Feasibility of a domestic offset programme for reaching and going beyond the 2030 ESR target in Finland: Legal framework and design considerations

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Abstract

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Abstract

This thesis focuses on researching whether a domestic offset program (DOP) could contribute to the 2030 emission reduction targets under the European Union (EU) Effort Sharing Regulation in Finland. Firstly, the thesis analyses the legal framework for voluntary DOPs through exploring relevant legislation which has a potential direct or indirect impact on voluntary domestic offsetting. The goal is to outline existing activities and targets under different legal frameworks, and see what areas are available for voluntary offsetting outside the compliance market. While the focus on international legal frameworks is on Kyoto Protocol and the Paris Agreement, on EU level, the thesis analyses EU Emission Trading System, Effort Sharing Decision, Effort Sharing Regulation and the Land Use, Land Use Change and Forestry Regulation. On a national level, the focus is on the Climate Change Act (609/2015) and the Medium-term Climate Change Plan for 2030. The latter outlines additional sector-specific measures for reaching the emission reduction targets in the effort sharing sector. Secondly, the thesis outlines the common challenges to offsetting, in particular, double counting and additionality issues associated with domestic offsetting. Thirdly, the thesis discusses the core design elements of voluntary DOPs and implementation considerations from the perspective of the level of outsourcing and government involvement. Also, a case study featuring selected DOPs across Europe showcases the various possibilities for DOP design and implementation.

Finally, the thesis explores the feasibility of a domestic offset program for reaching and going beyond the 2030 targets for the Effort Sharing sector in Finland. By generating carbon credits from the LULUCF sector, a voluntary DOP could contribute to reaching the compliance target in the Effort Sharing sector to the extent of the allowed amount of transferred credits under the LULUCF flexibility. However, in order for a member state to be eligible to use the LULUCF flexibility under the ESR, it must first comply with the no-debit rule under the LULUCF Regulation. This creates further opportunities for a voluntary DOP to support the national government to reach compliance with the no-debit rule.

Key words: Voluntary Domestic Offset Programmes, Effort Sharing Regulation, non-ETS sectors, LULUCF flexibility, No-debit rule, Finland

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My initial motivation for this thesis was to find a topic which is not only interesting and meaningful but also that its implementation would have a positive impact on the society and the environment. The development and evolution of the three pillars of the EU climate policy, in particular, the revised EU ETS Directive (Directive (EU) 2018/410), the new Effort Sharing Regulation and the new LULUCF Regulation pointed my attention towards topics related to international and EU emission reduction targets. While this field has a lot of interesting potential thesis topics to offer, I could not set my vision on one particular topic until I got in contact with Maija Saijonmaa from Nordic Offset. I would like to thank Maija for setting the direction for this thesis and the wonderful collaboration throughout the thesis writing process. Also, my hopes are that through Nordic Offset, you can breathe life into the thesis and implement it in practice.

Researching the feasibility for a domestic offset programme for contributing to the 2030 emission reduction target in the Effort Sharing Sector was complex and difficult at times, but the actual implementation of the programme in Finland and the associated positive impacts on the environment was always keeping me motivated. I would like to express my appreciation and thanks to my supervisor Harro van Asselt for his guidance and invaluable support throughout the thesis writing process. Finally, I want to thank my family and friends for their endless patience, love and encouragement.

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Contents

LIST OF ABBREVIATIONS

AAU – Assigned Amount Unit

ADEME - French Environment and Energy Management Agency

AEA - Annual Emission Allocation

BAU – Business as Usual

CCP - Cities for Climate Protection

CDM - Clean Development Mechanism

CERs – Certified Emission Reductions

CNPF - National Center for forest property

DEHSt - German Emissions Trading Authority

DOEs - Designated Operational Entities

DOPs – Domestic Offset Programs

EAU – Emission allowance unit

ERDF - European Regional Development Fund

ERUs – Emission Reduction Units

ESD – Effort Sharing Decision

ESR - Effort Sharing Regulation

EU ETS – European Emission Trading System

EUAs - European Union Allowances

EUTL - The European Union Transaction Log

FISU - Finnish Sustainable Communities

GHG – Greenhouse gas

HFCs – Hydrofluorocarbons

I4CE - Institute for Climate Economics

ICLEI - Local Governments for Sustainability

ICROA - International Carbon Reduction and Offset Alliance

IPCC - Intergovernmental Panel on Climate Change

ITMOs - Internationally Transferred Mitigation Outcomes

JCM - Joint Crediting Mechanisms

JI – Joint Implementation

LULUCF - Land use, land-use change, and forestry

MRV – Monitoring, reporting and verification

NDCs - Nationally Determined Contributions

NGO - Non-Governmental Organisation

PFCs – Perfluorocarbons

UNFCCC - United Nations Framework Convention on Climate Change

VCS – Verified Carbon Standard

VOCAL - Voluntary Carbon Land Certification

VVBs – Verification and Validation bodies

WCC – Woodland Carbon Code

REFERENCES

LITERATURE

Asian Development Bank: Monitoring, Reporting, and Verification Manual for Clean Development Mechanism Projects. Institutional Document, June 2016

Baranzini, Andrea – van der Bergh, Jeroen – Carattini, Stefano – Howarth, Richard – Padilla, Emilio – Roca, Jordi: Carbon pricing in climate policy: seven reasons, complementary instruments, and political economy considerations. 2017. WIREs Climate Change 2017, Volume 8, e462

Barata, Pedro – Spors, Felicity – Kennedy, Pauline - Platonova-Oquab, Alexandrina - Gadde, Harikumar: Carbon Credits and Additionality Past, Present, and Future. 2016. Partnership for Market Readiness, World Bank, Technical Note 13, May 2016.

Borkent, Bram - O'Keeffe, Siobhan – Neelis, Maarten – Gilbert, Alyssa: Costs and effectiveness of domestic offset schemes. Ecofys, 2012.

Dormady, Noah – Englander, Gabriel: Carbon allowances and the demand for offsets: a comprehensive assessment of imperfect substitutes. 2016. Journal of Public Policy; Cambridge Vol. 36(1), March 2016, 139-167.

German Emissions Trading Authority (DEHSt): Future of the Voluntary Carbon Markets in the Light of the Paris Agreement. Perspectives for Soil Carbon Projects. 2018.

Grassi, G – House, J – Dentener, F – Federici, S - den Elzen, M – Penman, J: The key role of forests in meeting climate targets requires science for credible mitigation. Nature Climate Change. 2017, Volume 7(3), 220–226.

Hamrick, Kelley – Brotto, Lucio: State of European Markets Voluntary Carbon. Forest Trends' Ecosystem Marketplace, 2017.

*Hamrick, Kelley - Gallant, M*elissa: Fertile Ground: State of Forest Carbon Finance. Forest Trends, Ecosystem Marketplace, 2017.

Hamrick, Kelley – Gallant, Melissa: Unlocking Potential: State of the Voluntary Carbon Market. Forest Trends, Ecosystem Marketplace, 2017.

Hamrick, Kelley – Gallant, Melissa: Voluntary Carbon Markets: Outlooks and Trends January to March 2018, Ecosystem Marketplace, 2018.

Hayashi, Daisuku – Michaelowa, Axel: Standardization of baseline and additionality determination under the CDM. 2013. Climate Policy Volume 13(2), 191-209

ICROA – IETA: Enlisting government support for voluntary carbon management & offsetting to scale & accelerate climate action. International Carbon Reduction and Offset Alliance & International Emissions Trading Association. White Paper, Issue 1, 18th November 2014.

IRENA: Bioenergy from Finnish forests: Sustainable, efficient, modern use of wood. International Renewable Energy Agency, Abu Dhabi, 2018.

Iversen, Peter – Lee, Donna – Rocha, Marcelo: Understanding Land Use in the UNFCCC. 2014.

Ivleva, Daria - Nett, Katharina - Treutwein, Regina - Wolters, Stephan: Documentation of the Workshop Domestic Carbon Initiatives in Europe: Experiences and Opportunities. 2015. German Emissions Trading Authority (DEHSt).

Joosten, Hans - Brust, Kristina - Couwenberg, John - Gerner, Alexander - Holsten, Bettina - Permien, Thorsten - Schäfer, Achim - Tanneberger, Franziska – Trepel, Michael – Wahren, Andreas: MoorFutures Integration of additional ecosystem services (including biodiversity) into carbon credits – standard, methodology and transferability to other regions. BfN-Skripten 407, 2015.

Kollmuss, Anja - Lazarus, Michael – Lee, Carrie - Polycarp Clifford: A Review of Offset Programs: Trading Systems, Funds, Protocols, Standards and Retailers. 2008. Research Report, Stockholm Environment Institute.

Krug, Joachim: Accounting of GHG emissions and removals from forest management: a long road from Kyoto to Paris, Journal of Carbon Balance Management, Volume 13(1), 2018, p.9

Lang, Sebastian – Blum, Mareike – Leipold, Sina: What future for the voluntary carbon offset market after Paris? An explorative study based on the Discursive Agency Approach. 2018. Climate Policy.

Mehling, Michael: Governing Cooperative Approaches under the Paris Agreement. 2018. Harvard Project on Climate Agreements, Discussion Paper ES 18-8

Mehling, Michael – Metcalf, Gilbert – Stavins, Robert: Linking Heterogeneous Climate Policies (Consistent with the Paris Agreement). Cambridge, MA: Harvard Project on Climate Agreements.

Nabuurs, Gert-Jan – Arets, Eric – Schelhaas, Mart-Jan: Understanding the implications of the EU-LULUCF regulation for the wood supply from EU forests to the EU. 2018. Carbon Balance and Management 2018, 13:18.

Nett, Katharina – Wolters, Stephan: Leveraging domestic offset projects for a climate-neutral world. Regulatory conditions and options. Berlin: German Emissions Trading Authority (DEHSt) at the German Environment Agency, 2017.

Olesen, Asger – Lesschen, Jan – Rayment, Matt – Ebrahim, Naazia – Weiss, Peter – Arets, Eric - Larsen, Ana - Sikirica, Natasa – Nabuurs, Gert-Jan – Schelhaas, MartJan: Agriculture and LULUCF in the 2030 Framework – Final Report. Submitted to European Commission by ICF Consulting Limited, Alterra, COWI, Ecologic Institute and Umweltbundesamt GmbH.

Pettenella, Davide - Brotto, Lucio (eds): Forest Management Auditing: Certification of Forest Products and Services**.** Routledge, 2018.

World Bank: Overview of Carbon Offset Programs: Similarities and Differences. Partnership for Market Readiness, 2015, World Bank, Washington, DC.

World Bank: Options to use existing international offset programs in a domestic context. Partnership for Market Readiness, 2015, World Bank, Washington, DC.

Richards, Kenneth – Huebner, Grant: Evaluating protocols and standards for forest carbon offset programs, Part A: additionality, baselines and permanence. Journal of Carbon Management, 2014, Volume 3(4), 2012, 393–410.

Schneider, Lambert - Kollmuss, Anja – Lazarus, Michael: Addressing the risk of double counting emission reductions under the UNFCCC. Journal of Climatic Change, 2015, Volume 131, 473–486.

Valatin, Gregory: Forest and Carbon: a review on additionality. Forestry Commission Research Report, 2011, United Kingdom.

VCS: Programme Definition. Version 3 Requirements Document 21 June 2017, v3.7

Villoria-Saez, Paola - Tam, Vivian - del Río Merino, Mercedes – Arrebola, Carmen - Wang, Xiangyu: Effectiveness of greenhouse-gas Emission Trading Schemes implementation: a review on legislation. 2016. Journal of Cleaner Production, 2016, Volume 127, 49-58.

OFFICIAL SOURCES

United Nations documents

CDM: Methodological tool – combined tool to identify the baseline scenario and demonstrate additionality. Version 07.0

UNEP: Emissions Gap Report 2018. A UN Environment Synthesis Report. United Nations Environment Programme 2018.

UNFCCC: Achievements of the Clean Development Mechanism: Harnessing Incentive for Climate Action 2001-2018. United Nations Climate Change 2018.

UNFCCC: Clean Development Mechanism Methodological Tool. Tool for the demonstration and assessment of additionality, Version 07.0.0, 2012.

UNFCCC: Informal Compilation Proposal by the President, Version 15/12/2018.

UNFCCC: Kyoto Protocol to the United Nations Framework Convention on Climate Change adopted at COP3 in Kyoto, Japan, on 11 December 1997

UNFCCC: Paris Agreement to the United Nations Framework Convention on Climate Change adopted at COP21 in Paris, France, on 2 December 2015

UNFCCC: Sustainable Development Mechanism. Roundtable Discussion Among Parties. Presentation by Brazil.

European Union Documents

COM(2016) 483 final. Report from the Commission to the European Parliament and the Council on evaluating the implementation of Decision No. 406/2009/EC pursuant to its Article 14. 20.7.2016.

Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020.

Directive (EU) 2018/410 of the European Parliament and of the Council of 14 March 2018 amending Directive 2003/87/EC to enhance cost-effective emission reductions and low-carbon investments, and Decision (EU) 2015/1814.

Directive 2009/29/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 2003/87/EC so as to improve and extend the greenhouse gas emission allowance trading scheme of the Community

European Environmental Agency*:* Trends and projections in Europe 2017. Tracking progress towards Europe's climate and energy targets. EEA Report No 17/2017.

Intended Nationally Determined Contribution of the EU and its Member States. Submission by Latvia and the European Commission on behalf of the European Union and its Member States. Riga, 6 March 2015

Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU

Regulation (EU) 2018/842 of the European Parliament and of the Council of 30 May 2018 on binding annual greenhouse gas emission reductions by Member States from 2021 to 2030 contributing to climate action to meet commitments under the Paris Agreement and amending Regulation (EU) No 525/2013.

National documents

Ministry of the Environment: Climate Change Act (609/2015)

Ministry of Environment of France: Decree of November 28, 2018, defining the standard of the "Low Carbon" label.

Ministry of Agriculture and Forestry: Information on LULUCF actions. LULUCF action Progress Report December 2016.

Ministry of Agriculture and Forestry: Rural Development Programme for Mainland Finland 2014-2020.

Ministry of Economic Affairs and Employment: Government report on the National Energy and Climate Strategy for 2030.

Ministry of the Environment: Government Report on Medium-term Climate Change Policy Plan for 2030 Towards Climate-Smart Day-to-Day Living. Reports of the Ministry of the Environment 21en/2017, Ministry of the Environment, Helsinki 2017.

Ministry of the Environment - Statistics Finland: Finland's Third Biennial Report under the UNFCCC. Submission to UNFCCC 13 December 2017.

Ministry of Agriculture and Environment Mecklenburg-Vorpommern: MoorFutures Standard. February 2017.

Statistics Finland: National Inventory Report under the UNFCCC and the Kyoto Protocol. Greenhouse Gas Emissions in Finland from 1990 to 2016. Submission to the European Union on 15 March 2018.

INTERNET SOURCES

4 per 100 Initiative: What is the "4 per 1000" Initiative? 17.09.2018. [https://www.4p1000.org/] (17.09.2018)

CAN Europe: LULUCF: rankings reveal member states' forest policy positions. 23.01.2019 [http://www.caneurope.org/publications/blogs/1386-lulucf-rankings-reveal-member-states-forest-policy-position] (23.01.2019)

Carbon Action: Carbon Action. 02.11.2018. [https://carbonaction.org/front-page/].

Carbon Action: What Is Done At Carbon Farms? 02.11.2018 [https://carbonaction.org/farmers/] (02.11.2018)

Carbon Brief: Paris 2015 - Tracking country climate pledges. 15.08.2018 [https://www.carbonbrief.org/paris-2015-tracking-country-climate-pledges] (15.08.2018)

CCP: Cities for Climate Protection Campaign. 26.09.2018. [https://sustainabledevelopment.un.org/partnership/?p=1498] (26.09.2018)

Climate Change Plan 2030: Towards Climate-Smart Day-to-Day Living. 08.08.2018. [http://www.ym.fi/enUS/The_environment/Climate_and_air/Mitigation_of_climate_change/National_climate_policy/Climate_Change_Plan_2030] (08.08.2018)

Emissions EU ETS: Effort Sharing Legislation. 01.10.2018. [https://www.emissions-euets.com/carbon-market-glossary/784-effort-sharing-decision] (01.10.2018).

Emissions EU ETS: Exclusion of small installations and hospitals from the EU ETS. 01.10.2018. [https://www.emissions-euets.com/carbon-market-glossary/952-small-installations-and-hospitals-exclusion] (01.10.2018)

European Commission: Climate Action. European Union ESD Transaction Log. 15.08.2018. [http://ec.europa.eu/environment/ets/esdTransactions.do?languageCode=en&startDate=&endDate=&transactionStatus=4&fromCompletionDate=&toCompletionDate=&transactionID=&transactionType=-1&suppTransactionType=1&originatingRegistry=-1&destinationRegistry=-1&originatingAccountIdentifier=&destinationAccountIdentifier=&transferringEsdRegistryCode=-1&acquiringEsdRegistryCode=-1&transferringEsdYear=&acquiringEsdYear=&search=Search&currentSortSettings=] (15.08.2018)

European Commission: Effort sharing 2021-2030: targets and flexibilities. 09.08.2018. [https://ec.europa.eu/clima/policies/effort/proposal_en]. (09.08.2018)

European Commission: Effort sharing: Member States' emission targets. 13.08.2018. [https://ec.europa.eu/clima/policies/effort_en] (13.08.2018)

European Commission: European Emission Trading System (EU ETS). 13.08.2018. [https://ec.europa.eu/clima/policies/ets_en] (13.08.2018)

European Commission: Member States' emission reduction targets for 2021 to 2030 adopted. 09.08.2018.

[https://ec.europa.eu/clima/news/member-states-emission- reduction-targets-2021-2030-adopted_en] (09.08.2018)

European Commission: Regulation on land use, land use change and forestry in 2030 climate and energy framework adopted. 09.08.2018.

[https://ec.europa.eu/clima/news/regulation-land-use-land-use-change- and-forestry-2030-climate-and-energy-framework-adopted_en] (09.08.2018)

European Commission: Types of EU law. 23.01.2019

[https://ec.europa.eu/info/law/law-making-process/types-eu-law_en] (23.01.2019)

FISU: New Fisu municipalities are selected. 25.09.2018.

[http://www.fisunetwork.fi/fi-FI] (25.09.2018)

Forestry Commission, Woodland Carbon Code: Registry and avoidance of double counting. 30.08.2018. [https://www.forestry.gov.uk/forestry/infd-8vxmlf] (30.08.2018)

Gold Standard: Double Counting Guideline. 24.08.2018.

[https://www.goldstandard.org/sites/default/files/documents/2015_12_double_counting_guideline_published_v1_1.pdf] (24.08.2018)

Gold Standard: Project Registry. 30.01.2019

[https://www.goldstandard.org/project-developers/our-project-registry] (30.01.2019)

Gold Standard: Future Proofing the voluntary carbon market double counting. 24.08.2018

[https://www.goldstandard.org/sites/default/files/documents/future_proofing_the_voluntary_carbon_market_double_counting_final_report.pdf] (24.08.2018)

HINKU: HINKU Municipalities. 25.09.2018.

[http://www.hinku-foorumi.fi/fi-FI/Tietoa_foorumista/Hinkukunnat] (25.09.2018)

HIS Markit: Environmental Registry. 30.01.2019

[https://ihsmarkit.com/products/environmental-registry.html] (30.01.2019)

I4CE: Low Carbon Label - a new tool at the service of the actors of territories that innovate for the climate. 06.02.2019.

[https://www.i4ce.org/label-bas-carbone-un-nouvel-outil-au-service-des-acteurs-des-territoires-qui-innovent-pour-le-climat/] (06.02.2019)

I4CE: Project VOluntary CArbon Land Certification (VOCAL). Institute for Climate Economics. 16.09.2018. [https://www.i4ce.org/go_project/project-voluntary-carbon-land-certification-vocal/] (16.09.2018)

ICAO: Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA). International Civil Aviation Organization. 2.10.2018.

[https://www.icao.int/environmental-protection/CORSIA/Pages/default.aspx] (2.10.2018)

Kirk, Lisbeth: Bioeconomy is a win-win strategy for Finland. EU Observer. 18.02.2019

[https://euobserver.com/business/141113] (18.02.2019)

Ministry of the Environment: Climate Change Legislation. 24.01.2019.

[http://www.ym.fi/enUS/The_environment/Legislation_and_instructions/Climate_change_legislation] (24.01.2019)

Ministry of the Environment: National Climate Policy. 24.01.2019.

[http://www.ym.fi/enUS/The_environment/Climate_and_air/Mitigation_of_climate_change/National_climate_policy]

Moor Futures: How Does It Work? 20.09.2018.

[https://www.moorfutures.de/konzept/wie-funktioniert-es/] (20.09.2018)

Moor Futures: Standards and Criteria. 20.09.2018

[https://www.moorfutures.de/konzept/standard-und-kriterien/] (20.09.2018)

Official Statistics of Finland: Greenhouse gases. Statistics Finland 2017. 05.09.2018.

[https://www.stat.fi/til/khki/2017/khki_2017_2018-05-24_tie_001_en.html] (05.09.2018)

Ökoregion Kaindorf: Humus Enrichment Certificates. 17.09.2018.

[https://www.oekoregion-kaindorf.at/index.php?id=623] (17.09.2018)

Ökoregion Kaindorf; Humus Certificates. 17.09.2018.

[https://www.oekoregion-kaindorf.at/index.php?id=191] (17.09.2018)

Ökoregion Kaindorf; Humus Programme. 06.02.2019.

[https://www.oekoregion-kaindorf.at/index.php?id=515] (06.02.2019)

Statistics Finland: Emissions into air by industry 2016. 28.09.2018.
[https://www.stat.fi/til/tilma/2016/tilma_2016_2018-09-26_en.pdf] (28.09.2018)

Statistics Finland: Use of renewable energy at a record level in 2016. 2017. 28.09.2018.
[https://www.stat.fi/til/ehk/2016/ehk_2016_2017-12-08_tie_001_en.html] (28.09.2018)

Stockholm Environment Institute – Greenhouse Gas Management Institute: Additionality and Quantification Procedures. (12.02.2019)

[http://www.co2offsetresearch.org/policy/AdditionalityBaselines.html] (12.02.2019)

Stockholm Environment Institute – Greenhouse Gas Management Institute: Offset Protocols, Programs, Registries & Standards. (28.01.2019)

[https://www.co2offsetresearch.org/policy/StandardsPrograms.html] (28.01.2019)

Stockholm Environment Institute – Greenhouse Gas Management Institute: Introduction to Offset Standards. (29.01.2019)

[http://www.co2offsetresearch.org/consumer/Standards.html] (29.02.2019)

UNDP: Climate Credit Mechanisms. 11.08.2018.
[http://www.undp.org/content/sdfinance/en/home/solutions/climate-credit-mechanisms.html] (11.08.2018)

VCS: Double Counting Policy Brief. Verified Carbon Standard. 15.08.2018.
[http://verra.org/wp-content/uploads/2018/03/VCS-Policy-Brief-Double-Counting_0.pdf] (15.08.2018)

Verra: The VCS Programme. 13.02.2019.

[https://verra.org/project/vcs-program/] (13.02.2019)

Verra: Registry System. 30.01.2019.

[https://verra.org/project/vcs-program/registry-system/] (30.01.2019)

Zwick, Steve: Katowice Climate Deal Leaves Carbon Markets Intact But Incomplete. Ecosystem Marketplace. 15.12.2018.

[http://www.ecosystemmarketplace.com/articles/carbon-markets-look-set-to-emerge-from-katowice-intact-but-incomplete/] (15.12.2018)

FIGURES AND TABLES

1. INTRODUCTION

Climate change mitigation efforts have stirred global environmental politics with the signing of the Paris Agreement. Countries have committed to keeping the global temperature rise well below 2 degrees and made national pledges by setting various greenhouse gas (GHG) emission reduction targets.[1] However, according to the 2018 U.N. Emission Gap report, even if all countries fulfil their national pledges, this will contribute to just one-third of the actions needed by 2030 to keep the global temperature rise below 2 degrees Celsius. The emission gap assessment demonstrates that countries need to undertake two to three times higher emission reductions in order to bridge the gap between conditional NDCs and the 2 degrees goal and five times higher reduction targets to stay on the path of 1,5 degrees.[2] The gaps could be reduced by a few gigatons carbon dioxide equivalent (CO_2 e) per year by 2030 by tapping the emission reduction potential of subnational and non-state actors, such as municipalities and private companies. However, the extent to which non-state actors could contribute to the global emission reductions is a highly debated topic as the potential contributions are already accounted for in current national policies or the NDCs. Nevertheless, several studies are assessing the contribution of non-state actors' emission reductions, and the general view is that if a non-state actor's emissions are reduced at a rate faster than the national NDC, then the contribution is additional and goes beyond the national pledge.[3]

EU climate and energy policy have paved the way toward achieving -40% emission reductions by 2030 in comparison to 1990 levels. 2018 was a crucial year as we have witnessed the adoption of the revised EU ETS Directive, the Effort Sharing Regulation (ESR) and the Land Use, Land Use Change and Forestry (LULUCF) Regulation, also known as the pillars of EU climate and energy policy. The ESR sets national legally binding targets for the sectors which fall outside the EU ETS and account for almost 60% of the EU's total domestic emissions.[4] The LULUCF Regulation introduces the no-debit rule, meaning that emissions from the sector should not exceed removals, an updated accounting framework and also establishes a connection with the effort sharing sector through a flexibility

[1] *Carbon Brief* 2015
[2] UNEP 2018, p. 21
[3] Ibid, 38
[4] *European Commission* 2018, Effort Sharing Regulation

mechanism.[5] While the three pillars of EU climate and energy policy are equally important and complementary to each other, this thesis will focus on examining the feasibility of domestic offset programs (DOPs) for reaching and going beyond the emission reduction targets in the effort sharing sector in Finland in the light of the international, EU and national legal frameworks.

