



Policies for a climate-neutral industry: Lessons from the Netherlands

EAERE pre-conference workshop
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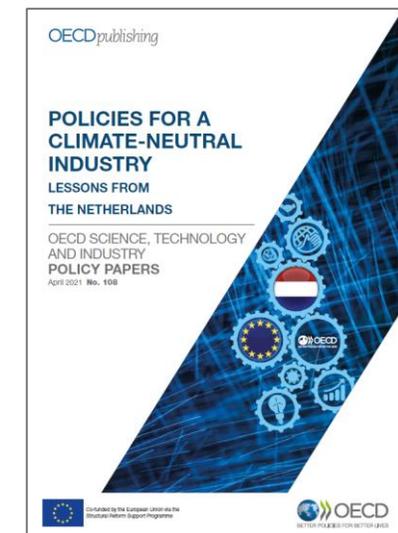
Luisa Dressler, OECD (luisa.dressler@oecd.org)

With: Brilé Anderson, Emile Cammeraat, Antoine Dechezleprêtre,
Nicolas Gonne, Joaquim Martins Guilhoto, Guy Lalanne,
Konstantinos Theodoropoulos



Is the Dutch policy package fit for purpose?

- Policy context – National Climate Agreement
 - Industry target: 59% GHG emissions reduction by 2030; carbon neutrality by 2050.
- Objectives of the project:
 - Analyse the policy mix to reach long-term decarbonisation objectives in the manufacturing sector;
 - Assess the consistency, cost-effectiveness and comprehensiveness of existing toolbox;
- Policy paper: <https://doi.org/10.1787/a3a1f953-en>

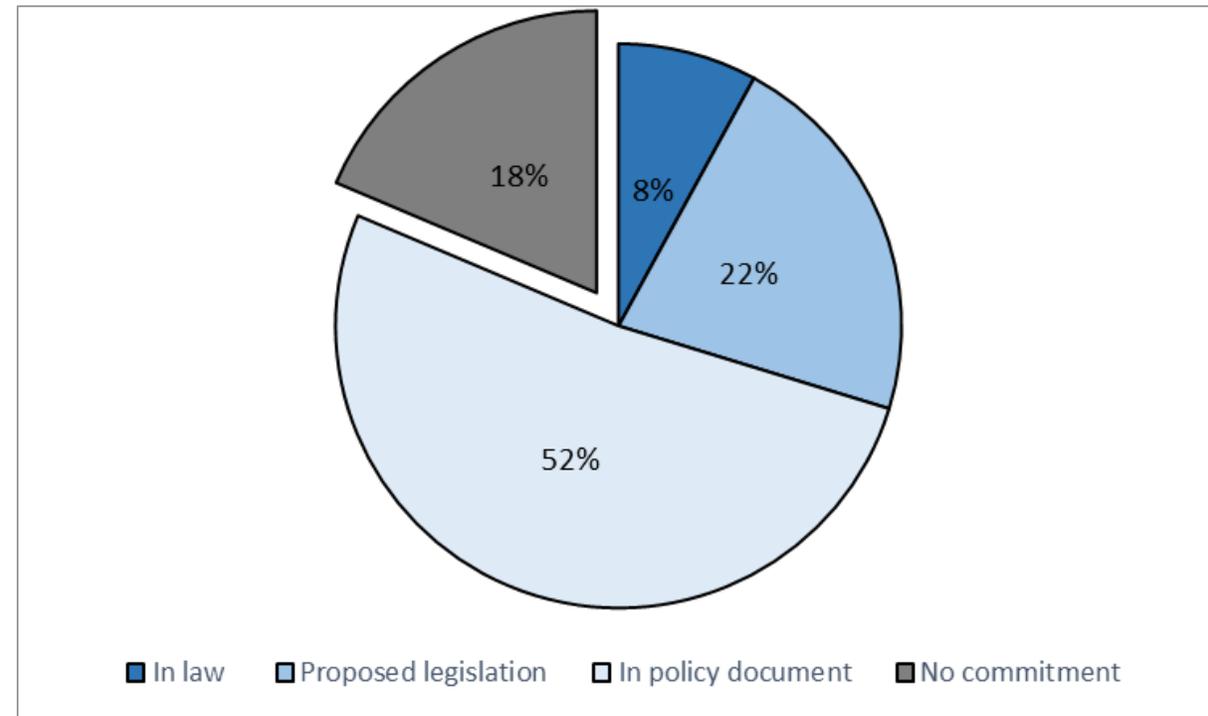




The climate agenda across countries is ambitious

- Over 80% of the world economy has announced carbon neutrality goals by 2050;
- New EU target: -55% in 2030 (wrt 1990), Green Deal;
- Climate summit: US: -50% in 2030 (wrt 2005), Japan, Canada, etc.;
- Green recovery plans.

