	Carbon capture and storage <sup>7</sup>
<b>CDM</b>	Clean Development Mechanism (established under the Kyoto Protocol)
<b>CO<sub>2</sub>e</b>	Carbon dioxide equivalent (common measure for greenhouse gas emissions)
<b>CORSIA</b>	Carbon Offsetting and Reduction Scheme for International Aviation
<b>CCP</b>	Core Carbon Principles (criteria for high-quality carbon credits published by the ICVCM)
<b>CRCF</b>	EU Carbon Removals and Carbon Farming Certification Framework
<b>CSDDD</b>	EU Corporate Sustainability Due Diligence Directive
<b>CSRD</b>	EU Corporate Sustainability Reporting Directive
<b>DACCS</b>	Direct air capture with carbon storage
<b>ECGT</b>	Empowering Consumers for the Green Transition Directive
<b>ESR</b>	EU Effort Sharing Regulation (covering GHG emissions from transport, agriculture, etc.)
<b>EU ETS</b>	EU Emissions Trading System
<b>ICVCM</b>	Integrity Council for the Voluntary Carbon Market (international and independent governance body for voluntary carbon markets)
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>ITMO</b>	Internationally transferred mitigation outcome (authorised by countries under Article 6.2 of the Paris Agreement)
<b>JI</b>	Joint Implementation (of the Kyoto Protocol)

<sup>7</sup> Carbon capture and storage can generate emission reductions if the captured carbon is fossil-based and carbon removals if it is biogenic.

<b>Term</b>	<b>Description</b>
<b>LULUCF</b>	Land use, land use change and forestry (emissions calculation category)
<b>NDC</b>	Nationally Determined Contribution (of each State party to the Paris Agreement)
<b>PACM</b>	Paris Agreement Crediting Mechanism (established under Article 6.4 of the Paris Agreement)
<b>SBTi</b>	Science Based Targets Initiative (to contribute to promoting mitigation activities in the private sector, helping companies set science-based emission reduction targets for their own operations)
<b>VCMI</b>	Voluntary Carbon Markets Integrity Initiative (international initiative focusing on claims related to the voluntary use of carbon credits)

## FOREWORD

We need voluntary mitigation action because global greenhouse gas emissions are still rising. Though the pace has slowed down, greenhouse gas emissions are still higher than ever before. At the global level, the emission reduction commitments made by different states to date are not enough to limit global warming to 1.5°C by the end of the century.

Through voluntary mitigation action, operators can complement the binding targets and take responsibility for their residual emissions that cannot be reduced. In addition to emission reduction measures carried out within their own value chain, operators can implement voluntary mitigation activities beyond their value chains. Companies have started to consider and invest in these, but it would be advisable for decision-makers to further develop common rules and incentives to spur projects. Our shared Earth needs this.

Technological carbon sequestration solutions play an important role in Finland's industrial and climate policies. The long-lasting and permanent nature of these solutions also make them attractive for buyers in voluntary markets who want to invest in the quality and reliability of credits and minimise their reputational risk. Among other things, Finland has potential for biogenic carbon capture and use. In many cases, high investment costs require combining public and private funding. It is therefore important to create sufficient incentives and enable a clear operating environment for technological carbon sequestration solutions, in order to scale the emerging technologies for use.

Finland also has potential for and the need to promote mitigation activities especially in the land use sector. Further action is needed for Finland to meet its 2035 carbon neutrality target and the climate obligations set by the EU for the land use sector. The characteristics of the land use sector also add to the challenges of using the markets (measurement challenges and permanence of carbon sequestration, etc.). However, the Government intends to later include certain cost-effective emission reductions of the land use sector in the flexibility mechanism for the biofuel distribution obligation. In the first phase, the Government is introducing measures taken in the effort sharing sector as part of the flexibility mechanism.

Voluntary carbon markets are constantly evolving. The EU is taking its first steps in its regulatory action through the Carbon Removals Certification Framework (CRCF), Corporate Sustainability Reporting Directive (CSRD) and consumer protection (Empowering Consumers for the Green Transition and Green Claims Directives). At the same time, independent initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM) are developing tools for auditing the quality of mitigation outcomes. It is worth keeping an eye on and taking part in this development.

In Finland, the debate on carbon markets is well informed and of a very high standard. Published in 2023, the Guide to good practices for voluntary carbon markets attracted international attention. Finland should stay at the forefront of development and contribute to developing voluntary carbon markets towards even greater climate impact.

When properly and responsibly implemented, voluntary carbon markets can be a significant driving force for effective climate actions. I hope that companies and other parties will take an active role in these activities.

Kai Mykkänen, Minister of Climate and the Environment

# 1 Introduction

Voluntary mitigation activities contribute to the long-term climate targets under the Paris Agreement by supporting countries to either meet or exceed national targets. In addition to emission reduction measures carried out within their own value chain, operators can implement voluntary mitigation activities beyond their value chains. One way to support mitigation activities outside of the value chain is to purchase carbon credits. Purchasing carbon credits makes it possible to provide support for additional and verified mitigation outcomes, scale the support to match a certain amount of emission reductions or removals, and target support to different types of mitigation activities carried out in different parts of the world. The use of carbon credits can either help states to meet their national climate targets or raise the level of ambition for climate targets by directing support to activities not counted as part of national climate targets.

The use of carbon credits as part of the mitigation activities and strategies of operators has evolved for more than 20 years. Operators have typically used carbon credits to offset emissions relating to their operations or products and to make related marketing claims (such as 'carbon neutral', 'carbon footprint offset'). In addition to consumer marketing, operators have also increasingly used carbon credits as part of their corporate social responsibility. The policies and quality related to production and use of credits have thus far varied considerably due to lax regulation and standardisation. In response to market criticism, the use of carbon credits is changing through more stringent regulation and quality control. Guidelines and regulation for production and use of carbon credits are constantly evolving as experience is gained and the climate policy framework changes. In Finland, good practices for production and use of carbon credits have been compiled in a guide published by the Government in February 2023<sup>8</sup>.

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8 Laine, A., Ahonen, H-M., Pakkala, A., Laininen, J., Kulovesi, K. & Mäntylä, I. 2023. Guide to good practices for voluntary carbon markets. Supporting voluntary mitigation action with carbon credits. Publications of the Finnish Government 2023:24. <http://urn.fi/URN:ISBN:978-952-383-511-5>.

The interim report<sup>9</sup> of this project, published in December 2023, compiled developments in market-related regulation and guidance and their implications for Finland. This final report explores potential future trajectories of these market changes and their impact on the demand for and supply of carbon credits. The report also examines the views of domestic operators on market changes and, finally, the implications of the trajectories from the government perspective in terms of Finland's climate targets, national regulation and information guidance instruments.

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9 Laine, A., Ahonen, H-M., Pakkala, A., Mäntylä, I., Noro, K., Halonen, M., Laininen, J. & Aalto, L. 2023. Vapaaehtoisten ilmastotoimien rooli ja kansainvälisen viitekehyksen muutoksen vaikutukset Suomelle: Väli­raportti. (*The role of voluntary climate actions and the effects of the changing international framework for Finland: Interim report.*) Publications of the Government's analysis, assessment and research activities 2023:63. Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-383-035-6>.

## 2 Current status and development of voluntary carbon markets

This chapter focuses on trends in the supply of and demand for carbon credits, which are traded on voluntary carbon markets. The chapter starts by describing the fundamental principles and development needs of these markets and the most frequent criticism directed at them. It then moves on to explain how these development needs have been met in recent years. Finally, it examines potential trajectories for the markets in light of the current status.

### 2.1 Operating policies of voluntary carbon markets

Climate change can be mitigated by reducing greenhouse gas emissions and enhancing carbon removals from the atmosphere. In this report, measures to reduce emissions or enhance removals are called **mitigation activities** and the emission reductions and removals generated through these activities are referred to as **mitigation outcomes**.

In this report, a **carbon credit**<sup>10</sup> refers to an emission reduction or removal equivalent to one tonne of carbon dioxide, which is certified within the framework of a **carbon crediting programme**. Certification requires the mitigation outcome to meet the programme criteria for additionality, permanence, verification, etc. Carbon credits are bought and sold on **carbon markets**. These can be used by states and non-state actors to provide voluntary support for mitigation activities and, in some cases, to meet obligations.

Businesses and other organisations can contribute to climate change mitigation by implementing mitigation activities within and supporting mitigation activities outside their own value chain. Organisations should prioritise reducing their own

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10 The term 'carbon credit' can also cover an emission allowance equal to one tonne of carbon dioxide equivalent, such as in the EU Emissions Trading System (EU ETS). To achieve a mitigation outcome equivalent to a carbon credit, an operator must cancel emission allowances or keep the acquired emission allowances out of market circulation by holding these in its own account. In this report, however, 'carbon credit' refers to credits issued by carbon crediting programmes.

value chain emissions in line with the global 1.5°C target. They can complement – but not replace or postpone – their own efforts to reduce emissions by also supporting mitigation activities outside their own value chain. Buying carbon credits is a way to support beyond value chain mitigation outcomes, which have been assessed under a carbon crediting programme to be additional and reliably quantified.

All carbon credits produced should meet the internationally established minimum criteria consistent with good practices, aiming to ensure that mitigation outcomes are additional, permanent, verifiable, etc<sup>11</sup>. Several **carbon crediting programmes** have been developed to assess whether the minimum criteria are met, with a view to issuing carbon credits for mitigation outcomes that meet the criteria. Key internationally managed carbon crediting programmes include the already completed Clean Development Mechanism (CDM) and Joint Implementation (JI) under the Kyoto Protocol<sup>12</sup>, as well as the Paris Agreement Crediting Mechanism (PACM) established under Article 6.4 of the Paris Agreement, which is still being developed (see Box 1). In addition to the international mechanism, the Paris Agreement establishes rules for international market cooperation in accordance with Article 6.2. International market cooperation is based on internationally transferred mitigation outcomes (ITMOs) authorised by countries in keeping with the rules for implementing Article 6.2. At EU level, the Commission is developing a **Carbon Removals Certification Framework (CRCF)**<sup>13</sup>. Nationally managed crediting programmes include the Joint Crediting Mechanism (JCM) between Japan and its partner countries, the Thailand Voluntary Emission Reduction Program

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- 11 The internationally established minimum criteria for carbon credits are as follows: additionality; robust baselines; robust quantification methodologies; monitoring and reporting; permanence; avoidance of carbon leakage; authenticity; independent verification and certification; avoidance of double counting; and avoidance of significant harm, known as the 'do no significant harm' (DNSH) principle. These minimum criteria are described in further detail in the Finnish Government's Guide to good practices for voluntary carbon markets (Laine, A., et al., 2023).
- 12 While the CDM ceased operations on 30 June 2023, it has been possible to cancel existing CDM credits voluntarily even after this date. However, new projects will no longer be registered under the programme.
- 13 European Commission. 2022. Proposal for a Regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals, also referred to as the Carbon Removals and Carbon Farming Certification (CRCF) Regulation. COM(2022) 672 final. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0672>; and Provisional agreement of March 2024. Available in English at: [https://www.europarl.europa.eu/meetdocs/2014\\_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR\\_2022-0394COD\\_EN.pdf](https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR_2022-0394COD_EN.pdf).

(T-VER) and the Label Bas Carbone (Low Carbon Standard) programme in France. The main crediting programmes for voluntary carbon markets, such as the Gold Standard for the Global Goals (GS4GG) and the Verified Carbon Standard (VCS), are managed by private bodies.

### **Box 1: Market cooperation under and rules for implementing Article 6 of the Paris Agreement**

The international mandatory use of carbon credits is governed by Article 6 of the Paris Agreement, which establishes a framework for international market-based cooperation and allows countries to meet their national climate commitment to the Agreement, known as the Nationally Determined Contribution (NDC), partly in cooperation with other countries. The countries participating in cooperation must comply with international rules covering quality assurance of mitigation outcomes, avoiding double counting, etc. Article 6.2 enables cooperation concerning mitigation outcomes suitable for international mandatory use and Article 6.4 establishes the international Paris Agreement Crediting Mechanism (PACM). Cooperation under Article 6.2 has already started, whereas the development of the international crediting mechanism is still ongoing. The mechanism is expected to be operational in 2025.

Article 6.2 establishes rules for market cooperation<sup>14</sup> based on internationally transferred mitigation outcomes (ITMOs) authorised by countries. According to the rules for implementing Article 6.2, an ITMO is a real, verified and additional mitigation outcome that is authorised for use: a) to meet other countries' Nationally Determined Contributions (NDCs) to the Paris Agreement; b) in international contexts (such as meeting the CORSIA obligations for aviation); and/or c) for other purposes (such as voluntary offsetting claims). Countries participating in ITMO-based cooperation must meet the conditions for participation and they are responsible for ensuring environmental integrity, promoting sustainable development and applying robust

14 The rules for market cooperation under Article 6.2 are discussed in more detail in the project's interim report, which is available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-383-035-6>.

accounting, for purposes such as avoiding double counting in keeping with the international Article 6.2 rules. They should set up national arrangements for authorising ITMOs and recording, monitoring and reporting relevant information. Authorisation obliges the host country to adjust its national emissions balance by an amount equivalent to authorised and 'first transferred'<sup>15</sup> ITMOs. If an ITMO is used to meet another country's NDC, the user country makes a corresponding adjustment to its own emissions balance. Corresponding adjustments are used to avoid double counting, i.e. to ensure that the mitigation outcome represented by the ITMOs will only be counted towards the ITMO user and not towards the host country.

The EU and its Member States have a common NDC, which is intended, as a general rule, to be achieved through internal EU action, with the exception of EU cooperation with Iceland, Liechtenstein, Norway and Switzerland. These international links should apply Article 6.2 accounting rules. This will require a new EU-level regulatory framework, which is still being developed. The current EU regulatory framework does not provide any opportunities for Member States to authorise national mitigation outcomes as ITMOs. The opportunities for cooperative approaches under Article 6.2 within the EU are discussed in broader terms in the project's interim report.

The Paris Agreement Crediting Mechanism (PACM) established under Article 6.4 is an international crediting programme managed by the Supervisory Body under the Paris Agreement. The PACM issues carbon credits known as Article 6.4 Emission Reductions (A6.4ERs) to mitigation outcomes that meet the mechanism criteria. The rules for implementing Article 6.4 contain the criteria and processes in general terms. In addition to the above-mentioned established minimum criteria, the A6.4ER criteria also include requirements for compatibility with national targets and the long-term goals of the Paris Agreement and methodologies to encourage ambition. The Supervisory Body is charged with developing more detailed criteria and processes for approval of quantification methodologies, for example. At least 2% of A6.4ER credits should be cancelled to reduce global net emissions and another 5% should be transferred to an adaptation fund under the Paris Agreement.

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15 For NDC use, 'transfer' is defined as the first international transfer. For other uses, a party may define authorisation and the issuance, use or cancellation of credits as 'transfer'.

A6.4ER credits are only suitable for international mandatory use if authorised as ITMOs under Article 6.2. Unauthorised A6.4ER credits with mitigation outcomes counted towards the host country's emissions inventory are suitable for supporting the host country's mitigation activities and can be used as a basis for climate finance or voluntary **contribution claims** or as part of implementing national carbon pricing systems, etc. In practical terms, a carbon credit is generated when a mitigation activity that meets the criteria has been implemented and the resulting additional mitigation outcomes have been quantified and reported in keeping with approved methodologies and in comparison to a conservative baseline, verified and recorded in the crediting programme's registry. The programme registry keeps track of the credits issued and their transfers and uses. Besides the credits issued, buyers can make offtake agreements to purchase credits in advance.

Carbon credits can be used for different purposes. The market is described in more detail in Figure 1. Operators can use credits voluntarily by cancelling them in the registry. By purchasing carbon credits, an operator supports voluntary mitigation action outside its value chain. 'Voluntary use of carbon credits' refers to a situation where an operator (public or private) purchases carbon credits without a binding obligation. 'Mandatory use' means the use of credits to meet an emission reduction or other such obligation specified by a scheme. 'National mandatory use' refers to the use of a carbon credit to fulfil obligations in the host country, while 'international mandatory use' means the use of a carbon credit to meet the obligations of another country.

Regulation governing mandatory use and good practices for voluntary use require avoidance of double counting. Avoidance of double counting means that the mitigation outcome underlying a carbon credit is only credited towards one operator.

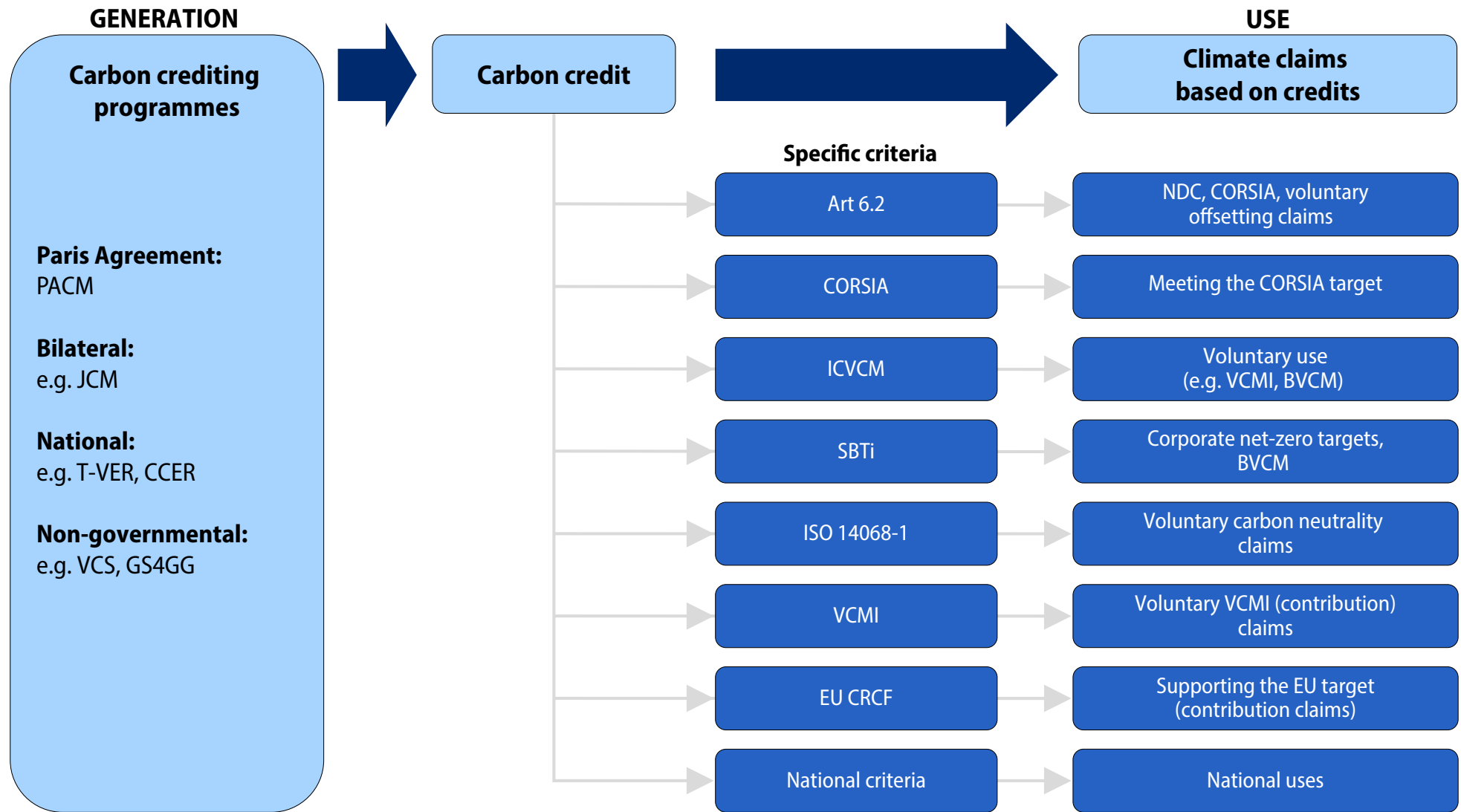
When purchasing carbon credits, operators can make various claims depending on the purchased credit, its type and the operator's objectives. Claims based on carbon credits can be divided into the following two main types: 1) **offsetting claims** and 2) **contribution claims**. To date, the majority of climate claims have been offsetting claims, while the contribution claim is a new type of claim still being developed. 'Offsetting claim' means that the climate harm caused by emissions from a certain source is counterbalanced by supporting an equivalent number of carbon credits such that the combined effect of the emissions and carbon credits on global net emissions equals zero. A popular example of an offsetting claim is **carbon neutrality**, which means that the carbon footprint of the subject of the claim (such as an organisation or product) is offset in full. The good practices for voluntary use require that the voluntary offsetting of the climate impact of emissions is based on mitigation outcomes that are only credited towards the user of the credits and not

counted towards meeting the national target of any state. As a general rule, this requires that the host country has authorised the mitigation outcome as an ITMO under Article 6.2 of the Paris Agreement (see Box 1). In the context of contribution claims, rather than to offset the climate harm of specific emissions, mitigation outcomes are used to contribute to collective goals. In other words, contribution claims cover any claims based on carbon credits where the operator does not claim that its own emissions have been offset by the carbon credits<sup>16, 17, 18</sup>. The operator can use a contribution claim to communicate that it has supported mitigation activities outside its own value chain, thus contributing to achieving global or national climate targets. The operator can voluntarily support a country's national climate target by purchasing carbon credits that represent mitigation outcomes counted towards that country's national climate targets.

Different carbon credits are suitable for making different types of claims. As a general rule, any carbon credit can be used for contribution claims, while those that meet certain criteria can also be used for other purposes. While contribution claims can also be related to supporting mitigation activities that are not based on carbon credits, this report focuses on claims based on carbon credits. Carbon credits produced under any crediting programme can currently be used on a voluntary basis, but only some can be used to meet a national or international obligation. There are several links between voluntary and mandatory uses of carbon credits because credits suitable for mandatory use can be used on a voluntary basis and, correspondingly, credits originally intended for voluntary markets can also be approved for mandatory use under certain conditions (such as in the CORSIA scheme for aviation). Carbon credits suitable for international mandatory use can also be used to offset emissions on a voluntary basis because they make it possible to avoid double counting with the host country's national targets. Carbon credits suitable for national mandatory use can also be used to make contribution claims because they make it possible to contribute to achieving the host country's national targets.