1.1 Background and rationale

The Effort Sharing Regulation sets a binding target of 30% reduction in GHG emissions in the non-ETS sectors for the period 2021-2030. The non-ETS sectors include transport, buildings, agriculture, non-ETS industry, and waste.[6] The reduction targets for each member state is based on the principles of fairness, cost-effectiveness and environmental integrity and range between 0% and -40% compared to 2005 levels. For Finland, the target is -39%.[7]

Under the Effort Sharing Regulation, international credits from CDM or JI projects are no longer eligible to be used for reaching the ESR targets. Instead, member states should rely on domestic emission reductions, and the flexibilities provided under the regulation.[8] This opens opportunities for establishing voluntary domestic offset programs for realising emission reductions from sectors not contributing to international, EU and national climate targets. For instance, utilising the LULUCF flexibility under the ESR allows carbon credits generated from the land use and forestry sector to be first sold on the voluntary market and the emission reductions also to be counted towards reaching the 2030 ESR target up to the allowed amount specified under the regulation.

Voluntary DOPs could contribute to reaching and going beyond national and international climate targets depending on their scope and aim. The broad definition of domestic offset programs allows for flexibility during the design and implementation process. DOPs could be customised and adapted according to the national circumstances and the objective and scale of the program. As a result, voluntary DOPs differ from country to country and could be targeted entirely to meeting the demand on the voluntary market, as well as contributing to and overachieving national emission reduction targets.

[5] *European Commission* 2018, LULUCF Regulation adopted
[6] *European Commission* 2018, Effort Sharing Regulation adopted
[7] *European Commission* 2018, Effort Sharing Regulation targets and flexibilities
[8] Ibid.

In order to qualify as voluntary carbon offsets, emission reductions need to be additional, meaning that they go beyond current policies and business as usual. Other aspects related to ensuring the environmental integrity of the carbon offsets is avoiding double counting. Ensuring additionality and avoiding double counting are essential requirements for generating voluntary carbon credits. The underlying idea is that both the voluntary and compliance markets exist in parallel and are complementary to each other.

Voluntary domestic offset programs are being implemented in various countries across Europe. While, some of them are developed in partnership with the national governments for achieving national climate targets, others are entirely independent. Either way, the national government could provide support and endorse the program, for instance in matters related to establishing and maintaining program registry or validation of methodologies and processes.

1.2 The concept of DOPs

In line with reaching the goals set in the Paris Agreement, countries have made climate pledges to reduce carbon emissions on the national level. As countries will have to transform their climate pledges into climate policies to demonstrate that their intended emission reductions are taking place governments will look for alternatives with low abatement costs. Thus, carbon pricing will be vital for the achievement of the goals set in the Paris Agreement as it offers emission reduction at lower abatement costs in comparison to other policy alternatives.[9] Carbon markets are utilised as a cost-effective means to reduce greenhouse gas emissions in Europe, the United States, China, New Zealand, Canada, South Korea and Japan.[10]

EU policymakers have launched a wide array of climate change mitigation initiatives for reducing greenhouse gas emissions since the 1990s, including the first international scheme for emission trading in Europe - the EU ETS launched in 2005.[11] The primary mechanism behind emission trading is setting a cap on the level of allowed greenhouse gas emissions that could be emitted by corporations under the jurisdiction of the regulator. The greenhouse gas allowances are capped on an annual level, and companies can trade these allowances to cost-effectively reduce their carbon emissions and reach compliance with the annual cap.

[9] *Baranzini – van der Bergh – Carattini – Howarth – Padilla – Roca* 2017, p. 2
[10] *Dormady – Englander* 2016, p. 140
[11] *Villoria-Sáez – Tam – del Río Merino – Arrebola - Wang* 2016 p. 52

Often in addition to the compliance cap-and-trade policy instruments, market players also use voluntary instruments, such as carbon offsets. Offsets allow emission reductions to be made cost-effectively through verified projects, which could take place anywhere in the world. Usually, offset projects take place in regions with lower abatement costs and high emission reduction potential. Carbon offsets represent additional emission reductions, where one unit of carbon dioxide equivalent, usually 1 tonne, is reduced, sequestered or avoided.[12]

Following the increased interest towards regulated and voluntary carbon markets in recent years, the concept of offsetting has also expanded in a domestic context in the form of a new category of domestic offset programs which are on the rise in various countries. DOPs are project-based mechanisms to offset GHG emissions in the country the emission reduction has occurred, and they can be either regulated or voluntary. Regulated domestic offset programs are administered by the national government, and buyers use the carbon credits for compliance purposes.[13] The strict definition of domestic offsetting is purchasing carbon credits within the national territory from emission reduction projects implemented in one sector by industry players in another sector or the government for meeting emission reduction targets.[14]

On the other hand, voluntary DOPs could be organised by a third-party organisation or a stakeholder group, and their purpose is to contribute to GHG emission reductions in sectors not covered by the compliance market, thus meeting the demand for local offset created by non-state actors. In that sense, voluntary DOPs are considered a complementary instrument to the compliance carbon markets, which could further boost emission reductions and spur technological innovations within the national borders.[15]

In a domestic offset project, the project company conducts GHG emission reduction projects and for each removed, sequestered or avoided ton of CO2, the developer receives a tradable carbon credit. Before being able to sell the credits to domestic companies/organisations, the GHG reductions need to be certified and verified either by independent quality standards, such as the Verified Carbon Standard (VCS), Gold Standard or a domestic offset scheme.[16] Usually, the domestic offset programs are small scale and exist alongside the compliance carbon market. The interest in voluntary domestic offsets is on the rise in many countries.

[12] *Dormady – Englander* 2016 p. 140
[13] *Pettenella – Brotto* 2018, p. 102
[14] *Borkent - O'Keeffe – Neelis – Gilbert* 2012, p. 14
[15] *Nett – Wolters* 2017, p. 5
[16] Ibid.

Examples of DOPs include among others France's Low Carbon Label, the United Kingdom's Woodland Carbon Code, Colombia's voluntary carbon market, and Korea's Forest Carbon Offset Scheme.[17]

1.3 Research objective

The topic of national DOP has received recent attention, and there have been discussions on how to establish a national offset program in Finland. However, there is lack of information whether such system is feasible and what is the legal framework. Hence, the main focus of this thesis is on researching whether a voluntary domestic offset program in Finland is a feasible option for contributing to and going beyond the 2030 emission reduction targets in the ESR sector.

Research questions

1. What are the applicable international, EU and national legal frameworks for voluntary domestic offsetting?
2. What are the main challenges to domestic offsetting?
1. What are the core design elements and implementation considerations for establishing a domestic offset program?
2. Is DOP a feasible option for contributing to and going beyond the 2030 ESR emission reduction targets in Finland?

Firstly, this thesis will examine the applicable legal frameworks for DOP implementation. The objective is to determine the space available for voluntary domestic offsetting within the constraints of international and EU climate policy, and Finnish legislation. Eligible sectors and project types for voluntary offsetting are the ones not contributing to climate targets and mitigation pledges. Hence, the focus will be on exploring the Kyoto Protocol, Paris Agreement, EU ETS, Effort Sharing Decision (ESD), ESR, LULUCF Regulation and national legislation. Particular attention is paid on the LULUCF Regulation, LULUCF flexibility under the ESR, as well as the national Climate Change Act (609/2015), the Finnish Medium-term Climate Change Plan to 2030 outlining measures to reaching the 2030 ESR targets and the National Forest Strategy 2025.

[17] *Hamrick – Gallant*, 2018, p.13

Secondly, the thesis outlines the critical challenges to offsetting and how to overcome them. The aim here is to provide a good understanding of different types of double counting and ways of ensuring additionality. Thirdly, the thesis will investigate the key design considerations for establishing a domestic offset program. In particular, the focus will be on exploring the core elements of DOPs, in particular, accounting rules, monitoring, reporting verification and certification methodologies and registration and enforcement systems. Implementation considerations are analysed from the perspective of the level of outsourcing and government involvement. Also, a case study of selected domestic offset programs in Europe is presented, demonstrating the vast possibilities for program design, implementation and level of government involvement.

Fourthly, the thesis will examine to what extent a DOP could contribute to the 2030 target. With respect to the voluntary market, the focus is on the possibility to contribute to the ESR target trough utilising the LULUCF flexibility. The thesis will outline eligible offset project types and activities, challenges to domestic offsetting and design and implementation considerations. LULUCF sector has a significant emission reduction potential, and its essential role in the EU's 2030 emission reduction targets is highlighted in the LULUCF Regulation according to which member states have to ensure that GHG emissions from the LULUCF sector are offset by at least an equivalent removal of CO2 from the atmosphere between 2021 and 2030, known as the no-debit rule.[18] Thus, the thesis will look into whether a DOP is a solution for helping Finland reach compliance with the no-debit rule, by bridging the gap between total emissions and total removals in the LULUCF sector. Lastly, the thesis will sum the key findings and provide conclusions and recommendations for program methodology and processes which are suitable for the purpose and scale of the program.

1.4 Methodology

The research questions are going to be answered through utilising a mixed methodology approach, including explanatory and doctrinal research.

For answering Research Question 1, I will use a doctrinal approach when exploring the limitations and conditions posed by the international, EU and national law. The focus will fall on the Kyoto Protocol and the Paris Agreement on international level, whereas the EU legal environment is determined by analysing the impact of the EU ETS Directive, Effort

[18] European Commission 2018

Sharing Decision, Effort Sharing Regulation and the LULUCF Regulation. Particular attention will be paid on the LULUCF flexibilities under the ESR. On national level and the focus is on the Climate Change Act (609/2015), the medium-term climate change policy plan to 2030. Figures from key national documents and reports on the implementation of the EU climate and energy policy will be discussed in order to estimate how ambitious the -39% target for Finland is and whether a voluntary domestic offset scheme is feasible and needed for reaching the non-ETS target, given the flexibilities under the ESR.

For answering Research Question 2, I will use an explanatory approach and academic sources when presenting key challenges to offsetting. Notably, the focus will fall on challenges related to double counting and additionality issues. First, I will provide an overview of the double counting types and highlight under what circumstances they are likely to occur. The risk of double counting will be analysed from the perspective of international, EU and national law. Second, the concept of additionality and its significance in the context of voluntary offsetting will be introduced by utilising academic sources. Finally, possible measures to avoiding double counting and ensuring additionality will be presented based on recent reports in the field of voluntary domestic offsetting and academic literature.

For answering Research Question 3, I will use explanatory approach. Firstly, the key design elements of DOPs will be presented, including accounting rules, methodologies for monitoring, reporting and verification (MRV) and certification, and registration and enforcement systems. Secondly, the chapter will discuss implementation considerations for establishing DOP with regard to the level of outsourcing elements from international offset programmes and the degree of government involvement. Thirdly, the chapter will present a case study on existing DOPs in Europe, featuring three DOPs, in order to illustrate in practice, the different possibilities for DOP design and implementation.

For answering Research Question 4, I will use explanatory and doctrinal approaches to explore whether a DOP is a feasible option to contribute to the 2030 ESR target in Finland. On the one hand, this chapter explores DOP legal framework, issues of double counting and additionality and implementation considerations from the perspective a DOP in Finland is focused entirely on meeting the demand for carbon offsets created by private actors. The underlying goal is to identify the implications of international, EU and national legislation on potential DOP development in Finland with regard to avoiding double counting and

ensuring additionality. On a national level, the key documents to be analysed are the mid-term climate change plan to 2030, the Rural Development Plan for Mainland Finland 2014-2020, and the possible implications of the new Rural Development Plan for the next EU programming period starting in 2021. On the other hand, the thesis will explore whether a DOP is a feasible option for contributing to the ESR target and help Finland comply with the no-debit rule. For providing an answer to that question, I will utilise an explanatory approach supplemented with relevant statistical data on Finnish emissions and projections of emissions and removals in the LULUCF sector based on the estimates outlined in the National Forest Strategy 2025. The focus falls on analysing current and estimated Finnish emission in the LULUCF sector, the implications of the new LULUCF Regulation concerning utilisation of forest resources in Finland, and flexibilities available to reach the no-debit rule.

1.5 Scope

The scope of this thesis is relatively broad, as the goal is to cover almost all aspects to voluntary domestic carbon offsetting. This is a challenging task since the complexity of the topic requires delving into various perspectives related to offsetting and exploring the available information from different angles.

With regard to the applicable legal framework for DOP, the attempt is to cut slices from international law, through EU level, to national level. The underlying objective is to determine what sectors and activities are covered by compliance targets, and respectively what opportunities are left for voluntary actions. Particular attention is paid to the LULUCF Regulation not only because carbon credits are mostly generated from land use and forestry projects, but also due to the LULUCF flexibility under the ESR. The goal is to explore whether this flexibility could be utilised by a DOP for contributing indirectly to 2030 ESR and what are the eligible activities from sectors not contributing to international climate commitments, EU ETS, ESR, and national climate targets.

Although several challenges are impairing the environmental integrity of carbon offsets, this study is limited to exploring only double counting and additionality issues. The topic of additionality and double counting is quite complex, and whereas in theory, the definitions are strict and narrow, examples of DOPs across Europe show a more open and flexible perception of both concepts in practice. This thesis, however, explores DOP as a tool for meeting the voluntary demand by private actors and considers that offset projects should at

minimum not contribute to any compliance targets in order to be additional from a policy perspective. Additionality testing methodologies presented in this thesis are utilised by international standards but could also be customised and used by DOPs. The main focus with regard to additionality testing methodologies is from the perspective of project-based additionality testing versus performance standards and positive lists or checklists.

With regard to the design options and considerations, the thesis identifies the key design elements of DOPs and discusses implementation considerations and options for additionality testing from the perspective of a small-scale DOP with a narrow scope. The discussion on outsourcing design elements from international offset programmes and level of government involvement is built on presenting advantages and disadvantages, for instance emphasising the need and outlining ways of minimising the administrative costs. In addition, three DOPs across Europe are selected in order to demonstrate in practice how DOPs operate and how different elements and process could be flexibly adapted to fit DOP's purpose.

Finally, the thesis discusses how a DOP could contribute to the 2030 ESR target in Finland. While the primary focus is on the demand at the voluntary market driven by private actors, and the utilisation of the LULUCF flexibility under the Effort Sharing Regulation, the thesis also explores whether a DOP could be a solution to reaching compliance with the no-debit rule under the LULUCF Regulation. The no-debit rule requires that member state's removals in the LULUCF sector exceed the emissions, and it is a prerequisite for utilising the LULUCF flexibility.[19] Due to the complexity of the topic, it is essential to keep the scope of the thesis open with regard to double counting and additionality issues, which could be communicated and agreed upon by the parties involved. Thus, this thesis does not "prescribe" one correct option of how to implement a DOP in Finland, but instead, it explores the possible choices available with regard to design elements, implementation considerations and ways to handle additionality and double counting issues.

1.6 Outline

The thesis consists of 6 chapters as each chapter delves into exploring a different aspect of voluntary DOPs, except for the last chapter which uses the already gathered information about DOP implementation and adapts it to the Finnish context in order to evaluate whether DOP is a feasible option for contributing to the 2030 ESR target in Finland.

[19] Regulation (EU) 2018/842, Art. 7(d)

Chapter 1 provides an overall background of the research, its objective, an introduction to the concept of domestic offset programmes, selected methodology, scope and outline of the thesis. Chapter 2 explores the legal environment for DOP implementation and how international, EU and national climate targets impact voluntary offsetting. The analysis starts by outlining the limitations posed by international and EU climate law and continues with the constraints for the scope of DOP posed by the Finnish climate policy. For instance, even if some sectors are excluded from EU climate targets, hence are suitable for carbon credit generation, they might be included under member state's climate policy, and as a result, are not eligible for voluntary offsetting.

Chapter 3 introduces the common challenges impairing the environmental integrity of carbon credits. The four double counting types explored are double accounting/issuance, double selling, double claiming and double monetisation. Additionality is the second aspect of ensuring offsets' environmental integrity, and it could be tested on various levels depending on the carbon offset standard in place, project type and the national circumstances.

Chapter 4 explore DOP's key design elements and implementation considerations. After presenting the accounting rules, MRV and certification processes and registration and enforcement systems, the chapter continue with discussing the outsourcing and government involvement levels deemed appropriate with respect to DOP's purpose and scale. Key emphasis is on advantages and disadvantages for DOP and minimising administrative costs. The chapter continues with presenting a case study on existing DOPs in Europe and features three programmes selected based on predetermined criteria.

Chapter 5 focuses on exploring the feasibility of DOP for reaching and going beyond the 2030 ESR target in Finland. Firstly, the chapter outlines the legal framework, double counting, additionality and implementation considerations from the perspective of a DOP focused entirely on meeting the demand on the voluntary market in Finland. Secondly, the chapter explores whether a DOP could be a solution to closing the emission gap between removals and emissions in the LULUCF sector, thus helping Finland reach compliance with the no-debit rule under the LULUCF regulation. Finally, Chapter 6 sums up the main findings and insights gained throughout the thesis and provides recommendations.

2. LEGAL FRAMEWORK FOR VOLUNTARY DOMESTIC OFFSET PROGRAMS

Market-based policy instruments have attracted significant attention as scholars and policymakers try to reach a balance between achieving climate goals and continuous economic growth. The importance of carbon trading has increased, and for the past decade, carbon markets have evolved at the international, national, sub-national, state, regional and municipal levels. Carbon offsets have gained vital importance in recent years as they allow emissions to be reduced, sequestered or avoided cost-effectively.[20]

In the past, voluntary domestic carbon offset programs emerged as bottom-up initiatives from project developers and NGOs[21], and nowadays their importance is increasing as a mechanism for achieving GHG emission reductions in line with the goals set in the Paris Agreement. This chapter aims to clarify what is the legal framework for voluntary domestic offset programs in the context of international, EU and Finnish legislation. On international level, the focus will fall on the Kyoto Protocol and the Paris Agreement, while on EU level the focus will be on EU ETS, Effort Sharing Decision, Effort Sharing Regulation and LULUCF Regulation. Finally, this chapter will seek an answer to what is the legal framework for developing a domestic offset program in Finland.

2.1 International legal framework

2.1.1 Kyoto Protocol

The Kyoto Protocol under the UNFCCC is considered the backbone of the international climate change policy as it commits industrialized countries to reduce GHG emissions collectively. It entered into force in 2005, and it committed Annex B Parties to legally binding GHG reduction targets in comparison to 1990 levels - 5% for the first commitment period (2008-2012) and 18% for the second commitment period (2013-2020).[22]

The reductions in Annex B countries are achieved through allocated emission budgets, which take the form of assigned amount units (AAUs). The Kyoto targets are intended to be achieved through implementation of domestic policies and measures in the following areas:

[20] *Dormady – Englander* 2016, p. 139-140
[21] *Nett – Wolters* 2017, p. 10
[22] UNFCCC Kyoto Protocol, Article 3

energy efficiency, protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol, sustainable forest management practices, afforestation and reforestation, sustainable forms of agriculture, renewable energy, advanced and innovative environmental and CO2 sequestration technologies, and fiscal incentives.[23]

In addition to the implementation of domestic policies and measures, the Kyoto Protocol provides for three flexibility mechanisms: Emission Trading, Clean Development Mechanism (CDM) and Joint Implementation (JI). Under the Emission Trading under a cap and trade approach, countries can trade AAUs with other countries.[24] Under the CDM and JI, Annex B countries could offset carbon emissions. CDM is the most extensive global offset mechanism for emission reductions projects implemented in non-Annex I Parties. Under the CDM, billions of dollars of investments in climate action have been realised.

The significant contribution of CDM to climate action is also highlighted by the CDM Executive Board Chair Arthur Rolle who emphasises CDM's ability to "harness the entrepreneurial power of markets and the private sector to meet goals on sustainable development and climate change". For the reduced GHG emissions under the CDM, the project developer acquires Certified Emission Reduction (CER), also known as offsets and carbon credits. Since 2001, 8100 climate projects and programmes in 111 developing countries have been registered under the CDM, amounting more than USD 300 billion, and resulting in reduction or avoidance of 2 billion tonnes of carbon dioxide. [25] Similarly, for GHG reduction from JI projects implemented in other Annex B countries, project developers receive Emission Reduction Units (ERUs).[26] The idea behind the flexibility mechanisms is not only to provide a broader scope of action but also allow for emission reductions to be achieved in a cost-efficient way.

Even though not explicitly included in Annex A, including all GHG emission sources covered by the Kyoto Protocol, certain LULUCF sectors are subject to mandatory and voluntary emission accounting. While LULUCF activities possible to implement under the CDM are limited only to afforestation and reforestation, any LULUCF activity under Articles 3.3 and 3.4 is possible under JI.[27] According to Article 3, paragraphs 3 and 4, emission accounting from afforestation, deforestation and reforestation were mandatory for

[23] Ibid, Article 2
[24] Ibid, Article 17
[25] UNFCCC CDM Report 2018, p. 5
[26] UNDP, 2018
[27] *Iversen – Lee – Rocha* 2014, p.46

the first commitment period, whereas in the second commitment period to the list was also added forest management. On the other hand, emissions from the following LULUCF activities were subject to voluntary accounting in the first commitment period: forest management, cropland management, grazing land management, and revegetation. In the second commitment period, forest management became subject to mandatory emission accounting, while wetland drainage and rewetting were added to the voluntary accounting of LULUCF activities.[28]

The carbon credit compliance market created by the Kyoto Protocol and its flexibility mechanisms limits the possible implementation of voluntary DOPs. Firstly, since DOPs are part of the voluntary carbon market, they are in a way complementary and additional to the compliance offset market, meaning that only carbon reduction activities not covered by the Kyoto Protocol are eligible for voluntary domestic carbon reduction projects. Hence, creating specific difficulties, as most of the emission reduction activities are eligible under the Kyoto Protocol. Thus, the scope of DOPs is significantly limited, as only the activities in the LULUCF sector subject to voluntary accounting under the Kyoto Protocol could be implemented. Secondly, in cases where voluntary DOPs are implemented in countries having emission reductions obligations under Kyoto Protocol different types of double counting could occur. [29] It is still uncertain whether the limitations to DOPs scope posed by the Kyoto Protocol will continue post-2020, as while the Paris Agreement is seen as a successor to the Kyoto Protocol, the latter does not necessarily cease to exist.

2.1.2 Paris Agreement

The globally adopted Paris Agreement, which entered into force in 2016, will be the principal instrument governing GHG emission reductions after 2020. Unlike the Kyoto Protocol, the Paris Agreement sets ambitious non-binding climate change mitigation targets to keep the global temperature rise to well below 2 degrees Celsius. As laid down in Article 4, paragraph 2 each Party is required to prepare, communicate and maintain successive nationally determined contributions (NDCs) and outline through what domestic actions, regulations and policies it aims to achieve them.[30] The progress in achieving the NDCs is monitored, and the goal is for countries to pursue even more ambitious targets in the future.

[28] UNFCCC Kyoto Protocol, Article 3, paragraph 3 and 4
[29] *Nett – Wolters* 2017, p.47
[30] UNFCCC Paris Agreement, Art. 4.2

Furthermore, Article 4, paragraph 3 highlights that the successive NDCs will represent a progression beyond the current NDCs, which aims to foster ambitious targets, while taking into consideration the principle of common but differentiated responsibilities and respective capabilities, in the context of different national circumstances.[31]

Even though carbon markets are not explicitly mentioned in the Paris Agreement, under Article 6, paragraph 2 and 3, parties could voluntary use internationally transferred mitigation outcomes (ITMOs) to achieve the targets set in their NDCs. This international approach to cooperation where a new bottom-up market mechanism is established is seen as a means to enhance the ambition of the NDC.[32] ITMOs generated from voluntary cooperation could be traded between the parties involved, under the condition that the whole process is transparent, and double counting issues are addressed.[33] As trading of ITMOs is voluntary for countries and it is aimed to facilitate the achievement of the targets set in the NDCs, it will have no direct implications on the development of domestic carbon offsets targeted at the non-ETS sector. However, there is a need for a robust regulatory framework to guarantee that the transfer of questionable mitigation outcomes is avoided. The operational rules for the implementation of Article 6 are currently being developed under the Paris Agreement Work Program.[34]

The Paris Agreement is also considered a turning point for the role of forests as a critical instrument for reaching climate change mitigation targets.[35] In particular, the goal of achieving "a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century" outlines the significant role of the whole land use sector in achieving the overall GHG emission reductions. For instance, a large number of countries intend to reach the goals set in their NDCs through activities in the forest sector. However, it should be noted that forests could help mitigate climate change to a certain extent but cannot alone solve the problem.[36]

The establishment of a new market mechanism under Article 6.4-6.7 aims at mitigating GHG emissions and enhancing sustainable development. The new market-based mechanism will be established under the UNFCCC, and it will be supervised from a body designated by the

[31] Ibid, Art, 4.3
[32] *Mehling – Metcalf – Stavins* 2017, p.35
[33] UNFCCC Paris Agreement, Art 6.2-6.3
[34] *Mehling* 2018, p. 2
[35] *Grassi - House - Dentener - Federici - den Elzen – Penman* 2017, p. 2
[36] *Krug* 2018. p.9

Parties.[37] Although still unclear what the name and scope of this mechanism will be, there have been numerous interpretations and speculations about the characteristics and scope of the new mechanism based on the provisions in Article 6.4-6.7.