Share of global economy that announced net-zero CO₂ or GHG emissions by mid-century



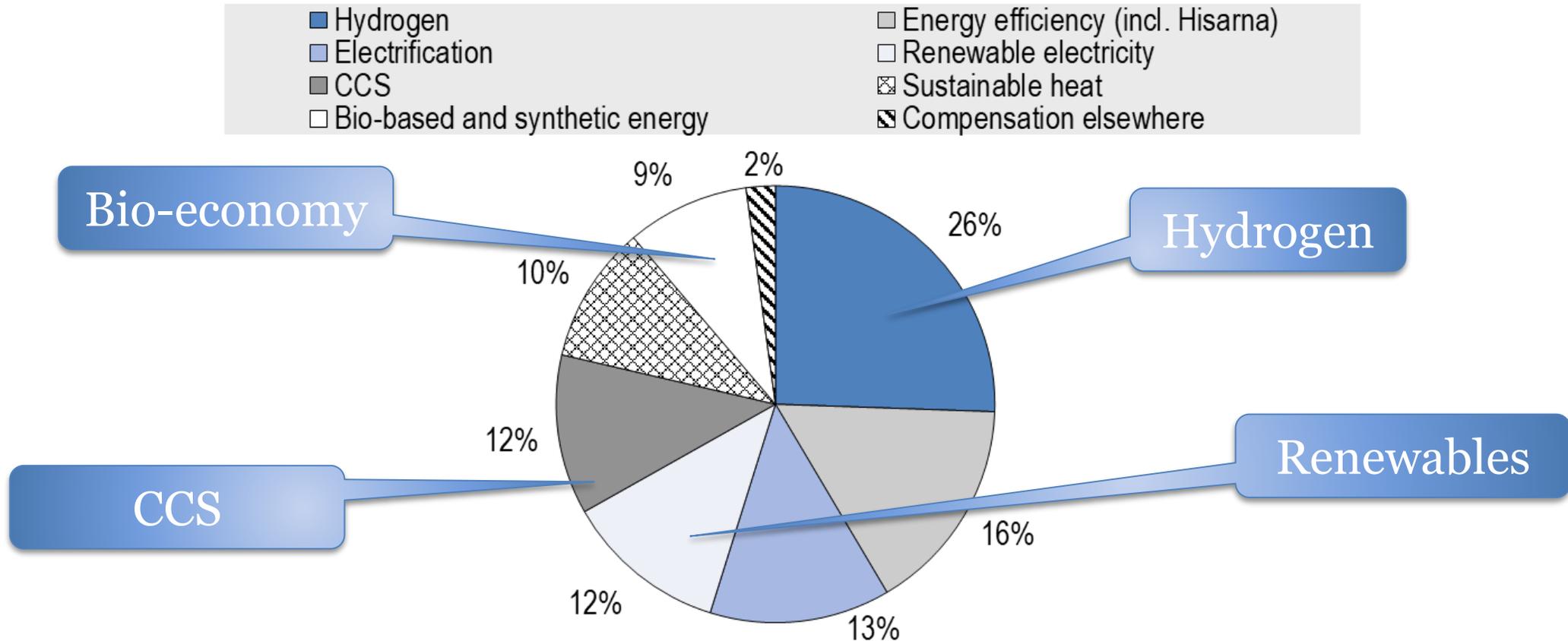
Note: In law: Sweden, United Kingdom, France, Denmark, New Zealand and Hungary. Proposed legislation: European Union (part of the EU that does not yet commit to net zero in law, including the Netherlands), Canada, South Korea, Chile and Fiji. In policy document: US, China (by 2060). South Africa, Japan, Germany, Switzerland, Norway, Costa Rica, Iceland and Marshall Islands.

Source: Own calculations based on the share of global GDP represented by the countries that commit according to the Net Zero Tracker (<https://eciu.net/netzerotracker>). Share of global GDP is calculated based on GDP in 2017 taken from World Bank national accounts data and OECD National Accounts data (2021).



