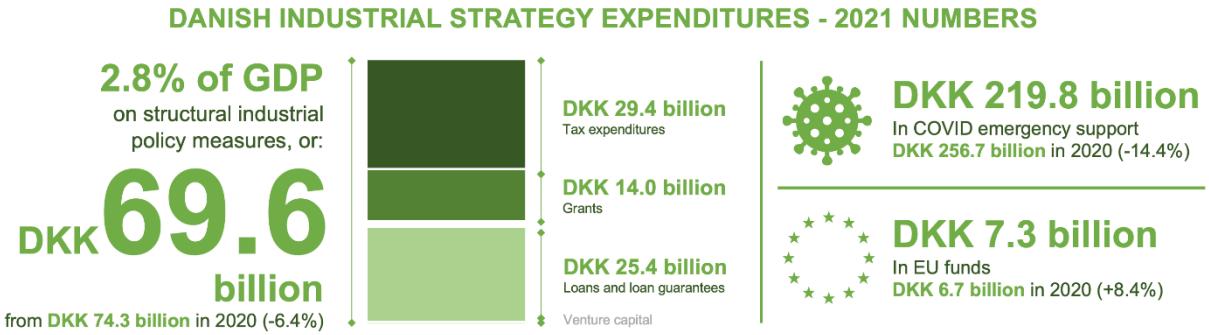
Denmark: Quantifying Industrial Strategy

Highlights

- **Compared to other countries, the Danish industrial strategy is characterised by a strong green focus, which is mainly targeting the energy sector.**
- **Compared to other countries, the Danish industrial strategy, including green industrial policy, relies more on grants and tax expenditures and less on financial instruments, with the notable exception of COVID emergency support.**
- **Besides the energy sector, Danish sectoral support is mainly targeted to transport.The Danish support to businesses relies much less on labour cost reduction and support to training than in other countries. Training support and other active labour market programmes are provided at the worker level instead.**



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The QuIS project

The 'Quantifying Industrial Strategies (QuIS)' project measures industrial strategies across OECD countries through harmonised data on industrial policy expenditures, their composition, their mode of delivery, and the characteristics of their beneficiaries. This allows participating countries to benchmark their industrial strategies against each other in terms of industrial policy expenditures, policy priorities, policy instruments and recipients.

The data gathered for each country were sent to the member states for additional checks and validation, also with questions regarding the detail of certain instruments as well as gaps in the available data. After countries' validation, the final cross-country data were compiled in a common database. Another relevant delivery of the QuIS project is the report 'Quantifying industrial strategies across nine OECD countries' published as an OECD Science, Technology and Industry Policy Paper, which consists in a cross-country analysis of the industrial strategies of the first nine countries participating in the project. Both the database and the report will be downloadable from https://www.oecd.org/industry/industrial-policy-and-strategies/.