The precise plan for implementing the Paris Agreement was expected to be agreed at the UN Climate Conference in December 2018 in Katowice, Poland. The modalities and procedures of the new market-based mechanism were highly debated topic at the roundtable discussions among parties during COP24 in Katowice, where Brazil's presentation called for a transition from CDM to the new market-based mechanism.[38] However, climate negotiators could not agree on a set of rules, leaving the guidance for creating international carbon markets to speed up the emission reductions under Article 6 for COP25 in Chile, 2019.[39] In the Informal Compilation Proposal, it is outlined that the Conference of the Parties requests the Subsidiary Body for Scientific and Technological Advice to continue consideration of the matters relating to Article 6 of the Paris Agreement.[40]

As a private sector mechanism in the field of climate governance, the voluntary carbon market exists in parallel to the UN climate change regime, but it is impacted by the changes happening as a result of the Paris Agreement.[41] Both, Article 6.2 (cooperative approaches and internationally transferred mitigation outcomes or ITMOs) and Article 6.4 (new market-based mechanism) will have a significant impact on the potential for DOPs. For instance, in the period after 2020, new additionality rules need to be defined, to ensure that voluntary domestic offset projects do not overlap with actions under the new market-based mechanism and stringent accounting of emissions reductions is needed to ensure that double counting is avoided.[42]

The demand for DOPs could also be driven by the increased ambition of countries to go beyond their predetermined NDCs. Despite the intended ambitious nature of the NDCs, the recent U.N. Emission Gap Report highlighted that even all countries achieve the targets set in their NDCs, this collective effort will contribute to only one-third of the emission reductions needed by 2030 to keep the global temperature rise below 2 degrees Celsius.[43] Thus, countries are encouraged to undertake more ambitious climate action, and for example

[37] UNFCCC Paris Agreement, Art. 6.4
[38] COP24 Round Table Discussions Among Parties, Brazil Presentation
[39] *Zwick* 2018
[40] UNFCCC 2018, Informal Compilation Proposal
[41] *Lang – Blum – Leipold* 2018, p. 2
[42] *Nett – Wolters* 2017, p. 92
[43] UNEP 2018, p. 21

utilise the GHG emission reduction potential of subnational and non-state actors, such as private companies.[44] Generally, it is considered that climate actions of non-state actors are additional and "go beyond" national climate pledges if emissions are reduced at a rate faster than the national NDC.[45] Parties' long-term goal of achieving carbon neutrality in the second half of this century, also offer opportunities for neutralising unavoidable emissions with the help of carbon sinks and domestic offsets.[46]

2.2 EU legal framework

On EU level, the EU ETS, the Effort Sharing Decision, the Effort Sharing Regulation and the LULUCF Regulation shape the legal framework for the possible implementation of DOPs. Through the Effort Sharing legislation, the EU sets binding emission reduction targets against the 2005 levels for the sectors which fall outside of the EU ETS. While the Effort Sharing Decision sets a 10% reduction target for the period 2013-2020, the recently adopted Effort Sharing Regulation sets a 30% target for the period 2021-2030.[47] Unlike EU ETS sectors which are regulated at EU level, Member States are in charge of introducing national policies and measures to achieve the emission reduction targets set by the Effort Sharing legislation. This section aims to find out what is the legal framework for DOPs under the EU law through discussing the targets, requirements and flexibilities under the EU ETS, ESD, ESR and the LULUCF Regulation, and the way they interact and enable the implementation of DOPs.

2.2.1 EU ETS

The EU ETS is the key instrument of EU climate policy. Launched in 2005, it is the largest emission trading system in the world operating in 31 countries, including the 28 EU member states plus Iceland, Liechtenstein and Norway. The scheme applies a cap-and-trade approach, where each member state has national emission cap which indicates the amount of the total allowed emissions. Under the EU ETS, tradable emission permits, known as European Union Allowances (EUAs) are issued in limited number and are distributed to the member states. EU ETS covers carbon dioxide (CO_2), nitrous oxide (N_2O) and perfluorocarbons (PFCs) emissions from over 11 000 installations with heavy-energy

[44] UNEP 2017, p. 1
[45] UNEP 2018, p. 38
[46] *Nett – Wolters* 2017, p. 92
[47] *European Commission*, 2018, Effort Sharing: Member states emission targets

consumption. CO_2 sources covered under the EU ETS include power and heat generation and energy-intensive sectors, such as oil refineries, steelworks and production of iron, aluminium, metals, cement, lime, glass, ceramics, pulp, paper, cardboard, acids and bulk organic chemicals and commercial aviation. N_2O emissions covered under the scheme are from the production of nitric, adipic and glyoxylic acids and glyoxal, whereas PFCs emissions are covered from aluminium production. These sectors together account for approximately 45% of the total GHG emissions on an EU level. Companies in the sectors covered by the EU ETS receive or purchase EUAs to cover their emissions. Excess allowances could be kept for meeting future compliance needs or sold on the other companies. The possibility of trading EUAs ensures that emission reductions will be made cost-effectively, whereas the decreasing carbon cap over time increases the level of ambition and motivates investments in low-carbon technologies.[48]

Currently, the EU ETS is in its third phase (2013-2020), and emissions are capped at 21% reductions in comparison to 2005 levels. In April 2018, the revised EU ETS Directive (Directive (EU) 2018/410) entered into force. The directive sets a target of 43% emission reduction in comparison the 2005 levels for phase 4 (2021-2030), which will help in reaching the EU's 2030 GHG reduction targets in line with the 2030 climate and energy policy framework and as part of the EU's commitments under the 2015 Paris Agreement.[49]

With respect to DOP implementation, the EU ETS sets certain limitations and boundaries. Firstly, domestic offset projects could be implemented only in the non-ETS sectors in order to avoid double counting issues. Secondly, the fact that the majority of low-priced GHG emission reduction technologies and installations are among the ETS sector limits significantly the scope of technological options eligible for domestic offset projects leaving available only options with higher abatement costs. Thirdly, voluntary DOPs bear the risk of double counting.[50] Different double counting types and ways to avoid them are discussed in detail in Chapter 3.

Article 24a of the EU ETS Directive 2009/29/EC sets harmonised rules for projects that reduce emissions by introducing domestic offsets as an instrument for compliance under the EU ETS. As the EU ETS covers around 45% of all GHG emissions, Article 24a aims at addressing the emission gap created by the sectors not covered in the emission trading

[48] *European Commission*, 2018, EU ETS
[49] Ibid.
[50] *Nett – Wolters* 2017, p.51

scheme. In line with Article 24a, the Commission may adopt measures, consistent with acts adopted under former Article 11b(7) as in force before 8 April 2018, for issuing allowances or credits in respect of projects administered by Member States that reduce greenhouse gas emissions not covered by the EU ETS. Such carbon credits may be generated through the implementation of DOPs and then used for compliance with the EU ETS targets. It is essential that credits issued in pursuit of Article 24a do not obstruct or interfere with other policy measures aiming at reducing non-EU ETS emissions and that double counting is avoided.[51]

2.2.2 Effort Sharing Decision (ESD)

The Effort Sharing Decision is part of the EU's climate and energy policy framework for 2020 and sets a collective target of 10% reduction of GHG emissions in the non-ETS sector for the period 2013-2020. The national reduction targets are measured against 2005 levels and are set according to the gross domestic product per capita, resulting in wealthiest countries having the most ambitious targets.[52] The ESD covers the six GHG controlled by the Kyoto Protocol in the first commitment period (2008-2012): carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). The targets concern only domestic emissions from IPCC source categories of energy, industrial processes and product use, agriculture and waste and explicitly exclude emissions covered by the EU ETS and emissions and reductions from land use, emissions and removals from land use change and forestry (LULUCF).[53]

The emission reductions are planned as linear reductions starting from 2013 reaching the 10% target by 2020, and for each year there is a set annual target that needs to be fulfilled. The annual targets are also known as Annual Emission Allocations (AEAs), and for 2013, member states reducing their emission had to keep their 2013 emissions under the level of their average annual emission for the period 2008-2010.[54] Since the Effort Sharing legislation does not exist in a vacuum, the AEAs had to be adjusted twice in order to be consistent with the expanded EU ETS (in 2013) and to be in line with the updated international guidelines and methodologies for reporting emission reductions (in 2017).

[51] Directive (EU) 2018/410**,** Article 24a
[52] *European Commission* 2018, Effort Sharing: Member states emission targets
[53] Decision No 406/2009/EC Art 2
[54] Ibid, Art. 3.2

Member states are also allowed to use certain flexibilities provided under the ESD in order to enhance the cost-effectiveness of reaching their annual targets. Between 2013 and 2019, a member state may transfer from the following year up to 5% of its AEAs. In addition, in case the member state has met its annual target, it has the possibility of transferring the excess AEAs to the next year up to 2020. [55] According to Article 3.4 of the ESD, a member state is allowed to sell up to 5 % of its annual emission allocation for a given year to other member states, which in turns could use the transferred AEAs to meet their annual targets for the current year or any year up to 2020. After meeting their annual target, member states can transfer excess emission allocation to other member states, which can use the AEAs to meet their target for any year up to 2020.[56] International credits, such as carbon offsets from CDM or JI projects could also be used towards meeting the annual GHG reduction target under certain quantitative and qualitative conditions laid down in Article 5. All member states may use project credits included in the General positive list, while only the 12 member states listed in Annex III may additionally use the project credits from the Special positive list. [57]

An evaluation of the implementation of ESD covering the period 2013-2015 conducted by the European Commission concluded that the EU had met its 2020 target of 10% already in 2014 when the total emission reductions were 12.9% below the 2005 levels. Regarding the use of the flexibility mechanisms, the evaluation discovered that only three Member States indicated that they were planning to purchase AEAs, while ten Member States planned to sell AEAs. According to the evaluation report, the low demand in using the flexibilities, in particular transfers of AEAs is owed to the fact that in the period until 2015, the ESD was in its early years and that there might be drivers for the implementation of domestic actions for achieving the national target, instead of purchasing AEAs. The report concludes that ESD targets have been met by introducing policies and measures on national level promoting effective GHG emission reduction within the ESD scope, as the majority of emission reductions has resulted from technological changes and policy related to the use of low-carbon technologies. Also, the launch of the ESD at the same time as other EU climate and energy initiatives related to energy efficiency and renewable energy as part of the 2020 package has accelerated the achievement of the ESD target for 2020.[58] Up to the present day,

[55] Ibid, Art. 3.3
[56] Ibid, Art. 3.4-3.5
[57] Ibid, Art. 5.1 and 5.5
[58] COM (2016) 483 final

no CDM or JI credits have been used by any member state for compliance under the ESD. Data related to compliance and the use of flexibilities is updated daily at the EUTL public website.[59]

The national target for Finland under the ESD is -16% emission reductions by 2020[60] and by 2015 -11.96% has been achieved.[61] So far, Finland has not reported using market mechanisms for reaching the ESD targets, and instead implementing domestic policies and measures. In 2016, Finland exceeded the emission allocation set by the ESD, hence needed to use excess AEAs from the period 2013-2015.[62] Even though in 2017 emissions in the non-ETS sector decreased by 2% in comparison to 2016, they still exceeded the annual emission allocation.[63] According to the recent report "Trends and projections in Europe 2017" by the European Environmental Agency, Finland will exceed a little the annual emission allocations for the years 2019 and 2020, and the excess emissions could be compensated with surplus AEAs from previous years.[64]

2.2.3 Effort Sharing Regulation (ESR)

The Effort Sharing Regulation was adopted on 14 May 2018. While its predecessor, the Effort Sharing Decision was part of the Union 's climate and energy policy framework for 2020, the Effort Sharing Regulation is part of the Energy Union strategy and the EU's implementation of the Paris Agreement.[65] The main distinction between ESR and ESD lies in the difference between a regulation and a decision as legislative acts. Regulations, on the one hand, are one of the most powerful forms of European law. Not only regulations are automatically and uniformly enforceable as law in all member states on the date they enter into force, but also they are superior to all national laws related to the issue being regulated. Hence national legislation needs to be adapted accordingly. On the other hand, decisions are binding only to those to whom they are addressed. For instance, a decision could apply to one or more EU countries, companies or individuals, and prior to entering into force, the parties concerned need to be notified.[66] Thus, the Effort Sharing Regulation is a clear indication of the evolution of the Effort Sharing legislation and EU climate policy towards

[59] *European Commission* 2018, EU ESD Transaction Log
[60] Decision No 406/2009/EC, ANNEX II
[61] *European Environmental Agency* 2017, p. 28
[62] Ministry of the Environment & Statistics Finland, p.59
[63] *Official Statistics of Finland* 2017
[64] *European Environmental Agency* 2017, p. 27
[65] European Commission, Effort Sharing
[66] European Commission, Types of EU law

stricter targets as a response to the global challenge of climate change and the international climate efforts under the Paris Agreement.

ESR sets ambitious emission reduction target of 30% for the non-ETS sector for the period 2021-2030. The contribution of each member state is determined according to the principle of shared but differentiated responsibilities and respective capabilities. Furthermore, cost-effectiveness is ensured by adapting the targets for countries with above-average GDP per capita. As a result, the national targets vary from 0% to -40% compared to 2005 levels. For Finland, the emission reduction target is -39%.

The reductions follow a linear trajectory determined by annual emission reductions calculated at five-twelfths of the distance from 2019 to 2020 or in 2020 (depending on which one results in lower annual allocations) on the average of the GHG emissions during 2016 to 2018.[67] In addition to the gases covered in the ESD, nitrogen trifluoride (NF3) is added in the ESR.[68]

An adjustment of 41 million tonnes will be provided in 2021 as a means to overcome potential challenges facing the lower-income Member States. In addition, a safety reserve amounting to 105 million tonnes CO2 equivalent will be established as a means to ensure that the overall target of 30% is achieved despite the challenges lower income countries might face with reaching their national emission reduction targets.[69] The safety reserve will be made available ex-post in 2032 "as a last resort under strict conditions"[70] only to member states whose GDP per capita was below the EU average in 2013, whose GHG emissions were below the annual emission allocations for the period 2013-2020 and who have difficulties in meeting their 2030 national reduction targets, despite utilising the flexibilities provided under the ESR. The reserve aims at covering the estimated collective deficit for the period 2021-2030 without the introduction of new policies, and at the same time ensuring the environmental integrity of the ESR and motivating action beyond the minimum contributions outlined in the regulation.[71] The ESR maintains the current flexibilities under the ESD, such as banking, borrowing and transfer and they are laid in Article 5 of the ESR. During the period 2021 - 2025, a member state may borrow a quantity of up to 10 % from

[67] Regulation (EU) 2018/842, Art 4.2
[68] Ibid, Art. 3.1
[69] European Commission, Effort sharing 2021-2030: targets and flexibilities
[70] Ibid.
[71] Regulation (EU) 2018/842, Art. 11

its annual emission allocation for the following year,[72] whereas for the period 2026 – 2029, a member state may borrow a quantity of up to 5% from its annual emission allocation for the following year.[73]

On the other hand, if a member state's GHG emissions are below the annual emission allocation, the state may in respect to 2021 bank that excess part of its annual emission allocation to subsequent years up to 2030. From 2022 to 2029, the state may bank its excess annual emission allocation capped at a level of 30% of its annual emission allocations up to that year to subsequent years until 2030.[74] A member state may also transfer up to 5% of their annual emission allocation to other member states for the period 2021-2025, and up to 10% for the period 2026-2030.[75] For a given year member state's reviewed greenhouse gas emissions are below its annual emission allocation for the same year, the excess annual emission allocation could be transferred to other member states, which could use the transferred emission allocation for compliance purposes for the same year or any other subsequent year.[76]

In addition to the current flexibilities maintained from the ESD, the ESR introduces two new flexibilities enabling fairness and cost-effectiveness in achieving the 2030 targets. The first flexibility allows member states listed in Annex II to the ESR Regulation to access allowances limited to 100 million tonnes CO_2 over the period 2021-2030 from the EU ETS, which otherwise would have been auctioned.[77] Each member state needs to announce the amount of EU ETS allowances they intend to use counting towards their 2030 non-ETS target before 2020, and the amount could be revised twice downwards.[78] The second flexibility allows member states to access up to 280 million credits from the land use sector to comply with their national targets for the period 2021-2030. Each member state has a limitation for using reductions from the LULUCF sector, as access is higher for member states with a larger share of emissions from agriculture.[79] However, for member states to be able to use the LULUCF flexibility, they must comply with the no-debit rule, meaning that the total emissions on the territory of a member state should not exceed the total removals.[80]

[72] Ibid, Art. 5.1
[73] Ibid, Art. 5.2
[74] Ibid, Art. 3(a)(b)
[75] Ibid, Art. 5.4
[76] Ibid, Art. 5.5
[77] Ibid, Art. 6.1
[78] Ibid, Art. 6.3
[79] Ibid, Art. 7
[80] Regulation (EU) 2018/842, Article 7(d)

An overview of the LULUCF regulation and the conditions under which member states could use this flexibility is provided in section 2.2.4.

Another flexibility provided in Article 5.8 of the ESR encourages member states to use an unlimited number of credits from projects issued under Article 24a(1) of Directive 2003/87/EC for compliance under Article 9 of the Effort Sharing Regulation, considering that double counting is avoided.[81] Under the amended Article 24a(1), the Commission may adopt measures for issuing allowances or credits in respect of projects administered by Member States that reduce greenhouse gas emissions not covered by the EU ETS.[82] Such projects may take the form of DOPs, where carbon credits are issued and could be used for compliance with the national GHG reduction targets set by both the EU ETS and the ESR.[83] Article 24a is not yet operational, as the Commission has not issued the needed implementing legislation and the future of projects implemented under Article 24a is still uncertain. Nevertheless, the recently adopted ESR encourages member states to establish public-private partnerships for implementing domestic offset projects under Article 24a, which indicates its potential in the period 2021-2030, given the increased emission reduction targets both in the ETS and non-ETS sectors.[84]

2.2.4 Land Use, Land Use Change and Forestry (LULUCF) regulation

The new LULUCF regulation was adopted in May 2018, and it is one of the pillars of the EU climate and energy policy. The LULUCF sector plays a significant role in providing long-term climate benefits, hence contributing to reaching both the EU GHG emission reduction goals and the climate goals set in the Paris Agreement.[85] In line with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, robust accounting of the emissions and removals in the LULUCF sector is ensured through utilising annually reported values for land use categories and the conversion between land use categories as laid down in Regulation (EU) No 525/2013 of the European Parliament and of the Council.[86] Under the internationally agreed IPCC Guidelines, combustion of biomass is considered carbon-

[81] Ibid, Art. 5.8
[82] Directive 2009/29/EC, Art. 24a
[83] Directive 2018/410, Article 24a
[84] Regulation (EU) 2018/842, Recital 20
[85] Regulation (EU) 2018/841, Recital 5
[86] Ibid, Recital 14

neutral in the energy sector, only if the related emissions are accounted for in the LULUCF sector.[87]

In line with the regulation, emission and removals of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) expressed in CO2 equivalent are subject to mandatory accounting if they occur in any of the land accounting categories. The accounting categories valid for both compliance periods 2021-2025 and 2026-2030 are: afforested land, deforested land, managed cropland, managed grassland, and managed forest land. In addition, member states could choose to include the category "managed wetland" to the mandatory accounting for the period 2021-2025, whereas as of 2026 it becomes mandatory.[88]

As for both compliance periods, member states can utilise the flexibilities under Article 12 and 13, provided that they comply with the no-debit rule or each member state's emissions in the LULUCF sector do not exceed removals, which are calculated as the sum of total national emissions and removals in all of the land accounting categories.[89] In line with the general flexibilities outlined in Article 12, member states which total emissions exceed total removals, could use the flexibility and delete AEAs under Regulation (EU) 2018/842 to help them reach compliance with the no-debit rule. On the other hand, if a member state's total removals exceed the total emissions, hence it complies with the no-debit rule, the excess quantity of removals could be transferred to another member state, which could use it for complying with the no-debit rule. Furthermore, any remaining or extra removals from the first compliance period could be banked and used for the second compliance period 2026-2030.[90]

The LULUCF Regulation also includes an accounting framework for Managed Forest Land with capped credits for additional compensation which is based on a forest reference level. The forest reference level provides the estimated future carbon sinks in the two compliance periods 2021-2025 and 2026-2030 on the basis of past forest management practices during the period 2000-2009. The forest reference level was highly debated topic as some member states argue that it is limiting the amount of future harvesting levels from managed forest land.[91] The amount of compensations for member states is limited to sinks accounted for as

[87] Ibid, Recital 15
[88] Ibid, Art. 2, para 1 and 2
[89] Ibid, Article 4
[90] Ibid, Article 12
[91] *Nabuurs – Arets – Schelhaas* 2018

emissions against its forest reference level and up to the maximum amount specified in Annex VII for the period from 2021 to 2030.[92]

The managed forest land flexibility under Article 13 could be used by member states whose total emissions exceed total removals in the land accounting categories to comply with the no-debit rule. If the value of emissions and removals in the periods from 2021 to 2025 and from 2026 to 2030 minus the value obtained by multiplying by five the forest reference level of the Member State is a positive number, member states are eligible to compensate the emissions under two conditions listed in Article 13 paragraph 2 points (a) and (b). Firstly, as part of developing low carbon development strategies under Article 4 of Regulation (EU) No 525/2013, member states have already included or plan to include activities to ensure the conservation or enhancement of forest sinks and reservoirs. Secondly, total emissions should not exceed total removals on EU level in the land accounting categories for the period for which the Member State intends to use the compensation.[93] The flexibilities available for member states to comply with the no-debit rule, together with the required conditions to be fulfilled are summarised in Figure 1.

The flexibilities under the LULUCF Regulation aim at facilitating compliance with the no-debit rule, but since they are set on EU level, they are not tailored to fit the national circumstances of each member state. Hence, it is not surprising why usually "climate-friendly" countries possessing the largest forest resources in Europe, such as Finland, France, Sweden and Austria were the ones opposing and trying to undermine the land accounting proposals under the LULUCF Regulation back in 2017.[94] The underlying reason for that unusual behaviour is that in these countries there are strong conflicting perspectives on how the forest resources are to be best utilised. For instance, developing bioeconomy strategies or being a leader in bioenergy production undermines reaching compliance with the no-debit rule. Thus, member states should strive to utilise all available methods and resources for increasing forest sinks and reducing the gap between emissions and removals in the LULUCF sector, which opens an opportunity for a domestic offset programme to play a vital role in this equation.

[92] Regulation (EU) 2018/841, Art. 13, para 3
[93] Ibid, Art 13, para 2ab
[94] *CAN Europe* 2017

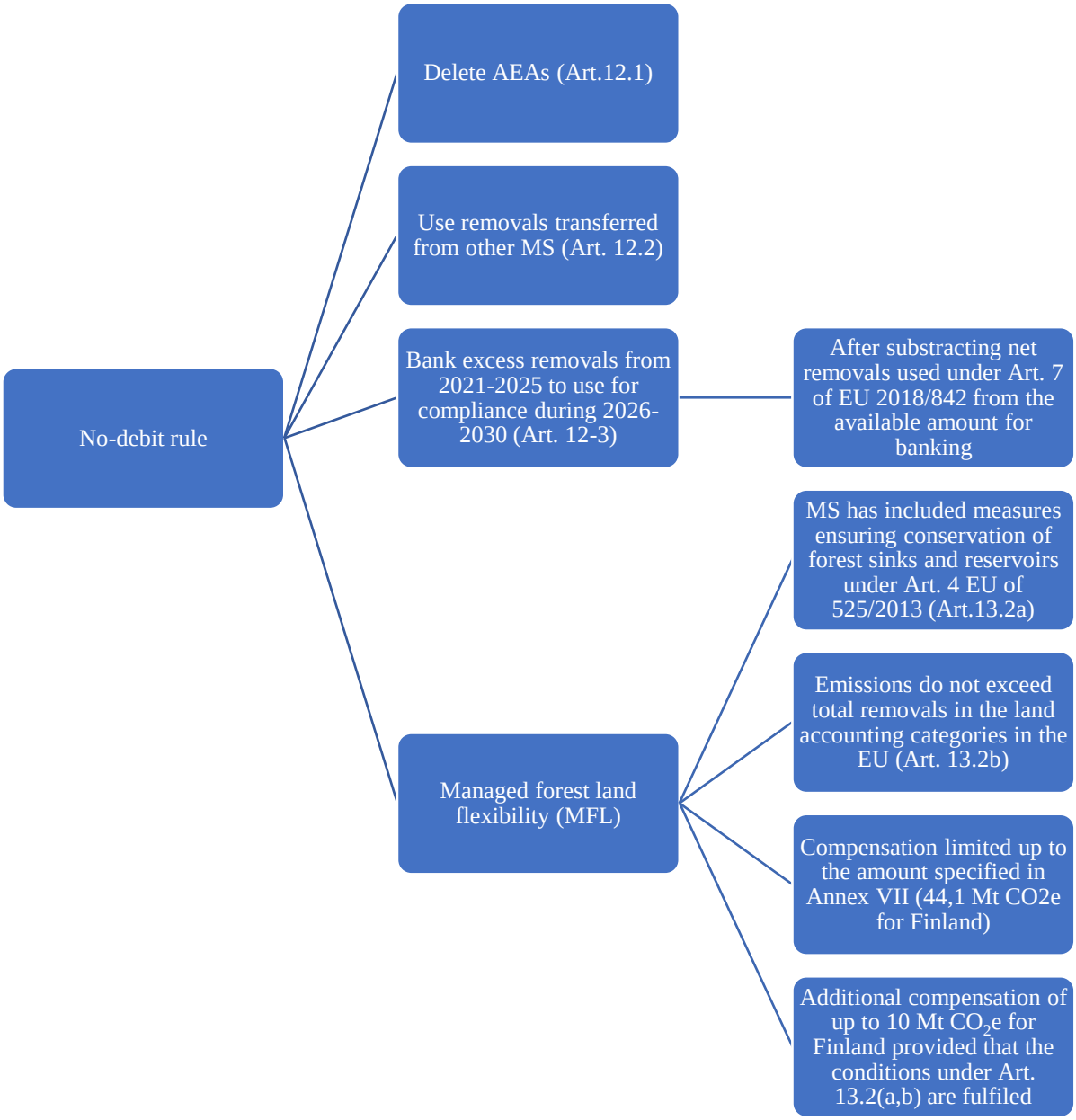

Figure 1 Flexibilities available for the Member States to comply with the no-debit rule

2.3 National legal framework

Finnish climate change legislation has developed gradually following the lead of international and EU climate law. The Climate Change Act (609/2015), which entered into force in 2015 is of significant importance as it sets guidelines for planning a long-term and cost-effective Finnish climate change policy.[95] The underlying objective of the planning framework is to guarantee that Finland fulfils its binding obligations under the treaties binding on Finland and under the legislation of the European Union to reduce and monitor greenhouse gases and in addition to develop national strategies for climate change mitigation and adaptation.[96]

The key objectives and policies until 2030 are outlined in the National Energy and Climate Strategy adopted in 2016, including both the emission trading and the effort sharing sectors. Under the Climate Change Act, the Ministry of Environment coordinated the preparation of the medium-term climate change policy plan which entire focus is on drafting an action plan for achieving the 2030 targets in the effort sharing sector. The plan was adopted by the Parliament in March 2018.[97] Thus, this section aims at exploring the legal framework for DOPs in Finland through discussing the implications of the Climate Change Act and the Medium-term climate change plan to 2030 on domestic offsetting.