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- 16 Carbon Market Watch. 2020. Above and Beyond Carbon Offsetting – Alternatives to compensation for climate action and sustainable development. Available in English at: <https://carbonmarketwatch.org/wp-content/uploads/2020/12/AboveAndBeyondCarbonOffsetting.pdf>.
- 17 WWF. 2020. Corporate climate strategies in the era of the Paris Agreement and the (new) role of «compensation» projects. Available in English at: [https://www.wwf.ch/sites/default/files/doc-2021-10/2020\\_12\\_15\\_WWF\\_Recommendations\\_Climate\\_Strategies\\_in\\_the\\_Paris\\_Era.pdf](https://www.wwf.ch/sites/default/files/doc-2021-10/2020_12_15_WWF_Recommendations_Climate_Strategies_in_the_Paris_Era.pdf).
- 18 Science Based Targets initiative. 2024. Raising the bar: A SBTi report on accelerating corporate adoption of beyond value chain mitigation (BVCM). Available in English at: <https://sciencebasedtargets.org/resources/files/Raising-the-Bar-Report-on-BVCM.pdf>.

**Figure 1.** Crediting programmes and their uses in voluntary carbon markets



Voluntary markets can also be linked to national mandatory schemes, in which case the link functions as a driver for the demand for mitigation outcomes. In recent years, linkages between voluntary markets and mandatory schemes have been implemented in a number of countries. In 2024, for example, Chile introduced a new flexibility mechanism for carbon tax<sup>19</sup>, which allows operators subject to carbon tax to cover some of their emissions by supporting nationally approved mitigation activities, therefore paying less tax<sup>20</sup>.

Within the EU, debate on linking voluntary and compliance markets has thus far focused on the potential inclusion of permanent carbon removals in the EU Emissions Trading System (EU ETS) and/or some other instruments in the future<sup>21, 22</sup>. Any decision on the inclusion of permanent carbon removals in emissions trading will be made in 2026 at the earliest, when the EU Commission is required to report on the possibilities and options of including carbon removals to the EU Parliament and Council.<sup>23</sup>

A domestic example of linking voluntary and mandatory schemes is the flexibility mechanism for the distribution obligation included in Prime Minister Petteri Orpo's Government Programme. Under a draft bill amending the distribution obligation, the flexibility mechanism would allow fuel retailers (NEOT Group, Neste and Teboil) to meet 5.5% of their distribution obligation with alternative emission reduction measures in the effort sharing sector. The draft bill provides that, later on, it would also be possible to steer the functions of the flexibility mechanism by government decree to cover the land use sector to the extent that one percentage point of

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19 Carbon Pulse. March 28, 2024. Chile approves first offsetting projects eligible for paying national carbon tax. Available in English at: <https://carbon-pulse.com/272882/>.

20 For more information about Chile's carbon tax and flexibility mechanism, refer to: International Monetary Fund. Fiscal Affairs Dept. 2023. Chile: Technical Assistance Report – An Evaluation of Improved Green Tax Options. Available in English at: <https://doi.org/10.5089/9798400229381.002>.

21 European Parliament. 2022. Draft report on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for green-house gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757 (COM(2021)0551. Available in English at: [https://www.europarl.europa.eu/doceo/document/ENVI-PR-703068\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/ENVI-PR-703068_EN.pdf).

22 Directive 2023/959 of the European Parliament and of the Council. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023L0959>.

23 Directive 2003/87/EC, consolidated text. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02003L0087-20230605>.

the 5.5 percentage points could be directed to land use sector measures.<sup>24</sup> The Government Programme notes that measures in the effort sharing sector are the priority target of the flexibility mechanism because the mechanism specifically aims to step up emission reductions in the effort sharing sector. As part of the flexibility mechanism, the Government would produce a registry for mitigation outcomes approved for the flexibility mechanism. The Government is also seeking to implement pilot projects to support development of a market for domestic mitigation outcomes. While the main focus is on measures in the effort sharing sector, the Government Programme indicates that piloting also covers measures such as forest ash fertilisation or mitigation activities in agricultural land.<sup>25</sup>

## 2.2 Development needs of voluntary carbon markets

In recent years, voluntary carbon markets have been subject to a lot of criticism and their shortcomings have also been widely raised in the media. There has been no previous specific regulatory framework binding on the production of carbon credits for voluntary carbon markets, their voluntary use and claims based on them; instead, there has only been a general requirement on the truthfulness of marketing claims. To increase confidence in carbon markets, various good practices, which have already become established in the markets, have been put together by several states and other parties, such as the Nordic Dialogue<sup>26</sup>; Finland<sup>27</sup>;

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24 Lausuntopalvelu.fi, 2024. Luonnos hallituksen esitykseksi uusiutuvien polttoaineiden käytön edistämisestä liikenteessä annetun lain muuttamisesta (jakelovelvoite) (Draft government proposal amending the Act on promoting the use of biofuels in transport (distribution obligation). Available in Finnish at: <https://www.lausuntopalvelu.fi/FI/Proposal/DownloadProposalAttachment?proposalId=06eb81dc-1127-4938-86a3-709b8864653d&attachmentId=22606>.

25 Prime Minister Petteri Orpo's Government Programme. 2023. Chapter 7.4: Finland will use effective and sustainable means to increase its climate handprint and proceed towards carbon neutrality. Available in English at: <https://valtioneuvosto.fi/en/governments/government-programme#/7/4>.

26 Nordic Council of Ministers. 2021. Nordic Dialogue on Voluntary Compensation. Working together towards and beyond carbon neutrality. 2021:459. Available in English at: <https://www.norden.org/en/publication/nordic-dialogue-voluntary-compensation>; and Nordic Council of Ministers. 2022. Harnessing voluntary carbon markets for climate ambition 2022:563. Available in English at: <https://www.norden.org/en/publication/harnessing-voluntary-carbon-markets-climate-ambition>.

27 Laine, A., Ahonen, H-M., Pakkala, A., Laininen, J., Kulovesi, K. & Mäntylä, I. 2023. Guide to good practices for voluntary carbon markets. Supporting voluntary mitigation action with carbon credits. Publications of the Finnish Government 2023:24. Available in English at: <http://urn.fi/URN:ISBN:978-952-383-511-5>.

New Zealand<sup>28</sup>; the Joint Statement by a like-minded group of EU countries<sup>29</sup>; the Gold Standard<sup>30</sup>; the World Wildlife Fund (WWF)<sup>31</sup>; the Carbon Credit Quality Initiative (CCQI); the Oxford Principles for Net Zero Aligned Carbon Offsetting; the Integrity Council for the Voluntary Carbon Market (ICVCM); and the Voluntary Carbon Markets Integrity Initiative (VCMI). Good practices aim to promote the production of carbon credits that meet the international minimum criteria and the consistent and reliable use of credits as part of operators' marketing and corporate responsibility, for example. Despite good practices, self-regulation based on non-state actors' crediting programmes and guidelines have so far failed to create sufficient confidence in credit quality or use and related claims.

According to good practices, the **use of carbon credits** should primarily be based on an organisation's own emission reduction measures and ambitious emission reduction plan, which entails that the organisation will only use credits to cover the share of emissions that it cannot avoid through its own action. Good practices entail a shift to use credits based on carbon removals in the long term<sup>32</sup>. Operators have typically used credits in a wide variety of ways and credits have also been used in contravention of good practices, such as without a clear emission reduction target or plan or reliable quantification of emissions. Divergent practices in the use of credits, a lack of transparency and challenges related to the comparability of claims have created misgivings about the use and reliability of credits. While practices relating to the use of credits are becoming harmonised through

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28 Ministry for the Environment, New Zealand. 2022. Interim guidance for voluntary climate change mitigation. Available in English at: <https://environment.govt.nz/assets/publications/interim-guidance-voluntary-climate-change-mitigation.pdf>.

29 Government of the Netherlands. Joint Statement on Voluntary Carbon Market: The Claims Side. 2023. Available in English at: <https://www.government.nl/documents/publications/2023/12/10/joint-statement-on-voluntary-carbon-market>.

30 Gold Standard. 2023. Fairly contributing to global Net Zero - Considerations for credible claims. Available in English at: <https://www.goldstandard.org/publications/fairly-contributing-to-global-net-zero-credible-claims>.

31 WWF. 2019. WWF position and guidance on voluntary purchases of carbon credits. Version 1.2. Available in English at: <https://www.worldwildlife.org/publications/wwf-position-and-guidance-on-voluntary-purchases-of-carbon-credits>. WWF & BCG. 2020. Beyond Science-Based Targets: a blueprint for corporate action on climate and nature. Available in English at: [https://wwfint.awsassets.panda.org/downloads/beyond\\_science\\_based\\_targets\\_\\_a\\_blueprint\\_for\\_corporate\\_action\\_on\\_climate\\_and\\_nature.pdf](https://wwfint.awsassets.panda.org/downloads/beyond_science_based_targets__a_blueprint_for_corporate_action_on_climate_and_nature.pdf).

32 Axelsson et al. 2024. Oxford Principles for Net Zero Aligned Carbon Offsetting (revised 2024). Available in English at: <https://www.smithschool.ox.ac.uk/sites/default/files/2024-02/Oxford-Principles-for-Net-Zero-Aligned-Carbon-Offsetting-revised-2024.pdf>.

regulation and guidance on carbon markets, market participants have found it challenging to follow the guidelines for the use of credits and their changes. To some extent, numerous guidelines, changes in and criticisms of the field have also led to operators becoming cautious and passive in recent years<sup>33</sup>.

In addition to the use of carbon credits, criticism of voluntary carbon markets has focused on **claims based on credits** and their potentially misleading nature and risk of greenwashing. Criticism of greenwashing has focused on issues such as disregard of good practices for the use of credits and a lack of transparency of claims. Various underlying assumptions have made it challenging for consumers to interpret and compare different claims. Moreover, offsetting and carbon neutrality claims may have given consumers a misleading picture of an operator's actual emissions and climate impacts if the operator has not openly shared information on actual emissions and the scope of calculations and claims.<sup>34</sup>

Besides criticism of the rationale for using carbon credits, the **quality of credits and its assurance** have also involved challenges and criticisms of greenwashing. In particular, criticism has focused on the carbon crediting programmes that monitor the quality of credits and their ability to ensure that the minimum criteria (such as additionality, permanence and conservative baseline) are met in line with good practices. Alongside criticism of the climate impacts of projects, increasing attention has been paid in recent years to their potential negative impacts on aspects such as the environment and local communities. Efforts have been made to improve and promote the ability of crediting programmes to assess the adequacy of credits by initiatives (such as the ICVCM and CCQI) which establish common criteria for assessing the quality of project types and crediting programmes.

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33 See e.g. Forest Trends' Ecosystem Marketplace. 2024. State of the Voluntary Carbon Market 2024. Washington, DC: Forest Trends Association.

34 By way of example, a claim may have only concerned product packaging, or the organisation may have only calculated its direct emissions, ignoring those generated within the value chain. See: Mäntylä, I. 2023. Ilmastoyksiköihin perustuvien mainos- ja markkinointiväittämien laatu Suomessa: Katsaus vuosina 2021–2022 esitettyjen väittämien syvyyteen, asianmukaisuuteen sekä tulevaisuuden käytäntöihin. (*Quality of advertising and marketing claims based on carbon credits in Finland: A review of the depth and relevance of claims made in 2021–2022 and future practices.*) Available in Finnish at: <http://urn.fi/URN:NBN:fi:hulib-202306132584>.

## 2.3 Development of voluntary carbon markets in relation to needs

The guidelines and regulatory frameworks governing voluntary mitigation activities are constantly evolving, influencing the parameters for operators' voluntary mitigation activities and the role of such activities in achieving national and international targets. Figure 2 shows the regulatory and self-regulatory frameworks for carbon credits, which establish parameters for the production of credits and voluntary claims based on these. There is regulation at international, regional (e.g. EU) and national levels. Voluntary markets for carbon credits are also influenced by the voluntary standards, carbon crediting programmes and recommendations developed for them. This chapter examines recent changes and developments in guidance and regulation governing voluntary carbon markets, which contribute to illustrating how regulation and market participants have aimed to respond to criticism of carbon markets.

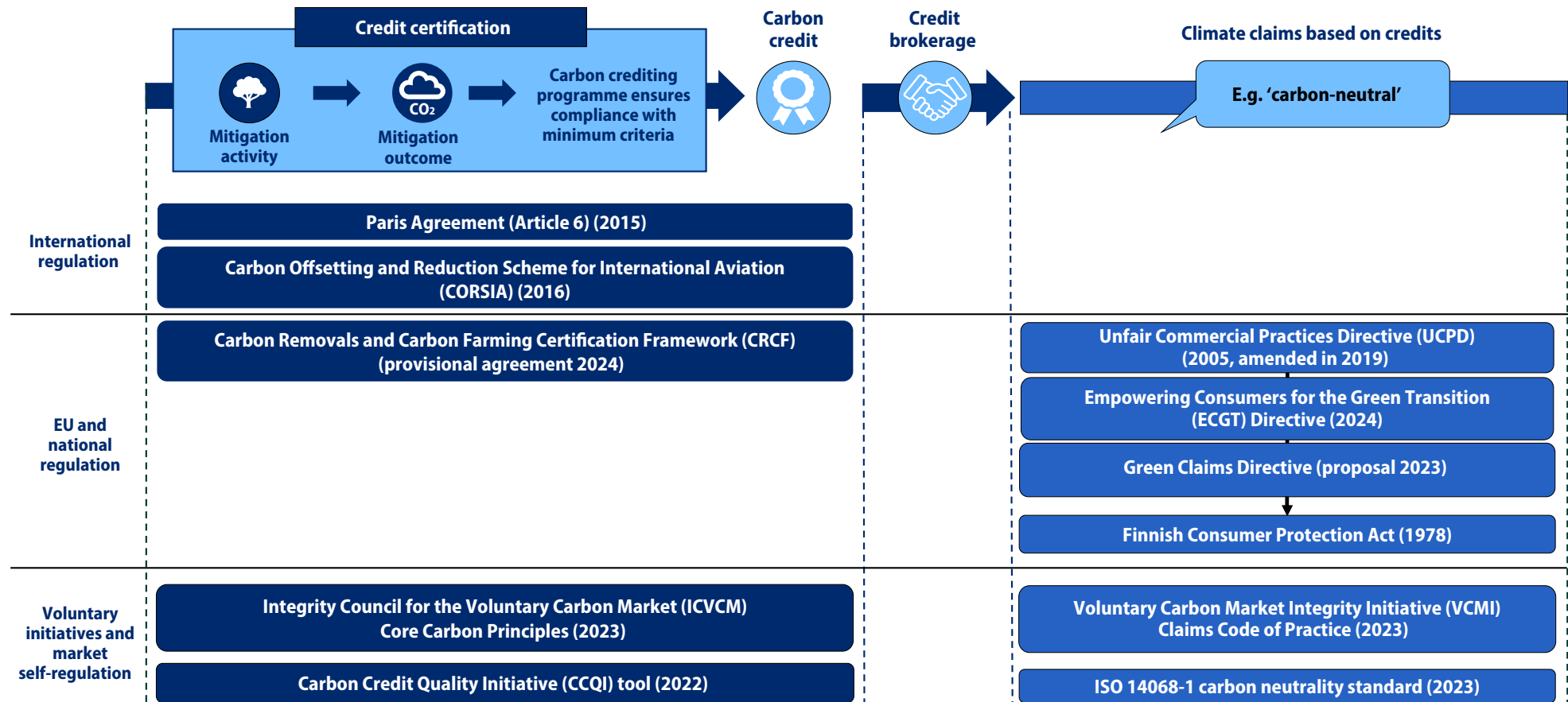
### 2.3.1 Responsible use of carbon credits

According to good practices, responsible use of carbon credits is based on: 1) comprehensive and reliable quantification of an organisation's own emissions; 2) emission reductions carried out in the organisation's value chain, its climate target and roadmap; 3) use of high-quality credits; 4) credible claims; and 5) transparent and reliable reporting<sup>35</sup>. Each of the elements mentioned above involve various initiatives, guidelines and regulatory instruments aiming to promote the responsible and reliable use of credits. However, there are many overlaps between self- and binding regulation of different elements and links have been created between them to avoid overlapping and conflicting guidance.

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35 Laine, A., Ahonen, H-M., Pakkala, A., Laininen, J., Kulovesi, K. & Mäntylä, I. 2023. Guide to good practices for voluntary carbon markets. Supporting voluntary mitigation action with carbon credits. Publications of the Finnish Government 2023:24. Available in English at: <http://urn.fi/URN:ISBN:978-952-383-511-5>.

**Figure 2.** Value chain of carbon credits and key regulation and self-regulation governing credit production and voluntary claims



Currently the most powerful driver for development of operators' emissions quantification and emission reduction targets in their own value chain is the framework created by the Science Based Targets Initiative (SBTi)<sup>36</sup>, which allows businesses to set short- and long-term climate targets in line with the global 1.5°C target. The SBTi notes that carbon credits cannot currently be used to achieve value chain emission reduction targets<sup>37</sup>. However, the SBTi encourages operators to support additional mitigation action that falls outside their value chains, known as 'beyond value chain mitigation' (BVCM). According to the BVCM guidance published by the SBTi in February 2024<sup>38</sup>, operators can support beyond value chain mitigation action by means such as purchasing carbon credits (see Box 2). However, the SBTi does not take a stand on whether operators should make offsetting or contribution claims, as long as beyond value chain carbon credits are used in addition to, rather than in lieu of, achieving the emission reduction target set for their own value chain. Likewise, the Gold Standard published BVCM guidance in the spring of 2024, which also includes other options to support mitigation action alongside the use of credits<sup>39</sup>. The Gold Standard recommends making contribution claims and avoiding offsetting claims due to the challenges involved in the latter.

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36 Science Based Targets initiative. Standards and guidance. Available in English at: <https://sciencebasedtargets.org/standards-and-guidance>.

37 In April 2024, however, the SBTi published a release according to which it is currently developing guidance on consideration of carbon credits as part of abating Scope 3 emissions generated within the value chain in setting targets in line with the SBTi framework. Due to the completion schedule of this guidance and the uncertainty of its content, the guidance has not been considered in this report. However, this revision would presumably increase operators' use of credits significantly because the most challenging aspect for businesses in many cases is to abate emissions generated within the value chain on their own. (Available in English at: <https://sciencebasedtargets.org/news/statement-from-the-sbti-board-of-trustees-on-use-of-environmental-attribute-certificates-including-but-not-limited-to-voluntary-carbon-markets-for-abatement-purposes-limited-to-scope-3>).

38 Science Based Targets initiative. Beyond value chain mitigation. Available in English at: <https://sciencebasedtargets.org/beyond-value-chain-mitigation>.

39 Gold Standard. 2024. Funding Beyond Value Chain Mitigation. Available in English at: <https://www.goldstandard.org/publications/funding-beyond-value-chain-mitigation>.

## **Box 2: Supporting mitigation activities in line with the SBTi guidance on beyond value chain mitigation (BVCM)**

The SBTi BVCM guidance identifies three approaches to supporting and financing beyond value chain mitigation activities. The approaches presented below aim to add to the recognised ways and models to support various mitigation activities (including research and development that does not directly produce mitigation outcomes).

### **Covering emissions with an equivalent number of mitigation outcomes (tonne-per-tonne approach)**

One of the most common models used in carbon markets is known as the 'tonne-per-tonne approach', where an operator purchases a number of carbon credits (tCO<sub>2</sub>e) equivalent to its emissions (tCO<sub>2</sub>e) over a specific period of time, such as annual emissions, from voluntary carbon markets. The amount of financial support paid by the operator depends on its emissions and the price of the purchased carbon credits.

### **Covering emissions with an equivalent amount of climate finance (money-per-tonne approach)**

In the 'money-per-tonne approach', the operator directs financial support to beyond value chain mitigation activities based on a pre-established carbon price and the operator's emissions. The amount of financial support payable in the approach is based on the operator's emissions over a specific period of time (such as annual emissions or emissions over some other specified period). The amount of financial support is established in keeping with the carbon price determined by the operator (such as the social cost of carbon).

### **Revenue-based climate finance (money-per-money approach)**

In the 'money-per-money approach', the operator directs a share of its revenue to beyond value chain mitigation activities. By way of example, the operator can decide to allocate a specific percentage of its revenue or profits to mitigation activities, such as purchasing carbon credits.

Science-based target setting is encouraged in particular by the requirements of the EU's new Corporate Sustainability Reporting Directive (CSRD) and Corporate Sustainability Due Diligence Directive (CSDDD)<sup>40,41</sup>. The CSRD requires operators to report whether their targets are aligned with the global 1.5°C emission reduction pathway under the Paris agreement. In addition, undertakings falling within the scope of the Reporting Directive must report on a 'transition plan', in which the undertaking explains its emission reduction targets and indicates the measures with which it intends to achieve its targets. The Reporting Directive also instructs operators to report comprehensively on their own Scope 1, 2 and 3 emissions and those of their value chains and the carbon credits involved. The CSDDD applies to a narrower group of operators, which are required to ensure that their activities are aligned with the 1.5°C emission reduction pathway. As large operators strive to reduce emissions in their value chains, these requirements will also cascade down to businesses not directly governed by the requirements.

The CSRD European sustainability reporting standard ESRS E1 (Climate change) contains specific reporting requirements on the use of carbon credits<sup>42</sup> for undertakings that have purchased or intend to purchase carbon credits, in order to meet the targets for the use of credits, for example. The disclosure requirements for carbon credits aim to create transparency on the use and quality of carbon credits when an undertaking uses them for purposes such as supporting its climate claims. The ESRS defines the 'recognised quality standards' for carbon credits<sup>43</sup>. As part of reporting on the use of carbon credits, undertakings are required to demonstrate that the use of carbon credits does not slow down or impede emission reductions within their value chains. The ESRS requires undertakings to report the

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40 Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022L2464>.

41 Directive (EU) 2024/1760 of the European Parliament and of the Council of 13 June 2024 on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859. Available in English at: <https://eur-lex.europa.eu/eli/dir/2024/1760/oj>.