Dutch industry needs a major technological transformation

Modelled contribution of different technologies in emission reductions between 2015 and 2050 in the Netherlands



Note: The scenario covers 4 manufacturing sectors: chemical sector, metallurgy, refineries and food-processing. The contribution of "Renewable electricity" corresponds to the abatement of the 2015 scope 2 emissions, which would be overturned by completely shifting to renewable electricity sources by 2050. The contribution of "Electrification" corresponds to additional electricity needed to reach the carbon neutrality objective in 2050, assuming that this additional electricity is also renewable and carbon-neutral.

Source: OECD, based on Berenschot (2020).



Carbon neutrality and the green industrial strategy

- **Public policies** are needed to help trigger the necessary investments, especially in the context of the COVID-19 crisis
 - Industry decarbonisation significantly relies on **technologies that are not mature yet**
 - Decarbonisation largely hinges on technologies requiring **large infrastructure investments**
- Public policies need to achieve the transition at **least cost for society**
 - Cost-effective policies, limiting the impact on short-term competitiveness and taking into account the human side of the transition



What can we learn from the Dutch experience?

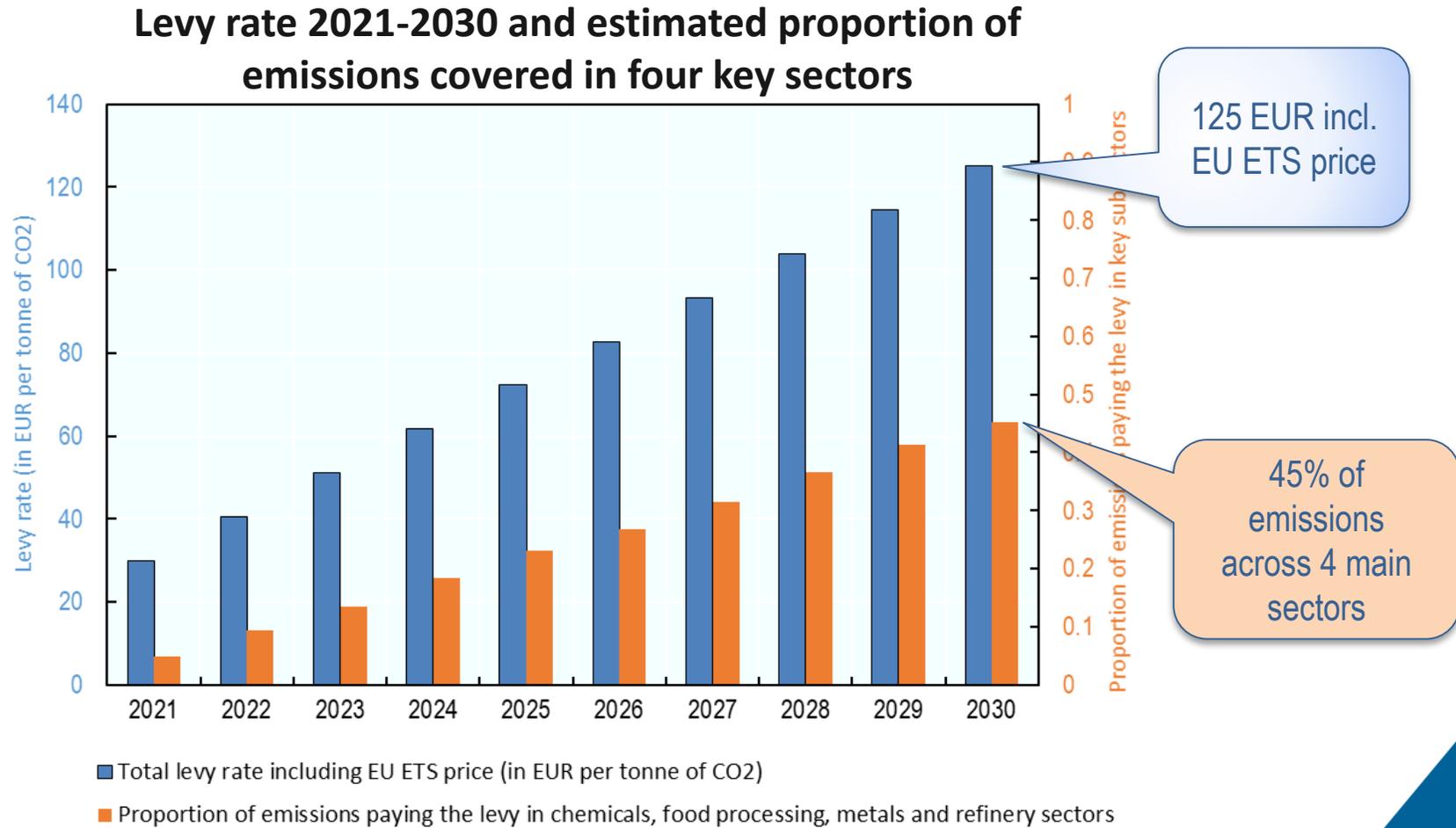
1. The advantage of combining ambitious **technology support** with a strong commitment to raising **carbon prices**;
2. The fundamental **trade-off** between short-run cost-efficiency and the need to switch to radically new technologies, such as green hydrogen, in the longer run;
3. The pervasiveness of **competitiveness provisions** related to carbon pricing and energy taxation instruments;
4. The value added of supra-national coordination and investments, for infrastructure and demonstration projects;
5. The need to align policy frameworks well beyond carbon pricing and technology support;