2.3.1 Climate Change Act (609/2015)

The Climate Change Act, adopted in June 2015, aims at setting the direction of the Finnish climate change policy and its purpose is three-fold. Firstly, the Act establishes a planning and monitoring framework for the implementation of the Finnish climate change policy. Secondly, it aims at enhancing and coordinating the activities of state authorities in planning and monitoring climate change mitigation and adaptation measures. Thirdly, the Act aims at strengthening public participation in the planning of the Finnish climate change policy.[98]

[95] Ministry of the Environment, Climate Change Legislation 2018
[96] Climate Change Act (609/2015), Section 1(1)
[97] Ministry of the Environment, National Climate Policy 2018
[98] Climate Change Act (609/2015), Section 1(2)

While the Act sets the direction for cost-effective planning and monitoring of climate change policy, it does not provide particular provisions for specific measures or actions.

The Planning system for climate change policy consists of a long- and a medium-term climate change policy plan and a national adaptation plan for climate change.[99] The underlying objective of the planning system is to set greenhouse gas reduction targets together with the measures required to achieve the targets. The long-term target for 2050 is a reduction of at least 80% of greenhouse gas emissions in comparison to the 1990 levels.[100] Furthermore, the Act outlines that the Finnish government approves a long-term plan for key policy measures with regard to the emission trading and effort sharing sectors at least once in every ten years.[101] The long-term plan should consider the greenhouse gas emissions scenarios to 2050 and the respective sector-specific measures for the achievement of the long term emission reduction target, as well as current and future climate change policy environment both on the international and EU level. Furthermore, the plan should also include an evaluation of potential options for emission reduction in the context of Finland.[102]

In line with the Act, in addition to the long-term plan, the Finnish government shall approve a medium-term plan for climate change policy during each electoral term. The medium-term plans should determine concrete measures and an action plan for emission reduction and climate change mitigation actions in the effort sharing sector. During the preparation of the medium-term plan factors, such as fulfilling existing emission reduction commitments under international and EU legislation should be taken into consideration. Furthermore, current policy measures targeted at emission reductions in the effort sharing sector should be presented and evaluated in terms of their effectiveness. Finally, the medium-term plan should suggest additional policy measures for emission reduction in the effort sharing sector which will contribute to the achievement of the targets in the long-term climate change policy plan.[103] By outlining emission reduction activities in different effort sharing sectors, the plan limits the scope of additional activities which could be implemented under DOP. The implications of the medium-term plan on a DOP in Finland is explored in detail in the section below.

[99] Ibid, Section 6(1)
[100] Ibid, Section 6(3)
[101] Ibid, Section 7(1)
[102] Ibid, Section 7(2)
[103] Ibid, Section 9(1)(2)

2.3.2 Medium-term climate change plan to 2030

The medium-term climate change policy plan sets greenhouse gas emission reduction target for the effort sharing sector for 2030 and outlines additional sector-specific measures to ensure that the targets are achieved. The medium-term plan and the Energy and Climate Strategy are the instruments which implement the Finnish climate and energy policy. The target for the reductions in the effort sharing sector is 39% in comparison to the 2005 levels. The additional sector-specific measures for GHG emission reductions for each of the effort sharing sectors are included as part of the WAM policy scenario. The estimation of measures' emission reduction potential, costs and impacts are based on the currently available information and given the uncertainties and overlaps between measures. There is no detailed information on the policy mechanisms through which the additional measures will be implemented. In line with the Climate Change Act, each of the effort sharing sectors will be in charge of implementing the policy measures relevant to its activities and operations. Measures requiring funding will be implemented in line with the limits set in the General Government Fiscal Plan and the Budget.[104]

The estimated emission reduction potential of each sector is presented in Table 1 below. For this research, the focus will be only on additional measures in the transport and agriculture sectors, as they are the most relevant in terms of voluntary domestic offset projects in Finland. It is estimated that by implementing the additional sector-specific measures, in addition to waste incineration transferred to ETS and using the one-off flexibility in full (0.7 Mt CO_2 e/year), the 2030 targets will be exceeded by 0.4 Mt CO_2 e.[105] The activities outlined in the medium-term climate change plan determine the space left for implementing a voluntary DOP. For instance, activities under the DOP would complement the measures set in the plan and could be in the sectors of transport and agriculture, but the specific offset project should differ from the ones outlined in the plan, in order to be additional from a policy perspective.

[104] Ministry of the Environment, Medium-term Climate Change Policy Plan for 2030, p. 77
[105] Ibid, p. 95

Table 1 Summary of estimated sector-specific emission reductions potential by 2030

Sector	Estimated emission reductions by 2030 (Mt CO_2e/year)
Transport, total • Renewable/low emission fuels and power sources • Energy efficiency of vehicles • Energy efficiency of the transport system	**3.1** 1.5 0.6 1
Increased use of biogas	**0.5**
Agriculture	**0.3**
Building-specific heating, total • Blending obligation • Phasing out oil in the public sector	**0.2** 0.1 0.1
Industrial oil use	0.1
Waste management	**0.6**
F-gases	**0.3**
Machinery, total • Blending obligation • Other measures	**0.5** 0.2 0.3
Total	**5.6**

2.3.2.1 Transport sector

The transport sector in Finland has the highest potential for emission reductions, and through implementing various actions, emissions are estimated to be halved by 2030 in comparison to 2005 levels. The three main categories of measures are: replacing fossil fuels with renewable and low emission alternatives, improving vehicles' energy efficiency and improving the energy efficiency of the transport sector. Replacing fossil fuels with renewable fuels will be done by increasing the share of biofuels to 30% of all sold road transportation fuels by 2030 and promoting low emission vehicles. The overall emission reduction potential of replacing fossil fuels with low emission alternatives is 1.5 Mt CO_2 by 2030. On the other hand, the energy efficiency of vehicles is expected to be improved through introducing EU-wide CO_2 threshold values for car manufacturers, which will reduce by 30% the emissions of new vehicles in 2030 in comparison to the 2020 levels. It is estimated that the gradual shifting to low-emission vehicles in Finland, which would also be promoted through advisory services and financial incentives, has the potential to decrease GHG emissions by 0.6 Mt CO_2 by 2030 without changes to taxation. Lastly, mobility services in order to decrease car journeys and increasing walking and cycling by 30% by

2030 have the potential to decrease emissions by 1 Mt CO_2 by 2030, given that there is no increase in car transport.[106]

The measures for emission reduction in the transportation sector included in the medium-term plan together with the ambitious emission reduction estimates point the direction this sector is headed in the future. As the decarbonisation of the transport sector gains momentum, a voluntary DOP could offer market players the opportunity to purchase offsets which are in line with their carbon emissions reduction strategies. The voluntary market for carbon offsets comprises of corporates, municipalities and individuals looking for cost-effective options to decrease their emissions.

2.3.2.2 Agriculture sector

Finnish agricultural land and grasslands are estimated to be an annual net source of GHG gases equivalent to 7.5 Mt CO_2, out of which clearing forests for other land use purposes is responsible for 3.5 Mt CO_2 equivalent. As emissions increase and carbon stock decreases, current efforts are targeted mainly at reversing these trends by increasing the sequestration and storage of carbon in soil.[107] The estimated emission reductions from the agriculture sector by 2030 in the medium-term plan are 0.07 Mt CO_2 in the non-ETS sectors and 0.32 Mt CO_2 equivalent in the LULUCF sector. N_2O and CH_4 emissions are the agricultural emissions counted in the effort sharing sector, whereas CO_2 emissions are included in the LULUCF sector.[108]

Suggested additional measures to reduce greenhouse gas emissions in the medium-term plan are mainly associated with decreasing emissions from organic soils, which provide the highest potential for reducing emissions from arable land. As a result of the growing demand for food, measures are targeted at improving the efficiency of food production, hence reducing emissions per litre or kilogram of products produced. For instance, growing crops in organic soils for several years with zero tillage and not only continuing the current measure of providing environmental compensation for 'perennial environmental grasslands on peat or mull soil' in the next EU programming period starting in 2021, but also expanding it to other plants. The expansion of this measure is expected to result in environmental

[106] Ibid, p. 77-81
[107] Ibid, p. 87-88
[108] Ibid, p. 81-82

compensation, and investment support for gasification of grass and manure increased cultivation of reed canary grass for use in energy production or as bedding.[109]

Other options for decreasing emissions to be considered are afforestation of organic soils (0.23 Mt CO_2 in the non-ETS sector and 0.26 Mt CO_2 equivalent in the LULUCF sectors) and planting wetland forest on organic soils **(**0.01 Mt CO_2 in the effort sharing sector and 0.13 Mt CO_2 equivalent in the LULUCF sector). Both options could be added to the Rural Development Programme for Mainland Finland during the preparation for the next period starting in 2021. In addition, increasing the water table through controlled surface drainage slows down the decomposition of peat, and it is another option of reducing emissions by 0.14 Mt CO_2 equivalent in the effort sharing sector and 0.43 Mt CO_2 equivalent in the LULUCF sector.[110] Another suggested additional measure is the promotion of biogas production, which will be incentivised through providing investment supports for biogas plants run by farms and rural companies and the introduction of biogas in agricultural machinery will also be promoted. Additional measures related to biogas promotion have the potential to decrease emissions by 0.36 Mt CO_2 equivalent in the non-ETS sector, of which 0.05 Mt CO_2 equivalent in the agricultural sector and a total of 0.31 Mt CO_2 equivalent from transport, heating and machinery emissions.[111]

The role of the agriculture sector in realising emission reductions has been recognised in the medium-term climate change policy plan. Various measures for emission reduction included in the plan, such as planting wetland forest on organic soils, afforestation of organic soils, decreasing emissions from peatlands through controlled surface drainage and biogas production are technically feasible to be also implemented as offset generating projects under a domestic offset programme. However, these activities if implemented under DOP would not be additional due to their inclusion under national climate change policy. Nevertheless, the agriculture sector in Finland provides numerous opportunities for emission reduction outside the activities listed in the medium-term plan, a potential that could be tapped by a domestic offset programme. The eligible project types and activities for generating voluntary offsets in Finland is discussed in detail in Chapter 5.

[109] Ibid, p. 81-82
[110] Ibid, p. 81-83
[111] Ibid, p. 61

3 CHALLENGES TO OFFSETTING

3.1 Key challenges to domestic offsetting

Ensuring offsets' environmental integrity is the key challenge for voluntary offsetting. Environmental integrity refers to offsets' credibility in terms of proving that each offset or carbon credit corresponds to actual GHG emission reduction. In order to ensure the carbon offsets' environmental integrity, GHG emission reductions need to be additional, permanent, verified and double counting should be avoided. However, the overlap between various legally binding climate targets on international, EU and national level increases the risk of non-additionality of credits and the occurrence of double counting, for instance in domestic offset programmes.[112] Avoiding double counting and ensuring additionality guarantees the credibility of the carbon offsets and demonstrates the actual contribution of carbon offset projects to emission reductions beyond the country's international or national climate change mitigation targets and commitments. Thus, this chapter aims to explore the various double counting types and additionality issues from the perspective of voluntary domestic offset programs and possible ways of overcoming these challenges and safeguarding the environmental integrity of the carbon credits.

3.1.1 Double counting

Double counting occurs when a GHG emission reduction is counted more than once towards achieving climate mitigation or financial pledges. As such, double counting undermines the environmental integrity of carbon offsets, as the actual GHG emissions are higher than the reported.[113] Double counting can occur both in compliance and voluntary markets, and different forms include double accounting/issuance, double selling, double claiming and double monetisation.[114]

Double accounting/issuance impairs the environmental integrity of the carbon credit as a result of accounting for the same unit twice or issuing more than one credits for the same GHG reduction. This form of double counting could occur under one crediting mechanism or offset program by issuing two units to either the same entity or issue the same unit to two different entities. While in the first case examples include double registration of emission

[112] *Nett – Wolters* 2017, p. 36-37
[113] *Schneider - Kollmuss– Lazarus* 2015, p. 473
[114] Ibid, p. 475

reductions, in the second case two different entities claim the same emission reductions under two different offset projects, e.g. the carbon credit is claimed both by the producer and the consumer of biofuels. The complexity of carbon markets as a result of various mechanisms on international, national and non-governmental levels increases the risk of issuing more than one carbon credits for the same amount of emission reductions under two different mechanisms. An evident example of double counting occurring under two crediting mechanisms is if a project developer registers a project under two offset programs (domestic and international) or if two entities (e.g. biofuel producer and consumer) claim the emission reduction under two different offset programs.[115]

Double selling refers to the situation when one carbon credit is sold to multiple buyers, which does not necessarily impair the environmental integrity of the carbon credit.[116] For instance, if the carbon credits corresponding to one tonne CO_2 are not used for compliance purposes, such as achieving emission reduction commitments, environmental integrity is not impaired. However, since selling the same carbon credit twice is both unethical and illegal, double selling should be avoided.[117]

Double claiming occurs when two entities, such as governments, companies, municipalities or other institutions, claim the same emission reduction. In the context of voluntary offsetting, this could occur if, for instance, a company claims the carbon offset for achieving carbon neutrality, and a buyer who purchases company's products also claims the carbon neutrality of the product. In this case, the environmental integrity is preserved as this is voluntary offsetting, and as such neither of the parties have emission reduction obligations, nor the emission reduction is counted towards any binding mitigation pledge or accounted for in the national GHG inventory.[118] On the other hand, if one of the parties would have compliance obligations, double claiming could occur if a carbon credit from a voluntary DOP is first claimed by a company to offset GHG emissions, and then claimed by the national government for achieving compliance with national emission reduction targets. Under a DOP, the environmental integrity of the credit is preserved despite the double claim,

[115] Ibid, p. 475
[116] *VCS*, 2012 p. 3
[117] *Nett – Wolters* 2017, p.38
[118] Ibid, p. 39

as the carbon offset is counted only once in a national inventory for compliance purposes.[119] This viewpoint is supported by the VCS[120] and UK's Woodland Carbon Code[121].

Double monetisation refers to the situation when a GHG emission reduction is monetised both as a GHG credit and as a GHG allowance. This type of double counting occurs if a carbon credit is first retired by a company which wishes to offset its emissions, and then the national government accounts for the emission reductions achieved under the domestic offset project, which is accounted in the national GHG inventory. For instance, under the Kyoto Protocol, this might result in a surplus of AAUs, which the government might choose to sell to another country with Kyoto obligations. Post-2020, double monetisation can result in a surplus of AEAs which the government could sell to a country with obligations in the effort sharing sector. As a result, for one ton of CO_2 removed from the atmosphere through the carbon offset projects are released two tons of CO_2 – one from the company which offsets its emission, and the second from the country which purchases the AAUs.[122]

3.1.2 Additionality

Additionality is one of the essential criteria for generation of carbon credits in all standards and offset programs. The common definition of additionality which is widely used by both regulated and voluntary carbon markets is: "A credit is considered additional if the emissions reduction that underpins the credit would not have occurred in the absence of the activity that generates the credit [Business-as-Usual scenario]".[123] Determining which activities are additional, thus go beyond the business-as-usual scenario, requires establishing a baseline scenario, which illustrates the emission levels without implementing the project. While the concept of additionality refers to the emission reductions as a result of a particular project, the concepts of "leakage" and "displacement" are also considered.[124] These two concepts refer to external impacts leading to an increase in emissions which are measurable and attributable to the project. For instance, carbon leakage occurs if emission reductions in one sector lead to an emission increase in another sector.[125]

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[119] *VCS* 2012, p.5
[120] Ibid.
[121] *Ivleva- Nett - Treutwein – Wolters,* 2015, p. 21
[122] *VCS* 2012, p .1-2
[123] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 3
[124] *Valatin* 2011, p. 2
[125] *VCS* 2018, p. 8

The additionality of carbon credits could be guaranteed by conducting an additionality test, which would not only prove that emissions has been reduced, but also ensures that voluntary actions do not replace mandatory actions under international, EU and national climate policies. Additionality could be tested on different levels, including environmental, policy, financial, and technological. Tests could focus only on one additionality criteria, or they might combine multiple criteria, resulting in a more robust additionality assessment. [126] For proving environmental additionality, it is enough to guarantee that emission reductions take place without considering other factors. On the other hand, to pass a policy additionality test, the activities under an offset project should not be covered under international, EU or national policy and law. Financial additionality, also known as investment assessment under the CDM additionality methodology tool, aims at determining whether an offset project would not be feasible without the financial gains from selling the carbon offsets and whether it is not the most economically/financially attractive option.[127] Finally, technological additionality test assesses if the offset project will result in a deployment of technology, which otherwise would not be possible.[128] The four additionality criteria are illustrated in Figure 2 below.

[126] *Nett – Wolters* 2017, p. 36
[127] *UNFCCC, CDM Additionality Methodological Tool*, 2012
[128] *Barata – Spors – Kennedy – Platonova - Oquab - Gadde* 2016, p. 9

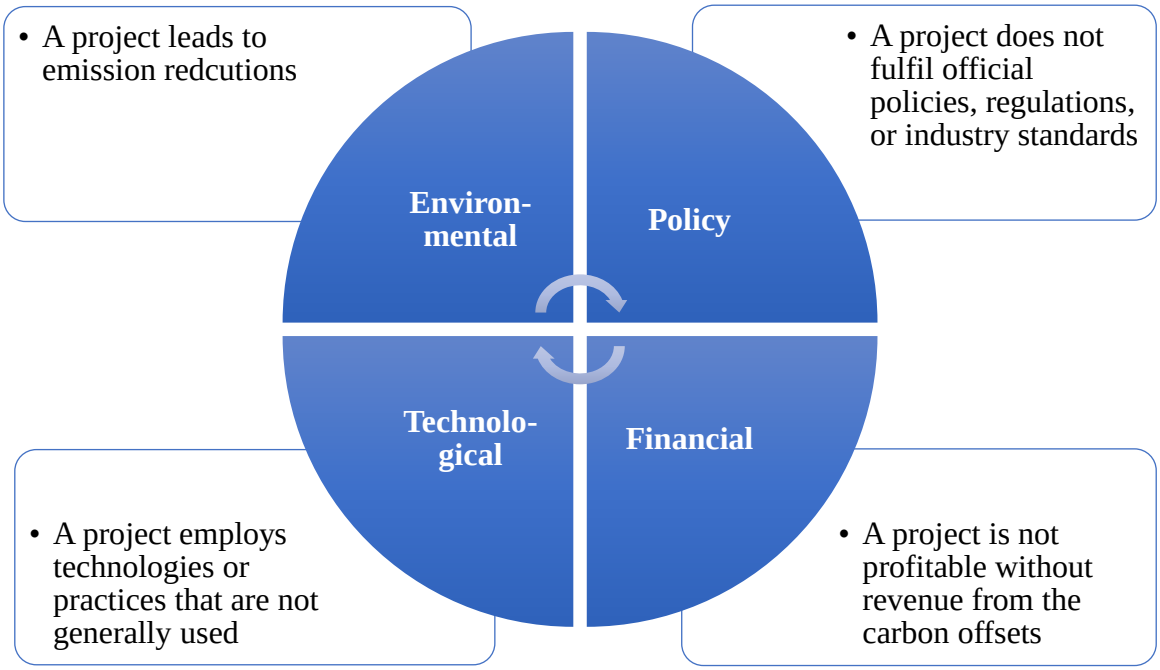

Figure 2 Additionality criteria (Adapted from Nett – Wolters 2017)

The lack of widely adopted and recognised rules and processes for determining the additionality of voluntary carbon offsets often leads to criticism of DOPs of non-additionality, meaning that the emission reductions from the conducted offset projects would have happened even without the DOP in place. [129] In that case, the issuance of non-additional carbon credits leads to a net increase in emissions, meaning that actual compensation does not occur[130], which in turns significantly undermines offset's credibility. For instance, companies offsetting part of their unavoidable emissions with non-additional carbon credits could be blamed of greenwashing and attacked by environmental NGOs.

Regarding the impact of double claiming on additionality, it is argued that including emission reduction from voluntary DOPs to meeting national targets without retiring an equivalent amount of allowances is viewed as helping the government to achieve already planned domestic emission reduction targets, instead of "going beyond" compliance.[131] Supporters of this argument emphasise that companies' actions to offset emissions through

[129] *Pettenella – Brotto*, 2018, p. 103
[130] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 4
[131] *Gold Standard* 2015, p. 7

purchasing carbon credits not be any more additional, as they decrease the ambition level of government measures to meeting the national GHG reduction targets.[132]

3.2 Overcoming the key challenges to domestic offsetting

3.2.1 Avoiding double counting

The easiest way for a voluntary DOP to avoid double accounting/issuance and double selling is by establishing a registry where all issued and transacted carbon credits are recorded. For instance, the Gold Standard's guideline on avoiding double counting, suggests that the risk of double selling could be mitigated through following standard's registry procedures and rules on tracking ownership and retirement of carbon credits.[133] On the other hand, offset programmes could avoid double accounting/issuance either by not allowing it or by ensuring that only one of the parties involved uses the carbon credit towards meeting mitigation pledges. For instance, under the CDM and Gold Standard methodologies, project developers are required to state ownership and location of the project. Also, under the VCS and Gold Standard, project developers are required to declaring that they do not intend to seek credits for the same emission reductions under different offset programs or standards.[134] UK's Woodland Carbon Code mitigate the risk of double issuance through requiring project developers to declare they have not registered the emissions reduction under different registry or standard and through conducting administrative checks. The risk is further mitigated by WCC being the only standard issuing credits for UK projects, hence the only registry provider.[135]

Double claiming could be avoided if a DOP does not generate carbon credits from activities accounted in the national inventory. However, this substantially limits the scope of voluntary DOPs as most of the project types are covered by compliance targets under the Kyoto Protocol, EU ETS, ESR, or national policy, hence are reflected in the national greenhouse gas inventory. In order to mitigate the risk of double claiming in the case, a DOP realises emission reductions from activities accounted in the national inventory, the government needs to cancel AAUs/AEAs corresponding to the number of carbon credits generated

[132] *Ivleva – Nett – Treutwein – Wolters* 2015, p. 28
[133] *Gold Standard* 2015 p. 5
[134] *Schneider - Kollmuss– Lazarus* 2015, p. 481
[135] *Forestry Commission, Woodland Carbon Code* 2018

through a voluntary domestic offset program.[136] As a result, the emission reductions under the DOP are accounted for in the national GHG inventory, but they do not contribute to reaching national emission reduction targets, thus increasing the level of ambition for government measures. On the other hand, the risk of double monetisation could be mitigated if the government commits not to sell surplus AAUs under the Kyoto Protocol and AEAs under the EU ETS and ESR. [137]

However, the need for ensuring the credibility and high-quality of carbon offsets under DOPs and the high transaction costs associated with the cancellation of units from the national inventory are among the key challenges.[138] The Swiss max.moor peat standard is an interesting example in which the majority of the offset cost is borne by the government, while the buyer pays just a fraction of the actual cost. To avoid double claiming and ensure environmental integrity for every transacted max.moor credit is retired a CDM credit.[139]

Similarly, with regard to the national targets under the Paris Agreement, countries could make a commensurate deduction or "corresponding adjustment" as laid down in Article 6 of the Paris Agreement.[140] Generally, voluntary DOPs focus on projects in the land use sector and since in most NDCs there are no targets for soil carbon sequestration corresponding adjustments might not be necessary. One possibility is for countries to allow voluntary projects in the cases the actions are not included under the NDCs and review them every five years, following the update cycle of the NDCs. In the case offset project types are not covered under the updated NDC, the offset activities could continue without a change. On the other hand, if the actions are included in the NDC, then a corresponding adjustment needs to be made in order to mitigate the risk of double claiming.[141]

It should be noted that even excluded from the NDCs, soil carbon sequestration actions could be included under the national climate policies. As a result, double claiming could occur unless the government takes measures, such as deducting the emission reductions under the DOP from meeting national climate targets to avoid the same emission reduction to be claimed twice – once by the company purchasing the offsets and once by the government using the reduction to reach national climate targets. The risk of double claiming could also

[136] *Nett – Wolters* 2017, p. 41
[137] *German Emissions Trading Authority* 2018, p. 5
[138] *Nett – Wolters* 2017, p. 41
[139] *German Emissions Trading Authority* 2018, p. 6
[140] UNFCCC Paris Agreement, Art. 6
[141] *German Emissions Trading Authority* 2018, p. 5

be mitigated by increasing transparency and clarity regarding the targets towards which the voluntary offsets are used both on corporate and national levels.[142]

3.2.2 Ensuring additionality

Additionality of carbon offsets could be ensured through conducting additionality testing. The two approaches to additionality testing are project-based additionality test and performance standards. Project-based additionality tests include additionality assessment for each project separately which is often time and resource consuming as each project is tested based on one or more of the following criteria: environmental, policy, financial and technological. On the other hand, performance standards assess technologies that generate carbon offsets and could take the form of positive lists and benchmarks approaches. While positive lists consist of all technologies considered additional, benchmark approaches establish a threshold against which projects are measured.[143] Finally, a simplified method for determining additionality on a project level is developing a checklist of criteria, where a project is considered additional if it meets, a number of the predetermined criteria.[144]

The VCS, the most widely used voluntary offset standard in the world[145], often utilises the CDM Additionality Tool for ensuring the additionality of carbon credits. The CDM additionality tool includes identification of alternative scenarios, barrier analysis, investment analysis and common practice (technical) analysis, and to be deemed additional, projects need to pass all of these tests. The main steps in the CDM additionality tool are presented in Figure 3 below.