42 The term 'carbon credit' in the ESRS refers to carbon credits in the same sense as in this report.

43 According to the ESRS, recognised quality standards are "verifiable by independent third parties, make requirements and project reports publicly available and at a minimum ensure additionality, permanence, avoidance of double counting and provide rules for calculation, monitoring, and verification of the project's GHG emissions and removals".

total number of credits cancelled during the reporting period and those planned to be cancelled in the future in tonnes of carbon dioxide equivalent. Where an undertaking has made claims of carbon neutrality, it is required to report the following details<sup>44</sup>:

1. whether the undertaking has set emission reduction targets for emissions within the value chain and how these targets are connected to the claims made by the undertaking;
2. whether the use of carbon credits impede or slow down the achievement of the specified emission reduction targets and how to avoid this; and
3. the credibility and integrity of the carbon credits used, including information on the carbon crediting programme and any similar adjustments and whether the credits are based on emission reductions or removals.

Where an undertaking has carried out carbon removals or storage within its own value chain, it is required to report, among other things, the amount of carbon dioxide stored and the methods used to calculate emissions.

### 2.3.2 Reliable claims

In recent years, efforts have been made to promote good practices for and the clarity of marketing claims based on carbon credits through binding EU legislation and voluntary standards and guidelines. Legislation governing claims provides definitions and a general framework for making and substantiating marketing claims based on carbon credits. Voluntary standards and guidelines contribute to complementing the regulatory framework governing claims based on carbon credits. Due to the challenges involved in double counting, contribution claims are emerging alongside traditional emissions offsetting claims.

The key standard for making carbon neutrality claims is the ISO 14068-1 carbon neutrality standard published in November 2023<sup>45</sup>. As part of the standard, operators can make carbon neutrality claims by purchasing a number of carbon

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44 Commission Delegated Regulation (EU) 2023/2772 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Disclosure requirements E1–7. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R2772>.

45 ISO 14068-1:2023. Climate change management — Transition to net zero. Part 1: Carbon neutrality. Available in English at: <https://www.iso.org/standard/43279.html>.

credits equivalent to the carbon footprint of their organisation or product so as to offset the negative climate impact of the emissions involved. The ISO standard requires operators to specify a 1.5°C aligned emission reduction pathway and a long-term net-zero target and to report on their progress towards the targets. While the ISO standard does not comment on the means to achieve net-zero targets, it refers to the SBTi framework as an example for setting net-zero targets.

The most powerful driver for contribution claims is the Claims Code of Practice published by the Voluntary Carbon Markets Integrity Initiative (VCMI) in June 2023<sup>46</sup>, which allows operators to make carbon integrity claims of promoting global climate goals. While the VCMI does not categorise its claims, it recommends avoiding offsetting claims in one of its guides. Instead, an operator can make carbon integrity claims at three levels, depending on the proportion of its residual emissions covered by purchasing carbon credits. A VCMI Carbon Integrity Platinum claim requires the operator to cover at least 100% of its residual emissions by high-quality carbon credits<sup>47</sup>. The corresponding requirements are 60–100% at the Gold level and 20–60% at the Silver level. Operators should use the ICVCM's CCP-labelled credits for their claims (see Section 2.3.3). All VCMI claims require operators to have science-based, 1.5°C aligned near- and long-term targets in place and to show progress on this target pathway.

In addition to offsetting and contribution claims, voluntary standards and guidelines also address good practices for long-term net-zero claims. Under the SBTi framework, an operator can make a net-zero claim when the operator achieves its long-term emission reduction target<sup>48</sup> (by 2050) and neutralises its small residual emissions in the target year and beyond by using permanent carbon removals within or outside its value chain. The net-zero guidelines also encourage the use of carbon credits on the pathway towards net zero (Beyond Value Chain Mitigation, see Section 2.3.1).

Several ongoing projects within the EU have put forward proposals for significantly tightening the regulatory framework governing environmental and climate claims from the current situation. These will have a material impact on operators' ability

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46 VCMI. 2023. Claims Code of Practice. Available in English at: <https://vcmintegrity.org/vcmi-claims-code-of-practice/>.

47 The first VCMI Carbon Integrity Platinum claim was made in February 2024. For more information, see: VCMI. 26.02.2024. [Bain & Company makes the inaugural VCMI Carbon Integrity Claim](#).

48 Science Based Targets initiative. SBTi Corporate Net-Zero Standard (March 2024), p. 14. Available in English at: <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>.

to make claims based on the use of carbon credits. The key legislative projects in terms of operators' climate claims include the Empowering Consumers for the Green Transition (ECGT) Directive<sup>49</sup> and the Green Claims Directive<sup>50</sup> concerning substantiation and communication of green claims. The ECGT Directive specifies the EU consumer and marketing law and is complemented by the Green Claims Directive. The ECGT Directive aims to prohibit and restrict making unclear environmental claims and the use of carbon credits as a basis for climate claims. The Green Claims Directive, in turn, specifies the criteria for operators' environmental claims by laying down requirements for substantiating environmental claims.

Under the ECGT Directive adopted in February 2024, offsetting claims concerning products (such as 'carbon-neutral product') will be banned from now on. The Directive also revises procedures relating to forward-looking climate claims (such as 'carbon neutral by 2040')<sup>51</sup>. The prohibition on offsetting claims under the ECGT Directive does not apply to organisational claims or other claims based on carbon credits (such as contribution claims); nor does it prevent operators from supporting or marketing their support to projects (including mitigation activities) falling outside their value chains.

The Green Claims Directive is still being developed. The European Parliament adopted its negotiating position in March 2024<sup>52</sup> and the European Council followed suit in June 2024<sup>53</sup>. Both positions allow the use of carbon credits as a

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49 Proposal for a Directive of the European Parliament and of the Council amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information. COM(2022) 143 final. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022PC0143>.

50 Proposal for a Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive). COM(2023) 166 final. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2023:0166:FIN>.

51 The Directive would also define as prohibited any forward-looking claims not backed by science-based commitments, implementation plans and monitoring or entirely based on carbon credits. Under the Directive, the veracity of forward-looking claims would be determined on the basis of a case-by-case assessment.

52 European Parliament. 2024. Substantiation and communication of explicit environmental claims (Green Claims Directive). Available in English at: [https://www.europarl.europa.eu/doceo/document/TA-9-2024-0131\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/TA-9-2024-0131_EN.pdf).

53 Council of the European Union. 10 June 2024. Proposal for a Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive). Available in English at: <https://data.consilium.europa.eu/doc/document/ST-10940-2024-INIT/en/pdf>.

basis for organisational offsetting or contribution claims. With regard to offsetting claims, both positions require that an organisation making such a claim reduce its own emissions in line with 1.5°C. Parliament would ask the Commission to develop a methodology for determining 1.5°C aligned residual emissions. The Council's position, in turn, refers to the Corporate Sustainability Reporting Directive (CSRD), which requires all of the companies falling within its scope to report on how their business models and strategies are compatible with the 1.5°C target. The Council would request the Commission to develop more detailed implementing acts for offsetting and contribution claims based on carbon credits by the end of 2027, considering international standards, including key international standards and the authorisations under Article 6 of the Paris Agreement and corresponding adjustments. According to Parliament's position, carbon credits may only be used for offsetting claims if they are certified under the EU Carbon Removals Certification Framework (CRCF) or other carbon crediting programmes approved by the Commission as equivalent to its requirements. Although Parliament's position mentions avoiding double counting, the use of EU-certified carbon credits (CRCF, see Section 2.3.3) for offsetting claims could lead to double counting because the mitigation outcomes certified under the EU framework should contribute to achievement of the EU climate targets. In its position, the Council does not mention carbon credits certified under the CRCF. Both positions require the claimant to report the use of carbon credits separately from its own emissions data, the share of carbon credits of its own emissions and the type of project related to carbon credits (emission reduction or carbon removal). In its position, the Council also requires reporting on the organisation's emission trends, the time of production of carbon credits and the carbon crediting programme, and whether the mitigation outcomes underlying the carbon credits reduce the host country's emissions.

By regulating claims, the EU aims to promote clear marketing claims and steer operators away from using carbon neutrality claims perceived as misleading. Similar to a number of standards, guidelines and initiatives (such as the Gold Standard, VCMi, Nordic Dialogue and the Joint Statement by alike-minded group of EU countries), the EU's claims regulation steers operators towards the use of contribution claims.

### 2.3.3 Credit quality assurance

The key drivers of credit quality in Europe include the EU's forthcoming Carbon Removals Certification Framework, on which the European Parliament and Council reached an agreement in February 2024<sup>54</sup>. Furthermore, there are continuous efforts to improve the quality of carbon credits through a number of voluntary initiatives and certification. The most significant of the voluntary initiatives is the Integrity Council for the Voluntary Carbon Market (ICVCM), while the Paris Agreement Crediting Mechanism (PACM) will likely have a significant impact on the development of credit quality.

The EU Carbon Removals Certification Framework (CRCF) is intended to provide rules and a framework for certification of carbon removals produced within the EU and certain emission reductions in the land use sector. The Carbon Removals and Carbon Farming Certification (CRCF) Regulation covers carbon farming (such as forest and soil restoration and wetland and peatland management)<sup>55</sup>; permanent CO<sub>2</sub> removal from the atmosphere by technological means (such as bioenergy with carbon capture and storage (BECCS)) and direct air carbon capture and storage (DACCS)); and carbon storage in long-lasting products and materials (such as wood construction or building elements injected with CO<sub>2</sub>). The Regulation lays down quality criteria for verification, certification and issuance of carbon removals and emission reductions. One of the key benefits of the EU certification framework is considered to be methodology development carried out as part of the framework. The Commission intends to develop calculation methods tailored to the EU context, which will be published in separate delegated regulations. As part of methodology development, the EU will review existing carbon removal methodologies and their suitability for the EU context. The EU certification framework covers several different types of mitigation outcomes and, accordingly, types of carbon credits with different characteristics in terms of carbon permanence, for example (see Box 3 for more information). In practice, certification would be carried out by certification schemes – i.e. carbon crediting programmes – approved by the Commission.

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54 Council of the European Union. 20 February 2024. Climate action: Council and Parliament agree to establish an EU carbon removals certification framework. Available in English at: <https://www.consilium.europa.eu/en/press/press-releases/2024/02/20/climate-action-council-and-parliament-agree-to-establish-an-eu-carbon-removals-certification-framework/>.

55 In addition to carbon sequestration, carbon farming can also cover activities that lead to soil emission reductions.

Under the Regulation, all mitigation outcomes certified under the EU certification framework should count towards the EU climate target. To avoid double counting, certified carbon removals and soil emission reductions must not be counted towards a third party's nationally determined contribution (NDC) or used in international mandatory schemes. The Commission will assess by June 2026 whether there is a need to align the content of the Regulation with Article 6 of the Paris Agreement and the best practices of voluntary carbon markets.

In terms of technological removals<sup>56</sup>, the current IPCC Guidelines for National Greenhouse Gas Inventories<sup>57</sup> allow reporting of BECCS-based removals. Carbon captured from bioenergy and permanently stored is reported in the inventory as a negative emission. A more comprehensive IPCC methodology report on removal technologies is being developed with publication scheduled for 2027<sup>58</sup>. The Commission has specified<sup>59, 60</sup> that Member States can report BECCS-based removals produced within the EU to the Commission as part of their intra-EU climate reporting, but that these do not count towards achieving the current targets within the effort sharing, LULUCF and emissions trading sectors. The effort sharing and emissions trading sectors do not currently cover removals, whereas the LULUCF sector only covers removals related to land use. However, BECCS-based removals can probably be counted towards the EU NDC, since it covers all emissions and removals across the EU. They can also be counted towards national targets.

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56 Pipatti, R., Monni, S., Lohman, E. & Ojala, J. 2023. Kansallisen kasviuonekaasujen päästölaskennan tietojen hyödyntäminen ilmastotyön tukena. (*Utilisation of information from the national greenhouse gas inventory to support climate work.*) Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-361-771-1>.

57 IPCC Guidelines for National Greenhouse Gas Inventories. 2006. Available in English at: <https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.

58 Call for nomination of experts to Scoping Meeting for Methodology Report on Carbon Dioxide Removal Technologies and Carbon Capture Utilization and Storage. Available in English at: <https://www.ipcc.ch/2024/06/18/nominations-scoping-meeting-cdr/>.

59 European Commission. 7 May 2024. Adopted: New templates for Member States' climate reporting. Available in English at: [https://climate.ec.europa.eu/news-your-voice/news/adopted-new-templates-member-states-climate-reporting-2024-05-07\\_en](https://climate.ec.europa.eu/news-your-voice/news/adopted-new-templates-member-states-climate-reporting-2024-05-07_en).

60 Climate Change Committee. 17 April 2024. Commission statement. Summary record of the meeting, item 3. Available in English at: <https://ec.europa.eu/transparency/comitology-register/core/api/integration/ers/405511/098490/1/attachment>.

### **Box 3: EU Carbon Removals Certification Framework**

Participation in the EU Carbon Removals Certification Framework is voluntary for carbon crediting programmes, known as 'certification schemes' in the EU context. In other words, certification schemes can operate within the EU without participating in the EU certification framework. Private and public certification schemes can apply for approval under the EU certification framework, at which point the Commission will check whether the applicant complies with the quality criteria under the EU Carbon Removals and Carbon Farming Certification (CRCF) Regulation. To obtain EU-certified carbon credits, producers must apply methodologies approved by the Commission and certify their projects and the resulting mitigation outcomes within the framework of a certification scheme recognised by the Commission. The EU will develop certification methodologies applicable to different types of mitigation activities that the certification schemes approved for the framework are required to use. The Commission intends to set up a registry managed by an EU authority for credits sold under the certification schemes. Prior to introduction of the registry, certified credits can be issued in the registries of individual certification schemes, as far as they meet the criteria under the CRCF Regulation. According to the 2024 provisional agreement between the European Parliament and Council, the maintenance of the EU registry would be funded by annual user fees that would be proportional to the use of the registry.

The CRCF Regulation covers four types of credits based on: 1) permanent carbon removals; 2) carbon farming; 3) temporary carbon storage in products; and 4) soil emission reductions. Each type of credit must meet the overarching criteria defined in the Regulation for verification, additionality, long-term storage, monitoring and sustainability (by way of example, the Regulation requires carbon farming credits to have biodiversity co-benefits). With regard to permanence, however, different limits have been defined for different credit types. The limit for credits based on carbon sequestered in products is at least 35 years, whereas the corresponding definition for

credits based on carbon farming is five years<sup>61</sup>. The Regulation requires that different types of carbon credits be kept separately in registries for credit issuance and monitoring.

The Commission will assess by the end of July 2026 the changes required to align the CRCF Regulation with the implementation of Article 6 of the Paris Agreement. It will further review the CRCF Regulation against the best practices, including necessary adjustments and methodologies. This review will also examine the use of certified credits to compensate the climate impact of emissions generated outside of the EU NDC and to achieve the EU climate objectives. The review will be accompanied, where appropriate, by a legislative proposal.

Among voluntary initiatives, the ICVCM aims to promote high-integrity carbon markets where carbon credits are reliable and measurable and deliver real climate impacts<sup>62</sup>. In 2023, the ICVCM published its international Core Carbon Principles (CCP) for high-quality carbon credits and an assessment framework and procedure for identifying carbon credits that meet the CCP criteria (see Box 4 for more information). The ICVCM assessed carbon crediting programmes and project categories and approved the first programmes and categories in the first half of 2024. Credits falling within the approved project categories and certified under crediting programmes approved by the ICVCM are labelled as CCP-Approved. The ICVCM is working with the Voluntary Carbon Markets Integrity Initiative (VCMI), which focuses on topics such as claims. This cooperation aims to promote the transparency, reliability and sustainability of carbon markets.

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61 At the same time, the permanence of the mitigation outcome determines the validity of a credit. By way of example, the validity of credits based on carbon farming is five years.

62 Integrity Council for the Voluntary Carbon Market. 2024. Core Carbon Principles: Assessment Framework and Assessment Procedure. Version 2. Available in English at: <https://icvcm.org/core-carbon-principles/>.

#### **Box 4: The ICVCM Core Carbon Principles Assessment Framework**

As of the end of June 2024, five crediting programmes had been approved as CCP-eligible<sup>63</sup>, including the Gold Standard (GS) and the Verified Carbon Standard (VCS). Seven activity categories had obtained a CCP approval, including landfill gas recovery and utilisation. About 30 activity categories are currently being assessed, including Improved Forest Management, which covers a forestry activity called Improved Forest Management in Temperate and Boreal Forests. This VCM methodology covers Finland's forest areas in geographical terms, but it does not include peatland forest management. A further two methodology categories of agricultural land are in the pipeline. Work on approval of technological methodologies, such as CCS and DAC, is underway but on hold because a suitable methodology for their certification is not available. The ICVCM is developing its Assessment Framework on a continuous basis and plans to publish the next version in 2026.

The CCP requirements consist of three themes: governance, emissions impact and sustainable development, with ten points as follows:

##### **A) Governance**

**Effective governance:** The carbon crediting programme must have effective programme governance to ensure transparency, accountability, continuous improvement and the quality of carbon credits.

**Tracking:** The carbon crediting programme must operate or make use of a registry to uniquely identify, record and track carbon credits issued to ensure credits can be identified unambiguously.

**Transparency:** The carbon crediting programme must provide comprehensive and transparent information on all approved carbon credits. The information must be publicly available in electronic format.

<sup>63</sup> Integrity Council for the Voluntary Carbon Market. Carbon Credit Program Assessment Status. Available in English at: <https://icvcm.org/assessment-status/>.

Robust independent third-party validation and verification: The carbon crediting programme must have requirements for robust independent third-party validation and verification to confirm mitigation outcomes and review compliance with other requirements.

## **B) Emissions impact**

Additionality: The emission reductions and removals must be additional, i.e., they would not have occurred in the absence of the incentive created by carbon credits.

Permanence: The emission reductions or removals must be permanent. Where there is a risk of reversal, there must be measures in place to address those risks and compensate reversals. By way of example, the minimum commitment period of tracking and compensation in agriculture and forestry is 40 years<sup>64</sup>.

Robust quantification of emission reductions and removals: The emission reductions or removals must be robustly quantified, based on conservative approaches and scientific methods.

No double counting: Mitigation outcomes must not be double counted. Double counting covers double issuance, double claiming, and double use. However, double counting does not take into account the counting of mitigation outcomes towards the nationally determined contribution (NDC).

## **C) Sustainable development**

Sustainable development benefits and safeguards: The carbon crediting programme must have clear guidance, tools and compliance procedures to ensure that mitigation activities conform with or go beyond widely established industry best practices on social and environmental objectives while delivering positive sustainable development impacts.

Contribution towards net-zero transition: Mitigation activities must avoid locking-in levels of technologies, carbon-intensive practices and emissions that are incompatible with the objective of achieving net-zero emissions by mid-century.

<sup>64</sup> In its next iteration, the ICVCM will consider a longer period (such as a hundred years).

## 2.4 Potential trajectories for voluntary carbon markets

The current mood in carbon markets is expectant. Some of the regulatory projects governing the markets are incomplete or contradictory, creating an ambiguous situation where buyers are more cautious while the supply side is also weakened.<sup>65</sup> Should the current, unclear state persist, or should it become significantly more difficult to produce credits and/or make claims based on these, there is a risk that carbon markets will wither or move completely outside the EU. Conversely, should the market outlook become clearer and should the production and use of carbon credits continue to be encouraged, the carbon markets may have a significant impact on global net emissions.

Developments in the regulatory projects, initiatives and guidelines discussed above will have major influence steering the markets. Based on these, the project identified six potential trajectories for carbon markets, with five focusing on trends in the demand for carbon credits and one on the supply of credits (see Table 1). The trajectories presented here are parallel and therefore not mutually exclusive. The use of parallel trajectories aims to describe uncertainties related to market developments, which are mainly due to the ongoing development of regulation and self-regulation and the introduction of new guidelines. Moreover, different countries do not necessarily always move on the same trajectory, meaning that the EU may diverge from developments in other countries in terms such as prohibiting claims allowed elsewhere and creating credit types not recognised elsewhere.

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<sup>65</sup> In 2023, the volume of carbon credits sold at a global level dropped by 56% from 2022 figures. This was a second year in a row to see declining volumes. (Forest Trends' Ecosystem Marketplace. 2024. State of the Voluntary Carbon Market 2024. Washington, DC: Forest Trends Association.)

**Table 1.** Potential future market trajectories

<b>Trend type</b>	<b>Trajectory</b>	<b>Drivers</b>
<b>Short-term demand trends</b>	Proliferation of contribution claims	The introduction and proliferation of contribution claims are especially driven by the increasing awareness of such claims through <b>carbon market literature and self-regulation (such as the VCM Claims Code of Practice)</b> .
<b>Short-term demand trends</b>	Significant decline in product carbon neutrality claims	Carbon neutrality claims concerning products will be withdrawn from the EU market as a result of the ban on product carbon neutrality claims under the <b>ECGT Directive</b> (see Section 2.3.2).
<b>Short-term demand trends</b>	Proliferation of organisational carbon neutrality claims consistent with good practices	Use of organisational carbon neutrality claims is currently governed by <b>the ISO 14068-1 carbon neutrality standard</b> . The ban on product carbon neutrality claims under the ECGT Directive may either steer demand towards organisational claims or dampen interest in all types of carbon neutrality claims. The Corporate Sustainability Reporting Directive ( <b>CSRD</b> – transparent credit use) and the Corporate Sustainability Due Diligence Directive ( <b>CSDDD</b> – setting science-based targets) contribute to promoting good practices.
<b>Short-term demand trends</b>	Proliferation of non-credit-based claims	<b>The SBTi and Gold Standard Beyond Value Chain Mitigation (BVCM)</b> guidelines encourage broad support for mitigation activities, including those not producing measurable mitigation outcomes and carbon credits.
<b>Long-term demand trends</b>	Proliferation of net-zero claims	Long-term net-zero targets are expected to become more prevalent in the years to come, especially driven by <b>the SBTi framework</b> .
<b>Supply trends</b>	Divergence of carbon credit characteristics in terms of permanence	The characteristics of carbon credits produced are expected to diverge within the EU in particular as a result of the <b>EU CRCF</b> .

## 2.4.1 Proliferation of contribution claims

The proliferation of contribution claims has to date been mainly promoted by carbon market literature and the increasing need to avoid double counting between claims based on carbon credits and national climate targets as a result of the Paris Agreement. At the same time, the introduction of contribution claims has been hindered by poor awareness of such claims and uncertainties involved in their use, etc.