General picture

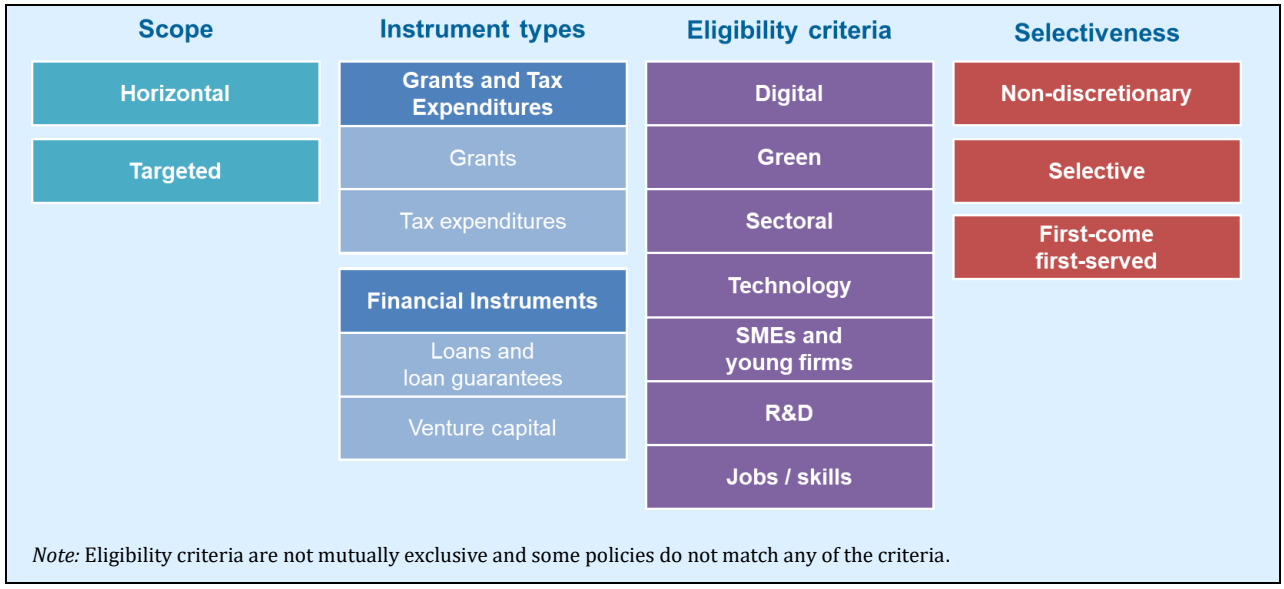
The Danish industrial strategy is characterised by its dedicated support to the green transition, accounting for 30% of its industrial policy spending on grants and tax expenditures (0.54% of GDP). This green support is mostly provided to the energy sector to produce renewable energy. Moreover, the Danish industrial strategy, including green industrial policy, relies more on grants and tax expenditures and less on financial instruments, with the notable exception of COVID emergency support, for which the country relied more on financial instruments. Regarding sectoral support in Denmark, this tends to be targeted to energy and transport. Policies not following any eligibility criteria used in QuIS are also important in Denmark since they represent 54% of the support in the form of grants and tax expenditures and 91% of the support in the form of financial instruments.

Box 1. QuIS methodology

QuIS gathers publicly available data from many, decentralised sources on industrial policy expenditures. For the case of Denmark, the project focuses on annual industrial policy expenditures higher than DKK 44 million (0.002% of GDP in 2017). The period covered is 2019-2021 and the data track both structural policies and COVID-19 emergency support measures. Instruments targeting agricultural firms are excluded from the database and the analysis. Policy instruments are classified along four dimensions: scope, instrument type, eligibility criteria and selectiveness. The QuIS methodological paper outlines the scope and the definitions in more detail and can be found here: oe.cd/il/QuIS. Importantly, financial instruments, defined as the provision of loans, loan guarantees or equity investments, are measured through the so-called notional amounts method, which measures expenditures as the amount of financing (or guarantees) provided by public entities. This measure was chosen as it is the most widely available across countries. However, amounts obtained with this method are not directly comparable with grants and tax expenditures, so the two types of instruments are recorded and analysed separately.

Countries used to define the benchmark are Canada, France, Ireland, Israel, Italy, the Netherlands, Sweden and the United Kingdom. Country notes are also available for these countries.

