Executive summary

Countries representing more than 80% of the world economy have announced targets of carbon neutrality by mid-century. Reaching this objective requires a comprehensive set of policy instruments – a "green industrial strategy" – to trigger the necessary investments in zero-carbon energy sources and production processes across all economic sectors. As countries embark on this journey, they can benefit from learning from each other, exchanging knowledge and experience on their different roads towards carbon neutrality.

This document presents the main findings of the project "Sustainable transition of the Dutch industry", whose objective was to evaluate the consistency and cost-effectiveness of the set of policy instruments in place in the Netherlands to reach its 2050 decarbonisation objectives in the manufacturing sector, and to offer recommendations on adjustments of existing policy instruments and further measures.

The analysis of the Dutch climate policy package offers a number of lessons for countries seeking carbon neutrality. The Netherlands illustrates the strength of an approach that combines a strong commitment to raising carbon prices with ambitious technology support. These two pillars can be mutually reinforcing, as a clear trajectory of increasing carbon prices helps make the business case for investment in low-carbon technologies. At the same time, the Dutch case demonstrates the pervasiveness of provisions aimed at supporting the competitiveness of the industry and the trade-off between short-term emission cuts and longer-term technology shifts.

The first pillar of the Netherlands' approach, the carbon pricing signal, includes a carbon levy on industrial emissions that sets an ambitious price trajectory to 2030. This levy provides a strong incentive to encourage low-carbon investment in industry. It is designed so that the additional carbon price kicks in gradually, thus avoiding immediately burdening businesses with new taxes. However, the overall carbon price signal is tempered by provisions that grant extensive preferential treatment to energy-intensive users, including in the form of energy tax exemptions, lower tax rates for large energy consumers, and freely allocated carbon emission allowances. This yields a highly heterogeneous effective carbon price across sectors (e.g. on average EUR 3 per tonne in basic metals and EUR 76 per tonne for the food processing sector in 2021) and across firms, with small firms typically facing much higher energy and carbon prices than large incumbents. The economic inefficiency and horizontal equity concerns arising from this uneven price signal call for broadening tax bases and gradually removing exemptions and preferential rates.

The second pillar of the Netherlands' decarbonisation strategy aims at supporting the uptake of low carbon technologies, focusing on the cost-effective deployment of both mature (e.g. renewable electricity) and radically new technologies (e.g. hydrogen) through subsidy programmes and corporate tax incentives. The main instrument is the Sustainable Energy Transition Incentive Scheme (SDE++), which subsidises the additional costs associated with adopting a low-carbon technology. The instrument is allocated to applicants in increasing order of subsidy requirement per tonne of CO_2 reduction in a tender open to an extensive list of technologies, and is funded through a surcharge on electricity and gas use. However, the surcharge provides generous exemptions for key sectors and lower rates for energy-intensive users. These features imply that small firms may disproportionately contribute to funding the SDE++ scheme. Yet, these firms conversely have potentially little opportunity for claiming subsidies. Moreover, while the allocation design is economically efficient and ensures least-cost decarbonisation in the short run, it favours

technologies that are close to the market at the expense of more radical alternatives that are still at an earlier stage of development (such as green hydrogen). Similarly, the Netherlands supports R&D mostly through broad tax credits and the Innovation Box, which are technology neutral but, by construction, benefit mostly technologies that are closest to the market.

Therefore, the analysis of the Dutch technology support policy package calls for a balanced approach that supports both emerging and mature technologies. Options include holding separate tenders across technology readiness level for deployment instruments, and combining horizontal R&D support with targeted support for emerging technologies.

Beyond the core set of climate policy instruments, regulatory instruments can play an important role to support the diffusion of particular technologies. For example, clearly defining liabilities for carbon leaks outside of storage facilities would allow investors in carbon capture and storage (CCS) to more accurately price and potentially insure this risk. Minimum content requirements and public procurement can help create markets for recycled and bio-based products to bring about a more circular and bioeconomy.

Visibility over future infrastructure plans appears key for industrial firms to undertake low-carbon investments, as many technologies rely on shared infrastructure (notably hydrogen, CCS and renewable electricity). The global nature of climate change, the significant investments that it requires and the size of typical retrofitting and demonstration projects in industry also imply that the low-carbon transition can best be tackled at the supra-national level.

Finally, the low-carbon transition requires the alignment of policy frameworks well beyond the core climate policy toolbox. This includes a fit-for-purpose proactive and responsive regulatory framework, competition and entrepreneurship policies that encourage business dynamism and the reallocation of resources toward the most energy-efficient firms, skills and science policies that ensure industry can access the right human capital and that new research into low-carbon technologies is accompanied by development of other productivity-enhancing innovations, and investment and financial policies that enable start-up businesses offering decarbonisation solutions to grow. An effective and cost-efficient shift to a low-carbon economy requires a whole-of-government approach beyond ministries and other agencies traditionally mobilised in the development of climate change policies.

The recovery from the COVID-19 pandemic and the roll-out of sizeable stimulus packages provides a unique opportunity for governments to “build back better” and to steer the economy onto a green growth trajectory. Some countries such as the Netherlands are already taking the lead, but more ambitious measures are necessary across all countries to reduce net greenhouse gas emissions to zero before mid-century. With all eyes now on COP 26 in Glasgow this year, this report provides direction and support for countries to confidently reinforce their commitments and climate policy action.