[142] *Ivleva- Nett - Treutwein – Wolters* 2015, p.17
[143] *Pentella – Brotto* 2018, p. 107
[144] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 11
[145] Verra 2019

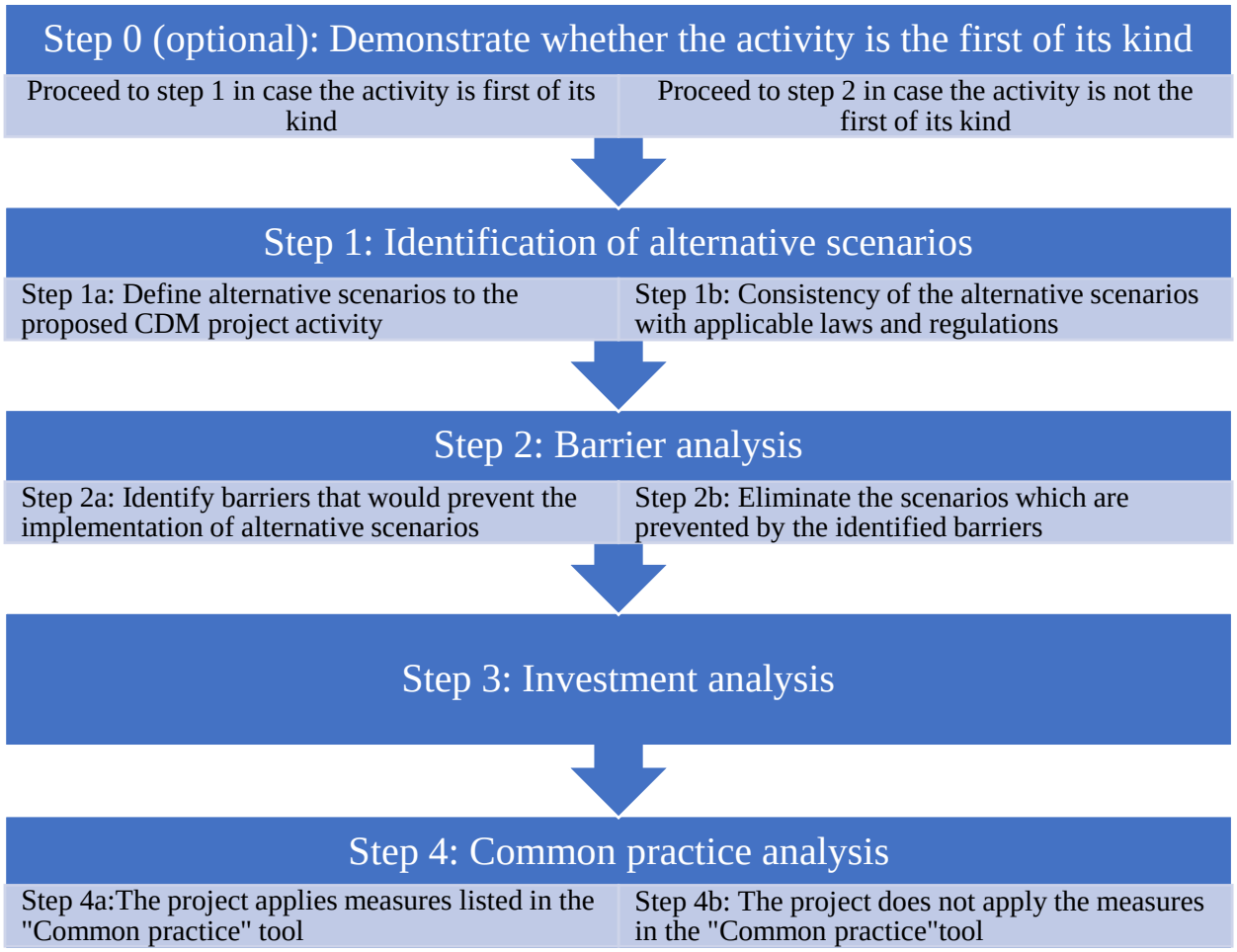

Figure 3 CDM Additionality Methodological Tool (Adapted from CDM Methodological Tool Version 07.0)

Voluntary carbon standards require robust project-based additionality testing before proceeding to the verification phase. As illustrated above, the CDM methodological tool for additionality testing is thorough and precise. However, this is a time-consuming and costly process, especially for small projects generating a limited number of carbon credits and respectively revenue. Also, project developers and domestic offset organising bodies face the risk of unsuccessful additionality testing. For instance, demonstrating financial additionality is a major challenge for forest projects, which need to access funding for implementing the project and wait years for trees to grow before they can sell the carbon credits. Under some carbon offset standards, credits could be sold ex-ante or before the actual emission reduction has occurred. Other projects generating offsets from improved forest management or soil carbon projects do not need to wait long periods and thus, could more easily prove financial additionality. Either way, in case upfront finance is needed, project

developers need to provide analysis and demonstrate that the funds are needed for implementing the project.[146]

In order to overcome the challenges associated with extensive additionality testing, voluntary DOPs are shifting from project-based additionality testing to performance standards, which allow for simplified and less costly additionality testing processes.[147] Performance standards simplify and fasten the process of additionality testing by either establishing a positive list consisting of technologies considered additional or a benchmark including a generic baseline scenario against which all projects are assessed. As local parameters could have a significant impact on emission performance, cost and the potential for emission reductions, the benchmark and the baselines are often set for particular sectors either as a quantity performance standard or a benchmark carbon intensity per unit of output.[148] Offset projects with emissions under the benchmark are considered additional, whereas carbon credits are issued on the basis of the difference between the project emission level and the benchmark emission level.[149]

Checklists are another alternative for easy and quick additionality testing especially suitable for small-scale projects, which cannot afford lengthy and extensive additionality testing procedures. Checklist criteria need to be carefully selected and approved by a regulator, depending on the additionality drivers related to the type of projects under the DOP. Once the checklist is developed, projects meeting a certain number of criteria are deemed additional, and no further additionality testing is needed. For instance, CDM has developed simplified checklists especially designed for microscale projects. Projects meeting the eligibility criteria location, type, and scale are automatically deemed additional.[150]

Both performance standards and checklists are a viable alternative for testing additionality of projects developed under a DOP. Not only they provide for a simplified and fast additionality testing, but also lower administrative costs. However, it should be noted that using eligibility criteria as part of performance standards and checklists guarantees the additionality of projects and activities, only if the scope of eligible activities is narrowly defined. On the other hand, broadening the scope of eligible activities to projects in which demonstrating additionality is not so straightforward may result in automatically attributing

[146] *Hamrick – Gallant* 2017, p. 46
[147] *Nett – Wolters* 2017 p. 37
[148] *Hayashi - Michaelowa* 2013, p. 12
[149] *Stockholm Environment Institute – Greenhouse Gas Management Institute 2019*
[150] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 6

additionality for non-additional projects.[151] Reflecting the emission reductions from the offset projects in the national inventory after they have been purchased by private parties poses another threat to additionality. In order to ensure the additionality of offsets, it is crucial that equivalent units are retired or deducted from the national inventory, so that the offsets increase the level of ambition for emission reductions, instead of being a substitute for governmental action.

As discussed in this section, there are many options to choose from when it comes to proving additionality. However, there is no "universal solution" for ensuring additionality, and the choice of methodology is determined depending on the context of the carbon offset program/standard in terms of project types, size and allocated financial means. While performance standards and checklists are more suitable for DOPs in terms of simplicity and costs, the eligibility criteria should be developed with great caution and precision in order to mitigate the risk of granting additionality to non-additional projects, which would decrease the credibility of the programme. As checklists are usually developed and approved by regulators, this would require a certain level of collaboration between the DOP and the regulator, as the latter will bear the costs of developing and approving the eligibility criteria[152]. Finally, after the additionality is attributed on a project level, it needs to be also preserved during the transaction and retirement phase, by ensuring that all types of double counting are avoided, with particular attention to double claiming in case the emission reductions are reflected in the national inventory.

[151] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 11
[152] Ibid.

4 DESIGN ELEMENTS AND CONSIDERATIONS FOR DOP IMPLEMENTATION

Establishing a DOP leads to building various capacities across a wide range of actors, for instance, private sector entities developing a project under the DOP, local validation and verification entities, project review and approval and issuance of carbon credits. [153] The program body, consisting of executive body, program administrator and advisory experts, is responsible for reviewing and approving projects, issuing credits and the overall implementation and supervision of the program. A domestic offset program could leverage previous experience with offset instruments, such as a vast understanding of the CDM and institutional capacity or it could develop its processes and methodologies. This chapter aims to provide an overview of the design elements a carbon offset programme comprises and to discuss possible DOP implementation considerations from the perspective of the level of outsourcing methodologies from international offset programmes and government involvement.

Firstly, the chapter presents the core elements comprising both voluntary and compliance offset programmes. The three essential elements every offset programme has are accounting rules, monitoring, reporting, verification and certification processes and registration and enforcement system. Secondly, the chapter explores the key considerations for DOP implementation from the perspective of the level of outsourcing methodologies and tools from existing international offset programmes and the degree of government involvement. Thirdly, the chapter presents a case study of successful voluntary DOPs from selected countries across Europe to demonstrate the various possibilities for DOP implementation. Programmes' design elements and implementation methodology are explored in detail as the objective is to illustrate the numerous DOP implementation possibilities. The chapter concludes with a summary discussion highlighting the key differences and similarities of the DOPs in the case study and drawing conclusions with regard to the choices of design elements and the level of outsourcing and government involvement.

4.1 Elements of voluntary carbon offset programs

Voluntary carbon offset programmes in general, including DOPs, have three core elements: accounting rules, monitoring, reporting, verification and certification rules, and registration

[153] *Hamrick – Gallant*, Unlocking Potential, 2017, p. 1

and enforcement system. Each of these core elements has a number of sub-elements which are the building blocks of voluntary carbon offset programmes.[154] This section aims at providing an overview of the architecture and key design elements of offset programmes. Figure 4 below illustrates the overall structure of voluntary offset programmes on which the discussion of this section is built upon.

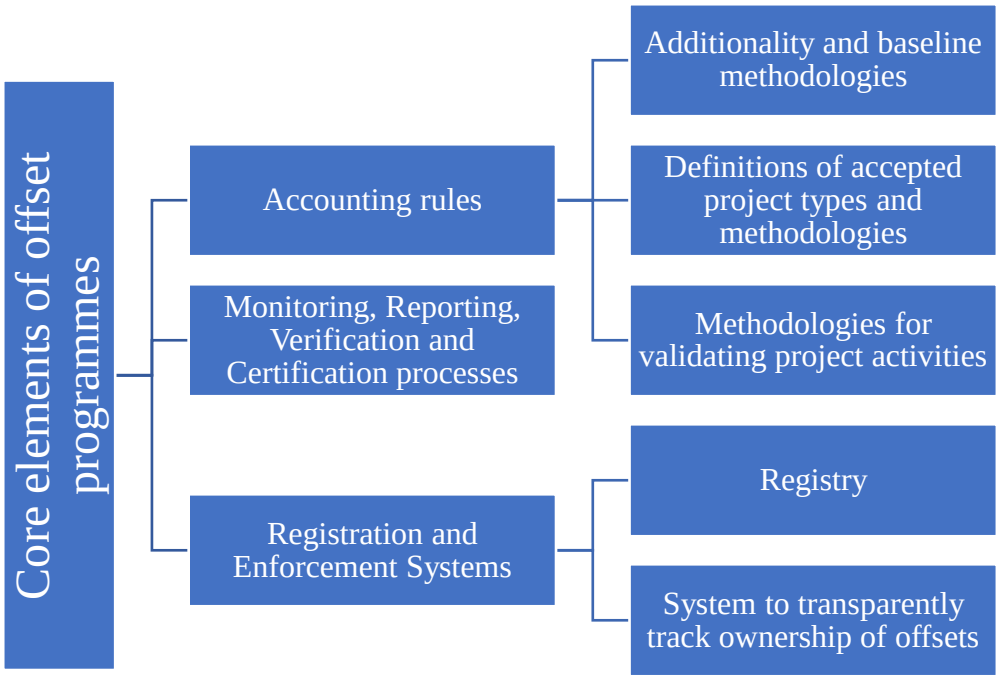

Figure 4 Core elements of offset programmes

4.1.1 Accounting rules

First of the core elements are the accounting rules which are the elements that need to be decided during the design and early implementation stage of a DOP. These essential elements ensure that the emission reductions are real, additional and permanent and could include *additionality and baseline methodologies, definitions of accepted project types and methodologies,* and *methodologies for validating project activities*.[155]

The concept of *additionality* aims to determine whether the emission reductions would have occurred in the absence of the offset project if all other conditions and circumstances were constant. Additionality testing could be done either on a project-based or through standardised additionality testing procedure. The topic of additionality and the challenges it

[154] *Stockholm Environment Institute – Greenhouse Gas Management Institute* 2019
[155] Ibid.

poses to offsetting is discussed in detail in Chapter 3. On the other hand, *baseline methodologies* are essential in order to quantify the emission reduction benefits from an offset project. Baseline methodologies could be developed in the form of a baseline scenario which outlines the estimated emissions in the absence of the offset project. With the help of the baseline scenario, it is possible to quantify the offset credits generated from a project by the difference in emissions between the offset project and the baseline scenario. Additionality methodologies and approaches to quantify the carbon credits differ depending on the program design. For instance, top-down offset programmes usually set predetermined detailed accounting rules, while bottom-up offset programs provide guidelines for quantification of the carbon credits and assess projects on a case-by-case basis.[156]

The *definitions of accepted project types and methodologies* determine the scope of a voluntary offset programme. The project type eligibility is determined on a geographic and sectoral basis. Voluntary offset programmes could be divided into two categories: programs with a *broad sectoral and geographic scope* and programmes with a *selective sectoral and geographic scope*. Programmes with broad sectoral and geographic scope, such as CDM, JI and VCS, are open to a variety of project types across different geographical regions.[157] In contrast, domestic offset programmes are an example of programmes with selective sectoral and geographic scope, as they are designed to complement other national climate change mitigation policies. As a complementary instrument, DOPs focus on activities with demonstrated additionality and lower risk for double counting, which consequently limits the scope of eligible project types. While the selective scope of DOPs limits the programme's potential in terms of carbon credits volume, it has a positive impact by reducing the uncertainty related to emissions reduction calculations and lowering the costs and risks for project developers.[158]

Methodologies for validating project activities aim at evaluating whether a suggested offset program meets the criteria and requirements set by the offset programme or standard. Validation could be completed either ex-ante for an upfront confirmation of offset's project eligibility or as part of the verification process.[159] Validation methodologies and processes could include an evaluation of baseline determination, additionality testing and monitoring plans. Usually validation is completed by a third-party auditor, and for instance, it is done at

[156] *Kolmus – Lazarus – Lee – Polycarp* 2008, p. 27
[157] *World Bank, Overview of Carbon Offset Programs* 2015, p. 4-6
[158] Ibid, p. 8
[159] *Stockholm Environment Institute – Greenhouse Gas Management Institute* 2011, p. 33

the stage of project registration in the case of CDM and JI. However, in some voluntary domestic and regional offset programmes, such as the Australia Carbon Farming Initiative and California Climate Action Registry, validation is completed as part of the verification processes. The latter approach is also adopted by VCS - the world's leading voluntary program for the certification of GHG emission reduction projects.[160]

4.1.2 Monitoring, reporting, verification and certification processes

The monitoring, reporting and verification (MRV) system goal is to ensure the quality of an offset project. While monitoring ensures that the offset projects meet its goals and proceed as planned, the verification process evaluates the achieved results after the end of the project. Certification ensures the amount of emission reductions that can be traded on the voluntary market after the start of the project.[161] The general steps and sequence of the MRV process are illustrated in Figure 5 below.

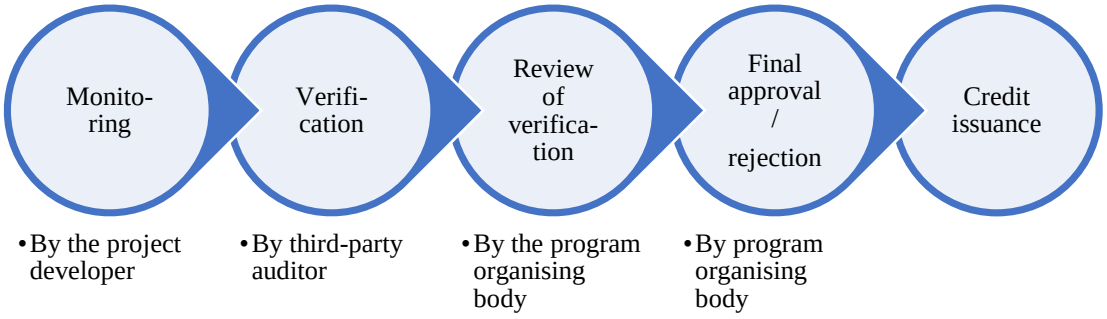

Figure 5 Sequence of MRV processes

The MRV rules differ for the various voluntary offset programmes, standards, and protocols which have a different purpose and underlying goals. Some offset programmes, such as the Gold Standard and the VCS provide a complete set of rules for monitoring, reporting, verification and certification. These programmes usually use the structure of existing rules and procedures in compliance markets, and for instance, are based on the rules set in the CDM. On the other hand, there are offset protocols with a narrower scope which provide common rules which can be adapted and used by individual offset programs. Hence, these protocols could be used as the foundation for building an individual domestic offset programme. Example of such offset protocols is the International Organization for

[160] *World Bank, Overview of Carbon Offset Programs* 2015, p. 14
[161] *Stockholm Environment Institute – Greenhouse Gas Management Institute, Carbon Offset Research and Education,* 2019

Standardization (ISO) standard 14064 and the GHG Protocol for Project Accounting.[162] This section aims at providing an overview of the different MRV and certification processes which could be used as design elements for DOP. The choices related to the selection of MRV rules depending on the needs of the specific offset programs are discussed in detail in section 3.2 focusing on implementation considerations.

The CDM MRV process is project-based, and emission reductions are calculated as a difference between the emissions which would occur in the absence of the project, also known as the baseline scenario minus the project emissions and leakage. The first step of the MRV process is *monitoring,* which involves data collection over a defined period for estimating emission reductions in line with the project monitoring plan. Relevant data includes information on emissions emitted, reduced or avoided through mitigation activities. Usually developing a monitoring report is a necessary condition for the following verification, certification and issuance. The second step is *reporting,* and it involves a report of the actual emission reductions realised during the offset project by the project organiser. Reporting is done by submitting the monitoring report to a third-party verifier, or the so-called Designated Operational Entity (DOE). During the third step – *verification,* the third-party verifier conducts an independent assessment after the end of the offset project to verify and certify that the emission reduction by the offset project as claimed in the monitoring report are correct.[163]

As there are no unified rules for MVR rules on the voluntary carbon market, some offset programmes could prefer to use more simplified MRV processes than the rules under the CDM. Voluntary offset programmes and standards usually require that emissions are verified by third-party verifiers. The verification report is submitted to the programme organising body, and after an evaluation and approval, carbon credits are issued. In some of the programmes, including The Australian Carbon Farming Initiative, VCS and Gold Standard the validation and verification steps are conducted at the same time by the same third-party verifier. While most programmes follow similar MRV processes, there is a difference in the quality of information during the step of verification. For instance, projects using methodologies with standardised baseline scenarios and default values, consequently need less detailed monitoring and verification details. Furthermore, transaction costs for programme and project developers could be decreased by the utilisation of standardised

[162] *Kolmus – Lazarus – Lee – Polycarp* 2008, p. 7
[163] *Asian Development Bank* 2016, p. 10

forms and tools at the verification step that could simplify the review, such as default emissions factors and standardised validation and verification forms. [164]

4.1.3 Registration and enforcement systems

After a successful verification and certification process, a carbon offset is issued, and it is listed on a registry with assigned unique serial number. Enforcement systems ensure emissions reduction ownership and also determine the party responsible and the associated risk in case of an unsuccessful offset project. Registries play an important role as they allow for tracing of carbon offsets through all of the stages of their life-cycle. [165] Offset registries are databases containing information related to project status, project documents, issued offsets, ownership, transitions, and retirement. Offsets could be transacted multiple times, and in the registry, this is reflected by transferring the serial number of the offset from the account of the seller to the account of the buyer, hence the latter gains the "credit" for the emission reduction. If the buyer uses the credits toward reaching emission reductions targets, the serial number of the credit is retired from the registry which prevents the credit to be sold multiple times.[166] Not only registries increase transparency on the ownership of carbon offsets, but they also are an effective measure to avoid double-claiming and enhance trust and confidence.[167][168]

Carbon offset programmes, including DOPs, could establish its own registry or use an approved registry. [169¨] There are a number of carbon registries in the voluntary market which have been developed by governments, non-profits, and the private sector. For instance, the VCS uses approved registries, and it has two independent registry operators – APX and Markit, which interact directly with the VCS Project Database.[170] The Gold Standard also uses an approved publicly available online registry hosted by Markit.[171]Thus, it could be concluded that the registration and enforcement system is a critical part of carbon offset programmes and there is certain flexibility regarding the choice of registry depending on the

[164] *World Bank, Overview of Carbon Offset Programs* 2015, p. 17-18
[165] *Ecosystem Marketplace* 2018, p.6
[166] *Stockholm Environment Institute – Greenhouse Gas Management Institute, Registries and Enforcement System 2019*
[167] *Ecosystem Marketplace* 2018, p.6
[168] *IHS Markit* 2019
[169] *Stockholm Environment Institute – Greenhouse Gas Management Institute, Offset Protocols, Programs, Registries & Standards,* 2019
[170] *Verra* 2019
[171] *Gold Standard*, Registry 2019

size and needs of the programme. The different implementation options for carbon registries and other design elements from the perspective of DOPs are discussed in the next section.

4.2 Implementation considerations

There are different approaches to choose from when designing a DOP. While some DOPs rely on international offset programs by mirroring certain design elements which have been developed and approved by a wide range of countries and stakeholders,[172] others prefer to develop their own methodologies and processes. This section aims to explore different implementation considerations regarding the level of outsourcing of the three core design elements of DOPs – accounting rules, MRV and certification and a registry. When deciding which elements of the DOP to be developed nationally and which to be outsourced, a key consideration must be given regarding costs and revenues.

Firstly, the focus in this section will be on DOP implementation considerations regarding outsourcing core design elements from international offset programmes. Secondly, this section focuses on exploring DOP considerations regarding the level of government involvement. Finally, the chapter concludes with a discussion of the overall advantages and disadvantages of outsourcing design elements and the possible benefits of government support during DOP implementation. This section provides insights which could serve as a guideline for any new domestic offset program to make informed decisions and weigh the pros and cons regarding the programme's implementation framework already at the planning phase.