Message 1 - Combining
ambitious technology support
with a strong commitment to
raising carbon prices



Carbon levy sends a gradually increasing, strong price signal to encourage decarbonisation

- New carbon levy: 125 EUR/tonne in 2030
- A strong medium-term price signal
- Provides certainty
- Kicks in gradually



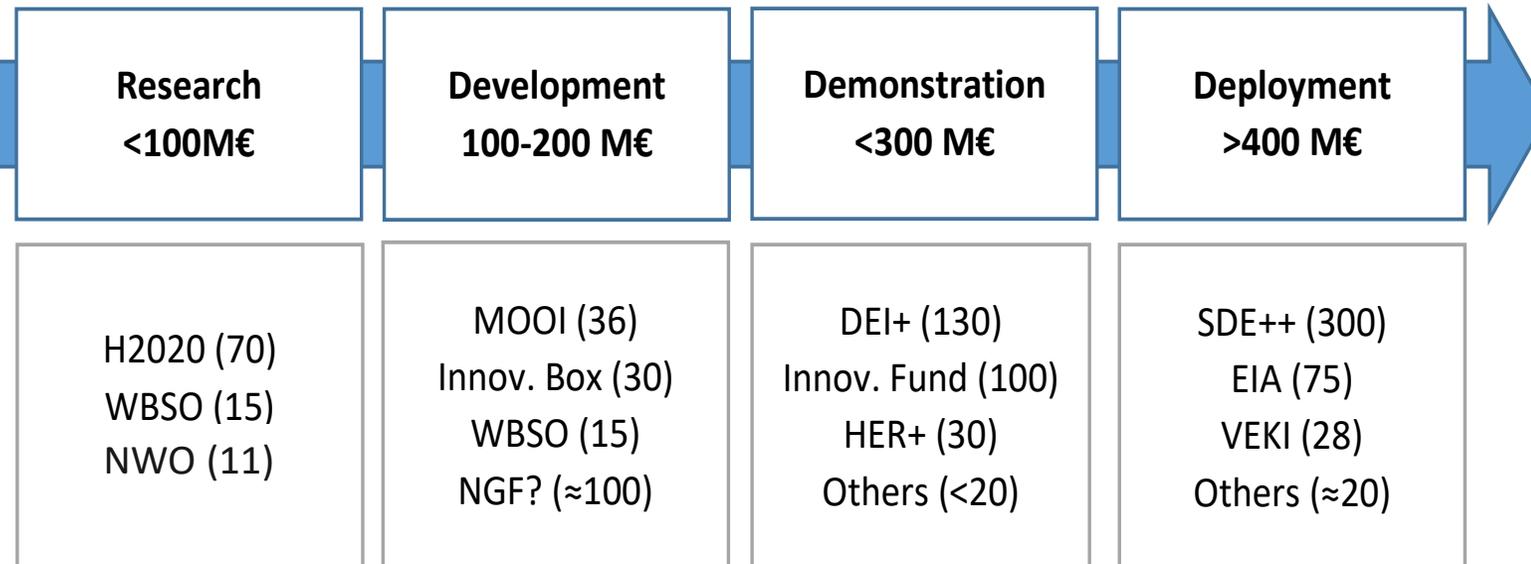
Note: The levy rate includes the floating national contribution and the EU ETS price. The estimated proportion of emissions paying the levy covers only the chemicals, food processing, metals and refinery sectors. It assumes benchmark values follow the draft revision of the EU ETS benchmarks published in December 2020. No behavioural adjustments in the emissions base, i.e. no technological shifts, no energy efficiency improvements or rebound effects compared to 2021 are assumed.