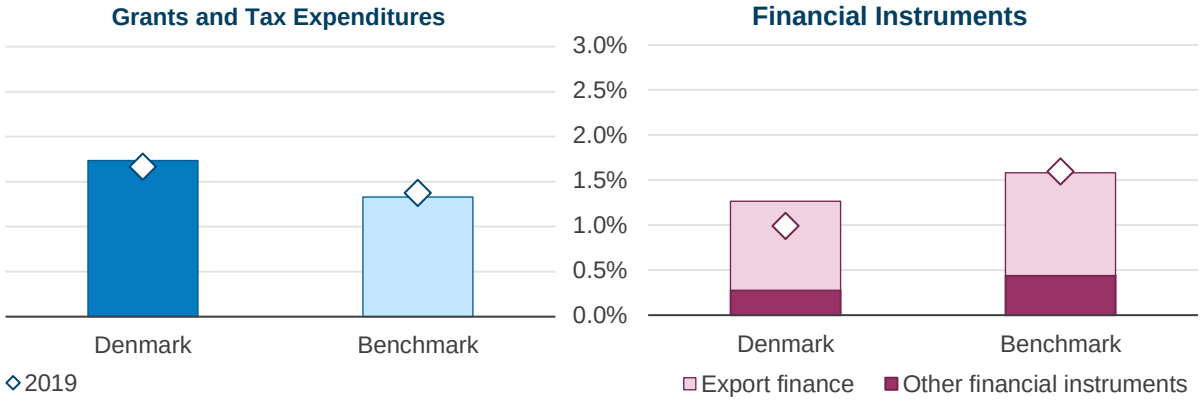
Figure 1. QuIS Data Categorisation



Note: Eligibility criteria are not mutually exclusive and some policies do not match any of the criteria.

A. Danish industrial strategy relies more on grants and has a strong green focus

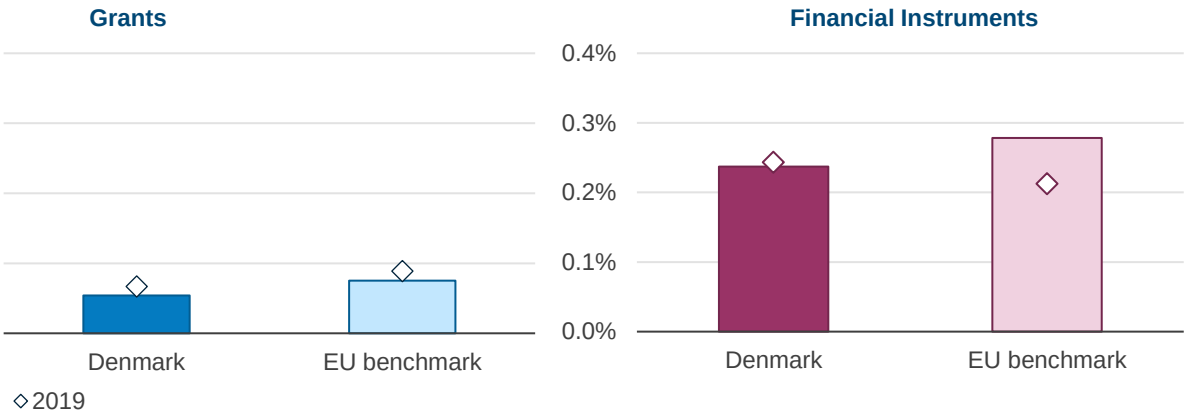
Figure 2. Domestic Industrial policy expenditures in 2021, % of GDP (diamonds – in 2019)



Note: Non-EU and structural policies (i.e., excluding COVID and EU support).
Source: OECD calculations based on the QuIS database.

Denmark spends more on grants and tax expenditures as a percentage of GDP than the benchmark (1.7% vs 1.3% of GDP in 2021, Figure **2**), while it spends less on financial instruments (1.3% vs 1.6% of GDP in 2021). As for grants and tax expenditures, this difference comes from larger schemes supporting the green transition, specific technologies and from larger horizontal instruments. As for financial instruments, this difference can be explained by lower export financing support, and smaller SME-focused schemes.