4.2.1 Outsourcing elements from international offset programmes

4.2.1.1 Accounting rules

Design elements such as additionality criteria, baseline setting, and emission reduction quantification could be outsourced from international offset programs, such as CDM and VCS. Outsourcing of accounting rules guarantees the environmental integrity of the DOP since the oversight and enforcement of the outsourced elements lie with the international offset body. Furthermore, in the case of fully outsourced accounting rules from international offset programme, the DOP would not need to make significant contributions in these

[172] *World Bank, Options to use existing international offset programs* 2015, p. 50-51

working areas, resulting in less expertise and resources needed. However, outsourcing the methodologies and tools limits the possible adaptation and customisation according to the national circumstances and objectives. For example, as VCS accepts both CDM and VCS methodologies, possible implications could arise from the fact that in case of conflict VCS rules have priority and override the CDM rules. Hence, in the case of DOP, the domestic programme body needs to have a vast understanding of the outsourced methodologies and how to act in the case of a conflict with domestic rules.[173]

It must be noted that if the domestic programme body outsources the methodologies and tools from an international program and wishes to revise them by adding particular application criteria in the national context, these additional elements need to be submitted by the project developers or by the domestic program body for review and approval to the international program. In the case of partially outsourced methodologies, the domestic programme body could use both methodologies developed domestically and under the international program. Thus, the domestic programme body needs to have capacities or advisory support related to the review and approval of methodologies. On the other hand, a DOP could develop its own domestic methodologies by following the methodologies approved under international offset program and customising them to fit the national circumstances. This significantly facilitates the development process and could be done in cooperation with the international program but bears legal consequences regarding the use of intellectual property from the international program.[174]

4.2.1.2 Accreditation system (MRV and certification)

Outsourcing of accreditation system decreases the need for developing domestic capacities related to the development of accredited verification and validation bodies. The domestic body could review and select the most suitable accreditation system for the DOP. For instance, CDM DOEs accredited under the UNFCCC are widely recognised and used across different offset programs, including Gold Standard, VCS, and Joint Crediting Mechanisms (JCM). According to the 2017 State of the Voluntary Carbon Markets report, 99% of offsets in the voluntary carbon markets in 2016 were certified by a third-party standard, VCS is the

[173] Ibid, p.78
[174] Ibid.

most widely used with 58% of total carbon credits traded, followed by the Gold Standard (17%) and CDM (8%).[175]

However, a DOP might be hesitant to outsource validation and verification standards as these need to be in line with the domestic rules. Hence it is questionable should their supervision be left to an international offset program.[176] Another possibility for a DOP is to develop its own capacities with regard to the MRV process by using service providers, such as training of validation and verification entities which also serve international offset programmes. Additionally, DOP could utilise international systems different than the ones used in international offset programs, for instance, accreditation of validation and verification bodies by a member of the International Accreditation Forum for ISO 14065.[177]

4.2.1.3 Registry

Regarding the extent of outsourcing a registry, fewer requirements and respectively costs related to processing project submissions, project registering, and credit issuance are to be expected in the case of a fully outsourced registry. In that case, most of the registry costs are incurred by the service provider and retrieved in the form of fees to the users.[178] However, the design, implementation and administration of the registry lie with the domestic offset body.[179] On the other hand, intermediate or limited outsourcing will enhance the involvement of the domestic body organising the DOP and would require specific administrative capacities. For instance, developing own DOP registry would require in-house operational capacities to establish and run the registry, including administrative and IT support. The bigger the involvement of the domestic body is in the registry the higher the costs.[180]

4.2.2 Government involvement

National governments could be involved in privately operated domestic voluntary carbon offsetting by providing *policy support, endorsement,* and *rewards and incentives* for participation in DOP. According to the International Carbon Reduction and Offset Alliance (ICROA), creating enabling conditions which facilitate and reward voluntary carbon actions

[175] *Hamrick – Gallant*, Unlocking Potential 2017, p. 16
[176] *World Bank, Options to use existing international offset programs, 2015, p. 78*
[177] Ibid, p. 37-40
[178] Ibid, p. 79
[179] *Hamrick – Gallant, Unlocking Potential 2017, p. 16*
[180] Ibid, p. 79

could boost the effectiveness of voluntary domestic carbon offset programs and in turns deliver not only emission reductions but also various climate change mitigation, adaptation and sustainable development benefits.[181]

Governments could significantly facilitate the development of DOPs by providing *policy support* in the form of measures promoting the development of domestic voluntary offset programs. For instance, governments could support DOPs and avoid double claiming and double monetisation by cancelling AAUs in lieu of voluntary carbon credits until the end of the second Kyoto commitment period, and the new units under the new market-based mechanism under the Paris Agreement post-2020. Currently this is not a common practice due to concerns related to the environmental integrity of the carbon offsets, meanwhile credible carbon standards, such as VCS and Gold Standard only certify credits in Kyoto Protocol Annex B countries if they cancel AAUs in place of the issuance of the voluntary credits. Thus, governments could alleviate this problem by agreeing to cancel or not sell AAUs if domestic carbon offset credits cover predetermined robust criteria, which could be agreed between the government and the domestic program body. Such criteria ensuring the environmental integrity of the offsets could be based on existing international standards or being developed domestically especially for the DOP. Another alternative for governments would be to deduct the voluntary GHG emissions reduction under the DOP from the national inventories, thus not counting them to the compliance target. Since national inventories do not generally differentiate between voluntary and compliance reductions, a registry documenting all voluntary carbon offset projects needs to be established. If carbon offsets from the DOPs are not in any way accounted in the national inventory the risk of double counting is avoided.[182]

Government endorsement and oversight not only enhances DOPs' credibility and transparency but also drives the demand for domestic offsets and decreases the transaction costs. The government could endorse existing offset standards by accepting a positive list of recognised standards or specific benchmarks for determining eligible project types under DOP. Not only this would speed up and facilitate the development of DOPs, but it would also ensure credits' environmental integrity and the overall cost-efficiency of the domestic program. Instead of burdening small project developers with conducting additionality testing – a time-consuming procedure associated with high transaction costs, endorsing

[181] *ICROA – IETA* 2014
[182] Nett – Wolters 2017, p. 96

additionality rules and criteria based on benchmarks, positive lists or checklists would facilitate the development and scale-up of the domestic offset projects. However, simplified benchmarks, positive lists and checklists might not be as precise as thorough additionality testing, but they are less expensive and quicker to implement. In order to harness their advantages and avoid the risk of non-additional credits, it is recommended that performance benchmarks and additionality testing for large-scale projects with a broader scope should be stricter.[183] Additionally, the government could endorse DOP's registry, while it remains privately operated by the domestic offset body.[184]

Finally, the government could encourage private parties to offset part of their unavoidable emissions by providing *rewards and incentives* for businesses participating in voluntary domestic offsetting. Such rewards and incentives could include fiscal relief/reduced VAT for carbon neutral products and services, tax exemption of voluntary carbon credit retirement, and allow voluntary carbon credits to be used for achieving compliance obligation. For instance, in California, parties with compliance obligations could meet their GHG reduction target by using up to 8% carbon credits from the voluntary market.[185] Figure 6 below summarises the various government support mechanisms for DOPs discussed throughout this section.

[183] Ibid.
[184] *ICROA – IETA* 2018, p. 16
[185] Ibid, p. 19

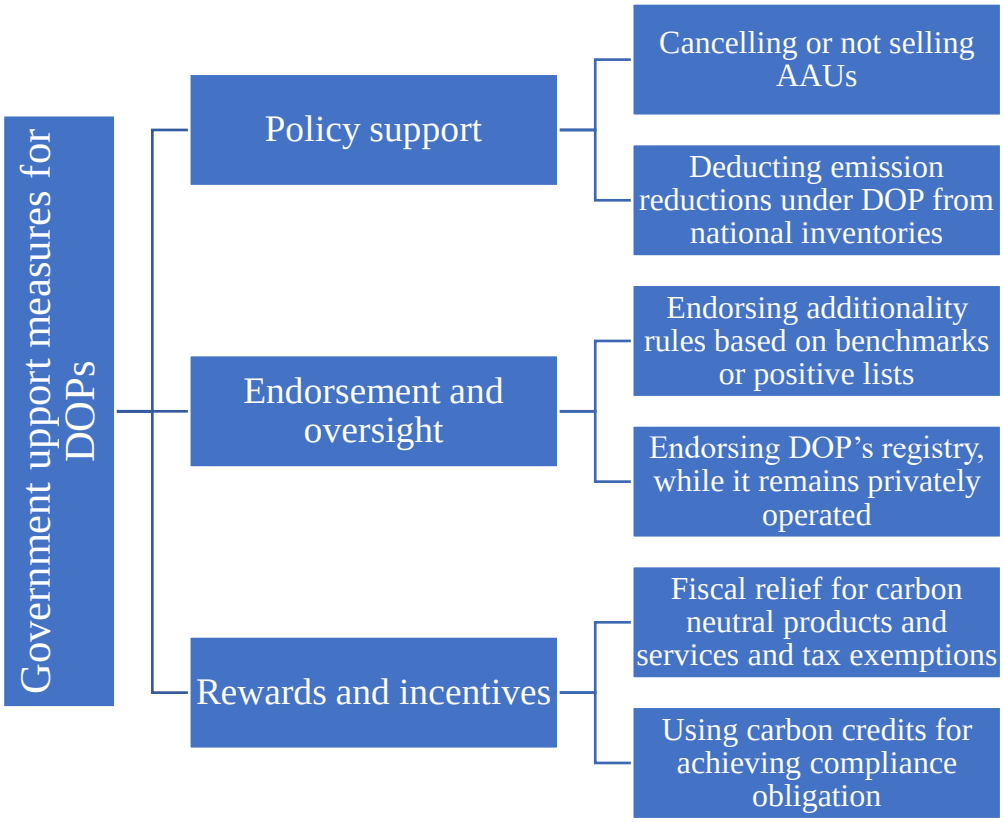

Figure 6 Government support measures for DOPs

4.2.3 Advantages and disadvantages of outsourcing and government involvement

A major advantage of outsourcing methodologies and tools from existing international offset programmes is designing and implementing DOP according to the national circumstances while leveraging the available international experience. Outsourcing already existing programme infrastructure and processes allow for faster implementation and lower administrative costs.[186] However, it should be noted that depending on the outsourced design elements, there might be a need for an agreement with the international offset program regarding costs and revenues related to the used intellectual property. Even though a high level of outsourcing design elements is not widely used in DOPs, it is customary for international programs. For instance, CDM methodologies and verification and validation processes are recognised and used under the Gold Standard. The reason is that international offset programmes have wider acceptability and recognition of methodologies from existing

[186] *World Bank, Options to use existing international offset programs 2015*, p. 65-66

standards, whereas the narrow scope of DOPs requires the methodologies to be customised according to the national context, for example, with respect to the eligible project types. [187]

There is no need for regulations related to development and approval of design elements and modules, such as methodologies and tools, validation, verification and accreditation activities, if these are outsourced and covered respectively by the international program. However, if the domestic offset body decides to put restrictions on the outsourced elements, such as accept validation and verification only from national bodies, this will result in additional costs for reviewing the restrictions and approving them.[188] On the other hand, full registry outsourcing is advantageous in terms of cost and capacity requirements minimisation, but it limits the oversight of the domestic program body over registry operations.[189] Another alternative to help the domestic programme body maintain control over its processes, while it takes advantage of international experience is to use service providers, which also serve international offset programs, for specific supporting functions, such as IT, registry or training of validation and verification entities.[190]

On the other hand, designing and implementing a DOP which develops its own methodologies and tools, instead of outsourcing from international programmes requires considerable financial and human resources. In that case, the domestic program body is responsible and has full control of establishing, overseeing and maintaining all elements and modules, except for the outsourced ones. The primary advantage of developing its own methodologies and tools is the high level of flexibility in the design and implementation process of DOP and its adaptation to the national context and requirements.[191] Furthermore, certain design elements and methodologies could be mirrored from international offset programmes to an appropriate extent, which could result in the quicker implementation process.[192] If developed domestically, regulations related to the development and approval of methodologies and accreditation guidelines and procedures need to be established by the DOP, which could result in additional costs from the need to demonstrate DOP's credibility. Finally, active support by the national government could also provide significant benefits and facilitate DOP implementation. One policy support measure having a positive impact on

[187] Ibid, p. 64-65
[188] Ibid, p. 62
[189] Ibid, p. 64-65
[190] Ibid, p. 37-40
[191] Ibid, p. 65-66
[192] Ibid, p. 82

DOPs is for the government to cancel AAUs in place of domestic offsets or committing not selling them if the carbon offset credits cover predetermined robust criteria.

The governments could also provide policy support by deducting the voluntary GHG emissions reduction under the DOP from the national inventories, thus not counting them to the compliance target. Both policy measures provide advantages for DOPs, as they will exclude the risk of double counting and promote GHG mitigation actions by private actors. Furthermore, it would ensure the additionality of the emissions reductions under the DOP and increase the ambition of the national compliance target. On the other hand, government endorsement and oversight boost DOP's credibility and demand for offsets, while lowering the transaction costs. For instance, accepting positive lists or checklists for demonstrating additionality could accelerate the programme development and implementation cost-effectively and facilitate the scale-up of DOP. This is especially beneficial for small project developers who are burdened with conducting extensive and costly additionality testing. Potential collaboration with the national government for setting national rules on validation, verification, and accreditation would also decrease the costs.[193]

Thus, it could be concluded that certain trade-offs are depending on the selected option for DOP implementation. The advantages and disadvantages of DOP implementation depending on the level of outsourcing and government involvement discussed throughout this section are summarised in the table below.

[193] *Nett – Wolters* 2017, p. 95-96

Table 2 Advantages and disadvantages for DOP implementation depending on the level of outsourcing and government involvement (Adapted from World Bank, Options to use existing international offset programs 2015 and Nett – Wolters 2017)

Advantages for DOPs		
High level of outsourcing	**Low level of outsourcing**	**Government support**
Leveraging international experience, while adapting DOP to the national circumstances	Full flexibility in the programme design to meet national requirements	Cancelling or not selling AAUs instead of domestic offsets exclude the risk of double counting and promote GHG mitigation actions by private actors
Quicker to implement with lower administrative costs	Full control over programme administration and implementation	Not counting emissions reductions under DOP towards national targets mitigates the risk of double counting and ensures additionality
No need for developing regulations related to design elements and methodologies	Outsourcing elements to an appropriate degree	Government endorsement and oversight enhances DOP's credibility and demand for offsets while lowering the transaction costs
Outsourcing programme registry results in cost and capacity requirements minimisation		Endorsing additionality rules based on benchmarks or positive lists facilitate DOP scale-up in a cost-effective way
Disadvantages for DOPs		
Additional costs related to the use of intellectual property	Substantial financial and human resources for designing the programme and implementing it	
Methodologies, tools, and MRV processes need to be customised according to the national context	A need for additional efforts to demonstrate the credibility of the DOP	
Restrictions on the outsourced elements will result in additional costs related to review and approval	Slower to implement, unless some designed elements are mirrored from international programmes	
Outsourcing programme registry limits the oversight of the domestic program body over registry operations		

4.3 A case study on existing DOPs in Europe

This section aims at presenting existing voluntary domestic offset programs in Europe. By picking case studies from selected countries, the objective is to illustrate the different design options concerning DOP's core design elements and level of outsourcing and government involvement. The country selection for this case study was made based on assessing six voluntary DOPs in Europe based on three criteria: contribution to compliance targets, additionality rules, and the level of government involvement. The table below illustrates the key differences and similarities of the six DOPs with regard to the evaluation criteria.

Table 3 Selection criteria for the DOPs featured in the case study (Source: adapted from Climate Austria 2018, Ökoregion Kaindorf 2018, Decree of November 28, 2018, defining the standard of the "Low Carbon" label, MoorFutures 2018, and Nett-Wolters 2017)

DOP	Contribution to compliance targets	Additionality of carbon credits	Government involvement
Climate Austria (Austria)	Emission reductions in non-ETS sectors might appear in national accounting	Yes (project-level policy and financial additionality testing	Managed by Kommunalkredit Public Consulting (KPC) in cooperation with the Ministry of Environment
Hummus certificate initiative (Austria)	No	Yes (no specific rules on additionality)	No
Low Carbon Label (France)	Yes (contribute to National Low Carbon Strategy)	Yes (following methodologies in international carbon standards)	The Ministry of Environment administers the DOP
MoorFutures (Germany)	No	Financial additionality	The regional government administers the programme and promotes transnational collaboration

RHC (Spain)	Yes (Kyoto Protocol's target)	No set rules on additionality; Projects are non-additional as they fall under Kyoto obligations	Administered by the Ministry of Agriculture, Food and Environment
Woodland Carbon Code (United Kingdom)	Yes (both national and Kyoto's targets	After the Kyoto target is achieved carbon credits are considered to be additional	Developed and overseen by the government

As the focus of this thesis is to demonstrate the possibilities for DOP design and implementation, three DOPs were selected for this case study based on the predetermined selection criteria described in Table 3 above. Firstly, demonstrating additionality of domestic offsets is crucial, since transacting non-additional credits for making environmental claims could result in bad publicity and cause severe damage both for the DOP and for the entities purchasing carbon credits. Secondly, as this case study aims at presenting different DOP implementation options, the selected offset programmes demonstrate different levels of government involvement. Thirdly, while DOPs can be designed and targeted at the domestic voluntary carbon market, they can also contribute to some extent to national and international climate targets. This would suggest selling the carbon credit to an entity without compliance obligations and after that counting the reductions in the national inventory. While this is controversial from the perspective of voluntary carbon markets, as Table 3 suggests, this practice is widely applied in DOPs across Europe. Exploring sensitive matters such as double counting and the overall views regarding DOP's contribution to compliance targets is an interesting angle from which this case study will benefit.

Thus, based on the considerations mentioned above, for this case study were selected three DOPs: Austria's Humus certificate initiative, France's Low Carbon Label and Germany's MoorFutures. All three programmes have additionality methodologies in place and different level of government involvement. From the selection, only the Low Carbon Label contributes to compliance targets. This section includes a brief presentation of the three DOPs, as the focus is on outlining their key design elements and implementation considerations. The section ends with a summary discussion touching upon the lessons learnt from existing DOPs in Europe. The focus is on comparing DOPs' design and implementation

choices and finding patterns which explain the connection of the choices made with regard to programme scope, size and purpose.

4.3.1 Austria's Humus Enrichment Initiative

The Austrian Humus Enrichment initiative is a domestic offset initiative administered by the non-profit organisation ÖkoregionKaindorf which unites committed citizens of the communities of Dienersdorf, Ebersdorf, Großhart, Hartl, Hofkirchen, Kaindorf and Tiefenbach. Around 200 farmers participating in the program reduce CO_2 emissions in a total covered area of 2500 hectares of arable land with average CO_2 sequestration of more than 10 tonnes of CO_2 per hectare per year.[194]

The programme has adopted accounting rules with regard to the additionality and baseline methodologies and accepted project types. Emission reductions are measured based on the percentage of humus increase in the soil. For instance, a 3% humus enrichment (25 cm depth) could sequester 125 tonnes of CO2 per hectare. Additional hummus creation and respectively CO2 sequestration are measured through analysing soil samples of the soil before and after the humus enrichment practices. The humus soil enrichment is achieved through sustainable farming practices, and eligible project types include fertilisation with compost, avoidance of measures resulting in degradation of humus, minimal tillage, permanent greening, crop rotation, and mixed crops.[195] Not only the program results in significant CO2 reductions, but also it provides co-benefits including better water absorption, decreased runoff, resilience to drought, water filtration, and reduced use of fertilisers.[196]

Monitoring and verification are conducted through soil sample analysis. Firstly, at the beginning of the project, a sample of the soil is taken and analysed at a certified independent laboratory. Secondly, in a period of 2-5 years, determined by the farmer, another sample is taken in order to measure the additional humus created, which is later converted to CO_2 equivalent. Farmers need to ensure the stability of the newly created humus for at least five years, which is verified by taking a third sample. Even without external verification, the

[194] *Ökoregion Kaindorf, Humus Initiative* 2018
[195] *Ökoregion Kaindorf, Humus Certificates* 2018
[196] *Ökoregion Kaindorf* 2018

initiative is considered transparent and credible. Double counting is not considered an issue since soil carbon is not included in the Austrian GHG inventory under the Kyoto Protocol.[197]

ÖkoregionKaindorf keeps a registry of the issued certificates and companies wishing to offset their unavoidable emissions could purchase "Humus Certificates" at a price of 45€/ton CO2e. On the other hand, farmers receive 30 euros for every tonne of CO_2 sequestered which covers the expenses related to the sample tests, and it also provides additional income.[198]

4.3.2 France's Low Carbon Label

The Voluntary Carbon Land Certification (VOCAL) project was launched in 2016 and is aimed at developing a national framework certifying carbon emission reductions. The project was administered by the Institute for Climate Economics (I4CE) in collaboration with a number of public and private partners. In addition to the French Ministry of Environment, the framework development and methodology of the VOCAL project was supported by the European Regional Development Fund (ERDF) and the French Environment and Energy Management Agency (ADEME).[199] Since 2018, the VOCAL project became the French domestic carbon label scheme "Low Carbon Label". The Label was published in November 2018, and it aims at facilitating the direction of public and private funding towards domestic emission reduction or carbon sequestration projects in the LULUCF sector. The label can be obtained by domestic projects reducing or sequestering greenhouse gas emission. The label is administered by Directorate General of Energy and Climate (DGEC), and it aims to support the National Low Carbon Strategy.[200]

Accounting rules including additionality and baseline methodologies, developed by the National Center for Forest Property (CNPF) and I4CE, are based on existing methodologies, such as Gold Standard, CDM and VCS.[201] The label provides guidelines for setting a baseline reference scenario against which emission reductions are measured. Only emission reductions going beyond the baseline scenario are considered additional, hence are recognised under the label. For instance, emission reductions under current laws and regulations, measures benefiting from economic incentives and emission reductions from already established practices which fall in the scope of the project are considered non-

[197] *Ivleva- Nett - Treutwein – Wolters*, 2015, p. 13
[198] Ibid.
[199] *I4CE 2018*
[200] *I4CE 2018, Low Carbon Label*
[201] *Nett – Wolters* 2017, p. 67

additional. For emission reductions to be recognised, project developers need to notify the administration body and send a request for validation. Upon acceptance of the validation request, the project is "labelled" and listed on the programme registry. The maximum validity of a project is fixed, and it should not exceed five years.[202] Eligible project types are limited to the LULUCF sector and include among afforestation, reforestation, improved forest management and livestock.[203]

The MRV process includes two steps. Firstly, for recognition of emission reductions, the project developer needs to send a formal request together with monitoring and verification reports, as the latter must be prepared by an independent auditor. Once the monitoring and verification reports are approved by the Label administrator, the project developers are credited with the emission reductions, and this is recorded in the programme registry. Maintaining an online public registry with detailed information on all aspects related to the offset project enhances transparency. [204]

4.3.3 Germany's MoorFutures

The MoorFutures standard was launched in 2011 by the federal State of Mecklenburg-Vorpommern. The scope of the standard is carbon sequestration through rewetting and restoring peatland projects in Germany, which also provides co-benefits, including ecosystem services, such as biodiversity conservation, flood mitigation, groundwater enrichment, evaporative cooling, enhanced water quality and nutrient retention. The programme is regional, and it is implemented on the territory of Mecklenburg-Western Pomerania, Brandenburg and Schleswig-Holstein, which are also the regions in Germany with the highest share of moors.[205]

Accounting rules and methodologies are based on, the Verified Carbon Standard and the Kyoto Protocol and follow the guidelines established by internationally recognised carbon standards, for instance, ISO 14064 and 14065. Emission reduction estimates are based on future baseline scenario which predicts the future emission in the case the rewetting project is not implemented. In this reference scenario, future emissions are estimated for a longer period of 30-50 years. Additionality is tested only to the extent of demonstrating that the

[202] Decree of November 28, 2018 defining the standard of the "Low Carbon" label
[203] *I4CE* 2018
[204] Ibid.
[205] *Joosten – Brust – Couwenberg – Gerner – Holsten – Permien – Schäfer – Tanneberger - Trepel - Wahren* 2015, p. 44

projects would not be feasible to implement without the financial gains from selling the certificates. Double counting is avoided as the certificates are not accepted for meeting compliance targets. [206]

Monitoring and verification processes are conducted by independent regional scientific institutions, including the University of Greifswald, Eberswalde University for Sustainable Development or TÜV Rheinland based on the VCS Peatland Rewetting and Conservation methodology. Utilising regional experts in the MRV and certification processes lowers the operational costs. The quality of the MoorFutures credits is guaranteed by the relevant Ministry and related state institutions as well as regional scientific institutions/universities.[207] Furthermore, projects' methodologies and emission reductions could also be validated and verified by an independent third party if requested.

MoorFutures carbon offsets are sold in advance before the actual emissions are reduced at a price 30-50 €/tCO2 e. Despite the high price, the demand is driven by regional companies, institutions, NGOs and individuals interested in purchasing local carbon credits.[208] As projects take place in different regions, registries are also maintained on a regional level by the responsible ministry. For instance, for projects located in Mecklenburg-Western Pomerania, the carbon offset registry is administered by the Ministry of Agriculture, Environment and Consumer Protection, whereas for projects carried on in Brandenburg, the registry is maintained by the Ministry of the Environment, Health and Consumer Protection.[209]

4.3.4 Lessons learnt from existing DOPs

The three voluntary DOPs explored in this case study demonstrate different characteristics in terms of design elements and implementation options. This section aims at highlighting the differences and similarities of the three DOPs and identifying key take-aways and lessons learnt with regard to the core design elements and the level of outsourcing and government involvement. Firstly, the methodological choices related to the accounting rules adopted in the three DOPs will be analysed, including additionality and baseline methodologies, MRV and certification and registration and enforcement. The aim is to explore the underlying

[206] *MoorFutures* 2018
[207] *MoorFutures Standard* 2017, p. 1
[208] *Ivleva- Nett - Treutwein – Wolters*, 2015, p. 10
[209] *MoorFutures* 2018

differences of the three DOPs part of the case study and to discover key patterns in the selection of methodological choices and the underlying considerations for programmes' implementation. Table 4 provides an overview of the key design elements which will be discussed throughout this section.