Source: OECD based on CE Delft (2021)



Strong technology support at all stages

Estimated amounts of annual public funding for technology support by stage
(in million EUR)



- NLD focuses on least-cost deployment
- Domestic R&D support is mostly horizontal (R&D tax credits)

Source: OECD calculation based on legislative documents and CE Delft (2021)

Message 2 – Trade-off between
short-run cost-efficiency and
the need to switch to radically
new technologies

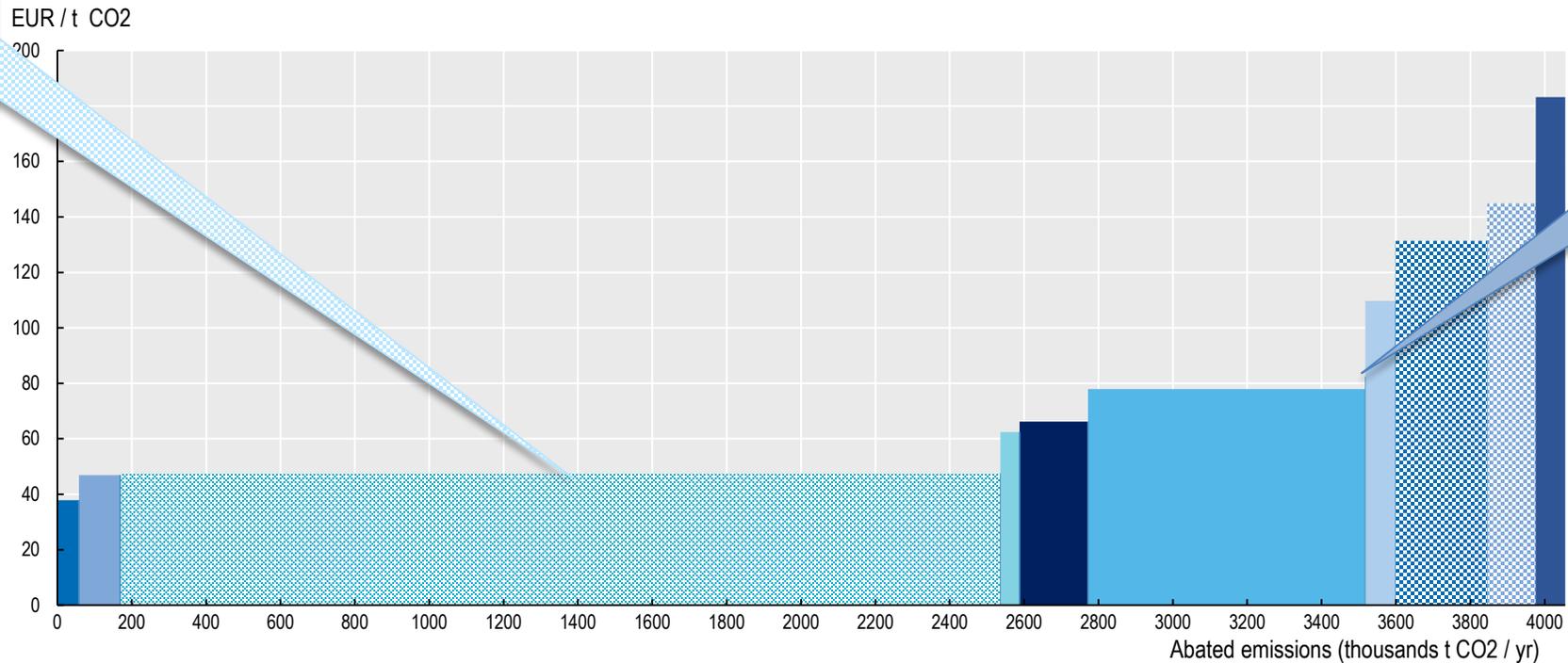


The main deployment support instrument focuses on least-cost abatement

SDE++ subsidy demand curve in first tender (2020)



CCS
42% of expected SDE++ payout in 2020 tender



Green H₂ (invisible):
0.03% of expected SDE++ payout in 2020 tender

Note: areas represent the expected subsidy payment based on RVO's long-term prices; actual pay-out will depend on market prices and RVO's grant decision. Category CCS includes "blue hydrogen"; category hydrogen production is "green hydrogen". Amount tendered to categories hydrogen production and solar thermal barely visible. Average subsidy per ton CO₂ at the technology category level and cumulated abated emissions calculated based on RVO data.