Carbon market literature<sup>66</sup> suggests that contribution claims be introduced in lieu of or in parallel with offsetting claims. The introduction of contribution claims is currently being facilitated by VCMI guidance, for example, which includes claims that can be defined as contribution claims. Likewise, the SBTi and Gold Standard BVCM guidelines can contribute to the proliferation of contribution claims, since they share very similar principles with the VCMI. The SBTi does not take a stand on the type of claim (offsetting vs. contribution claims), whereas the Gold Standard recommends a shift to using contribution claims and avoiding offsetting claims<sup>67</sup>. Besides voluntary initiatives and statements, the introduction of contribution claims can be facilitated by means such as regulation. The EU's regulatory framework for claims, for example, plays a key role in targeting and formulating operators' environmental and climate claims. The EU regulatory framework governing climate claims has thus far focused on offsetting claims without commenting directly on

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- 66 See e.g.: Carbon Mechanisms Review. 2023. Scaling Climate Action. Available in English at: <https://www.carbon-mechanisms.de/en/publications/details/carbon-mechanisms-review-02-2023-scaling-climate-action>; ClimatePartner. Whitepaper: Shifting from offsetting to contribution claims on the voluntary carbon market. Available in English at: <https://www.climatepartner.com/en/knowledge/insights/whitepaper-contribution-claims>; Compensate Foundation. 2023. Non-offset claims: How to make a robust climate claim? Available in English at: [https://compensatefoundation.org/wpcontent/uploads/2023/06/How\\_to\\_make\\_a\\_robust\\_climate\\_claim\\_Compensate\\_2023.pdf](https://compensatefoundation.org/wpcontent/uploads/2023/06/How_to_make_a_robust_climate_claim_Compensate_2023.pdf); Gold Standard. 2023. Fairly contributing to global Net Zero – Considerations for credible claims. Version 1.0. Available in English at: <https://www.goldstandard.org/publications/fairly-contributing-to-global-net-zero-credible-claims>; New Climate Institute. 2023. A guide to climate contributions – Taking responsibility for emissions without offsetting. Available in English at: <https://newclimate.org/resources/publications/a-guide-to-climate-contributions-taking-responsibility-for-emissions>; and Nordic Council of Ministers. 2022. Harnessing voluntary carbon markets for climate ambition – An action plan for Nordic cooperation. 2022:563. Available in English at: <https://www.norden.org/en/publication/harnessing-voluntary-carbon-markets-climate-ambition>.
- 67 Gold Standard. 2024. Fairly contributing to global Net Zero – Framework for Organisational Climate Mitigation Strategies. Available in English at: [https://goldstandard.cdn.prismic.io/goldstandard/Zn0kmJbWFBowe7z5\\_FairlycontributingtoglobNetZero-Frameworkfororganisationalclimatestrategies-v2.pdf](https://goldstandard.cdn.prismic.io/goldstandard/Zn0kmJbWFBowe7z5_FairlycontributingtoglobNetZero-Frameworkfororganisationalclimatestrategies-v2.pdf).

contribution claims<sup>68</sup>. As the mitigation outcomes underlying contribution claims can be counted towards the EU NDC, the EU has incentives to steer operators towards contribution claims in the future. In their respective positions on the Green Claims Directive, both Parliament and the Council mention contribution claims, which means that they will probably also be included in the final directive.

The effects of the proliferation of contribution claims on the supply of and demand for carbon credits and aspects such as the national amount of carbon removals depend significantly on whether the claims are attractive to buyers of credits. Attractiveness, in turn, largely hinges on how well known, understandable and trusted a claim is among consumers and the wider public. Within the EU, the attraction of contribution claims would be enhanced if EU regulation were to require avoiding double counting in keeping with good practices because contribution claims make it easier to avoid double counting. If a contribution claim can be designed to be attractive enough, it could create demand for both foreign and domestic credits.

## 2.4.2 Significant decline in product carbon neutrality claims

The new EU ECGT Directive governing operators' environmental claims prohibits making carbon neutrality claims concerning products in marketing and advertising (see Section 2.3.2). The Directive entered into force in 2024 and Member States must apply its provisions in national legislation from September 2026 onwards. The Directive will therefore remove carbon neutrality claims relating to products from the market by 2026.

In the long term, the ban on product carbon neutrality claims may increase public trust in climate claims by removing claims perceived as unclear and unreliable from the market. This may also build trust in carbon markets in more general terms and, consequently, increase the demand for carbon credits. At the same time, the ECGT Directive's prohibition will decrease demand for carbon credits used for product-specific claims. This may lead to a general contraction of voluntary carbon markets and decline in the supply of carbon credits – and new mitigation outcomes – unless there is a corresponding increase in demand for carbon credits used for other

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68 Outside the EU, government guidance for voluntary climate change mitigation in New Zealand, for example, mentions contribution claims, advising caution and transparent communication when supporting activities counted towards the host country's climate targets. See: <https://environment.govt.nz/assets/publications/interim-guidance-voluntary-climate-change-mitigation.pdf>.

purposes. The magnitude of the prohibition's impact on purchasing and producing carbon credits has yet to be comprehensively estimated. There is no certainty at the EU level regarding the number of carbon neutrality claims concerning products and the annual purchases of relevant carbon credits.

### **2.4.3 Proliferation of organisational carbon neutrality claims consistent with good practices**

Developments in organisational claims involve a number of drivers that steer them in partly opposite directions. Consequently, the trajectory of organisational claims currently involves significant uncertainties. Organisational carbon neutrality claims made in keeping with good practices are especially governed by the ISO carbon neutrality standard (see Section 2.3.2).

The prohibition on product carbon neutrality claims under the ECGT Directive may also have negative effects on the attractiveness of organisational carbon neutrality claims and therefore their use, should the ban lead to a perception that all carbon neutrality claims are misleading. At the same time, the decrease in product carbon neutrality claims may shift demand to organisational climate claims. Such organisational claims may be offsetting (e.g. carbon neutrality) or contribution claims depending on the awareness of contribution claims and its trajectory. The EU has thus far not established a clear link between the EU Carbon Removals Certification Framework and the regulatory framework for claims. In light of current information, however, credits included in the certification framework are counted towards the EU NDC, which is why the type of any claims based on these should be contribution claims in keeping with good practices.

Making organisational carbon neutrality claims consistent with good practices may also be facilitated by the EU's Corporate Sustainability Reporting Directive (CSRD) and Corporate Sustainability Due Diligence Directive (CSDDD). The Directives drive businesses to set ambitious science-based emission reduction targets that form a basis for using carbon credits in line with good practices. Furthermore, the CSRD reporting obligations concerning carbon neutrality claims and the use of carbon credits will enhance the transparency of using carbon credits and encourage businesses to use high-quality credits.

The effects of the proliferation of organisational contribution claims or carbon neutrality claims on the supply of and demand for carbon credits are equal from the perspective of supply and demand. Similar to contribution claims, an increase

in the popularity of carbon neutrality claims could create demand for both foreign and domestic credits. However, good practices would also require certification of mitigation outcomes and corresponding adjustments for domestic credits.

#### 2.4.4 Growing popularity of non-credit-based mitigation activities

The SBTi and Gold Standard BVCM guidelines encourage support for various voluntary mitigation activities, including those not based on carbon credits (see Section 2.3.1 and Box 2). While supporting various types of mitigation action has always been an option for businesses alongside the use of credits, the popularity of the SBTi and Gold Standard among operators can increase the popularity of mitigation activities not based on credits. SBTi commitments can be expected to increase in the future<sup>69</sup> driven by developments such as the EU Corporate Sustainability Reporting and Corporate Sustainability Due Diligence Directives (see Section 2.3.1 for more information). To differentiate in climate communications, businesses may need to take additional action alongside their own emission reduction targets, and the SBTi and Gold Standard BVCM guidelines can create the framework for such voluntary mitigation activities, as part of the ambitious climate targets and strategies recommended by the SBTi and Gold Standard.

In terms of carbon markets, however, an increase in the popularity of non-credit-based mitigation activities could mean reductions in the supply of and demand for carbon credits when mitigation activities are supported by means other than credits. The extent of this impact depends on the perceived popularity and reliability of mitigation activities not based on credits. The strengths of credits have covered their minimum criteria, including measurability, comparability, traceability, additionality and verifiability. The combined contribution to the climate of mitigation activities supported outside carbon markets may be more difficult to measure, verify or monitor. Non-credit-based approaches could provide new channels of support for Finnish mitigation activities that are not eligible for certification. This would require alternative means to convince potential buyers of the reliability of such activities.

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69 For example, the number of SBTi commitments has doubled every year in previous years. See: <https://sciencebasedtargets.org/blog/science-based-scale-up-three-milestones>.

## 2.4.5 Proliferation of net-zero targets

Long-term net-zero targets are expected to become more prevalent as a result of the SBTi framework and other voluntary initiatives based on its methodology. By the end of 2023, more than 4,000 operators had set SBTi-validated net-zero targets<sup>70</sup>. Under the SBTi framework, an operator can only make a 'net-zero claim' concerning net-zero emissions in the target year, once the operator has neutralised any minor residual emissions with permanent removals.

Operators' commitment to net-zero targets will primarily contribute to their ambitious emission reductions. In the long term, however, net-zero targets also require operators to produce permanent removals within their own value chain or purchase them. The number of targets therefore contributes to anticipating demand for permanent carbon removals. As net-zero targets are typically set for a period from 2040 to 2050, the targets will not significantly increase the demand for carbon credits based on carbon removals until 2040. As a result, there is a risk that the supply of carbon removals will not meet demand in the 2040s, unless investments are made in projects and technologies ahead of the net-zero target year. The SBTi has sought to encourage businesses to make these investments as part of its BVCM guidelines, for example. However, net-zero targets and their proliferation may function as one of the drivers for developing the supply of permanent removals.

## 2.4.6 Divergence of carbon credit characteristics in terms of permanence

The EU's forthcoming Carbon Removals Certification Framework will contribute to the production potential and quality of credits in Europe through new methodologies and quality requirements for different types of credits. It is particularly noteworthy that the EU certification framework creates production opportunities for different types of mitigation activities and for credits that differ in terms of permanence. The EU certification framework diverges from several commonly used permanence criteria with regard to certain mitigation activities. However, this divergence will enable a wider supply in terms of carbon farming and carbon storage in products in particular.

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70 Science Based Targets initiative. Target Dashboard. Available in English at: <https://sciencebasedtargets.org/target-dashboard>.

The proliferation of net-zero targets will contribute to boosting the demand for high-quality carbon credits based on removals, including permanent removals certified under the EU certification framework<sup>71</sup>. The opportunity to produce credits for compliance markets would in all likelihood increase the production of credits that could be offered to compliance markets. The ICVCM CCP Assessment Framework will divide supply into CCP-approved and non-CCP-labelled credits. This will affect the demand for credits, especially for the types of mitigation activities that fail to achieve CCP approval.

The divergence of the characteristics of carbon credits can therefore facilitate the development of supply of different mitigation outcomes while also concentrating demand on certain types of credits. However, supply development depends on whether there is demand for credits and whether the use of credits and the claims based on these are clear and attractive, since credit producers also anticipate future demand levels when making decisions on production.

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71 Credits can also be divided according to the duration of storage, i.e. into short-term or long-term storage. Credits based on removals and long-term storage are often considered to be of the highest quality.

## 3 Views of domestic operators on market changes

This chapter describes the implications of changes and trajectories of voluntary carbon markets for domestic operators' activities and preparedness. The chapter first describes the domestic potential of nature-based mitigation activities and market changes from the perspective of producers of nature-based mitigation activities. This is followed by a description of the domestic potential of mitigation activities based on technological removals and the views on changes in voluntary carbon markets and their potential impacts among experts following technological removals or potential producers.

### 3.1 Potential for production of carbon credits in Finland

There are already several mitigation activities underway in Finland that aim to produce carbon credits for voluntary carbon markets. Existing solutions mainly focus on forestry and agricultural activities (known as 'nature-based solutions') that aim to enhance the capacity of forests and agricultural land to capture carbon dioxide from the atmosphere and store it. In addition to existing solutions, several potential mitigation activities have been identified in Finland that have yet to be implemented or are only implemented on a scale that is minuscule when compared with their potential. Potential solutions can be found in both nature-based measures<sup>72</sup> and activities based on technological removals<sup>73</sup>.

International good practices and trajectories for carbon markets also influence mitigation activities carried out domestically. Certification requirements and their development are key because carbon markets are specifically focused on trading

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72 Laturi, J., et al., 2023. Vapaaehtoiset hiilimarkkinat maankäyttösektorilla – kehitys, kysyntä ja toimenpiteet Suomessa. (*Voluntary carbon markets in the land use sector – trends, demand and activities in Finland.*) PTT raportteja (*Reports of Pellervo economic research PTT*) 285. Available in Finnish (English abstract) at: <https://www.ptt.fi/julkaisut/vapaaehtoiset-hiilimarkkinat-maankayttosektorilla-kehitys-kysynta-ja-toimenpiteet-suomessa/>.

73 Kujanpää et al., 2023. Carbon dioxide use and removal: Prospects and policies. Available in English at: <https://urn.fi/URN:ISBN:978-952-383-197-1> and <https://tietokayttoon.fi/julkaisut/raportti?pubid=URN:ISBN:978-952-383-197-1>.

on certified mitigation outcomes, i.e. carbon credits. The purpose of certification is to demonstrate that a mitigation outcome meets the internationally established minimum criteria. The voluntary ICVCM CCP criteria provide a new driver for harmonising certification. With the exception of biochar production, no domestic mitigation outcomes certified as carbon credits according to international good practices have thus far been available in Finland. Voluntary support for domestic mitigation activities has been based on producers' own arrangements and calculations. In recent years, however, awareness of international good practices for and developments in carbon markets has also increased in Finland, which has increased buyers' interest in carbon credits and reduced demand for uncertified mitigation outcomes. While supporting uncertified mitigation outcomes can also be desirable and valuable, it can be expected that the domestic carbon market will evolve to use certified mitigation outcomes in line with its international model.

Methodologies used in certification have often been independently developed by producers, who seek their approval under their chosen carbon crediting programmes. Production of carbon credits has historically concentrated in developing countries, where local producers have also played a more active role in developing methodologies tailored to the conditions in developing countries. This emphasis is still reflected in the abundance of methodologies for mitigation activities suitable for these regions. The existing methodologies for nature-based credits and especially those designed for developing countries are probably not suitable as such for the Finnish context, not only because of natural conditions, but also because Finnish agriculture and forestry are different in terms of production, land ownership and culture. As domestic activities are still new, domestic methodologies for mitigation activities in the land use sector have yet to become available, but efforts have been made to promote them within the framework of an SFS standard<sup>74</sup>.

### 3.1.1 Nature-based mitigation activities and their production potential in Finland

Among the potential trajectories, the divergence of the characteristics of carbon credits have a direct bearing on the production and supply of nature-based mitigation activities in Finland. This divergence emphasises the following two

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74 SFS Finnish Standards. 2021. Aloite suomalaiseksi SFS-standardiksi: Päästökompensointi metsän puuston kasvun lisäisyyden kautta syntyvällä hiilinielulla. (*Initiative for a Finnish SFS standard: Emissions offsetting with a carbon sink generated through additionality of the increment of forest growing stock.*) Available in Finnish at: [https://sfs.fi/wp-content/uploads/2021/04/Standardialoite\\_2021-02\\_hiilinielu.pdf](https://sfs.fi/wp-content/uploads/2021/04/Standardialoite_2021-02_hiilinielu.pdf).

directions relating to the quality of carbon credits, which contribute to the production opportunities of carbon credits: 1) the ICVCM sets out the voluntary CCP criteria for carbon credits and carbon crediting programmes to ensure the high quality of crediting programmes and methodologies; and 2) the EU Carbon Removals Certification Framework (CRCF) provides opportunities to produce carbon farming credits subject to criteria that take into account the specific characteristics of nature-based mitigation activities and accept a shorter period of permanence for these than the established minimum criteria.

As voluntary carbon markets cover a wide range of very different mitigation activities, their commensurate assessment can be challenging. This also applies to nature-based activities. Below is a general review of the ability of nature-based activities to produce credits consistent with the minimum criteria for carbon markets. Overall, the ICVCM CCP criteria tighten the level of requirements compared with the current requirements for crediting programmes and methodologies, especially with regard to the permanence criteria that are challenging for nature-based activities.

The potential for producing nature-based credits in Finland has been analysed from different perspectives in a KolKom project report by Laturi et al. (2023). The report examined the potential of domestic mitigation activities to produce mitigation outcomes that are in line with good practices and meet the minimum criteria. Compared with the criteria used in the report, the requirements for CCP-approved credits do not include any new or distinctly more stringent requirements relating to the characteristics of mitigation activities. Likewise, the factors contributing to the attractiveness of producing mitigation outcomes have not changed for mitigation activities. The key difference compared with the report results involves timing: a mitigation outcome can only become a CCP-approved credit when the mitigation outcome has been achieved, verified and certified as a carbon credit. Table 2 provides a compilation of the results of the KolKom project for the following three conditions for production: meeting the minimum criteria for mitigation activities; attractiveness of producing mitigation outcomes for landowners; and timing of mitigation outcomes. The table shows that all three production conditions included in the assessment are assessed to be good for two mitigation activities – reducing methane emissions from dairy cows by means of feed additives and increasing the number of retention trees during final felling operations. It should be noted, however, that production potential involves other limiting factors for these mitigation activities. The dairy sector's mitigation outcomes based on reducing methane emissions from dairy cows are currently included in the sector's own climate plans and value chain. As a result, the supply of carbon credits to other sectors is limited, as the dairy sector has its own targets

to achieve carbon neutrality, which limits the sale of these mitigation outcomes to other sectors and carbon markets. In terms of increasing the number of retention trees, forest companies' own biodiversity requirements and increasing certification requirements, complete with the tightening permanence requirements in the CCP criteria, may reduce their production potential in the future.

While the report discussed the addition of biochar to agricultural land, these assessments can be readily applied to the type of biochar use where it will ultimately function as a long-term pool while either sequestered in soil or products. As production of biochar raw material is no different from conventional biomass production, landowners' attitudes will only affect biochar production and potential uses in cases where biochar is used on their land. As a general rule, biochar production and use do not involve any factors that would be problematic in terms of meeting the minimum criteria. However, attention should be paid to the sustainability of biomaterial used to produce biochar and its alternative uses for which the use of side streams can be most clearly demonstrated to have been sustainably produced and clearly defined in the baseline.

The report found that the challenges of demonstrating permanence, credible baseline setting and additionality are common for nature-based mitigation activities, especially in forestry sector projects relating to timber production. Forest carbon sequestration is linked to wood raw material production, which usually makes it profitable for landowners to promote carbon sequestration. However, accounting for the increased revenue and assessing the risks involved are complex issues, depending on factors such as the applicable market interest rate, which introduces ambiguities into assessing financial additionality. At the same time, landowners are most willing to promote mitigation activities that maintain or develop existing operations, i.e. agriculture and forestry activities and their profitability, making it challenging to demonstrate financial additionality. The supply of carbon credits based on conversion of peatlands is being held up by the slow transition in their production, meaning that carbon credits can only be produced after a transition period. In 2023, a decline in demand in the domestic voluntary carbon market affected the attractiveness and implementation of mitigation activities. This reduction in demand has, among other things, suspended the conclusion of new contracts and delayed carbon payments to landowners, making the risks of participating in the carbon market more tangible, especially in situations where payments are based on verified mitigation outcomes, i.e. already realised mitigation activities and investments.

**Table 2.** Assessment of existing and potential mitigation activities in production of ICVCM CCP-approved credits

<b>Mitigation activity</b>	<b>Compliance with the minimum criteria</b>	<b>Attractiveness of producing mitigation outcomes</b>	<b>Time of achieving mitigation outcomes (by 2035)</b>
Delaying final felling	Neutral	Good	Good
Fertilisation of commercial forests on peatlands (ash fertilisation)	Poor	Good	Good
Fertilisation of commercial forests on mineral soils (nitrogen fertilisation)	Poor	Good	Good
Rewetting low-yield peatland drained for forestry	Good	Neutral	Poor
Afforestation of abandoned peat production areas for use as commercial forests	Neutral	Neutral	Poor
Afforestation of thin-peated peat fields abandoned as agricultural land for use as commercial forests	Neutral	Neutral	Poor
Afforestation of wasteland areas on mineral soils for use as commercial forests	Neutral	Neutral	Poor
Addition of biochar to agricultural land	Good	Neutral	Good
Soil-improvement fibres	Poor	Good	Good
Long-lasting wood products	Neutral	No assessment	Good
Rewetting low-yield peat fields	Good	Poor	Good
Paludiculture	Good	Poor	Good
Reducing methane emissions from dairy cows with feed additives	Good	Good	Good
Refraining from felling in commercial forests	Good	Neutral	Good
Increasing the number of retention trees during final felling operations	Good	Good	Good

The results of the KolKom project can be used to assess the production potential of CRCF carbon farming credits in Finland. The project examined climate change mitigation measures in agriculture and forestry suitable for voluntary carbon markets, which have been used when preparing the Climate Plan for the Land Use Sector. For agriculture, measures not suitable for voluntary carbon markets were excluded. This applies to measures falling within the framework of agricultural support because agri-environmental aid compensates for the costs and loss of income caused by these measures. As a result, it is essentially not possible to demonstrate any financial additionality that carbon markets might provide.

The Climate Plan for the Land Use Sector brings together a broad range of potential climate actions in agriculture in Finland. The cost-effectiveness of measures has also been studied in the context of assessing the Climate Plan for the Land Use Sector<sup>75</sup>. Agricultural mitigation activities include:

- catch crops;
- soil-improvement and restoration crops;
- green manure grasslands.

These measures have diverse environmental impacts, increasing biodiversity, reducing emissions to water and mitigating climate change. They are also included in the agricultural support system. These and other similar agricultural measures add rapidly degradable organic matter to soil and their climate impact is based on their long-term use. In long-term use, the annual increase in carbon pools will decline year by year until eventually reaching a saturation point where carbon pools will no longer grow. The time frame until saturation point generally used for catch crops is 20 years. This is the period within which it is assumed that soil carbon will reach a new equilibrium after which no new carbon accumulates in soil. Under the good practices for voluntary carbon markets, the permanence of these types of measures is already insufficient compared with the existing 40-year permanence criteria for ICVCM CCP credits.