Table 4 Design elements of selected DOPs across Europe (Source: adapted from Ökoregion Kaindorf 2018, Decree of November 28, 2018, defining the standard of the "Low Carbon" label and MoorFutures Standard 2017)

Elements	Humus initiative	Low Carbon Label	MoorFutures
Accounting rules	Additionality testing methodology is not in place	Additionality testing methodology is based on CDM and VCS rules	Additionality testing methodology is limited to proving that carbon credits are financially additional
	Emission reduction level is based on the percentage of humus increase in the soil and converted to tonnes of CO_2	Baseline methodology of emission reduction includes a reference scenario and only emissions going beyond the reference level are considered additional	Baseline methodology include emission reduction estimates based on a future scenario (30-50 years) predicting emissions in case the project is not implemented
	Eligible project types incl. various sustainable farming practices for humus creation	Eligible project types are limited to the LULUCF sector (e.g. afforestation, reforestation, improved forest management and livestock); a need for formal validation	Eligible project types are limited to wetland rewetting; external validation of methodologies is possible
MRV and certification	Monitoring and verification through taking soil samples; Humus level increase and the respective CO_2 sequestration is measured through sample tests before and after the projects; No external verification	Emission reductions are recognised after the monitoring, and the verification reports are approved; The verification report needs to be conducted by an independent auditor	MRV methodologies are closely based on international carbon standards (VCS Peatland Rewetting and Conservation methodology) and are conducted by regional scientific institutions

Registration and enforcement	Ökoregion Kaindorf keeps a registry of the issued certificates and sells carbon credits to corporate buyers;	The programme registry is maintained by the Directorate General of Energy and Climate	A registry is maintained by the responsible state ministry; Carbon offsets are sold in advance

Accounting rules

While all of the three DOPs have in place additionality and baseline methodologies, they differ significantly. For instance, the bottom-up Humus Enrichment Initiative does not have any additionality methodologies[210], whereas the regional MoorFutures has adopted a financial additionality testing, proving that the carbon offset projects would not be possible if not for the economic gains of selling the carbon credits[211]. On the other hand, top-down Low Carbon Label has developed its additionality methodology mirroring existing internationally recognised standards, such as CDM and VCS and it is the only DOP in this case study requiring mandatory project validation. [212] Thus, this demonstrates that top-down programmes adopt stricter additionality rules, that could be based on existing carbon standards but developed in-house. The advantages of such approach lie in the quicker implementation process and the need of fewer resources while maintaining the flexibility to "borrow" and adapt the existing methodologies to an appropriate level to suit the needs of the DOP.[213]

Bottom-up programmes have more flexibility to decide whether and what kind of additionality methodology is necessary with regard to the purpose and scope of the programme. The baseline methodologies of both the Low Carbon Label and MoorFutures include emission reduction estimates against a reference scenario[214], similar to the CDM[215] and VCS methodology[216]. However, these are not outsourced directly, but instead, the domestic methodologies for baseline scenarios are closely based on the existing methodologies used in the international standards. On the other hand, the Humus Initiative determine emission reductions through measuring the humus increase in the soil before and after the project and converting the percentage of humus creation into tonnes of CO_2

[210] *Ökoregion Kaindorf, Humus Certificates* 2018
[211] *MoorFutures Standard* 2017, p. 1
[212] Decree of November 28, 2018 defining the standard of the "Low Carbon" label
[213] *World Bank, Options to use existing international offset programs 2015*, p. 82
[214] *MoorFutures Standard* 2017, p. 1
[215] CDM, Tool 2, p.7-9
[216] *VCS Standard* 2017, p. 36-37

sequestered[217]. This is an evident example of how the baseline methodology can be developed by the programme body to fit the exact needs of the DOP with regard to the project type. As humus creation is a very narrow field for offset generation, it is difficult to find and adapt internationally recognised standards whose baseline methodology would be applicable for soil humus enrichment through sustainable farming practices. Generally, it is considered that top-down programmes set predetermined rules with regard to the baseline methodologies, while bottom-up DOPs provide guidelines for quantification of the carbon credits and assess projects on a case-by-case basis[218]. These observations with regard to the selection of baseline methodologies are also valid in the case of the explored DOPs.

Regarding eligible project types, both the Humus Initiative and MoorFutures have very limited scope and accept only one type of carbon offset projects – hummus enrichment and wetland rewetting. The Low Carbon Label has a broader scope, and it includes various offset projects from the LULUCF sector. Narrowing down the scope of eligible projects for DOP by focusing on activities with demonstrated additionality is highly beneficial for smaller DOPs with limited resources. Not only this lowers the need for additionality testing and reduces the uncertainty related to emissions reduction calculations, but it also decreases the costs and risks for project developers.[219]

MRV and certification

The selection of MRV and certification rules differ depending on the purpose and scope of DOPs. In the Humus Enrichment Initiative, monitoring and verification are done by measuring the increase of humus level and the respective CO_2 sequestration through analysing soil samples before and after the project. Farmers need to ensure soil stability for five years, which is verified by another sample test. The farmers bring the soil samples for analysis at independent laboratories, thus despite the lack of external verification, the initiative is considered credible. The DOP has developed its MRV and certification rules, which are not based on international standards. By not following the standards MRV and certification processes set by international standards, the Humus Initiative decreases its administrative and operational costs, while the quality of carbon offsets is guaranteed by the independent laboratories. This example demonstrates how a DOP could develop

[217] *Ökoregion Kaindorf, Humus Certificates* 2018
[218] *Kolmus – Lazarus – Lee – Polycarp* 2008, p. 27
[219] *World Bank, Overview of Carbon Offset Programs* 2015, p. 8

methodologies and process that are functional and fit the programme's needs while reducing the financial burden for small DOPs with limited project types. [220]

On the other hand, the Low Carbon Label adopts more formal approach with regard to MRV and certification closely based on CDM and VCS rules, where carbon offsets are certified only after the standard procedure of approving monitoring and verification reports, as the latter is conducted by an independent auditor. This again showcases the clear difference between bottom-up and top-down programmes in terms of flexibility and freedom in the choice of design elements and processes. [221]

By having features of both bottom-up and top-down programme, MoorFutures' has developed its MRV rules to fit the programme's purpose and needs. The programme mirrors VCS and Kyoto Protocol methodologies and also follows the guidelines of ISO 14064 and 14065. In contrast to the formal MRV processes in the top-down DOPs, the verification is done by the relevant Ministry, or regional scientific institutions instead of independent auditors, which lowers the programme's operational costs. [222] Both the Low Carbon Label and MoorFutures are administered by a governmental body, but the key difference, which impacts the choice of MRV rules is in the scope of the programmes. For instance, it is more practical for programmes with a wider scope which also contribute to national compliance targets, such as the Low Carbon Label, to use the structure of existing rules and procedures. On the other hand, offset protocols with narrower scope providing common rules, such as ISO 14064, could be adapted according to the needs of DOPs having a smaller number of eligible project types.[223]

Registration and enforcement systems

In all three DOPs, the programme registry is developed and maintained by the body administering the respective domestic offset programme without outsourcing any elements from international carbon programmes. In the case of Humus Enrichment initiative, the programme registry is organised by the Ökoregion Kaindorf. Farmers receive 30 euros for every tonne of CO_2 sequestered, while Ökoregion Kaindorf owns and sells the certificates to corporate buyers at 45 euros per tonne of CO_2. The government is not involved in and does not support the Humus Initiative. The carbon offsets are sold only to private actors,

[220] *Ökoregion Kaindorf* 2018
[221] Ibid.
[222] *MoorFutures Standard* 2017, p. 1
[223] *Kolmus – Lazarus – Lee – Polycarp* 2008, p. 7

such as companies wishing to offset their emissions. Hence emissions reductions are neither reflected in the national greenhouse gas inventories nor contribute to any compliance targets.[224]

In the case of the Low Carbon Label, the registry is maintained by the Directorate General of Energy and Climate, which is also the body administering the DOP. The registry contains detailed information on every project and transaction[225], and it is online and publicly available, which enhances transparency. The programme has a high level of government involvement, as it is administered by the national government. Emission reductions from the offset projects contribute to reaching the targets under the national low-carbon strategy. However, the government is not cancelling AAUs in place of carbon offsets which increases the risk of double counting.[226]

Since MoorFutures is a regional programme spanning over three states in Germany. There are three registries, and each is maintained by the responsible state ministry. MoorFutures certificates are sold ex-ante, or before the actual emission reductions take place. The fact that responsible state ministries maintain MoorFutures registries even though the registries are not publicly available enhances the credibility of the DOP. By being responsible for all the steps from registration, through transaction and retirement, the programme organising bodies are having full control over registry operations. While MoorFutures is administered by regional state governments, carbon offsets generated under the programme do not contribute to compliance targets.

[224] Ibid.
[225] Decree of November 28, 2018 defining the standard of the "Low Carbon" label
[226] *Nett – Wolters* 2017, p. 68

5. FEASIBILITY OF DOP FOR REACHING AND GOING BEYOND THE 2030 ESR TARGET IN FINLAND

In line with the European Commission's proposal, the emission reduction target for the effort sharing sector in Finland would follow a linear trajectory starting in 2020 at the average emissions for 2016-2018 and emissions will not exceed 20.6 Mt CO2 equivalent by 2030. In response to this target, the Finnish government adopted in September 2017 a medium-term climate change plan to 2030 "Towards Climate-Smart-Day-to-Day Living". The medium-term plan outlines and evaluates possible solutions to close the expected emission gap by introducing additional actions in order to reach the 39% GHG emissions reduction in the non-ETS sectors in Finland. The plan is based on the Climate Change Act (609/2015), and together with the Energy and Climate Strategy adopted in November 2017 it implements the Finnish climate targets under the Paris Agreement and puts Finland on the path of reaching the 2030 EU's climate goals.[227]

The principles for determining additional measures in the medium-term climate change policy plan are outlined in the memorandum prepared by the Finnish Climate Panel at the request of the Ministry of the Environment in 2016. Significant attention is paid to the methodological choices in the medium-term climate change policy plan related to selecting evaluation criteria for GHG reductions which ensure equality and cost-effectiveness. For instance, GHG reduction costs should be equal across the effort sharing sectors, and cost-effectiveness of long-term investments should be assessed not only regarding reaching the 2030 targets, but also the 2050 targets. Also, the panel highlighted the importance of achieving net emission reduction, meaning that reductions in one sector, should not lead to an emission increase in another sector, also known as carbon leakage. Lastly, the panel underlined the importance of social acceptability and financial aspects of the additional measures through which the non-ETS targets will be achieved. [228]

To ensure social acceptability and equal distribution of measures' additional costs, the panel encouraged each sector to draft a list of emission reduction measures ranked according to their cost-effectiveness. Cost-effectiveness was determined based on information related to measures' emission reduction potential, cost allocation and an evaluation of possible steering instruments for their implementation. According to the framework presented in the

[227] *Climate Change Plan 2030*
[228] Ministry of Environment, Report on Medium-term Climate Change Policy Plan for 2030, p. 75-76

memorandum, the implementation of the additional measures will start with the least expensive options and move towards more expensive options until the needed emission reductions for achieving the -39% target across the non-ETS sectors is achieved.[229]

Domestic voluntary offsets could be used in addition to the measures listed in the medium-term climate change plan for reaching the 2030 ESR target. Domestic offsets could reduce emissions cost-effectively while ensuring equal offset price for the market players. Furthermore, generating carbon credits from activities which have a positive impact on the environment, for instance, soil or land recovery, would ensure social acceptance. Most voluntary credits are generated in the LULUCF sector due to the numerous opportunities for emission reduction at relatively low abatement cost. For instance, in 2016, LULUCF projects accounted for 76% of the worldwide total transacted volume of carbon offsets sold to European buyers and 100% of the European total transacted volume of carbon offset sold to European buyers.[230]

This chapter aims to explore the feasibility of DOP in Finland and to what extent it could contribute and go beyond the emission reduction targets in the effort sharing sector. Firstly, a DOP could focus on entities without legally binding emission reduction obligations, such as companies and municipalities. Secondly, the program could facilitate the government in reaching compliance with the no-debit rule under the LULUCF regulation. Both target areas are interrelated in terms of their contribution toward the 2030 ESR emission reduction targets, as a certain number of carbon credits from the LULUCF sector could be used for achieving the effort sharing targets, only if Finland complies with the no-debit rule.[231]

5.1 DOP as a tool for meeting the demand on the voluntary carbon market in Finland

A domestic offset program in Finland could focus entirely on meeting the voluntary demand for carbon credits created by entities without compliance emission reduction obligations. In order to avoid double counting and be additional, carbon credits need to be generated from sectors and activities not contributing to reaching national or international compliance targets. For instance, certain LULUCF activities are suitable for voluntary offsetting. On the voluntary market, buyers of carbon offsets are usually private companies wishing to offset

[229] Ibid, p. 75-76
[230] *Hamrick – Brotto* 2017, p. 33
[231] Regulation (EU) 2018/842, Article 7(d)

part of their unavoidable emissions for sustainability and corporate responsibility reasons. Another key target group that could drive the demand for voluntary carbon offsets is municipalities. For instance, more than half of the Finnish population lives in municipalities that have developed climate action strategies covering areas, such as energy production and use, transport, land use, services, industrial policy and procurement. [232]

Municipal climate networks, such as HINKU (The Carbon Neutral Municipalities project) and FISU (Finnish Sustainable Communities), further accelerate and encourage the level of ambition by providing a forum for cooperation and peer learning. HINKU is a network of 42 municipalities with a total population of 0.7 million residents whose objective is 80% emission reduction by 2030 in comparison to 2007 levels.[233] On the other hand, the FISU network of sustainable municipalities is focused on providing expertise on emission reduction potential plans and roadmaps and currently include 11 municipalities.[234]

The active engagement of Finnish municipalities in emission reduction activities is also supported by the national government, as 1 million euros is reserved in the central government budget for 2018 for promoting climate action in municipalities and regions. Furthermore, municipalities could also utilise project funding granted by the European Regional Development Fund to promote the transition to a low carbon economy. Besides, under the medium-term climate policy plan, municipalities are encouraged to set own emission reductions targets to support the achievement of the national target of -39% in the non-ETS sectors and also to ensure that 25% of ERDF funding is allocated to low carbon projects.[235] Thus, current emission reduction goals by municipalities suggest that cities might be interested in purchasing voluntary carbon offsets or participating in carbon offset projects as one option to complement existing measures and accelerate the transition to carbon neutrality.

Using voluntary DOPs for contributing to national targets is a highly debated topic, and it was discussed during the workshop "Domestic Carbon Initiatives in Europe: Experiences and Opportunities" organised by the German Emissions Trading Authority (DEHSt) at the German Environment Agency in 2015.[236] Some of the voluntary DOPs across Europe contribute to meeting national GHG reduction targets, including Spain's Voluntary registry

[232] Ministry of Environment, Report on Medium-term Climate Change Policy Plan for 2030, p.106
[233] *HINKU* 2018
[234] *FISU* 2018
[235] Ministry of Environment, Report on Medium-term Climate Change Policy Plan for 2030, p. 111
[236] *Ivleva- Nett - Treutwein – Wolters* 2015 p. 20-21

for carbon footprint, compensation and compensation and carbon sequestration projects (RHC)[237], UK's Woodland Carbon Code [238], and France's Low Carbon Label[239]. In contrast, others, such as Austria's Humus Initiative[240] and Germany's MoorFutures[241] are entirely focused on providing additional carbon credits, which do not contribute to any governmental actions.

If the carbon credits purchased by companies are not reflected in the national greenhouse gas inventory, then the DOP does not contribute to reaching the 2030 ESR target. On the other hand, if the credits are reflected in the inventory, the DOP could contribute only to the extent specified under the LULUCF flexibility. The allowed amount under this flexibility varies between countries and in Finland is 1,4%, as a percentage of 2005 effort sharing sectors emissions, which equals to 4,5 million tonnes CO_2 equivalent.[242] The sections below explore the legal framework, issues related to double counting and additionality, and key implementation considerations for a voluntary DOP in Finland.

5.1.1 Legal framework

A voluntary DOP in Finland would be complementary to other compliance mechanisms for reaching emission reduction targets. Thus it should focus on generating emission reductions from activities which are not accounted for under international, EU and national compliance targets. This section reflects on what was discussed previously with regard to the legal framework of DOPs and how this applies to establishing a DOP in Finland. The key focus is on implications posed by the Kyoto Protocol, Paris Agreement, the Effort Sharing Regulation and national legislation. Since this section explores the feasibility of voluntary DOPs focused on meeting the demand for offsets by private actors in Finland, the legal framework is discussed from the perspective of policy additionality which is often requested by companies.

International level

Some of the uncertainties on international level related to the post-2020 period, in particular parties' NDCs and the future of the Kyoto Protocol, could potentially impact a Finnish DOP.

[237] *Nett- Wolter* 2017, p. 73-74
[238] *Ivleva- Nett - Treutwein – Wolters* 2015 p. 20-21
[239] *Nett - Wolters* 2017, p. 66
[240] *Ivleva- Nett - Treutwein – Wolters* 2015, p. 12-13
[241] Ibid, p. 10-11
[242] Regulation (EU) 2018/842, Annex III

In the second Kyoto period, under Article 3, paragraph 3, Finland reports emissions and removals from afforestation, reforestation, and deforestation activities and under Article 3, paragraph 4, from forest management and harvested wood products.[243] While cropland management and grazing land management are subject to voluntary accounting under the Kyoto Protocol, both categories are included in the scope of the Finnish NDC under the Paris Agreement[244]. While it is yet unsure whether the Kyoto Protocol will continue to exist, it is not expected to pose more limitations to the potential development of Finnish DOP than in the current situation.

The LULUCF sector will play a significant role in the implementation of NDCs and will transform from a net anthropogenic source during 1990-2010 to a net sink of carbon by 2030, by providing approximately 25% of the total emission reductions for reaching the NDCs.[245] Hence, the Paris Agreement will have major implications on the project types and sectors available for voluntary offsetting on the international level. The current NDC, submitted in 2015 by Latvia and the European Commission on behalf of the European Union and its member states covers the LULUCF categories set out in Decision 529/2013/EU: afforestation, reforestation, deforestation, forest management, cropland management and grazing land management.[246] However, the Paris Agreement does not provide guidance on how the LULUCF sector will contribute to the NDCs. It is expected that parties to the Paris Agreement will have a certain level of flexibility when designing their LULUCF accounting systems, as long as consistency with reaching their NDCs is ensured.[247]

Most of the limitations for a Finnish DOP with respect to ensuring policy additionality on the international level are related to the wide coverage of accounting categories under the EU NDC, which is applicable for Finland and the uncertainties of expanding to new categories when the NDC is updated every five years. Furthermore, new additionality rules for DOP activities need to be defined after 2020 to ensure that voluntary domestic offset projects do not overlap with actions under the new market-based mechanism introduced in

[243] Ministry of Agriculture and Forestry, LULUCF action Progress Report December 2016, p. 10
[244] Intended Nationally Determined Contribution of the EU and its Member States
[245] *Grassi – House – Dentener – Federici - den Elzen – Penman* 2017, p. 12
[246] Intended Nationally Determined Contribution of the EU and its Member States
[247] *Olesen - Lesschen - Rayment - Ebrahim - Weiss - Arets - Larsen - Sikirica, - Nabuurs - Schelhaas* 2016, p. 85 - 86

Article 6 under the Paris Agreement.[248] The set of rules for implementing Article 6 are yet to be agreed at COP25 in Chile. [249]

EU level

A DOP in Finland could contribute to 2030 ESR target only to the extent of the allowed amount under the LULUCF flexibility which is 1,4% of 2005 effort sharing sectors emissions**,** which equals to 4,5 million tonnes CO2 equivalent.[250] While it is technically possible for a DOP to generate credits from the LULUCF sector and sell them to private actors, if not reflected in the national inventory, the emission reductions will not contribute to the 2030 target. In order to be additional from a policy perspective, carbon credits should be generated from activities not accounted for under the EU ETS and the ESR. The topic of additionality and eligible project types for voluntary offsetting are explored in detail in section 5.1.3.

The LULUCF flexibility could be utilised only under the condition that Finland complies with the no-debit rule under the LULUCF Regulation, meaning that the total removals from the LULUCF sector should exceed the total emissions.[251] Not only this adds to the uncertainty whether Finland could use LULUCF credits to contribute to the ESR target, but it also opens opportunities for a DOP to help the government reach the no-debit rule.

National level

The legal framework for a DOP in Finland is also shaped by the limitations posed by national legislation, in particular, the medium-term climate change policy plan and the Rural Development Programme for Mainland Finland 2014–2020. For instance, the latter provides for environmental compensations and investment supports for perennial grasslands on peat and mull soil[252], controlled subsurface drainage[253], and biogas plants. Moreover, in the next programming period starting in 2021, the scope of the activities subject to receiving support is expected to be expanded. On the other hand, measures outlined in the mid-term climate change plan include decreasing emissions from organic soils, planting wetland forest on organic soils, afforestation of organic soils, decreasing emissions from peatlands through

[248] *Nett – Wolters* 2017, p. 92
[249] *Zwick* 2018
[250] Regulation (EU) 2018/842, Annex III
[251] Ibid, Article 7(b)
[252] Ministry of Agriculture and Forestry 2014, p. 378
[253] Ibid, p. 98

controlled surface drainage and biogas production. As a complementary instrument, a voluntary DOP should focus on activities outside of the scope of the measures under national legislation. For instance, possible activities for generating voluntary carbon credits could include sequestering CO_2 in soils through soil enrichment, similar to Austria's Humus Initiative and recovering degraded or contaminated land, for example by utilising biochar for its soil amendment properties.

5.1.2 Double counting

Even if emissions are reduced in the effort sharing sector through purchasing voluntary carbon credits generated from domestic LULUCF projects, these reductions will not be necessarily counted in the national greenhouse gas inventory, thus will not contribute to the ESR target. The only way for a DOP to contribute to the 2030 ESR target is if the emission reductions from carbon credits sold to companies are also accounted for in the national inventory. The result will be double claiming – once the company claims the reductions, and a second time the same reductions are claimed by the government. While theoretically, this is possible, it is uncertain whether this would be feasible in practice due to possible concerns related to double counting and additionality. Other double counting types could be successfully avoided by having a registry system, where all transactions are recorded.

From the perspective of double counting and additionality, there are different views on using DOPs for reaching national targets. Since only one of the parties claiming the reductions have compliance obligations and in the context of domestic offsetting, the unit is not sold to another country for meeting a compliance target, the environmental integrity of the carbon credit is preserved. However, there are concerns related to accounting emission reductions from the voluntary carbon market in the national inventory, as substituting governmental actions. In that case, some might argue that companies purchasing carbon credits are paying for emission reductions which would otherwise be financed by the government. As a result, the national emission reduction targets would be achieved quicker, with lower efforts from the government.[254]

On the other hand, there is an argument in favour of double claiming, according to which helping the government save costs on compliance would not cause a problem, since the reductions are actual, and companies are motivated to purchase carbon credits for corporate

[254] *Ivleva- Nett - Treutwein – Wolters* 2015, p. 28

responsibility reasons. Furthermore, reaching governmental targets with the support of bottom-up offsetting could be viewed as increasing the ambition of the national government to go beyond the initial target.[255]

As demonstrated above, if clearly communicated and in the case the carbon credit is used only once for compliance purpose, double claiming is acceptable. However, additionality is a very delicate topic, since companies purchase voluntary offsets to demonstrate their environmental values and efforts beyond-compliance. Whether a DOP is a feasible option to contribute to the 2030 targets in Finland depends entirely on the underlying goal and purpose of DOP and its position with regard to additionality and double claiming.

5.1.3 Additionality testing

Methods of determining additionality for a voluntary DOP in Finland could be developed in line with the programme's goals and size. While following the CDM methodology tool would provide thorough and precise additionality testing, it could add a great financial burden for a smaller programme focusing only on the demand for voluntary offsets in Finland. Instead of undergoing a complex additionality testing, the DOP could choose one or more of the four additionality testing criteria: environmental, policy, financial, and technical additionality. While there are no rules to follow on how extensive additionality testing processes offset projects should undergo, demonstration of policy additionality is essential. Policy additionality testing is of significant importance for voluntary offsets, as it proves that the emission reduction does not substitute already planned activities. This is particularly important for private actors offsetting for reaching carbon-neutrality corporate goals. Hence, lack of policy additionality could result in bad publicity both for the DOP and for the offsetting company.

Policy additionality could be ensured if carbon credits are generated through offset projects and activities which do not contribute to international, EU and national climate targets. On the international level, revegetation and wetland drainage and rewetting fall outside the scope of the Kyoto Protocol[256] and the current EU NDC[257], hence these activities are eligible for voluntary offset generation.

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[255] *Ivleva- Nett - Treutwein – Wolters* 2015, p. 29
[256] UNFCCC Kyoto Protocol, Article 3, paragraph 3 and 4
[257] Intended Nationally Determined Contribution of the EU and its Member States

On EU level, additional voluntary carbon credits could be generated from activities not covered under the EU ETS and ESR. The possibilities for generating carbon credits in sectors excluded from the EU ETS include off-grid small-scale renewable energy projects, units with a rated thermal input under 3 MW, small emitters (<25 000 tCO2e and, where they carry out combustion activities, have a rated thermal input below 35 MW, excluding emissions from biomass, and units which use exclusively biomass).[258] For example, on-site/rooftop solar PV, solar thermal, biomass heating and small-scale hydro are feasible solutions for energy generation for facilities in remote housing locations. On the other hand, sectors not covered by the Effort Sharing Sector include LULUCF, CO_2 emissions from agriculture, aviation and international shipping.[259][260] Eligible LULUCF activities for generating carbon credits include recovering/rewetting degraded peatlands, afforestation/reforestation and converting peatlands into wet grasslands.

Aviation emissions are now regulated under the new Carbon Offsetting, and Reduction Scheme for International Aviation (CORSIA), developed by the International Civil Aviation Organisation, hence the aviation sector is not relevant for potential DOP.[261] Table 6 below summarises sectors and project types excluded from the EU ETS and ESR which are available for offset generation with regard to ensuring policy additionality.