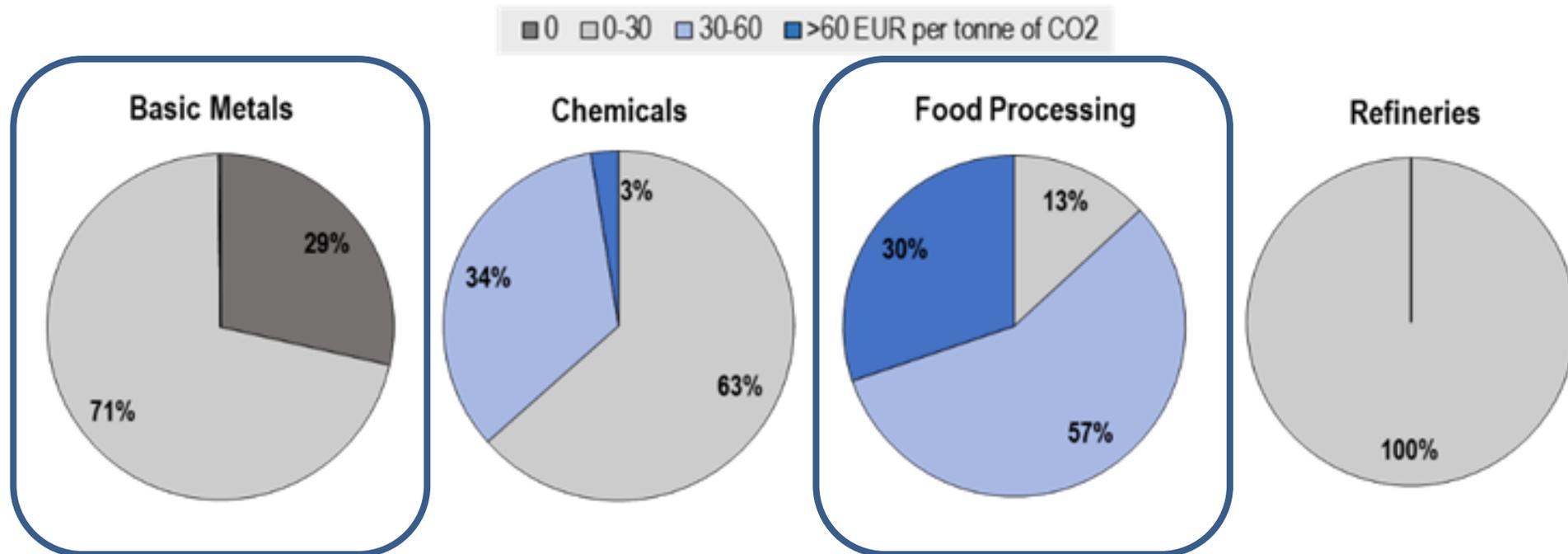
Source: OECD calculations based on RVO data.

Message 3 – Pervasiveness of competitiveness provisions



Competitiveness provisions yield an heterogeneous effective carbon price across firms and sectors

Proportion of CO₂ emissions from fossil fuel energy use at different price intervals, 2021



Note: Figures are based on OECD Taxing Energy Use and Effective Carbon Rates methodology (OECD, 2019 and OECD 2021). They include price signals from energy tax and ODE on natural gas (net of exemptions) and the EU ETS permit prices (independently of whether an allowance was allocated for free or not). The national component of the carbon levy is set to zero for 2021 because of the large amount of excess dispensation rights in 2021. CO₂ emissions are calculated based on fossil fuel energy use data adapted from IEA World Energy Statistics and Balances (2020).