The CRCF carbon farming credits under the EU Carbon Removals Certification Framework differ from the established good criteria for carbon markets in terms of additionality and permanence. The five-year permanence requirement for

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75 Laturi, J, et al., 2022. Maankäyttösektorin ilmastosuunnitelman kustannusvaikutusten arviointi (*Cost impact assessment of the Climate Plan for the Land Use Sector*). PTT raportteja (Reports of Pellervo economic research PTT) 273. Available in Finnish at: <https://www.ptt.fi/julkaisut/maankayttosektorin-ilmastosuunnitelman-kustannusvaikutusten-arviointi/>.

CRCF carbon farming credits and development of certification methodologies for mitigation activities falling within agricultural support systems will also provide a wide range of certification opportunities for mitigation activities included in the Climate Plan for the Land Use Sector and the existing supported agricultural measures. Therefore, the production potential of CRCF carbon farming credits in agricultural land is considerable in Finland. In the cost impact assessment of the Climate Plan for the Land Use Sector, the potential annual climate impacts in Finland will be 725,000 tCO<sub>2</sub>e for catch crops and 340,000 tCO<sub>2</sub>e for restoration crops in 2035. These climate impacts are part of the potential supply of CRCF carbon farming credits in agriculture and these two measures alone can create an annual supply of more than a million credits in Finland. In 2020, the total area of agricultural land in the European Union was about 157 million hectares<sup>76</sup>, which is about 70 times Finland's agricultural land area. It is therefore safe to assume that the supply potential of CRCF carbon farming credits could reach up to 100 million credits per year when other potential agricultural measures are also taken into account.

In forestry, the five-year permanence requirement for CRCF carbon farming credits will facilitate credit production and increase potential supply. The KolKom project's final report assessed the trajectories of the voluntary carbon market in Finland by 2035 using scenario analyses, among which the credits sold in the supply-driven scenario were closest to CRCF carbon farming credits. In this scenario, credits produced to voluntary carbon markets by means of fertilisation for growth and delayed final felling amount to a total of 146,000 carbon credits per year with the price of credit at EUR 15/tCO<sub>2</sub>e. The cost impact analysis of the Climate Plan for the Land Use Sector estimated the potential climate impact in Finland at 2.6 MtCO<sub>2</sub>e for ash fertilisation and 1.3 MtCO<sub>2</sub>e for fertilisation for growth in 2035, providing a rough estimate of the supply potential of these measures in Finland.

CRCF carbon farming credits represent significant supply potential for voluntary carbon markets. Whether potential will be realised in supply depends on the demand for and the price level and credibility of these credits in the long term, determining whether landowners are willing to engage in risky activities. The carbon market trajectories analysed here do not currently include factors that

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76 Eurostat. 2022. Key figures on the European food chain. Available in English at: <https://ec.europa.eu/eurostat/web/products-key-figures/w/ks-fk-22-001>.

would create any significant demand for temporary credits. Production of CRCF carbon farming credits will depend on whether suitable uses for them will emerge, possibly also through compliance markets or support systems<sup>77</sup>.

### 3.1.2 Technological removals and their potential in Finland

According to Prime Minister Petteri Orpo's Government Programme, the Government will promote the extensive introduction of technological removals in Europe and in Finland and will already set a target for the use of technological sinks during the 2020s<sup>78</sup>. 'Technological removals' generally refers to capturing carbon dioxide from plant flue gases or directly from the atmosphere<sup>79</sup>. The Government Programme notes that the Government intends to introduce incentives to advance investments in technological removals. The Government indicates that, where applicable, carbon markets would be used to fund the incentives. According to a report produced by the Finnish Climate Change Panel, for example, Finland will need technological removals to meet its own climate and sink targets. The Panel estimates that the current net sink gap by 2035 amounts to about 8 MtCO<sub>2e</sub>. Alongside additional measures in the land use sector, the net sink gap could be bridged to a significant extent by means of technological removals.

Potential technological removal solutions identified for Finland include<sup>80</sup>:

- bioenergy with carbon capture and storage (BECCS); and
- direct air capture with carbon storage (DACCS).

77 European Commission. 05/04/2024. Q&A on the provisional agreement on the Regulation establishing an EU-wide voluntary framework for certifying permanent carbon removals, carbon farming and carbon storage in products (CRCF Regulation). Available in English at: [https://climate.ec.europa.eu/document/download/a8abe1c4-a3c6-4c94-be0e-4b76f7fd0308\\_en?filename=policy\\_carbon\\_faq\\_crcf\\_regulation\\_en.pdf](https://climate.ec.europa.eu/document/download/a8abe1c4-a3c6-4c94-be0e-4b76f7fd0308_en?filename=policy_carbon_faq_crcf_regulation_en.pdf).

78 Outcome of the negotiations on the Government Programme, 16 June 2023: A strong and committed Finland. Available in English at: <https://valtioneuvosto.fi/en/government-formation-talks>.

79 Finnish Climate Change Panel. 2023. Suuntaviivoja Suomen ilmastotoimien tehostamiseen (*Guidelines for enhancing Finland's climate action*). Publications of the Finnish Climate Change Panel 1/2023. Available in Finnish at: <https://doi.org/10.31885/9789527457177>.

80 Kujanpää, L., et al., 2023. Carbon dioxide use and removal: Prospects and policies. Publications of the Government's analysis, assessment and research activities 2023:19. Available in English at: <https://urn.fi/URN:ISBN:978-952-383-197-1>

Domestically, about 28 Mt biogenic carbon dioxide emissions are generated annually, with the most significant sources including the forestry industry (19.6 Mt), thermal power and other incineration plants (8.0 Mt), and waste incineration (0.6 Mt). The Climate Panel memorandum<sup>81</sup> recommends that it would benefit Finland to produce 5–6 Mt of technological removals by means of a tendering procedure or other guidance instruments. The report notes that the carbon captured and stored from two or three plants generating the largest amounts of biogenic carbon dioxide would alone be enough to produce a technological sink of about 5 Mt. BECCS technology is recommended by both technological feasibility and the scale of emission reductions, especially in the medium term. In its report, the Climate Panel also estimated the costs involved in capture from domestic industrial emissions sources. The estimate ranged from about EUR 120 to EUR 240 per tCO<sub>2</sub> for commercial plants around 2030. The report also calculated the cost of financing a 5 Mt technological carbon sink at EUR 605–705 million per year.<sup>82</sup>

In the interviews carried out as part of this project, experts were asked to identify the technological removals for which they saw domestic potential. Most highlighted BECCS projects, not only because of the cost, technological development stage and availability of biogenic carbon dioxide, but also due to the fact that BECCS has specifically been selected as a technology to be promoted both domestically and at the European level. Only one interviewee felt that BECCS is overemphasised as a technology among technological removals. DACCS was seen as a potential solution in the future, but it was currently considered very expensive. The potential of biochar was also raised. According to the experts interviewed in the project, the most likely technological solution to be implemented could be a carbon capture project of a municipal bioenergy plant, but the highest technical-economic potential in quantitative terms would be found in large forestry industry point sources and especially in plants located in the vicinity of coastal areas.

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81 Finnish Climate Change Panel. 2023. Suuntaviivoja Suomen ilmastotoimien tehostamiseen (Guidelines for enhancing Finland's climate action). Publications of the Finnish Climate Change Panel 1/2023. Available in Finnish at: <https://doi.org/10.31885/9789527457177>.

82 Kujanpää, L., et al., 2023. Carbon dioxide use and removal: Prospects and policies. Publications of the Government's analysis, assessment and research activities 2023:19. Available in English at: <https://urn.fi/URN:ISBN:978-952-383-197-1>.

## 3.2 Views of domestic operators on changes in the international regulatory framework and market drivers

This chapter explores how international developments are applied in Finland from the perspective of domestic producers and how domestic operators anticipate and prepare for the changes and developments in the international regulatory framework and the initiatives of voluntary bodies discussed in previous chapters. Data collection and analysis were carried out separately for nature-based and technological mitigation activities.<sup>83</sup>

### 3.2.1 Nature-based mitigation activities

For producers of nature-based credits, carbon market monitoring is hampered by the large amount of information available on carbon markets and the uncertainties and ambiguities involved. From the perspective of domestic nature-based producers, some regulatory instruments governing carbon markets, such as the ICVCM CCP criteria, seem rather distant and theoretical. As there is no common marketplace in Finland for different operators to offer their credits to be freely purchased, trading mainly takes place directly between operators. It seems that domestic producers are in very close contact with buyers, allowing the effects of demand-related factors to be immediately communicated to them as part of their customer work. Operators also follow demand-related changes in carbon markets while some provide emissions accounting and other climate-related services as well. Following developments in international carbon markets appears to be particularly challenging because understanding the relative importance of different initiatives and the uncertainties involved in their implementation, interpretation and timing increase market confusion. Moreover, ensuring the timeliness of interpretations in use makes it difficult to operate in the market because carbon markets are in a constant state of flux.

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83 For technological solutions, the ways in which domestic operators anticipate and prepare for changes in the international regulatory framework were explored with semi-structured thematic interviews with ten participants following technological solutions or possibly implementing these in the future (hereinafter referred to as 'experts'). The interviews were conducted between November 2023 and January 2024. The topic was also explored in a workshop organised for operators and experts, where those participating in technological solutions discussed the topic and the measures they would like the central government to take in their own group. The workshop was arranged as a Teams meeting on 12 December 2023.

Operators considered the uncertainty about demand trends and the impact of voluntary carbon market policies to pose a major challenge for investment. The uncertainty regarding market developments also creates challenges for business continuity. Operators feel that public authorities should be responsible for regulation in order to avoid harmful market excesses and misleading marketing. However, it is important that operators participate in developing and defining practices as development cannot be left to society alone. This highlights the need for domestic cooperation and consensus that could be promoted through mechanisms such as a self-regulatory body.

The most significant factor limiting the channels of influence of the international regulatory framework for carbon markets is their focus on certified mitigation outcomes, i.e. carbon credits. Since domestic production is focused on uncertified mitigation outcomes, factors relating to the quality requirements of carbon credits do not have a direct effect on domestic production. However, the EU Carbon Removals Certification Framework will change the situation, also offering opportunities for domestic production by means such as carbon farming credits. In the December workshop and interviews, producers expressed mixed views on the EU certification framework and there was uncertainty about the impact and applicability of the forthcoming reform. In retrospect, domestic producers' views on carbon markets were close to the mark, but they expected the change to solve problems involved in carbon markets in broader terms.

However, workshop participants saw opportunities in carbon markets in the long term, as global demand increases and instruments such as the ISO carbon neutrality standard and Article 6 of the Paris Agreement are implemented and developed. At the same time, they felt suspicious of the requirements involved in the trajectories. On the demand side, they considered that the Green Claims Directive that was being developed in the EU would improve the harmonisation of market demand. However, there are difficulties in anticipating the impact of changes in EU-level legislation.

The quality requirements of carbon credits concerning climate claims and targets in voluntary carbon markets are being refined and tightened. Markets emphasise the use of high-quality carbon credits and the ICVCM CCP criteria are frequently referred to in their requirements. The channel of influence of this demand-focused change for Finnish voluntary carbon markets is an increase in demand for certified credits. However, domestic production of nature-based credits is limited by the challenges involved in the certification process and compliance with the quality requirements of carbon credits, with the exception of biochar production. In terms of quality requirements, the ICVCM's possible future extension of the permanence

criterion from 40 to 100 years will further complicate certification of nature-based credits in line with the CCP criteria. At the same time, the CRCF creates opportunities for production of nature-based carbon credits, but these do not meet the requirements for high-quality carbon credits.

The interviews with operators producing nature-based mitigation activities raised the key point that certification creates credibility for activities and that larger customers, in particular, would like to buy certified credits. At the same time, even the quality of credits that are certified has been repeatedly questioned by the media, which was seen to significantly undermine consumer and customer confidence in certification as well.

However, certification involves several challenges from the perspective of Finnish operators. The main challenges raised in interviews included the costs of certification and the slowness of the system. The current cost model of carbon crediting programmes was perceived to be poorly suited for small operators with more small-scale measures. Moreover, should crediting programmes be operated on the current principle of distributing the remuneration from carbon markets, the share of landowners would remain small, which in turn would reduce their revenues from carbon credit production and their willingness to implement mitigation activities.

Existing carbon crediting programmes were considered to be directed more to developing countries and their suitability for the Finnish context was seen as weak. Interviewees highlighted the fact that the measuring techniques used in Finland to assess the impacts of mitigation activities are not necessarily included in existing methodologies. Development of methodologies suitable for Finland and approval of crediting programmes can be an expensive and time-consuming process which can take years from the start of development to first certifications. At the same time, interviewees also raised the issue that areas such as Finnish peatlands are home to many different habitat types, each of which would require specific measurements, which can be challenging to implement. This can make it difficult to restore larger areas under crediting programmes. At the same time, Finnish operators are relatively small in size, which makes investing in development of standards a major financial risk. Methodology development without partners was considered to be a very demanding effort, which would place considerable requirements for operators' human resources, for example. In the future, the CRCF may facilitate certification with the ready-made methodologies it will provide. Several interviewees noted that the use of crediting programmes does not, however, solve the single most significant factor limiting current demand, i.e. avoiding double counting in the use of credits.

### 3.2.2 Views of experts and operators on market drivers for technological removals

It should be noted that no projects that would count as technological removals have as yet been carried out in Finland<sup>84</sup>. Domestic operators' views on technological removals are related to how changes in the operating environment and the regulatory framework influence operators' views on and interest in implementing industrial carbon removal projects in the future.

In general terms, it is noteworthy that the operators potentially implementing technological removals in particular are large operators for which carbon capture, transport and storage would be a minor additional activity in their ordinary operations. It is likewise noteworthy that operators are also showing significant interest in the utilisation of captured carbon. However, since such utilisation does not typically produce carbon removals, it is not covered in this report. While the interviews highlighted interest in carbon capture, transport and storage, there was also a cautiously expectant attitude towards the subject – especially as there is currently no functioning infrastructure for carbon transport and intermediate storage and no significant storage potential in Finland. Interviewees also underlined that permanent storage projects in Norway, for example, are only just being implemented and also involve significant uncertainties relating to issues such as storage capacity and costs. It should therefore be noted that the key drivers for operators' interest in technological removals are external to carbon markets. This means that the trajectories for voluntary carbon markets are not among the main drivers for generating carbon capture and storage projects domestically.

The change in the operating environment and regulatory framework that was most keenly followed was the EU Regulation on the Carbon Removals Certification Framework (CRCF). Comments in support of the Regulation revolved around the perception of the Regulation as an important way to enable a credible voluntary carbon market and ground rules for production of carbon credits based on technological removals. A negative aspect identified in the Regulation was the threat that the potential rigidity and bureaucracy of the chosen rules could hamper production of carbon credits based on technological removals.

The EU CRCF Regulation was perceived as confusing and unclear. The discussions highlighted that open questions about aspects such as quality criteria and use of certificates create uncertainty among operators. Among the experts interviewed,

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84 Please note that biochar is discussed in this report in the context of nature-based solutions.

operators that could implement technological solutions in the future also described the perception that uncertainty about EU regulation is currently making it difficult to conceptualise market formation. Uncertainty of demand can be managed with **offtake agreements**, which allow operators to agree in advance with individual buyers to sell future carbon removals.

Several interviewees highlighted the fact that, although the EU CRCF Regulation creates quality criteria for different types of credits, including those based on technological removals, it does not create market demand. They stressed that only an obligation can create demand. However, they felt that the Regulation was giving credibility to the marketplace. Several interviewees also mentioned that they expected the Regulation to be followed at some point by something more binding, or to be a step towards inclusion of carbon removals in the EU Emissions Trading System. Experts and operators pointed to a Commission report to be published in 2026, which is expected to provide information on the inclusion of carbon removals in EU obligations. In this context as well, they underlined that, rather than production, such an obligation would apply to purchase, which means that this would not automatically lead to implementation of technological sinks either.

In terms of demand, experts and operators were of the opinion that there is more demand for than supply of mitigation outcomes based on technological removals in particular. This perception was based on knowledge acquired through expertise and contacts or forecasts made in literature. Demand is largely driven by operators' net-zero commitments and the interest of certain large leading companies in both functioning as buyers and financing technological removals at relatively high price levels when compared with other buyers and credit types. These buyers want to ensure that they have access to enough carbon removals to meet their net-zero targets. Typically, buyers will only need carbon removals in and after the target year, from 2050 onwards at the latest. Offtake agreements allow buyers to already commit to buying future carbon removals, often directly from the producer. Offtake agreements can play a crucial role in making investment decisions in technological removal projects, since high unit costs and uncertainty of demand in voluntary markets make it particularly important for producers of technological removals to secure a revenue stream for their projects even before an investment decision is made. It is estimated that current buyers are willing to pay as much as EUR 250–1,000 per tCO<sub>2</sub> for technological removals.

According to the interviewees, demand is influenced by both long-term net-zero targets and the need to acquire carbon removals well ahead of the target year because it takes a long time to develop technological removal projects. In particular, the demand for technological removals was also seen to be boosted

by the fact that the markets and the media perceive technological removals to be of higher quality than many nature-based solutions with challenges relating to quality – such as permanence – that have been widely reported in the media. Some pioneering companies that buy technological removals also have the solvency and willingness to be interested in financing more expensive projects.

Voluntary markets are currently perceived to be a too uncertain way for operators to make the large investments required by projects. In their interviews and workshop discussions, experts and operators also stressed that the most viable way to implement especially large-scale and long-term investments domestically in voluntary markets would be to find a single buyer that would commit in advance to buying a sufficient number of carbon credits at a pre-agreed price under an offtake agreement to ensure project profitability. State aid is an alternative way to finance technological removals. Sweden is planning a reverse auction for removals produced by BECCS projects, with the government committing to pay a certain amount for tonnes of captured and permanently stored removals. The amount will be determined in the auction and will be payable to operators that can produce the tonnes of removals at the best price.<sup>85</sup> It is also possible to combine voluntary markets and state aid. For example, a Danish energy company Ørsted plans to finance its BECCS project partly with state aid and partly with proceeds from sale of carbon credits.<sup>86</sup>

However, offtake agreements function partly within the same initiatives both in terms of quality criteria and claims, meaning that changes in the operating environment and regulatory framework will also have an impact on their conclusion. In general terms, voluntary carbon markets were especially seen as heterogeneous, significantly smaller than compliance markets and not sufficiently reliable to make large-scale investments in technological carbon removals. Nevertheless, it was hoped that the major initiatives in particular (the EU Carbon Removals and Carbon Farming Certification Regulation, potential inclusion of credits in the EU Emissions Trading System and Article 6 of the Paris Agreement) would have the chance in the future to create a credible market that would also be suitable for credits based on technological removals. In the context of the

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85 See e.g. European Commission. Jul 2, 2024. Commission approves €3 billion Swedish State aid scheme to support the roll-out of biogenic carbon dioxide capture and storage. Available in English at: [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_24\\_3583](https://ec.europa.eu/commission/presscorner/detail/en/ip_24_3583).

86 See e.g. Ørsted awarded contract – will capture and store 430,000 tonnes of biogenic CO<sub>2</sub>. 15.05.2023. Available in English at: <https://orsted.com/en/media/news/2023/05/20230515676011>.

Regulation, experts also raised the idea that the Regulation was a step towards a compliance market; indeed, the Regulation was often discussed in relation to the possibility of including technological carbon capture and permanent storage in the EU Emissions Trading System.

A large number of the experts interviewed also followed the progress of negotiations on Article 6 of the Paris Agreement, whereas others focused on tracking EU-level developments. As a general rule, however, they found Article 6 to be good and an important international framework, but bringing the mechanism to completion and the opportunities for operators to participate were seen as difficult. The workshop and interviews also mentioned that Article 6 in particular was sometimes (especially in the past) perceived to emphasise land use sector activities at the expense of technological removals.

Discussion on the suitability of different carbon crediting programmes for technological removals was limited by the fact that there is as yet no experience of these. The main theme recurring in all responses, however, was an expectant attitude towards what the EU's carbon removal certification will require in the future and uncertainty about how other carbon crediting programmes for technological removals will develop. As a general rule, experts considered technological projects, including BECCS projects, to be of high quality and any concerns about not meeting the quality requirements were seldom raised.

However, a recurring aspect in operators' views was that they hoped that both the new EU-level requirements and updates to carbon crediting programmes would be consistent with other standards. Aspects such as biomass sustainability criteria, sustainability of wood-based bioenergy and its definition were raised as major sources of uncertainty about whether BECCS projects, for example, can be implemented at all or only on a small scale. Other interviews, in turn, emphasised the view that the domestic situation would be good for certified biomass in particular.

The interviewees highlighted that the central government could play a major role in providing operators with information on the EU regulatory framework in particular. They also would like to receive guidance on the flexibility mechanism of the distribution obligation currently in progress.

Among the trajectories outlined in Chapter 2, the production and supply of technological credits in Europe are most influenced by credit quality assurance and an increasing demand for removals. The initiatives concerning supply and quality

with the most impact on technological removals are, in particular, the EU Carbon Removals Certification Framework and voluntary bodies' initiatives to enhance the quality of carbon credits, such as the ICVCM.

However, supply will also be influenced by initiatives and trajectories guiding demand, since credit producers also anticipate future demand levels when making decisions on production. In particular, the increasing demand for permanent removals is most likely to specifically influence the demand for technological removals. Among the initiatives, domestic operators are following the EU Carbon Removals Certification Framework, in particular, while also stressing that the framework creates a market mechanism but will not automatically lead to demand. Issues relating to the legitimacy of various claims were also on operators' minds. The interviews highlighted the perception that there is currently no market demand for contribution claims. It is noteworthy that there are currently many trajectories particularly related to claims and their proliferation and acceptability (see Chapter 2).

## 4 Impacts of trajectories from the government perspective

This chapter discusses the impacts of different trajectories on mitigation action taken in Finland and achievement of Finland's climate goal. It also explores the impacts of the trajectories on global net emissions. These impacts were assessed on the basis of the effects of the trajectories on the demand for and supply of credits. Finally, the chapter examines the need to develop national regulatory and information guidance in light of market changes. This assessment is based on a 2021 review of regulation of voluntary carbon markets<sup>87</sup> and its recommendations.