Table 5. Sectors and project types excluded from EU ETS and ESR. Source: adapted from Directive 2009/29/EC and Regulation (EU) 2018/842.

Sectors and project types excluded from EU ETS	Sectors and project types excluded from ESR
Off-grid small-scale renewable energy • Solar thermal & PV • Small-scale hydro • Biomass for heating/electricity	LULUCF sector • Recovering/rewetting degraded peatlands • Afforestation/reforestation (reductions accounted under the Kyoto Protocol) • Converting peatlands into wet grassland
Small emitters (<25 000 tCO2e and, where they carry out combustion activities, have a rated thermal input below 35 MW, excluding emissions from biomass).	Agriculture sector (CO2 emissions) • Soil carbon sequestration • Soil enrichment

[258] *Emissions EU ETS*, Exclusions
[259] Regulation (EU) 2018/842 Art. 2
[260] *Emissions EU ETS*, Effort Sharing Legislation
[261] *ICAO* 2018

Units with a rated thermal input under 3 MW and units which use biomass exclusively. • Biomass installations (incl. large scale)	International aviation and shipping • Not relevant for domestic offsetting

Finally, in order to be additional, voluntary carbon offsets should be generated from activities not covered under national policies. Although the LULUCF sector is not covered under the EU ETS and ESR, specific activities to enhance carbon sequestration and storage in soils are included in the Rural Development Programme for Mainland Finland 2014–2020, thus are not additional. For instance, under the Rural Development Programme environmental compensations and investment supports are provided for perennial grasslands on peat and mull soil[262], controlled subsurface drainage[263], and biogas plants. Furthermore, in the new programming period starting 2021 existing measures will not only be continued but also expanded to other plants[264]. The wider coverage of activities in the new Rural Development Programme will limit the available space for voluntary domestic offset project types. Table 7 below summarises the measures for reducing emissions in the agriculture sector outlined in the medium-term climate change plan to 2030.

Table 6 Measures in the agriculture sector under national policy required to achieve the 2030 ESR targets

Measures in the agriculture sector required to achieve the ESR targets in Finland
Growing crops in organic soils for several years with zero tillage
Planting forest in areas with organic soil
Planting wetland forest in areas with organic soil
Raising the water table through controlled subsurface drainage
Promoting biogas production
Promoting the increased sequestration and storage of carbon in soil and the implementation of the 4per1000 initiative
Food consumption, food waste and nutrition recommendations

[262] Ministry of Agriculture and Forestry 2014, p. 378
[263] Ibid, p. 98
[264] Ministry of Environment, Report on Medium-term Climate Change Policy Plan for 2030, p. 81-82

Due to the interrelation of climate-related policies and targets on international, EU and national level, additionality testing proves to be a complex task. As proving additionality is crucial for carbon offsets traded on the voluntary market, it is of great importance for a DOP to conduct transparent and robust additionality testing. Additionality testing could be performed on a project-based, but standardising it, for instance by developing performance standards or checklists will make the additionality process quicker which will also lower the administrative costs.[265] Positive lists and checklists are more suitable for small-scale DOPs as they are less time-consuming and more cost-efficient in comparison to conducting project-based additionality testing.

Carbon credits generated from the LULUCF sector comprise the majority of carbon offsets offered on the voluntary carbon market globally.[266] Despite the limitations on the eligible project types for offset generation under a potential DOP in Finland, there are still certain opportunities in the LULUCF sector, for instance, projects related to carbon sequestration in soil, soil enrichment, and amendment of contaminated land. Other opportunities could include among others nutrient recycling and cleaning of water bodies, which in turns has many environmental and ecological benefits in addition to emission reduction.

Focusing on projects types not contributing to compliance targets, not only ensures that carbon credits are additional and credible, but also narrows down the scope of the DOP. The narrow scope allows for additionality testing based on performance standards and checklists[267], which has numerous benefits for small-scale DOPs in comparison to the costly and lengthy project- based additionality testing. Once the projects meet the predetermined criteria set in the checklist or project's emissions are under the baseline scenario set in the performance standard, projects are automatically deemed additional. [268]

On the other hand, in order to expand its scope, a DOP in Finland could potentially focus on activities and project types included under the international, EU and national climate policies. In that case, avoiding double counting and ensuring additionality is guaranteed through cancellation of AAUs/AEAs from the national invetory. In that case, the DOP will

[265] *Pentella – Brotto*, 2018, p. 107
[266] *Hamrick – Brotto*, 2017, p. 33
[267] *Barata – Spors – Kennedy - Platonova-Oquab - Gadde* 2016, p. 11
[268] *Stockholm Environment Institute – Greenhouse Gas Management Institute 2019*

not contribute to the national target, but instead, the realised emission reductions will go beyond the target, hence increasing the national ambition.

5.1.4 Implementation considerations

The two key aspects to consider when designing a voluntary domestic offset program are the scale of the programme and the associated transaction costs. While outsourcing elements and methodologies from international offset programs and standards decrease the administrative costs, this is not a common practice among DOPs. Unlike international programs which have a broader scope, domestic offset programs need to be designed and implemented according to the specific national circumstances and rules, resulting in a high level of customisation and an increase of costs. While outsourcing the registry could decrease the costs, it would limit the oversight of the program organising body over the registry operations.[269] For these reasons, outsourcing is not widely utilised in DOPs.

European voluntary carbon offset projects did not use any of the international carbon standards to verify transacted forest carbon credits in 2015. The general practice is that small-scale offset projects in Europe, which cannot justify the high transaction costs of independent third-party certification develop their internal protocols and methodologies for validation, verification and certification processes closely based on international offset standards.[270] Assuming that a potential DOP in Finland will focus only on additional activities in the LULUCF sector, hence it would be reasonable to develop its own registry and simplified methodology rules partly based on international programmes. In that case, the domestic offset body will maintain full control over the program, while decreasing the costs as a result of mirroring international methodology rules and adapting them to the national context.

The lack of universally accepted rules for MRV on the voluntary carbon market allows for DOPs to customise and simplify the MRV processes. One way for a DOP to do that is to utilise methodologies with standardised baseline scenarios and default values, which will minimise the need for detailed monitoring and verification procedures. Furthermore, utilisation of standardised forms and tools during the verification process, such as default emissions factors and standardised validation and verification forms could also decrease the

[269] Ibid, p. 64-65
[270] *Hamrick – Brotto* 2017, p. 25

transaction costs.[271] For instance, a DOP with a narrow scope could reduce costs by using standardised emission reduction calculations.[272] Possible co-operation could be established with the national government, universities and research institutes which could develop a methodology for verifying and validating the emission reductions. This would enhance the credibility of the DOP while avoiding the high transaction costs associated with independent third-party verification.

5.2 DOP as a solution for reaching the 'No-debit rule'?

Carbon credits from emission reductions in the LULUCF sector could be transferred for reaching the targets in the effort sharing sector, only if Finland's total removals from the LULUCF sector exceed the total emissions, known as the no-debit rule.[273] Thus, a voluntary domestic offset program could help the government reach compliance with the no-debit rule by conducting projects in the LULUCF sector and counting the associated emission reductions towards closing the gap of total emissions and total removals.

The emissions absorbed by the Finnish LULUCF sector generally exceed the emissions released into the atmosphere, having forests as the major sink.[274] For instance, according to 2016 National Energy and Climate Strategy 2030 Report, the size of forest carbon sinks in Finland was between 20-50 million tonnes CO_2 equivalent for the period 1990-2013, which is equivalent to 30-60% of the annual total emissions.[275] In line with the National Forest Strategy 2025, the aim is to increase the annual wood harvesting volume for the production of various products and energy from 65 million cubic meters in 2013 up to 80 million cubic meters of stemwood per year in 2025. It is estimated that a stable forest carbon sink of 13-20 Mt CO_2 equivalent will be maintained throughout the period 2021-2030, with an increase of carbon sinks towards 2030.[276]

However, the inclusion of emissions from biomass combustion and biofuels into the new accounting framework introduced by the LULUCF regulation might have severe implications on Finland and its capacity to comply with the no-debit rule. For instance, according to a 2018 report by Statistics Finland, CO_2 emissions from combustion of biomass

[271] *World Bank, Overview of Carbon Offset Programs* 2015, p. 17-18
[272] Ibid, p. 8
[273] Regulation (EU) 2018/842, Art. 7(b)
[274] Ministry of Environment, Report on Medium-term Climate Change Policy Plan for 2030 p. 31
[275] Ministry of Economic Affairs and Employment, 2016, p. 40
[276] National Forest Strategy 2025, p. 19

in 2016 amounted to 39,8 million tonnes, demonstrating a 2,9 % increase from the previous year.[277] If Finland proceeds with increasing the harvest level as outlined in the National Forest Strategy 2025, the emissions from biomass will be two to three times higher than the estimated forest carbon sinks of 13-20 Mt CO2. Not only emissions from biomass combustion were not previously included in member states' carbon budgets but also bioenergy was promoted as a key means for reaching the ambitious EU renewable energy targets. Finnish forests are a source for the sustainable and efficient modern use of wood, and the maximum sustainable harvest amount is calculated with the help of a planning tool developed by the Finnish Natural Resource Institute. Generally, half of the harvested wood is used for energy, including large-scale heat and CHP plants and the other half for products, such as timber, plywood, pulp and paper.[278]

According to Statistics Finland, the share of renewable energy in total energy consumption in Finland in 2016 was 34%, as bioenergy had the highest share (26%).[279] While bioenergy helps Finland achieve the EU renewable energy targets, the associated emission from deforestation and burning biomass accounted in the LULUCF sector could be an obstacle for complying with the no-debit rule introduced with the new LULUCF regulation. Thus, the LULUCF regulation and its accounting rules established a complex and rather contradictory relationship between the utilisation of wood for energy and the possibility for Finland to use the LULUCF flexibility under the Effort Sharing Regulation.

For Finland, the reported average annual removals by sinks from forest land during 2000-2009 were -36,79 Mt CO2e. Hence, in line with the forest managed land flexibility under the LULUCF Regulation, Finland is eligible to compensate up to -44,1 Mt CO2e during the 2021-2030 period.[280] Additionally, Finland is allowed to compensate up to 10 Mt CO2e emissions, if it fulfils the two conditions under Article 13 paragraph 2 in points (a) and (b) discussed above.[281] Under Article 13(b) the overall emissions in the land accounting categories in the EU should not exceed the total removals. Meaning that if this condition is not met, Finland would not be able to use the Managed Forest Land flexibility and the additional compensation of up to 10 Mt CO_2. Hence, implementing a domestic offset program which generates carbon credits from the LULUCF sector in Finland could be used

[277] *Statistics Finland* 2017, p. 2
[278] *IRENA* 2018, p. 8-11
[279] *Statistics Finland* 2017
[280] Regulation (EU) 2018/841, Annex VII
[281] Ibid, Article 13, para 4

as an instrument to reach compliance with the no-debit rule and decrease the dependence on the flexibilities. Furthermore, there is always the risk that even if all flexibilities are utilised Finland would still have higher emissions in the LULUCF sector than removals, due to bioenergy having the largest share in the national renewable energy mix and the continuously developing bioeconomy.

In the light of these circumstances, a DOP could be a feasible solution for realising carbon sequestration projects in the LULUCF sector, thus closing the gap between emissions and removals and helping Finland reach compliance with the no-debit rule and be able to utilise the LULUCF flexibility under the ESR. In that case, the DOP could be designed to serve entirely as an instrument for fulfilling national targets, including the 2030 ESR target and compliance with the no-debit rule. On the other hand, depending on DOP's underlying goals, the programme could focus on selling offsets to private actors, while reflecting the emission reductions towards reaching compliance with the no-debit rule. While that kind of offset scheme – a hybrid between a voluntary and compliance DOP falls outside the scope of this thesis, it is technically possible if questions related to additionality and double counting issues are communicated transparently and agreed upon by all stakeholders.

Another possibility for a DOP to contribute to achieving the no-debit rule by entirely focusing on the compliance market is utilising the flexibility provided in Article 5.8 of the ESR, under which the Member States could use unlimited number of carbon credits issued under Article 24a(1) of Directive 2003/87/EC for compliance under Article 9 of the Effort Sharing Regulation, considering that double counting is avoided.[282] Under Article 24a(1), a DOP could potentially implement offset projects within the effort sharing sectors, whereas the carbon credits will contribute to reaching compliance with the emission reduction targets under the EU ETS and ESR. [283] Despite not being yet operational, Article 24a holds a future potential since the Effort Sharing Regulation encourages member states to establish public-private partnerships for implementing domestic offset projects and in the light of increased emission reduction targets both in the EU ETS and ESR, actions under Article 24a might become topical in the period 2021-2030. Implementing domestic projects under Article 24a would help Finland reach compliance with the no-debit rule, as emission reductions from the implemented activities will be accounted for in the national inventory.

[282] Ibid, Art. 5.8
[283] Directive 2018/410, Article 24a

6. CONCLUSIONS AND RECOMMENDATIONS

Global efforts to tackle climate change has resulted in steeper emission reductions targets both on EU and national level. The transition from an Effort Sharing Decision to an Effort Sharing Regulation for the period 2021-2030 points out the evolution of the effort sharing legislation and paves the way forward to a stricter EU climate policy. Finland's ambitious target of -39% for the effort sharing also opens opportunities for reducing emissions through implementing domestic offset projects. This thesis attempted to answer the question of whether a domestic offset programme is a feasible option to contribute to the 2030 ESR target. Answering this question required an exploration of the legal framework for DOPs on international, EU and national level, outlining the challenges to domestic offsetting, in particular issues related to double counting and additionality and identifying the core design elements and implementation considerations for establishing a DOP. After crystallising the overall framework, methodologies and processes of domestic offset programmes, the thesis focused on adapting this knowledge to the national context in Finland in terms of identifying possibilities for a DOP to contribute to the ESR target. This chapter aims to summarise the key findings and conclusions throughout the thesis and provide recommendations.

As outlined in Chapter 2, the legal framework for DOPs is shaped simultaneously by international, EU and national climate policy. While on international level there are uncertainties related to the future of the Kyoto Protocol and whether it will continue existing after 2020, the Paris Agreement has a significant impact on DOPs implementation. For instance, the wide coverage of NDCs under the Paris Agreement limits significantly the space left for generating carbon credits from activities not covered by policy measures. As the thesis' main focus is on voluntary DOPs targeted at private actors purchasing offsets as part of their environmental strategy, policy additionality is considered a minimum criterion. The update of the NDCs every five years poses the risk that eligible activities for voluntary offsetting will eventually become mandatory. After implementation rules for Article 6 of the Paris Agreement are agreed at COP25 in Chile, additionality rules might need to be adjusted as DOPs activities might fall under the scope of the new market-based mechanism under the Paris Agreement.

On EU level, a DOP could be either implemented as a complementary instrument to the compliance market, focusing on activities and projects not contributing to climate targets, or as an instrument for achieving compliance targets. For instance, once Article 24a of the EU

ETS Directive 2009/29/EC becomes operational, it could result in the implementation of more domestic offset projects for reaching compliance under the EU ETS and ESR. On the other hand, the LULUCF flexibility introduced under the ESR allows member states to access credits from the land use sector to comply with their national 2030 ESR targets. Hence, by generating carbon credits from the LULUCF sector, a voluntary DOP could potentially contribute to reaching the 2030 ESR target to the extent of the allowed amount of transferred credits. However, double claiming issues need to be addressed as the same emission reductions are used first by private actors and then counted a second time for reaching the ESR target. On the other hand, the inclusion of carbon sinks and emissions from the LULUCF sector in the EU climate policy targets to 2030 and the introduction of the no-debit rule open new opportunities for domestic offsetting projects to help close the gap between removals and emissions in the LULUCF sector.

On the national level, the legal framework for DOP is shaped by the Climate Change Act (609/2015), under which is developed the medium-term climate change policy plan outlining additional measures and activities for reaching the 2030 ESR target in Finland. Hence in order for carbon credits to be additional on a policy level, a DOP in Finland needs to focus on projects outside the scope of measures listed in the medium-term plan. Also, further restrictions, in terms of ensuring financial additionality are added by the activities subject to investment support or environmental compensation under the Rural Development Programme for Mainland Finland 2014–2020. Furthermore, the scope of the activities covered by support schemes and compensations is expected to be extended in the new programming period starting 2021.

Chapter 3 discussed the key challenges to domestic offsetting, in particular, double counting and additionality issues. Double accounting/issuance and double selling could be mitigated through maintaining a programme registry. On the other hand, the risk of double claiming could be mitigated if a DOP produces carbon credits from activities not accounted in the national inventory. However, this will significantly limit the scope of DOP, as most of the project types are covered by compliance targets under the Kyoto Protocol, Paris Agreement, EU ETS, ESR, or national policy. Another way to avoid double claiming is for the government to cancel an equivalent number of AAUs/AEAs in lieu of the voluntary offsets (Kyoto Protocol, EU ETS and ESR) or make a “corresponding adjustment” if the offset activity falls under the scope of the national NDC or national climate policy. This will allow

DOPs to produce offsets from activities accounted for in the national inventory, but the emission reductions will not contribute to achieving compliance targets.

The occurrence of double claiming does not necessarily impair offsets' environmental integrity. For instance, there are examples from Europe, including France's Low Carbon Label, UK's Woodland Carbon Code and Spain's RHC, where offsets under voluntary DOPs are sold to private actors, while emission reductions are also reflected in the national inventory. The double claim of the same emission reduction is not considered to undermine the environmental integrity of the offsets, as the reduction is used only once for compliance purpose. VCS and UK's Woodland Carbon Code are supporters of this viewpoint. Even though formally acceptable, double claiming provisions should be agreed upon and communicated in order to minimise the risks for bad publicity. Finally, the risk of double monetisation could be mitigated if the government commits not to sell surplus AAUs/AEAs.

Additionality could be tested on environmental, policy, financial and technological levels. However, the lack of widely recognised additionality testing rules for voluntary offset projects leads to the risk of issuance of non-additional carbon credits. Ensuring policy additionality at minimum is crucial in order to demonstrate the environmental integrity of the offsets. For instance, additional activities for voluntary offsetting from sectors not covered under EU ETS include small-scale renewable energy generation projects, whereas from sectors excluded from the ESR include activities in the LULUCF sector. In addition, a voluntary DOP should also take into consideration activities under national legislation, which will further narrow down the available project offset types for voluntary offsetting.

In comparison to time and resource consuming project-based additionality testing, performance standards and checklists are a simplified, cost-efficient and quicker option for testing additionality. For instance, by utilising performance standards and checklists, a project is deemed automatically additional if it covers a number of predetermined criteria. Performance standards and checklists are suitable for DOPs with a narrow scope of activities and could be developed and validated by the national government or research institutes.

Chapter 4 discussed design elements and implementation consideration for DOPs from the perspective of the levels of outsourcing and government involvement. DOPs have three core elements: accounting rules, MRV and certification rules, and registration and enforcement system. Each of these elements has sub-elements which build the architecture of DOPs. Accounting rules guarantee that emission reductions are real, additional and permanent and

could include additionality and baseline methodologies, definitions of accepted project types, and methodologies for validating project activities. The MRV and certification system ensures the quality of the offsets through assessing whether the initial goal is achieved and the amount of issued credits corresponds to the realised emission reductions. Lastly, the registration and enforcement system guarantee the ownership of the offset and allows for keeping track of carbon offsets throughout their life-cycle.

One of the main implementation considerations for a newly established DOP is to decide which elements to outsource and which could be mirrored from international programmes and developed in-house. Due to the usually narrow scope of DOPs, full outsourcing of rules and methodologies is not common. Instead, DOPs often mirror elements from international standards and develop its own methodologies and processes and adapt them to the national circumstances, scale and purpose of the offset programme. Not only mirroring certain elements from international programmes allows for faster implementation, but it also lowers administrative costs, while the DOP organising body maintains full control of the programme.

The national government could support DOPs by providing policy support, endorsement, and rewards and incentives. Firstly, the government could support DOPs by providing policy support, for instance, cancellation of AAUs/AEAs in lieu of voluntary carbon credits in order to mitigate the occurrence of double claiming. Secondly, developing eligibility criteria for the positive lists or endorsing and maintaining the programme registry would fasten and facilitate DOP's development, while lowering administrative costs. For instance, in France's Low Carbon Label and Germany's MoorFutures, the programme registries are maintained by the responsible ministries. Thirdly, the government could provide financial incentives and rewards for purchasing voluntary offsets, such as fiscal relief/reduced VAT for carbon neutral products and services, tax exemption of voluntary carbon credit retirement, and allowing voluntary carbon credits to be used for achieving compliance obligation.

Chapter 4 also presented a case study on existing DOPs in Europe illustrating the various options available in terms of design elements and implementation considerations. The top-down Low Carbon Label has developed strict additionality rules based on existing standards, allowing for faster implementation and "borrowing" existing methodologies to the appropriate extent. On the other hand, the bottom-up Humus Initiative does not have any additionality rules in place, whereas MoorFutures conducts only financial additionality

testing. With regard to the baseline methodologies, the Low Carbon Label and MoorFutures emission reduction estimates are measured against a reference scenario, closely based on the CDM and VCS methodology.

The scope of Humus Initiative and MoorFutures is limited to only one type of offset projects – hummus enrichment and respectively wetland rewetting, which lowers the need for additionality testing and costs related to emission reduction calculations. While formal MRV processes based on VCS and Kyoto Protocol methodologies including a third-party verifier are adopted usually in top-down DOPs with a wider scope, such as the Low Carbon Label, it is more practical and cost-efficient for smaller DOPs with narrow scope to develop verification processes in co-operation with the government or regional scientific institutions. In all three DOPs, the programme registries are developed and maintained by the body administering the DOP without outsourcing any elements from international carbon programmes, which allow them to maintain full control over registry operations. The variety of implementation option demonstrated in the case study showcase how each DOP could be shaped to best serve its purpose in the given context.

Chapter 5 discussed the feasibility of DOP for reaching and going beyond the 2030 ESR target in Finland. Overall, the interest towards domestic offsets in Finland is expected to increase as a result of ambitious carbon neutrality goals on corporate, municipal and national levels. A potential DOP in Finland could be a feasible solution for tapping the demand on the voluntary market, while also contributing to reaching the 2030 ESR target to the extent of the allowed amount under the LULUCF flexibility which is 4,5 million tonnes CO2 equivalent. Utilising the LULUCF flexibility to contribute to reaching the ESR target helps the government save costs on compliance and could even result in more ambitious national measures that go beyond the initial target. However, the issues of double claiming and additionality need to be openly communicated and agreed upon among the key stakeholders in order to avoid a situation where the voluntary emission reductions are perceived as substituting governmental actions.

Even though the LULUCF sector is not covered by the ESR, measures for reducing emissions in the agriculture sector are included in the medium-term climate change plan to 2030 and the Rural Development Plan for Mainland Finland 2014-2020, thus limiting the scope of voluntary offsetting. Also, the scope of DOP could be further limited by the new activities and sectors which will be included in the new Rural Development Plan for

Mainland Finland starting in 2021. Another uncertainty on an international level is the role of the LULUCF sector in achieving Finnish NDC under the Paris Agreement. In order for emission reductions to be additional from a policy perspective, a DOP should conduct emission reduction activities not included as measures for reaching international, EU and national compliance targets. Another viable option is for a DOP to generate carbon credits from activities covered under existing climate policy measures if an equivalent number of AAUs/AEAs are cancelled in lieu of voluntary carbon offsets. This will ensure that the carbon offsets are additional and that double counting is avoided and credits could be sold to private actors.

Due to the vast coverage of measures for reaching compliance targets, the scope of possible additional activities is very limited. In particular, additional activities available for domestic offsetting include small-scale renewable energy projects, CO_2 sequestration in soils through soil enrichment, and recovering of degraded or contaminated land. Despite the double claim of the same emission reduction, once by the company and once by the government towards the ESR target, the environmental integrity is preserved as the offset has been used only once for compliance purpose. On the other hand, in order for a DOP to overcome the limitations set by the narrow scope of available additional activities, it could conduct projects also in sectors contributing to national targets. In that case, it is recommended that an equivalent number of AAUs/AEAs are cancelled from the national inventory in order to ensure the additionality of the carbon credits and that double counting is avoided. Thus, the emission reduction activities under DOP will result in more ambitious national emission reduction efforts which go beyond the 2030 ESR target.

With regard to design elements and implementation considerations, it is assumed that a DOP in Finland will have a narrow scope, focusing on a few activities not contributing to national targets. The narrow scope allows for the utilisation of standardised forms and emission reduction calculations, baseline scenarios, and default values which minimise the need for detailed monitoring and verification. Furthermore, additionality testing based on positive lists or checklists and methodologies for verification and validation developed in co-operation with the national government or research institutes would enhance DOP's credibility, while decreasing transaction costs.

Secondly, the chapter explores whether a DOP could be a solution for reaching compliance with the no-debit rule under the LULUCF Regulation by conducting projects in the LULUCF

sector and counting the associated emission reductions towards closing the gap of total emissions and total removals. Hence, a DOP could indirectly contribute to the ESR target, as compliance with the no-debit rule is a prerequisite for utilising the LULUCF flexibility under the ESR. In that case, policy additionality is preserved, as the no-debit rule is not a compliance target. Being a bioeconomy forerunner, Finland utilises intensely its forest resources, which results in decreased carbon sinks in the LULUCF sector. While this has not been an issue before, the LULUCF Regulation introduced the inclusion of emissions from biomass combustion and biofuels into the new accounting framework. Hence Finland might face challenges reaching compliance with the no-debit rule despite the available flexibilities and compensations, which also raises concerns whether the LULUCF flexibility could be utilised or not. This opens new opportunities for a DOP in Finland to help the government reach compliance with the no-debit rule.