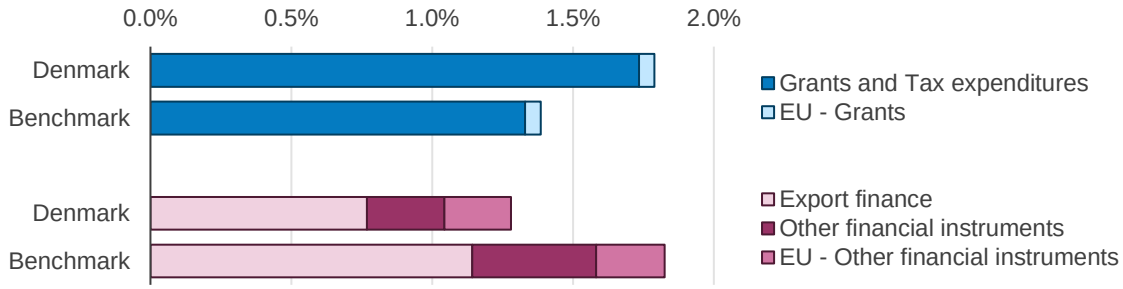
Figure 3. EU industrial policy support on grants and financial instruments in 2021, % of GDP (diamonds – in 2019)



Note: The EU benchmark corresponds to the average of the other EU participating countries: France, Ireland, Italy, the Netherlands and Sweden.
Source: OECD calculations based on the QuIS database.

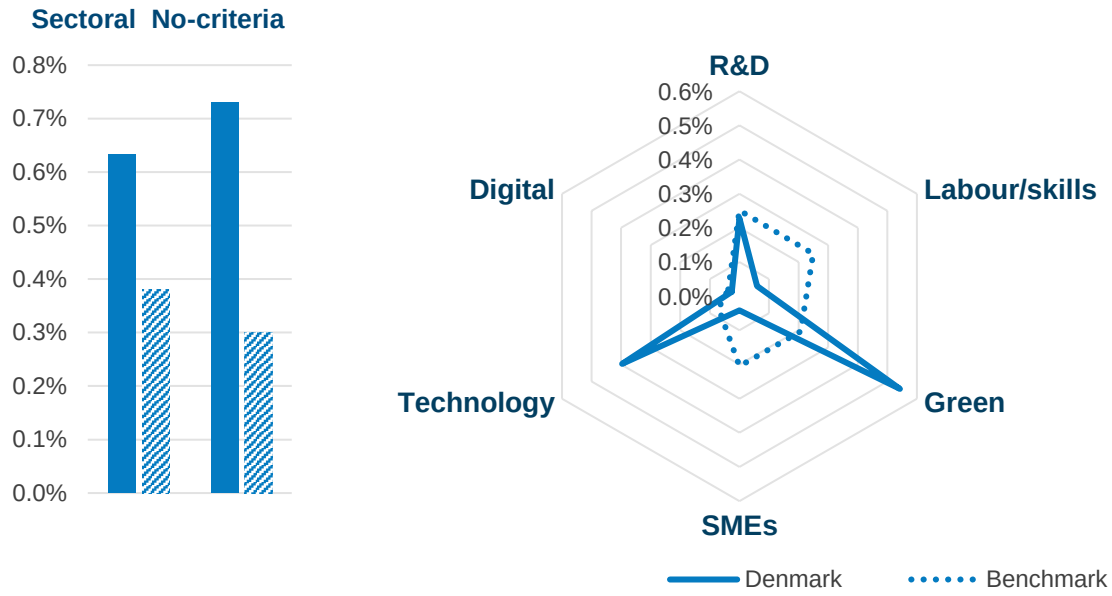
Denmark benefits less from EU grants than the average of the other EU countries considered (0.05% vs 0.08% of GDP in 2021 - **Figure 3, left**), this difference is primarily driven by the higher resources provided by the '*European Regional Development Fund (ERDF)*' to firms from Italy (0.18% of GDP), France (0.08% of GDP) and Sweden (0.05% of GDP); while the amount received by Danish firms is much lower (0.01% of GDP). Like the other EU countries, Denmark receives more EU financial instrument support than EU grants, while it benefits less from those schemes than the average of the other five EU countries considered (0.24% vs 0.28% of GDP in 2021 - **Figure 3, right**).