### 4.1 Impacts of trajectories on national and global net emissions

Businesses can promote emission reductions and carbon removals by both increasing mitigation activities within their own value chain and supporting them outside their value chains through purchase of carbon credits from carbon markets. The trajectories identified in the project have implications for both mitigation outcomes within business value chains and those supported through carbon credits. The focus of these impacts on emission reductions within the value chain and on carbon markets varies between the trajectories. The impacts of the proliferation of net-zero targets, for example, focus primarily on emission reductions within business value chains and secondarily on carbon markets. Besides the demand for and supply of carbon credits, trajectories may have implications for public confidence in carbon markets. As a general rule, regulation and voluntary initiatives around carbon markets are designed to ensure the quality of carbon credits and the reliability of claims based on carbon credits, thereby building up confidence in the markets and their ability to contribute to achieving climate targets. This chapter illustrates the potential impacts of the trajectories on the assumption that the regulation and initiatives being developed will contribute to

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87 Laine, A., et al. (2021). Vapaaehtoisten päästökompensaatioiden sääntely (*Regulation of voluntary emissions offsetting*). Available in Finnish (English abstract) at: <https://julkaisut.valtioneuvosto.fi/handle/10024/163347>.

implementation of good practices and, consequently, strengthen confidence in the markets. In practical terms, however, regulation and initiatives are not always fully aligned with good practices. The analysis aims to take this into account in relevant respects.

The trajectories may have an impact on national carbon removals and emission reductions through both domestic business value chains and use of domestic carbon credits. In general terms, domestically produced credits can be used to a) implement existing national climate policies; b) support additional action to achieve national targets (where existing efforts are insufficient); and c) support mitigation activities beyond national targets. The use of credits consistent with good practices may also be conditional on increasing emission reductions within the business value chain. The implications of the trajectories for mitigation outcomes within and outside value chains were not quantified in the project. In the context of assessing trajectories, it is important to note that emission reduction measures within business value chains are necessary to meet the global, EU and national climate targets and that the use of credits should always complement, never replace, measures within value chains. Therefore, the analysis also aimed to take account of the impacts of the trajectories on mitigation outcomes within business value chains.

The underlying assumption applied in the trajectory impact assessment for the use of carbon credits was that the carbon credits were produced and used in keeping with the Government Guide to good practices. The point of reference for the use of credits and non-credit-based mitigation action is a situation in which the related mitigation action would not have been taken.

Figure 3 shows the impacts of the use of carbon credits in terms of national climate policy and global net emissions. Credits used to meet binding obligations are always counted as part of the host country's climate targets and **national policies**. The mandatory use of credits is therefore part of implementation of national climate action and does not bring additional climate benefits compared with measures or targets decided at national or EU level, for example. The voluntary use of credits, in turn, can either deliver additional climate benefits to existing policies or to national target levels, depending on credit type. The voluntary use of credits can also bridge the **action gap** between existing policies and climate action required by the target when the mitigation outcomes of the credits are counted as part of the host country's national climate targets. In such cases, carbon credit buyers can avoid double counting by making contribution claims. At the same time, credits not counted towards achieving any country's climate targets represent additional mitigation outcomes to national climate targets, helping close the

so-called **ambition gap** between national targets and the global 1.5°C pathway. The ambition gap stems from the fact that current national climate targets and mitigation activities are not sufficient at a global level to limit climate change to 1.5°C. According to the Finnish Climate Change Panel, the Finnish Government's current carbon neutrality target for 2035 is in line with the 1.5°C target<sup>88</sup>. In light of current knowledge, however, Finland's mitigation activities are thus far not sufficient to achieve this target ('ambition gap')<sup>89</sup>.

#### 4.1.1 Impacts of trajectories on mitigation outcomes generated in Finland

The trajectories for demand trends are mainly expected to contribute to implementation of mitigation activities in Finland (Figure 4). The trajectories identified in the project may have different effects on domestic mitigation outcomes, depending on prevailing claims and whether development is specifically focused on emission reductions and carbon removals inside or outside business value chains, or on both of the above.

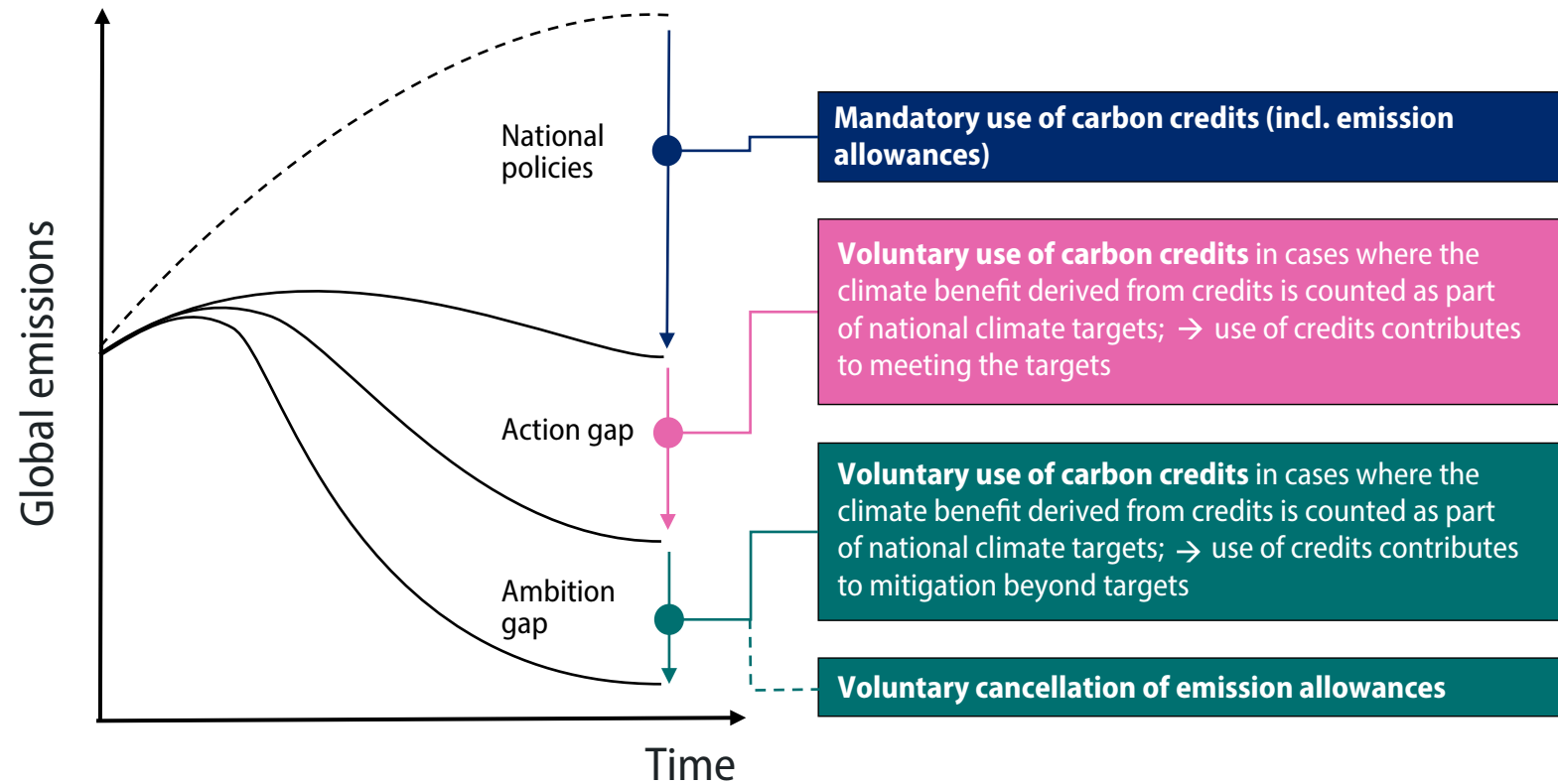
The main disincentives for developing certified mitigation activities identified in Finland include the challenge of double counting and the costs of carbon crediting programmes. Of those mentioned above, the challenge of double counting can be solved by means of contribution claims. The growing popularity of contribution claims is expected to have the potential to increase the demand for domestic mitigation outcomes, should operators perceive them as attractive ways to take responsibility for the climate. Attractiveness in turn is influenced by public awareness of such claims.

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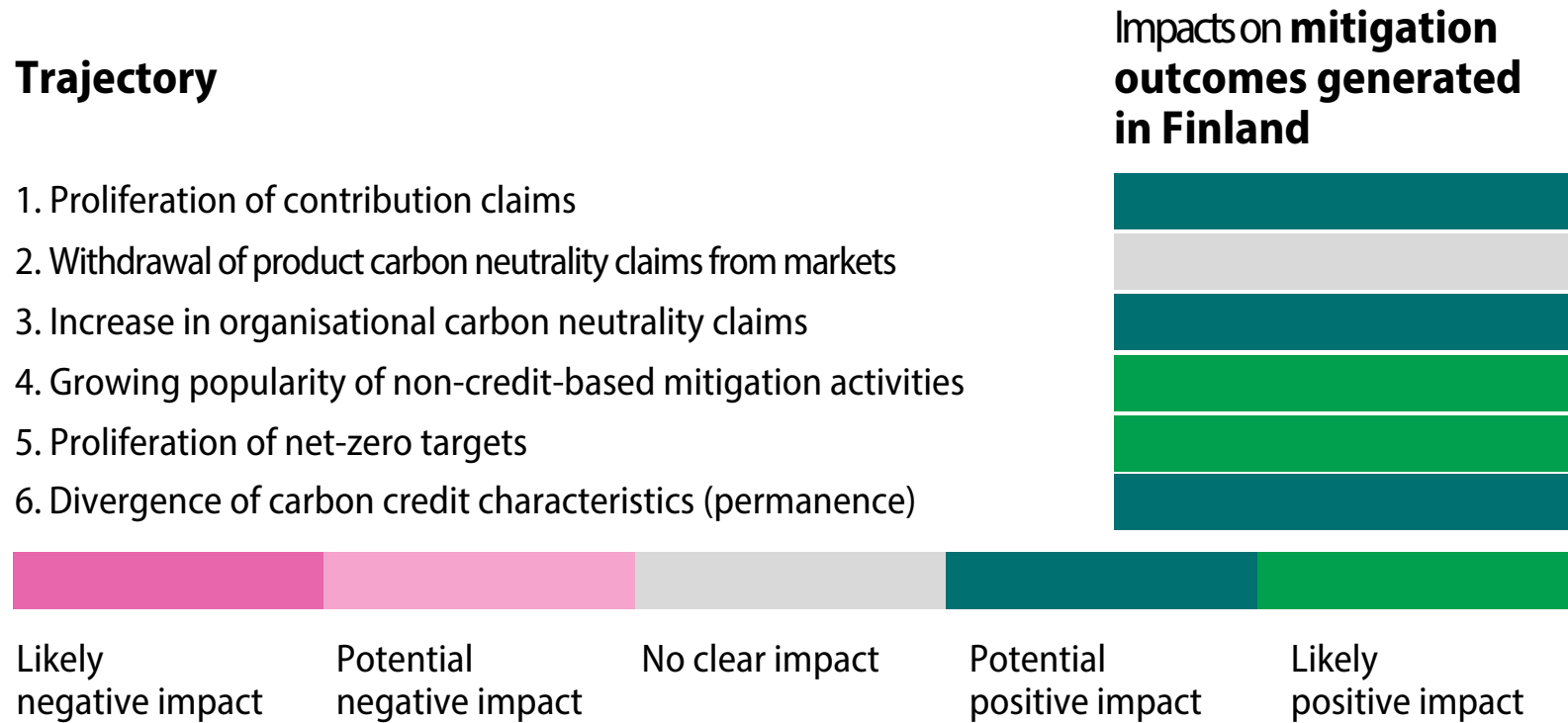
88 Finnish Climate Change Panel. 2019. Kohti ilmastokestävää maailmaa ja Suomea – päästöjen vähentämisen perspektiivit ja toimijat (*Towards a climate-resilient world and Finland – emission reduction perspectives and actors*). Available in Finnish at: [https://ilmastopaneeli.fi/hallinta/wp-content/uploads/2019/10/Ilmastopaneeli\\_Policy-Brief\\_Kohti-ilmastokestavaa-maailmaa-ja-Suomea-%E2%80%93-paastojen-vahentamisen-perspektiivit-ja-toimijat\\_FINAL.pdf](https://ilmastopaneeli.fi/hallinta/wp-content/uploads/2019/10/Ilmastopaneeli_Policy-Brief_Kohti-ilmastokestavaa-maailmaa-ja-Suomea-%E2%80%93-paastojen-vahentamisen-perspektiivit-ja-toimijat_FINAL.pdf).

89 Ministry of the Environment. 2024. Annual Climate Report. Available in English at: <https://ym.fi/en/annual-climate-report>.

**Figure 3.** Impacts of trajectories on mitigation outcomes generated in Finland



**Figure 4.** Role of credit use in reducing global net emissions



Contribution claims can be based on carbon credits or mitigation activities not based on credits. These mitigation activities are expected to have a likely positive impact on the demand for and supply of domestic mitigation outcomes. Non-credit-based mitigation actions do not require the use of certified mitigation outcomes. An increase in demand for non-credit-based mitigation activities could therefore also increase the demand for uncertified mitigation activities with less definable benefits and uncertified mitigation outcomes. In terms of domestic removals, the highest demand potential is therefore expected to come from non-credit-based mitigation actions, which can also be based on business support for activities that do not produce certified mitigation outcomes. Should businesses be interested in making contribution claims based on certified carbon credits, the challenges involved in certification may appear as a bottleneck for production of Finnish mitigation outcomes regardless of the increasing awareness of contribution claims.

According to the project's assessment, ending the use of product carbon neutrality claims would not have a significant impact on the demand for and production of mitigation outcomes generated in Finland, since using Finnish credits for product offsetting claims has not been allowed under good practices up to now either due to the lack of certified projects<sup>90</sup> and challenges involved in double counting mitigation outcomes.

The project's assessment indicated that the proliferation of organisational carbon neutrality claims had potential to deliver positive impacts on mitigation outcomes generated in Finland, especially through activities within business value chains. Under the current EU sustainability legislation (see Chapter 2), businesses' carbon neutrality targets and claims must be based on science-based emission reduction targets and pathways. Indeed, carbon neutrality is increasingly seen as a step towards long-term net-zero emissions in both regulation and voluntary standards (e.g. the ISO carbon neutrality standard). At the same time, however, linking the use of carbon credits to ambitious emission reductions within the value chain may reduce their demand among operators not committed to ambitious emission reduction targets for one reason or another. To make carbon neutrality claims, businesses must acquire carbon credits not counted towards any state's climate targets. There are no nationally authorised mitigation projects in Finland that would have been excluded from Finland's National Greenhouse Gas Inventory. In light of

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90 Puro.earth is thus far the only body in Finland to have offered credits suitable for offsetting claims. These credits were produced in biochar projects. Further information available in English at: <https://puro.earth/CORC-co2-removal-certificate/supplier-listing/carbofex-nokia-1>.

current knowledge, any carbon credits required for carbon neutrality claims must therefore be purchased from foreign projects, meaning that they will have no impact on mitigation outcomes generated in Finland.

The proliferation of net-zero targets may significantly increase the number of emission reduction measures implemented in Finland through operators' own emission reductions. The assessment suggests that the proliferation of net-zero targets could have a likely positive impact on domestic mitigation outcomes. For net-zero targets, operators can only use permanent carbon removals to neutralise any remaining emissions in the net-zero target year and beyond, which means that the proliferation of net-zero targets will create longer-term incentives to generate permanent removals. Compared with carbon neutrality targets, the proliferation of net-zero targets may already have a positive impact on research and development on and the anticipatory demand for domestic permanent removals. However, the impact on credit production will only become visible closer to the long-term target years (2040–2050).

Diverging carbon credit characteristics were assessed to have positive impacts in terms of supply trends. The EU Carbon Removals Certification Framework is seen to create opportunities for generating temporary mitigation outcomes in particular (e.g. agricultural emission reductions and carbon farming), for which Finland has significant potential (see Chapter 3). The certification framework offers operators opportunities to certify mitigation outcomes generated by carbon farming measures, for example, which are not issued carbon credits by other crediting programmes due to their short-term permanence. However, the certification framework does not create demand for, nor guarantee market confidence in temporary credits. Supply trends depend on the demand for new types of credits and for temporary credits in particular. From the perspective of demand, credit buyers will need to establish the characteristics of the credits that they buy more thoroughly in the future, paying attention to details such as the constraints resulting from the permanence of credits on their use. For example, temporary credits are not well suited for offsetting emissions because the offsetting effect should be permanent. Should short-lived credits be used to offset emissions generated during a certain year, the buyer would have to purchase a new credit whenever the validity of the previous credit expires in order to maintain the offsetting claim made during the validity of the original credit. Contribution claims are a looser and more flexible type of claim, which can also be based on temporary credits.

## 4.1.2 Impacts of trajectories on achievement of Finland's climate target

The impact of the use of carbon credits on Finland's climate targets depends on the methodology used to quantify the credits and the purpose for which they are used to close the action or ambition gap, as shown in Figure 3. Achievement of the national climate target can be promoted by using carbon credits reflected in the government emissions inventory and counted as part of the national emissions balance<sup>91</sup>. The impacts shown in Figure 5 on Finland's target are the same as those described in the previous chapter because, in light of current knowledge, Finland will not make corresponding adjustments and does not have carbon sequestration potential outside its emissions inventory.

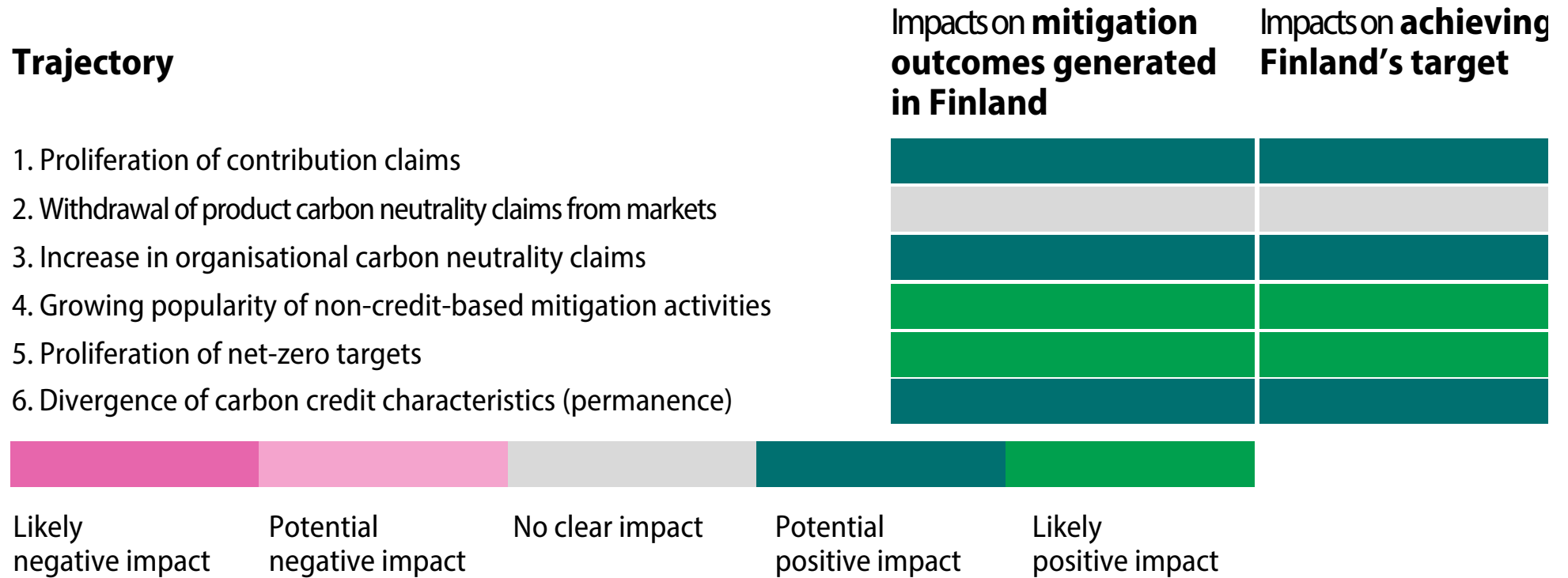
According to good practices, contribution and offsetting claims based on carbon credits should rest on ambitious emission reduction targets in the organisational value chain and the use of carbon credits should not diminish the operator's own emission reduction measures. Consequently, claims consistent with good practices encourage organisations to make more ambitious emission reductions in their own value chain. To the extent that these emission reductions are reflected in national emissions inventories and covered by climate targets, operators' own emission reduction measures contribute to achieving national climate targets in the country in which the emission reductions materialise. Likewise, the mitigation outcomes represented by carbon credits used by operators can help achieve national targets in the country in which they were produced, to the extent that they are reflected in the national emissions inventory and counted towards the national target. To the extent that emission reductions within operators' value chains and/or mitigation outcomes represented by carbon credits occur in Finland, they can help achieve Finland's national target.

Among the demand-related trajectories, the proliferation of contribution claims, organisational carbon neutrality claims and net-zero targets will promote and spur operators' own emission reductions, meaning that these trajectories would also contribute to achieving Finland's emission reduction targets. The most significant differences between the trajectories emerge when looking at their impact on mitigation activities outside organisational value chains, i.e. on purchasing the credits underlying the claims.

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91 Please note that the method of counting BECCS credits towards government emissions inventories differs from that used for other types of credits. Quantification of BECCS credits is explained in more detail in Chapter 2.

**Figure 5.** Impacts of trajectories on achievement of Finland's climate target



The proliferation of contribution claims and non-credit-based mitigation activities would contribute to achieving Finland's climate targets through credit purchases and other beyond value chain support, to the extent that the mitigation outcomes are realised in Finland, reflected in Finland's emissions inventory and counted towards Finland's climate targets. The impact of contribution claims based on carbon credits can be measured in the number of credits, but these are not necessarily fully reflected in the national inventory. Many outcomes of mitigation activities in the land use sector, for example, do not necessarily show up in a national sample and in the national emissions inventory partly compiled by means of modelling. In other words, the methodologies used to compile the emissions inventory do not necessarily take account of all mitigation activities, at least with sufficient accuracy. Measuring and assessing the impact of mitigation activities not based on credits involve challenges, as these actions do not necessarily produce measurable mitigation outcomes.