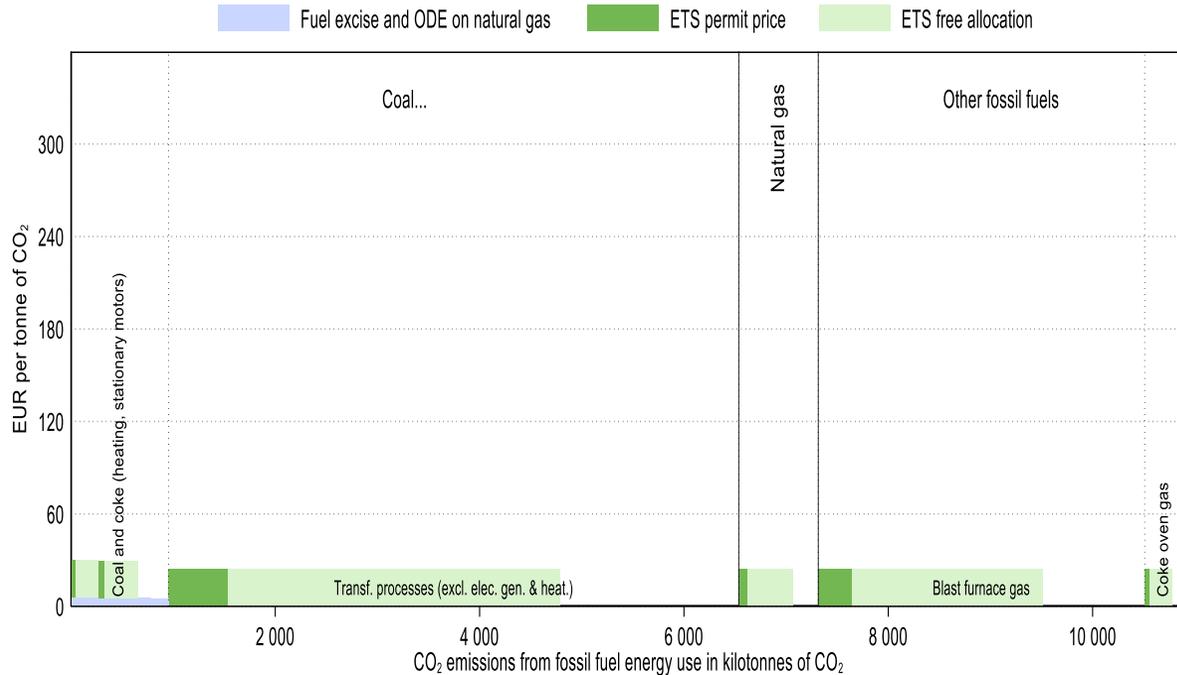
Source: OECD calculations.



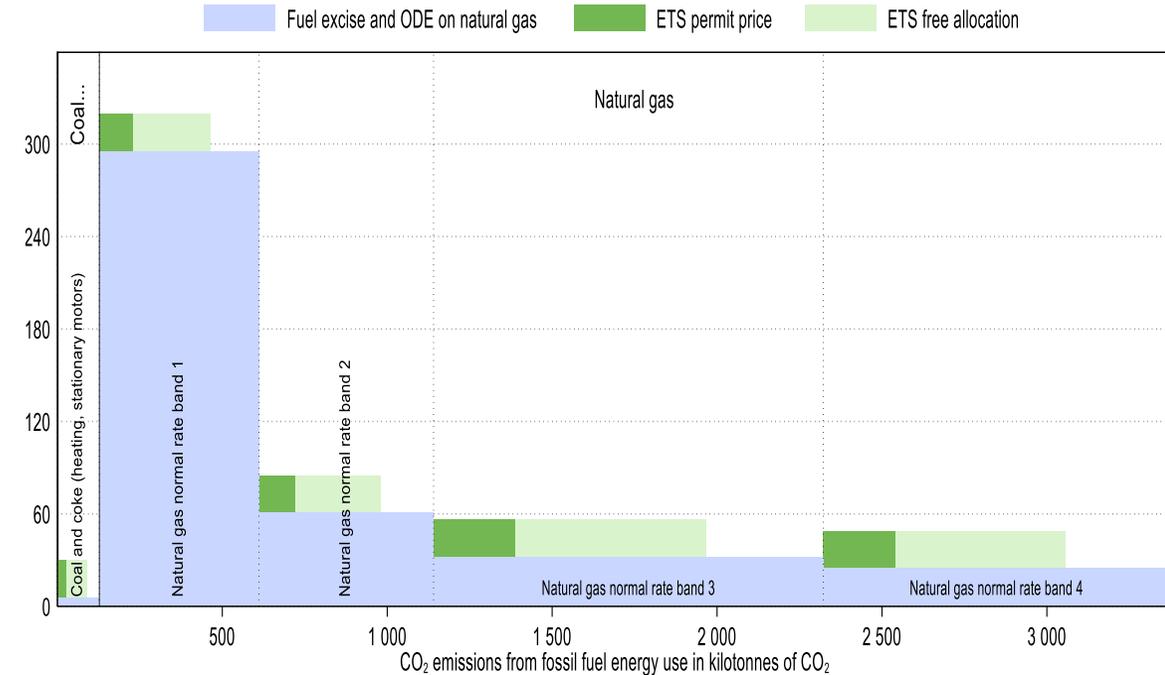
Carbon pricing is heterogeneous within sectors too

Effective carbon rates on CO₂ emissions from fossil fuel energy use, 2021

Basic metals



Food Processing



Note: Figures are based on OECD Taxing Energy Use and Effective Carbon Rates methodology (OECD, 2019 and OECD 2021). They include price signals from energy tax and ODE on natural gas (net of exemptions) and the EU ETS permit prices (accounting for free allocation). The national component of the carbon levy is set to zero for 2021 because of the large amount of excess dispensation rights in 2021. CO₂ emissions are calculated based on fossil fuel energy use data adapted from IEA World Energy Statistics and Balances (2020). Source: OECD calculations.