Compared with the trajectories discussed above, an increase in organisational carbon neutrality claims would only contribute to the government emission reduction target through any potential increase in emission reductions within operators' value chains, since credits used for carbon neutrality claims should not, according to good practices, be counted towards government targets.

In the short term, the impacts of the proliferation of net-zero targets focus on operators' own emission reductions in particular. Finnish businesses' net-zero targets reduce operators' own emissions in Finland and may consequently contribute to achieving government emission reduction targets. In the long term, net-zero targets will create demand for permanent removals. At present, however, these are not counted towards Finland's EU targets. The proliferation of foreign operators' net-zero targets may therefore significantly increase the demand for removals produced in Finland. Net-zero claims consistent with good practices are based on permanent removals, which are not counted towards any country's target. Should avoidance of double counting not be required for net-zero targets, the increased demand for removals produced in Finland could boost their domestic production, contributing to achievement of national targets. However, the demand for removals is not expected to increase significantly; nor will removals generated in 2040–2050 help Finland to achieve its carbon neutrality target for 2035. Net-zero targets may nevertheless create incentives for greater investment in projects generating removals and promote the implementation of such projects in Finland.

Expanding the supply to cover credits with different periods of permanence can contribute to achieving government emission reduction and carbon sequestration targets, provided that there is a stable demand for credits. Temporary credits could

allow additional emission reductions to be generated in the effort sharing sectors, for example, if the credits were to be implemented in agriculture. According to the April 2024 provisional agreement on the CRCF Regulation, credits certified under the CRCF are to be counted as part of the EU NDC<sup>92</sup>. An increase in the use of carbon farming credits, for example, could therefore potentially contribute to achieving the land use sector's targets. In practical terms, not all mitigation outcomes under the CRCF are necessarily reflected in national GHG inventories. However, the key to making progress towards targets is the permanence of credits, which should extend to 2035 to contribute to Finland's 2035 carbon neutrality target.

### 4.1.3 Impacts of trajectories on global net emissions

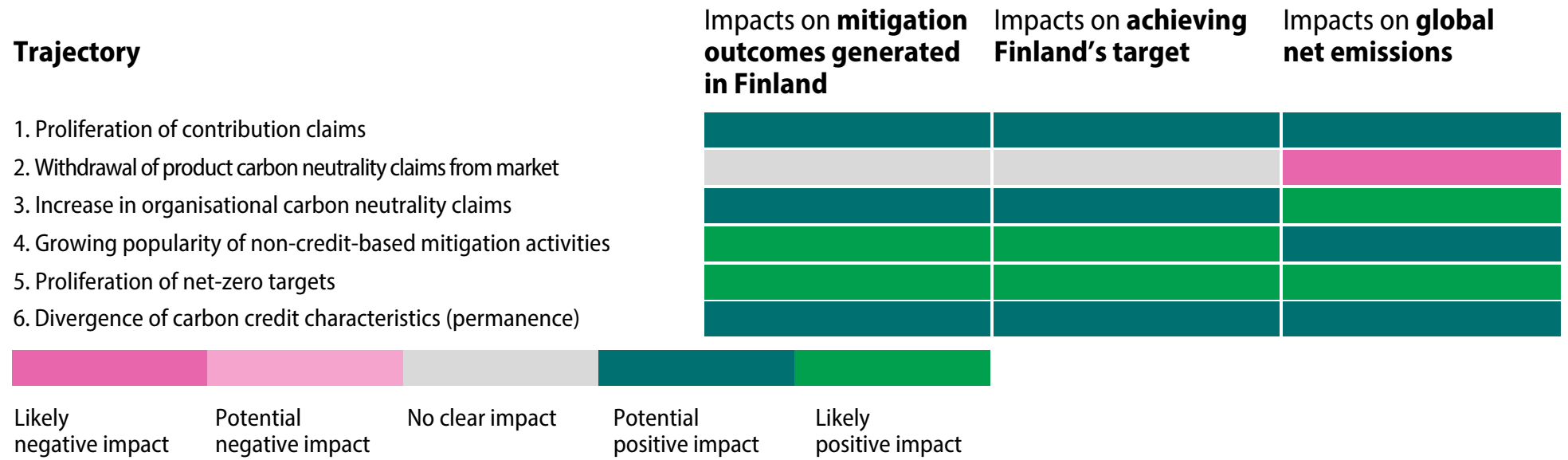
Besides the impacts on national climate targets, the project looked at how the trajectories impact global net emissions, i.e. what their additional climate impacts are and how they could contribute to meeting the 1.5°C target.

The estimated impacts of the trajectories on global net emissions vary significantly (see Figure 6). By way of example, the use and proliferation of contribution claims only impact the achievement of the government target through the way in which credits are calculated and will therefore not bring any additional climate benefits to the government target in terms of global net emissions. Should the government action gap be large, however, it is possible that the government will not achieve its target without voluntary markets. The impact of carbon neutrality claims on the ambition gap is the opposite to that of using contribution claims. According to good practices, carbon credits related to carbon neutrality claims should not be included in government emissions balances. Consequently, credits used for carbon neutrality claims can produce mitigation outcomes that are additional to the government target, contributing to bridging the ambition gap. The use and proliferation of organisational carbon neutrality claims would likely contribute to reducing global net emissions relative to government targets, provided that double counting of credits is avoided. The withdrawal from the market of product carbon neutrality claims, in turn, has a negative impact on global net emissions as a general rule, since their withdrawal will reduce the demand for credits and the number of mitigation outcomes purchased.

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92 The April 2024 provisional agreement on the CRCF Regulation states as follows: "All carbon removals and soil emission reductions certified under this Framework should contribute to the achievement of the Union's Nationally Determined Contribution (NDC) and its climate objectives." Available in English at: [https://www.europarl.europa.eu/meetdocs/2014\\_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR\\_2022-0394COD\\_EN.pdf](https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR_2022-0394COD_EN.pdf).

**Figure 6.** Impacts of trajectories on global net emissions



Mitigation actions not based on credits can contribute to achieving government targets or bridging the ambition gap, depending on the type of mitigation activity. Mitigation outcomes generated from direct air carbon capture and storage (DACCS), for example, are not currently reported in government emissions inventories, which are also largely the basis for assessing whether government targets are met. Operators' support for development and introduction of DACCS technology would therefore contribute to bridging the ambition gap. At the same time, support for afforestation or removals generated by BECCS, for example, would not produce additional climate benefits to the government target to the extent that these benefits are reflected in the government emissions inventory.

Expansion of the supply created under the CRCF into credits with different periods of permanence will likely not generate additional carbon sequestration to government targets as the mitigation outcomes generated within the framework are to be counted towards EU targets. The impacts of supply trends also depend on the future focus of development of credit production, i.e. the extent to which the supply is concentrated on permanent credits and temporary credits, respectively.

## 4.2 Impacts on national regulation and information guidance

At the national level, several studies have been carried out on the use of carbon credits and related good practices. Due to rapid changes in the international arena, however, the recommendations provided in the studies need to be updated. The chapter is divided into five policies on carbon markets proposed in a 2021 review of regulation of voluntary carbon markets<sup>93</sup>. Its sections examine each policy and its suitability and possible update needs in a changed operating environment. Among the policy recommendations set out in the 2021 review, the 2023 Guide to good practices for voluntary carbon markets is the only action nationally targeted to voluntary carbon markets to have been implemented to date. Special attention was paid to its update needs.

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93 Laine, A., et al., 2021. Vapaaehtoisten päästökompensaatioiden sääntely (*Regulation of voluntary emissions offsetting*). Available in Finnish (English abstract) at: <https://julkaisut.valtioneuvosto.fi/handle/10024/163347>.

## 4.2.1 Operators' cooperation and self-regulatory body

The 2021 report by Laine et al. recommended that the supply and purchasing organisations operating in carbon markets set up a regulatory body<sup>94</sup> to ensure and control the quality of mitigation outcomes and/or marketing claims. The need for a self-regulatory body has diminished with recent developments in EU claims legislation. Instead, there is a need to promote cooperation among carbon market participants and support knowledge-building and situational awareness. Over a longer term, efforts should be made to create a shared national vision of how to make use of carbon markets.

The need for operator cooperation and a shared vision of carbon markets will become ever more pronounced in the future as carbon market trajectories become more diverse. In addition to producers and purchasers, it is also necessary to engage public authorities, representatives of civil society and research, and consumers and NGOs in cooperation. Cooperation should be transparent and inclusive to ensure the widest possible societal support and promote market stability and development in a sustainable way.

At present, many operators perceive the overall picture of voluntary carbon markets to be complex and difficult to conceptualise. Operators' lack of knowledge and misunderstandings concerning carbon markets were evident in the project's supply-side business interviews and their descriptions of customer negotiations and discussions. While the 2023 guide has clarified good practices in principle, discussions highlighted the challenges involved in putting them into practice.

A key objective of the national cooperation body would therefore be to develop tools for practical implementation of good practices and regulation in cooperation with operators, taking their needs and experiences into account. The cooperation body could also play an important role as an information provider. It could communicate information on international and EU-level developments and help operators understand regulation and avoid misunderstandings. It could also provide operators with a channel to coordinate opinions and positions for stakeholder consultations, for example. Such a cooperation body could offer important support for market development, make regulation more accessible and help small operators to adapt and keep up with developments.

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94 Hiilensidontary ('Carbon Sequestration Association') was established in 2022 as a cooperation body for carbon market participants. The association's tasks include promoting the operating conditions of carbon markets and engaging in advocacy for the sector. For more information (in Finnish), refer to: <https://www.hiilensidontary.fi/>.

Among other things, an effective cooperation body should seek to take into account the following aspects:

1. Operators' areas of expertise and networks: It is possible to integrate broad and diverse expertise and insight into activities by making use of existing networks, such as the Centres for Economic Development, Transport and the Environment (ELY Centres); the Finland Chamber of Commerce; and the Natural Resources Institute Finland (Luke).
2. Operators' different interests: Organisations operating in carbon markets may have different interests and objectives. The cooperation body must be able to create a community that takes different viewpoints into account and seeks to find compromises between different interests. This may require an active facilitator role and building trust between different operators.
3. Differences and competition between forms of production: Nature-based mitigation outcomes are currently produced in Finland, but technological solutions are emerging and involve high targets and expectations. These two forms of production differ significantly in terms of the quality and price of carbon credits being produced and this competition can make it challenging to reach a shared vision.
4. Financing and resources: The cooperation body requires adequate financing and resources to function. In order for its activities to be effective, the body should be able to commission reports and reviews in support of its activities. This can pose a challenge for voluntary carbon markets because the sector's turnover is low and it can be difficult to raise voluntary contributions.
5. Political support and the role of central government: The success and importance of the cooperation body also depend on whether it receives sufficient support from central government. The central government's role could be more facilitative, offering resources and contributing to enabling cooperation. This calls for active dialogue between central government and other stakeholders and clear communication about the role and objectives of the cooperation body.

An essential part of planning the cooperation body and implementing its activities is to address and respond to problematic issues, in order for the body to operate effectively and achieve its objectives. The cooperation body could initially focus solely on building expertise in the sector and functioning as an information channel between markets and public administration and only later pursue the objectives relating to the functioning of markets more purposefully.

## 4.2.2 Carbon credit registry

The 2021 report by Laine et al. recommended that the central government establish a voluntary national registry for domestically produced carbon credits. In the current situation, a separate registry is no longer recommended for two reasons. Firstly, the EU Carbon Removals Certification Framework will be accompanied by the establishment of an EU-wide registry. Secondly, a national register is being prepared to accompany the flexibility mechanism for the biofuel distribution obligation.

The Commission will establish a Union registry under the EU Carbon Removals Certification Framework within four years of the Regulation's entry into force. The operation of the registry will be financed by annual fees payable by users. In the Union registry, different certified units (permanent carbon removal, carbon farming sequestration, temporary carbon storage in product and soil emission reduction units) must be treated separately and cancelled after a fixed period. Prime Minister Orpo's Government Programme includes and the Ministry of Economic Affairs and Employment is promoting the implementation of a transparent register in connection with preparing the flexibility mechanism for the distribution obligation. It aims to pilot measures to develop carbon markets.

## 4.2.3 Guide to good practices for voluntary carbon markets

The Finnish Government's Guide to good practices for voluntary carbon markets was published in the spring of 2023. Based on the recommendations issued by Laine et al. (2021), the guide aimed to clarify good practices for carbon markets to producers and users of credits as well as to consumers. Feedback from stakeholders indicates that the guide has been widely read among domestic market participants. According to experts, the guide's recommendations for credible claims, for example, have also been used outside Finland. Bringing together the regulation and numerous initiatives governing carbon markets and related good practices contributes to operators' understanding of the markets and clarifies debate and development work.

The principles of good practices contained in the guide remain valid and it can be considered to be a good information guidance instrument. As the guide describes the status of regulation and initiatives at the end of 2022, it mainly needs updating with complementary descriptions of regulation and initiatives. The guide's update needs were assessed by looking at market developments since its publication, up until June 2024, and the key update needs are described in Table 3.

Furthermore, the rapidly changing operating environment of carbon markets creates the need for the guide's agile and active maintenance. The guide's possible future updates could be implemented as a website instead of a static report. Website maintenance would require an active owner that follows the markets, updates content and describes market developments clearly and objectively. It would be advisable for the central government to be involved in the process to ensure that the guide contains up-to-date information on regulation. Furthermore, it would be important to engage market participants and inform them of guide updates, for example through their cooperation body. This would also allow joint piloting and identification of the practical challenges and opportunities involved in reporting, claims, value chains, etc., sharing experiences and co-learning in a timely manner. Rapid communication of information could support market development in general terms.

**Table 3.** Government Guide's update needs

<b>Guide section</b>	<b>Description of update needs</b>
<b>Key terminology</b>	EU regulation relating to the use of carbon credits has been significantly updated since 2022 and will also continue to be updated after the publication of this report. Key terminology should be updated to reflect the terms and phrases used in EU regulatory instruments.
<b>Good practices for voluntary production and use of credits in Finland</b>	<i>Update needs specified below</i>
<b>Good practices for credit producers</b>	Adopted in April 2024, the EU Carbon Removals Certification Framework is essential in terms of credit production. Guidelines for producers should be complemented with due consideration for the new EU-wide certification framework and the opportunities it creates. Furthermore, as the ICVCM CCP criteria have been fully completed since the guide's publication and their implementation is underway, the final criteria should also be taken into account in good practices for producers.
<b>Good practices for credit users and claimants</b>	EU claims regulation relating to the use of carbon credits has been significantly updated since 2022 and will also continue to be updated after this report's publication. Guidelines for credit users should be updated with due consideration for the EU's Empowering Consumers for the Green Transition and Green Claims Directives. Furthermore, some initiatives such as the ISO 14068-1 carbon neutrality standard and the VCMI Claims Code of Practice have only entered into force after the guide's publication and should also be reflected in the update of good practices.
<b>Highlights of good practices for private consumers</b>	EU claims regulation relating to the use of carbon credits and initiatives concerning claims (such as the ISO carbon neutrality standard and the VCMI Claims Code of Practice) have been significantly updated since 2022 and will also continue to be updated after this report's publication. Guidelines for private consumers should be updated to reflect claims development and possible regulatory changes in consumer marketing.

Guide section	Description of update needs
<b>Status report</b>	Information concerning current legislation and existing guidance was updated in the interim report of this project. Since keeping the guide up to date on the status report would take up significant resources from maintenance, it is recommended that, instead of descriptions of legislation and guidance, the guide's future updates focus on summarising good practices based on market updates.
<b>Recommendations for developing and supervising voluntary mitigation action and related claims in the future</b>	Recommendations for developing and supervising voluntary mitigation action and related claims in the future should be updated to reflect recent legislation (e.g. the final version of the Green Claims Directive) and voluntary guidelines.

#### 4.2.4 Green Deal

To promote good practices for voluntary carbon markets, Laine et al. (2021) proposed a voluntary commitment ('Green Deal') that would include criteria for the use of credits in keeping with good practices. The commitment could be signed by all operators purchasing credits and it could be implemented on the [sitoumus2050.fi](https://www.sitoumus2050.fi) website with other Green Deal commitments. However, the Green Deal for voluntary carbon markets would be different from other similar commitments because its terms would be directly specified in the Government Guide or its updated version (see Section 4.2.3).

The Green Deal for voluntary markets is still applicable to voluntary markets and provides a viable alternative for the central government to promote the introduction and implementation of good practices. The Green Deal is a familiar concept to many businesses and may therefore be seen by businesses buying carbon credits as an attractive way to commit to good market practices. From the central government perspective, the Green Deal does not involve any significant maintenance costs, provided that it would be created on the existing [sitoumus2050.fi](https://www.sitoumus2050.fi) platform. A specific challenge for voluntary commitments identified in the project focusing on regulation of voluntary carbon markets was the lack of willing implementation and negotiating partners. This project (Government's analysis, assessment and research activities 2024) considered that, in the current market situation, the operators' self-regulatory body described above in Section 4.2.1 could function as an implementation and negotiating partner. A model for the functioning of the self-regulatory body and the Green Deal could be found in

Germany, for example, where the Development and Climate Alliance<sup>95</sup> serves as the cooperation and self-regulatory body for market participants. Market participants can join the Alliance and, upon joining, they commit to complying with the Alliance's good practices, which are continuously developed on the basis of studies and surveys.

No comprehensive evidence is currently available of any potential benefits of voluntary commitments in the context of carbon markets. Ideally, the Green Deal could promote the attractiveness and introduction of contribution claims and build up confidence in carbon markets among operators and the wider public.

#### 4.2.5 Consumer Ombudsman's guidelines

The Finnish Consumer Ombudsman may publish guidelines to provide operators with guidance and advice regarding the application of law. The guidelines are the supervisory authority's position on how law should be applied. According to Laine et al. (2021), the Consumer Ombudsman could publish guidance on voluntary mitigation action, which could be incorporated into the existing guidelines for the use of environmentally oriented claims in marketing<sup>96</sup>.

Provisions governing misleading marketing practices and environmental claims are laid out in EU legislation and leave little room for manoeuvre at the national level. Legislation on environmental claims and relevant interpretation and application approaches are currently being actively developed within the EU (see Section 2.3.2). According to Laine et al. (2021), the Consumer Ombudsman's guidelines typically have the greatest impact in cases where a sector's marketing practices are already relatively well established. The guidelines are unlikely to provide an effective way to establish divergent practices and marketing approaches in a sector or market.

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95 For further information about the German Development and Climate Alliance in English, refer to: [https://allianz-entwicklung-klima.de/wp-content/uploads/2020/11/AllianzEntwicklungKlima\\_Anforderungskatalog\\_Standards\\_EN.pdf](https://allianz-entwicklung-klima.de/wp-content/uploads/2020/11/AllianzEntwicklungKlima_Anforderungskatalog_Standards_EN.pdf).

96 Finnish Competition and Consumer Authority. 1992, revised in 2002, 2019. Available in English (2002 version) at: <https://www.kkv.fi/en/consumer-affairs/facts-and-advice-for-businesses/the-consumer-ombudsmans-guidelines/the-use-of-environmentally-oriented-claims-in-marketing/>.

In April 2024, the Finnish, Swedish, Norwegian, Icelandic and Danish consumer protection authorities published a joint statement on climate claims based on carbon credits<sup>97</sup>. According to the statement, the Nordic consumer protection authorities are concerned about operators' climate claims stating that the climate impact of their products, for example, is neutral or positive. The consumer protection authorities have considered such claims difficult to verify and misleading to consumers. The statement notes that the authorities have difficulty verifying claims based on carbon credits and their veracity according to current EU claims legislation. Whether the Consumer Ombudsman's guidelines are applicable to the current market situation depends greatly on the level of precision with which the EU's future legislation and its application guidance address marketing practices and claims relating to voluntary mitigation action.

As the EU legislation governing environmental marketing and claims becomes clearer and more specific (by the end of 2024), the consumer authorities may need to develop new guidance for operators and their own domestic supervisory practices. For example, the new proposal for a Green Claims Directive is the first to divide marketing claims based on carbon credits into offsetting and contribution claims, which may trigger the need to develop new guidance and practices. As the new regulation enters into force, cooperation between EU authorities and between the authorities and market participants would be essential for developing the interpretation of law. Cooperation between the authorities and market participants could be built under the leadership of the national self-regulatory body, for example.

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97 Nordic statement on climate compensation claims in marketing. 18 April 2024. Available in English at: <https://www.forbrukertilsynet.no/wp-content/uploads/2024/04/nordic-statement-on-climate-compensation-claims-in-marketing.pdf>.

## 5 Conclusions

Voluntary carbon markets have been in a state of flux in recent years. Confidence in the markets has wavered as the result of intentional and unintentional greenwashing and problems involved in the quality of credits. Development needs have been addressed in terms of both regulation and self-regulation, which are in part leading the markets towards different potential trajectories. These trajectories have different implications for the demand for and supply of credits and, consequently, for national climate targets and global net emissions.

The best combination of trajectories for achieving Finland's national climate targets would be an increase in Finnish businesses' net-zero targets and contribution claims based on domestic credits. The best combination for global net emissions would be an increase in operators' carbon neutrality and net-zero targets and offsetting claims, as governments' targets do not as yet reach the 1.5°C emission reduction pathway under the Paris Agreement on an international scale. This conflict between national interests and global net emissions, combined with the fact that contribution claims have thus far not provided businesses with an attractive alternative to offsetting claims, has played a role in hindering the development of domestic carbon markets. Should contribution claims be made more attractive for Finnish businesses, the potential for CRCF carbon farming credits, for example, could be very significant in Finland. However, realising this potential would require certainty about future demand and price levels. Finland has significant potential for technological removals, particularly in terms of point source emissions from the forestry and energy industries, but voluntary carbon markets alone are unlikely to provide sufficient incentives to launch the major investments required for technological removals.

Business confidence in voluntary markets and marketing claims is influenced by regulatory developments and instruments such as the EU Green Claims Directive. As the Green Claims Directive is still being developed, its final content on more specific regulation of offsetting and contribution claims is not clear at the time of writing this report. According to the Council's position, for example, the Commission should develop more detailed implementing acts for offsetting and contribution claims based on carbon credits by the end of 2027.