Take-home messages for policy based on Dutch case

- Establish a **clear carbon pricing trajectory** to encourage low-carbon investment
 - Provides certainty – kicks in gradually
- Complement pricing with **balanced support for mature and radical technologies**
 - This helps industry avoid paying carbon prices in the future
 - Allows eliminating tax exemptions, strengthening efficiency & fairness
- Design **infrastructure programs** (visibility, supra-national level)
- Use regulatory instruments (e.g., **standards**) to encourage green markets creation
- Foster competition, ensure funding for green start-ups and SMEs and an adequate supply of “green” skills

Thank you



Contact details



Luisa Dressler

Economist

Tax Policy and Statistics Division
Centre for Tax Policy and Administration

2, rue André Pascal – 75775 Paris Cedex 16
Tel: +33 1 45 24 75 61 – Fax: +33 1 44 30 63 51

Luisa.Dressler@oecd.org || www.oecd.org/tax

BACK-UP SLIDES

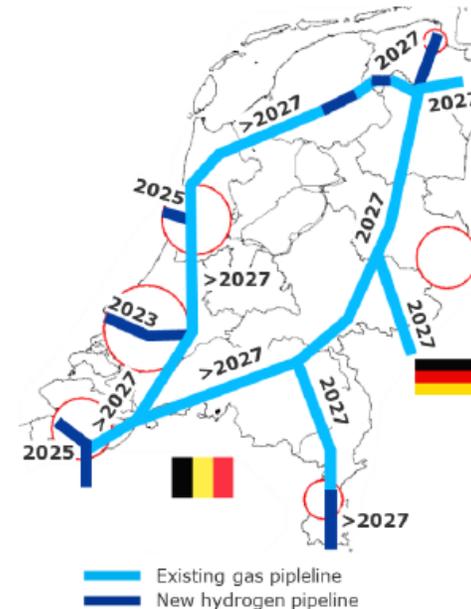
Message 4 - Value added of supra-national coordination and investments



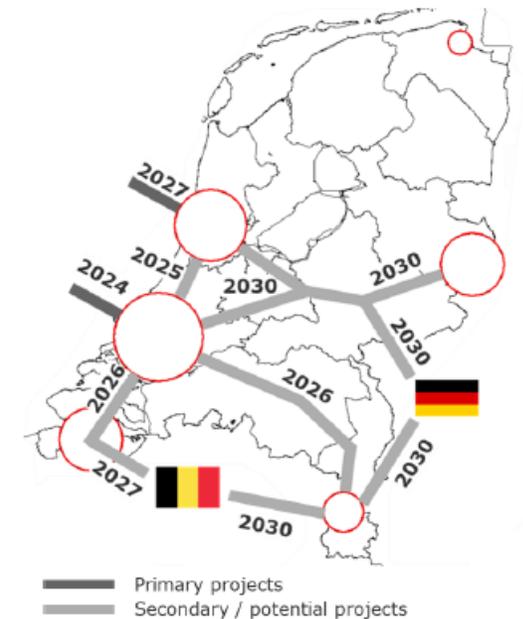
A critical role for infrastructure

- Infrastructure necessary for major technologies:
 - Hydrogen, CCS and renewable electricity
- Visibility over future infrastructure plans is key
- Value added of supra-national coordination and investments
 - Important Projects with Common European Interest (IPCEI)
 - Recovery Plan for Europe (EUR 1.8 trillion, 1/3 for climate change)
 - Connecting Europe Facility

Hydrogen backbone



CCS storage



Message 5 – Framework
beyond carbon pricing and
technology support



The role of regulatory instruments

- **Circular economy & scope 3 emissions**
 - Minimum content requirements and public procurement to create markets for recycled products and synthetic and bio-based feedstock
 - Re-labelling by-products of steel production from “waste” to “product” to facilitate use of recycled products
- **Hydrogen**
 - Setting regulatory standards at European level on the origin and purity
- **CCS**
 - Clearly defining liabilities for carbon leaks outside of storage facilities to allow investors to more accurately price and potentially insure this risk