The development of domestic carbon markets depends on the ability of buyers and sellers of credits to rely on common, enduring ground rules for the markets regarding credit quality assurance, using credits and making claims. Besides the more specific regulation and international guidelines, the central government can contribute to creating stability in the markets, for example by providing operators with readily accessible information on market trends. Furthermore, opportunities need to be provided for practical experimentation in light of this information. The central government can contribute to experimentation, for example by building awareness of contribution claims and increasing dialogue between operators and authorities such that, instead of looking for abuses, they can get together to think about ways to promote a better match between demand and supply in carbon markets in Finland.

What the market trajectories have in common are their impacts on climate change mitigation. Global net emissions can be reduced by ensuring that businesses have new, reliable and high-quality ways to promote corporate responsibility outside their value chains and communicate this to their stakeholders in a reliable and understandable manner. Regulation and self-regulation should seek to ensure that voluntary carbon markets provide complementary additional solutions rather than an alternative to businesses' own emission reductions. The worst alternative for the climate would be a situation in which voluntary climate cooperation made possible by carbon markets would cease completely.

## REFERENCES

- Allianz für Entwicklung und Klima. 2020. Development and Climate Alliance – Approved Standards and Processes. Available in English at: [https://allianz-entwicklung-klima.de/wp-content/uploads/2020/11/AllianzEntwicklungKlima\\_Anforderungskatalog\\_Standards\\_EN.pdf](https://allianz-entwicklung-klima.de/wp-content/uploads/2020/11/AllianzEntwicklungKlima_Anforderungskatalog_Standards_EN.pdf).
- Axelsson, K., Wagner, A., Johnstone, I., Allen, M., Caldecott, B., Eyre, N., Fankhauser, S., Hale, T., Hepburn, C., Hickey, C., Khosla, R., Lezak, S., Mitchell-Larson, E., Malhi, Y., Seddon, N., Smith, A. and Smith, S.M. 2024. Oxford Principles for Net Zero Aligned Carbon Offsetting (revised 2024). Oxford: Smith School of Enterprise and the Environment, University of Oxford. Available in English at: <https://www.smithschool.ox.ac.uk/sites/default/files/2024-02/Oxford-Principles-for-Net-Zero-Aligned-Carbon-Offsetting-revised-2024.pdf>.
- Call for nomination of experts to Scoping Meeting for Methodology Report on Carbon Dioxide Removal Technologies and Carbon Capture Utilization and Storage. Available in English at: <https://www.ipcc.ch/2024/06/18/nominations-scoping-meeting-cdr/>.
- Carbon Market Watch. 2020. Above and Beyond Carbon Offsetting – Alternatives to compensation for climate action and sustainable development. Available in English at: <https://carbonmarketwatch.org/wp-content/uploads/2020/12/AboveAndBeyondCarbonOffsetting.pdf>.
- Carbon Mechanisms Review. 2023. Scaling Climate Action – Combining public and private funding on the road towards carbon neutrality and climate resilience. Available in English at: <https://www.carbon-mechanisms.de/en/publications/details/carbon-mechanisms-review-02-2023-scaling-climate-action>.
- Carbon Pulse. March 28, 2024. Chile approves first offsetting projects eligible for paying national carbon tax. Available in English at: <https://carbon-pulse.com/272882/>.
- Climate Change Committee. 17 April 2024. Commission statement. Summary record of the meeting, item 3. Available in English at: <https://ec.europa.eu/transparency/comitology-register/core/api/integration/ers/405511/098490/1/attachment>.
- ClimatePartner. Whitepaper: Shifting from offsetting to contribution claims on the voluntary carbon market. Available in English at: <https://www.climatepartner.com/en/knowledge/insights/whitepaper-contribution-claims>.
- Commission Delegated Regulation (EU) 2023/2772 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards. Disclosure requirements E1–7. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R2772>.

- Compensate Foundation. Non-offset claims: How to make a robust climate claim? Available in English at: [https://compensatefoundation.org/wpcontent/uploads/2023/06/How\\_to\\_make\\_a\\_robust\\_climate\\_claim\\_Compensate\\_2023.pdf](https://compensatefoundation.org/wpcontent/uploads/2023/06/How_to_make_a_robust_climate_claim_Compensate_2023.pdf).
- Council of the European Union. 10 June 2024. Proposal for a Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive). Available in English at: <https://data.consilium.europa.eu/doc/document/ST-10940-2024-INIT/en/pdf>.
- Council of the European Union. 20 February 2024. Climate action: Council and Parliament agree to establish an EU carbon removals certification framework. Available in English at: <https://www.consilium.europa.eu/en/press/press-releases/2024/02/20/climate-action-council-and-parliament-agree-to-establish-an-eu-carbon-removals-certification-framework/>.
- Directive (EU) 2022/2464 of the European Parliament and of the Council amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022L2464>.
- Directive (EU) 2023/959 of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union and Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading system. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32023L0959>.
- Directive (EU) 2024/1760 of the European Parliament and of the Council on corporate sustainability due diligence and amending Directive (EU) 2019/1937 and Regulation (EU) 2023/2859. Available in English at: <https://eur-lex.europa.eu/eli/dir/2024/1760/oj>.
- Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC. Available in English at: <https://eur-lex.europa.eu/eli/dir/2003/87/oj>.
- Ecosystem Marketplace. 10 October, 2023. New research: Carbon credits are associated with businesses decarbonizing faster. Available in English at: <https://www.ecosystemmarketplace.com/articles/new-research-carbon-credits-are-associated-with-businesses-decarbonizing-faster/>.

- European Commission. 05/04/2024. Q&A on the provisional agreement on the Regulation establishing an EU-wide voluntary framework for certifying permanent carbon removals, carbon farming and carbon storage in products (CRCF Regulation). Available in English at: [https://climate.ec.europa.eu/document/download/a8abe1c4-a3c6-4c94-be0e-4b76f7fd0308\\_en?filename=policy\\_carbon\\_faq\\_crcf\\_regulation\\_en.pdf](https://climate.ec.europa.eu/document/download/a8abe1c4-a3c6-4c94-be0e-4b76f7fd0308_en?filename=policy_carbon_faq_crcf_regulation_en.pdf).
- European Commission. 7 May 2024. Adopted: New templates for Member States' climate reporting. Available in English at: [https://climate.ec.europa.eu/news-your-voice/news/adopted-new-templates-member-states-climate-reporting-2024-05-07\\_en](https://climate.ec.europa.eu/news-your-voice/news/adopted-new-templates-member-states-climate-reporting-2024-05-07_en).
- European Commission. Jul 2, 2024. Commission approves €3 billion Swedish State aid scheme to support the roll-out of biogenic carbon dioxide capture and storage. Available in English at: [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_24\\_3583](https://ec.europa.eu/commission/presscorner/detail/en/ip_24_3583).
- European Parliament. 2022. Draft report on the proposal for a directive of the European Parliament and of the Council amending Directive 2003/87/EC establishing a system for greenhouse gas emission allowance trading within the Union, Decision (EU) 2015/1814 concerning the establishment and operation of a market stability reserve for the Union greenhouse gas emission trading scheme and Regulation (EU) 2015/757. (COM(2021)0551. Available in English at: [https://www.europarl.europa.eu/doceo/document/ENVI-PR-703068\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/ENVI-PR-703068_EN.pdf).
- European Parliament. 2024. Provisional agreement: Proposal for a Regulation of the European Parliament and of the Council establishing a Union certification framework for permanent carbon removals, carbon farming and carbon storage in products. 2022/0394(COD). Available in English at: [https://www.europarl.europa.eu/meetdocs/2014\\_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR\\_2022-0394COD\\_EN.pdf](https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/ENVI/DV/2024/03-11/Item9-Provisionalagreement-CFCR_2022-0394COD_EN.pdf).
- European Parliament. 2024. Substantiation and communication of explicit environmental claims (Green Claims Directive). Available in English at: [https://www.europarl.europa.eu/doceo/document/TA-9-2024-0131\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/TA-9-2024-0131_EN.pdf).
- Eurostat. 2022. Key figures on the European food chain. Available in English at: <https://ec.europa.eu/eurostat/web/products-key-figures/w/ks-fk-22-001>.
- Finnish Climate Change Panel. 2019. Kohti ilmastokestävää maailmaa ja Suomea – päästöjen vähentämisen perspektiivit ja toimijat (Towards a climate-resilient world and Finland – emission reduction perspectives and actors). Policy brief. Available in Finnish at: <https://ilmastopaneeli.fi/suomen-hiilineutraaliustavoitevuodelle-2035-on-mahdollinen-mutta-toimia-on-nopeutettava-ilmastopaneelilaski-suomelle-paastovahennyspolun/>.

- Finnish Climate Change Panel. 2023. Suuntaviivoja Suomen ilmastotoimien tehostamiseen (Guidelines for enhancing Finland's climate action). Publications of the Finnish Climate Change Panel 1/2023. Available in Finnish at: <https://doi.org/10.31885/9789527457177>.
- Finnish Competition and Consumer Authority. Issued in 1992, revised in 2002, 2019. The use of environmentally oriented claims in marketing. Available in English (2002 version) at: <https://www.kkv.fi/en/consumer-affairs/facts-and-advice-for-businesses/the-consumer-ombudsmans-guidelines/the-use-of-environmentally-oriented-claims-in-marketing/>.
- Finnish Innovation Fund Sitra. 2018. Mitä nämä käsitteet tarkoittavat? – Hiilen sidonta. (What do these terms mean? – Carbon sequestration.) Available in Finnish at: <https://www.sitra.fi/artikkelit/mita-nama-kasitteet-tarchoittavat/>.
- Gold Standard. 2023. Fairly contributing to global Net Zero – Considerations for credible claims. Available in English at: <https://www.goldstandard.org/publications/fairly-contributing-to-global-net-zero-credible-claims>.
- Gold Standard. 2024. Funding Beyond Value Chain Mitigation. Available in English at: <https://www.goldstandard.org/publications/funding-beyond-value-chain-mitigation>.
- Government of the Netherlands. Joint Statement on Voluntary Carbon Market: The Claims Side. 2023. Available in English at: <https://www.government.nl/documents/publications/2023/12/10/joint-statement-on-voluntary-carbon-market>.
- Government Programme agreed on 16 June 2023: A strong and committed Finland. Available in English at: <https://valtioneuvosto.fi/en/government-formation-talks>.
- Intergovernmental Panel on Climate Change. 2022. van Diemen, R., Matthews, J.B.R., Möller, V., Fuglestvedt, J.S., Masson-Delmotte, V., Méndez, C., Reisinger, A., & Smenov, S. (eds.). (2022). Annex I: Glossary. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (Shukla, P.R., Skea, J., Slade, R., Al Khourdajie, A., van Diemen, R., McCollum, D., Pathak, M., Some, S., Vyas, P., Fradera, R., Belkacemi, M., Hasija, A., Lisboa, G., Luz, S., & Malley, J. (eds.)). Cambridge University Press. doi: 10.1017/9781009157926.020. Available in English at: [https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC\\_AR6\\_WGIII\\_Annex-I.pdf](https://www.ipcc.ch/report/ar6/wg3/downloads/report/IPCC_AR6_WGIII_Annex-I.pdf).
- Intergovernmental Panel on Climate Change. 2021. Frequently Asked Questions, FAQ 1.3. Available in English at: [https://www.ipcc.ch/report/ar6/wg1/downloads/faqs/IPCC\\_AR6\\_WGI\\_FAQ\\_Chapter\\_01.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/faqs/IPCC_AR6_WGI_FAQ_Chapter_01.pdf).
- International Monetary Fund. Fiscal Affairs Dept. 2023. Chile: Technical Assistance Report – An Evaluation of Improved Green Tax Options. Available in English at: <https://doi.org/10.5089/9798400229381.002>.

- IPCC Guidelines for National Greenhouse Gas Inventories. 2006. Available in English at: <https://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html>.
- ISO 14068-1:2023. Climate change management — Transition to net zero. Part 1: Carbon neutrality. Available in English at: <https://www.iso.org/standard/43279.html>.
- Kujanpää, L., Reznichenko, A., Saastamoinen, H., Mäkikouri, S., Soimakallio, S., Tynkkynen, O., Lehtonen, J., Wirtanen, T., Linjala, O., Similä, L., Keränen, J., Salo, E., Elfving, J. & Koponen, K. 2023. Carbon dioxide use and removal: Prospects and policies. Publications of the Government's analysis, assessment and research activities 2023:19. Available in English at: <https://urn.fi/URN:ISBN:978-952-383-197-1>.
- Laine, A., Ahonen, H-M., Pakkala, A., Laininen, J., Kulovesi, K. & Mäntylä, I. 2023. Guide to good practices for voluntary carbon markets. Supporting voluntary mitigation action with carbon credits. Publications of the Finnish Government 2023:24. Available in English at: <http://urn.fi/URN:ISBN:978-952-383-511-5>.
- Laine, A., Ahonen, H-M., Pakkala, A., Mäntylä, I., Noro, K., Halonen, M., Laininen, J. & Aalto, L. 2023. Vapaaehtoisten ilmastotoimien rooli ja kansainvälisen viitekehyksen muutoksen vaikutukset Suomelle: Väliraportti. (The role of voluntary climate actions and the effects of the changing international framework for Finland: Interim report.) Publications of the Government's analysis, assessment and research activities 2023:63. Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-383-035-6>.
- Laine, A., Airaksinen, J., Yliheljo, E., Ahonen, H-M. & Halonen, M. 2021. Vapaaehtoisten päästökompensaatioiden sääntely (Regulation of voluntary emissions offsetting). Publications of the Ministry of the Environment 2021:26. Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-361-408-6>.
- Laturi, J., Aalto, L., Forsman-Hugg, S., Horne, P., Laine, A., Kinnunen, P., Korhonen, O., Kujala, P., Noro, K., Mäntylä, I. & Valonen, M. 2023. Vapaaehtoiset hiilimarkkinat maankäyttösektorilla – kehitys, kysyntä ja toimenpiteet Suomessa. (Voluntary carbon markets in the land use sector – trends, demand and activities in Finland.) PTT raportteja (Reports of Pellervo economic research PTT) 285. Available in Finnish (English abstract) at: <https://www.ptt.fi/julkaisut/vapaaehtoiset-hiilimarkkinat-maankayttosektorilla-kehitys-kysynta-ja-toimenpiteet-suomessa/>.
- Laturi, J., Aalto, L., Horne, P., Kinnunen, P., Kujala, P., Sen, T. 2022. Maankäyttösektorin ilmastosuunnitelman kustannusvaikutusten arviointi (Cost impact assessment of the Climate Plan for the Land Use Sector). PTT Reports (Reports of Pellervo economic research PTT) 273. Available in Finnish at: <https://www.ptt.fi/wp-content/uploads/media/julkaisut/ptt-raportteja-273-maankayttosektorin-ilmastosuunnitelman-kustannusvaikutusten-arviointi.pdf>.

- Lausuntopalvelu.fi. Luonnos hallituksen esitykseksi uusiutuvien polttoaineiden käytön edistämisestä liikenteessä annetun lain muuttamisesta (jakeluelvoite) (Draft government proposal amending the Act on promoting the use of biofuels in transport (distribution obligation)). Available in Finnish at: <https://www.lausuntopalvelu.fi/FI/Proposal/DownloadProposalAttachment?proposalId=06eb81dc-1127-4938-86a3-709b8864653d&attachmentId=22606>.
- Mäntylä, I. 2023. Ilmastoyksiköihin perustuvien mainos- ja markkinointiväittämien laatu Suomessa: Katsaus vuosina 2021–2022 esitettyjen väittämien syvyyteen, asianmukaisuuteen sekä tulevaisuuden käytäntöihin. (Quality of advertising and marketing claims based on carbon credits in Finland: A review of the depth and relevance of claims made in 2021–2022 and future practices.) Available in Finnish at: <http://urn.fi/URN:NBN:fi:hulib-202306132584>.
- Ministry for the Environment, New Zealand. 2022. Interim guidance for voluntary climate change mitigation. Available in English at: <https://environment.govt.nz/assets/publications/interim-guidance-voluntary-climate-change-mitigation.pdf>.
- Ministry of Agriculture and Forestry. 2023. Government Report on the Climate Plan for the Land Use Sector. Publications of the Ministry of Agriculture and Forestry 2023:12. Available in English at: <https://urn.fi/URN:ISBN:978-952-366-592-7>.
- Ministry of the Environment. 2024. Annual Climate Report. Available in English at: <https://ym.fi/en/annual-climate-report>.
- New Climate Institute. 2023. A guide to climate contributions – Taking responsibility for emissions without offsetting. Available in English at: <https://newclimate.org/resources/publications/a-guide-to-climate-contributions-taking-responsibility-for-emissions>.
- Nordic Council of Ministers. 2021. Nordic Dialogue on Voluntary Compensation. Working together towards and beyond carbon neutrality. 2021:459. <https://www.norden.org/en/publication/nordic-dialogue-voluntary-compensation>.
- Nordic Council of Ministers. 2022. Harnessing voluntary carbon markets for climate ambition – An action plan for Nordic cooperation. 2022:563. Available in English at: <https://www.norden.org/en/publication/harnessing-voluntary-carbon-markets-climate-ambition>.
- Nordic statement on climate compensation claims in marketing. 18 April 2024. Available in English at: <https://www.forbrukertilsynet.no/wp-content/uploads/2024/04/nordic-statement-on-climate-compensation-claims-in-marketing.pdf>.
- Ørsted awarded contract – will capture and store 430,000 tonnes of biogenic CO<sub>2</sub>. 15.05.2023. Available in English at: <https://orsted.com/en/media/news/2023/05/20230515676011>.

- Pipatti, R., Monni, S., Lohman, E. & Ojala, J. 2023. Kansallisen kasvihuonekaasujen päästölaskennan tietojen hyödyntäminen ilmastotyön tukena. (Utilisation of information from the national greenhouse gas inventory to support climate work.) Available in Finnish (English abstract) at: <http://urn.fi/URN:ISBN:978-952-361-771-1>.
- Proposal for a Directive of the European Parliament and of the Council amending Directives 2005/29/EC and 2011/83/EU as regards empowering consumers for the green transition through better protection against unfair practices and better information. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022PC0143>.
- Proposal for a Directive of the European Parliament and of the Council on substantiation and communication of explicit environmental claims (Green Claims Directive). COM(2023) 166 final. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2023:0166:FIN>.
- Proposal for a Regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals. COM(2022) 672 final. Available in English at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52022PC0672>.
- Puro.earth. Carbofex Nokia 1. Available in English at: <https://puro.earth/CORC-co2-removal-certificate/supplier-listing/carbofex-nokia-1>.
- Science Based Targets initiative. 2023. SBTi Corporate Net Zero Standard. Available in English at: <https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf>.
- Science Based Targets initiative. 2024. Raising the bar: A SBTi report on accelerating corporate adoption of beyond value chain mitigation (BVCM). Available in English at: <https://sciencebasedtargets.org/resources/files/Raising-the-Bar-Report-on-BVCM.pdf>.
- Science Based Targets initiative. 2nd Apr 2024. Science-Based Scale-Up: The SBTi celebrates three milestones. Available in English at: <https://sciencebasedtargets.org/blog/science-based-scale-up-three-milestones>.
- Science Based Targets initiative. Beyond value chain mitigation. Available in English at: <https://sciencebasedtargets.org/beyond-value-chain-mitigation>.
- Science Based Targets initiative. Standards and guidance. Available in English at: <https://sciencebasedtargets.org/standards-and-guidance>.
- Science Based Targets initiative. Target Dashboard. Available in English at: <https://sciencebasedtargets.org/target-dashboard>.

- SFS Finnish Standards. 2021. Aloite suomalaiseksi SFS-standardiksi: Päästökompensointi metsän puuston kasvun lisäisyyden kautta syntyvällä hiilinielulla. (Initiative for a Finnish SFS standard: Emissions offsetting with a carbon sink generated through additionality of the increment of forest growing stock.) Available in Finnish at: [https://sfs.fi/wp-content/uploads/2021/04/Standardialoite\\_2021-02\\_hiilinielu.pdf](https://sfs.fi/wp-content/uploads/2021/04/Standardialoite_2021-02_hiilinielu.pdf).
- The Integrity Council for the Voluntary Carbon Market. 2024. Core Carbon Principles: Assessment Framework and Assessment Procedure. Version 2. <https://icvcm.org/core-carbon-principles/>.
- The Integrity Council for the Voluntary Carbon Market. Carbon Credit Program Assessment Status. Available in English at: <https://icvcm.org/assessment-status/>.
- VCMI. 2023. Claims Code of Practice. Available in English at: <https://vcmintegrity.org/vcmi-claims-code-of-practice/>.
- VCMI. 26.02.2024. Bain & Company makes the inaugural VCMI Carbon Integrity Claim. Available in English at: <https://vcmintegrity.org/bain-company-makes-the-inaugural-vcmi-carbon-integrity-claim>.
- WWF & BCG. 2020. Beyond Science-Based Targets: A blueprint for corporate action on climate and nature. Available in English at: [https://wwfint.awsassets.panda.org/downloads/beyond\\_science\\_based\\_targets\\_\\_\\_a\\_blueprint\\_for\\_corporate\\_action\\_on\\_climate\\_and\\_nature.pdf](https://wwfint.awsassets.panda.org/downloads/beyond_science_based_targets___a_blueprint_for_corporate_action_on_climate_and_nature.pdf).
- WWF. 2019. WWF position and guidance on voluntary purchases of carbon credits. Version 1.2. Available in English at: <https://www.worldwildlife.org/publications/wwf-position-and-guidance-on-voluntary-purchases-of-carbon-credits>.
- WWF. 2020. Corporate climate strategies in the era of the Paris Agreement and the (new) role of «compensation» projects. Available in English at: [https://www.wwf.ch/sites/default/files/doc-2021-10/2020\\_12\\_15\\_WWF\\_Recommendations\\_Climate\\_Strategies\\_in\\_the\\_Paris\\_Era.pdf](https://www.wwf.ch/sites/default/files/doc-2021-10/2020_12_15_WWF_Recommendations_Climate_Strategies_in_the_Paris_Era.pdf).

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