Summary Figure. Danish industrial policy expenditures by instrument type in 2021, % of GDP



Note: Includes EU support.
Source: OECD calculations based on the QuIS database.

Figure 4. Industrial policy expenditures by eligibility criteria in 2021, % of GDP (Left: Sectoral and no criteria, Right: Other criteria)



Note: Structural policies (i.e., excluding COVID). Categories are not mutually exclusive, as policies can be tagged in several categories. Additionally, some policies do not fulfil any of these eligibility criteria (see right panel).
Source: OECD calculations based on QuIS database.

Regarding grants and tax expenditures; Danish industrial strategy is structurally different than that of other countries (**Figure 4**). Denmark spends more, as a percentage of GDP, on grants and tax expenditures supporting specific sectors, the green transition, specific technologies and not fulfilling any eligibility criteria.

First, it has a strong green focus, with 0.54% of GDP spent on green policies (30% of its grants and tax expenditures) compared to 0.20% of GDP in the benchmark. Important instruments in this category include grants for wind turbine electricity *('Tilskud til vindmølleelektricitet'*, 0.16% of GDP) and grants for renewable energy plants *('Tilskud til VE-anlæg, decentrale kraftvarmeværker mv'*, 0.10% of GDP).

Second, as a percentage of GDP, the share spent on technology-focused policies is almost six times higher than in the benchmark (0.40% of GDP vs 0.07% of GDP), with all these instruments being green, such as a grant supporting the development of biogas technologies *('Tilskud til opgradering eller rensning af biogas'*, 0.10% of GDP).

Third, when compared to the benchmark, Denmark spends a higher share of GDP on grants and tax expenditures not directed to any eligibility criteria (0.7% vs 0.3% of GDP). Among these policies, a business-oriented electricity tax deduction *('Fradrag for elafgift',* 0.65% of GDP) is by far the largest instrument, followed by a tax exemption for profits on unlisted portfolio shares ('*Skattefritagelse for avancer på selskabers unoterede porteføljeaktier*', 0.04% of GDP).

Fourth, as a share of GDP, R&D grants and tax expenditures in Denmark are just slightly lower than in the benchmark (0.23% vs 0.25% of GDP). Denmark's R&D support relies more on grants (0.14% of GDP) than on tax expenditures (0.09% of GDP), while this is the opposite for almost all the other countries in the sample (except Sweden). Denmark uses R&D grants to support R&D in strategic technologies or intended to address specific societal challenges, with instruments such as the '*Strategic and challenge-driven research*' (0.05% of

GDP). With respect to R&D tax incentives, the larger scheme is the additional deduction of 30% for R&D expenditure (0.07% of GDP)[1].

Fifth, when compared to the benchmark, Denmark provides a smaller share of GDP to grants and tax expenditures in some criteria: jobs/skills (0.06% vs 0.25% of GDP) and SMEs and young firms (0.04% vs 0.20% of GDP). The low share of spending on jobs/skills policies can be understood by considering the structural characteristics of Danish labour policies, which are primarily provided to workers rather than firms (Box 1). On the other hand, the relatively small share of GDP spent on grants and tax expenditures targeted to SMEs contrasts with the high share in countries such as the Netherlands (0.50% of GDP targeting SMEs, with tax expenditures to SMEs representing a 0.49% of GDP vs 0.03% in Denmark).

Denmark also has a strong sectoral focus, with the country providing 0.6% of GDP to grants and tax expenditures supporting specific sectors compared with 0.4% in the benchmark, as well as a limited emphasis on policies focusing on the digital transition. In Denmark, the most important sectoral policies are the aforementioned green policies supporting the energy sector, as well as policies supporting the transport sector, such as exemptions of wage tax for ships (0.04% of GDP) and of fuel tax for trains, ships and airplanes (0.07% of GDP).

The high share of Danish spending on green industrial policies is complemented with other environmental policies such as environmental tax rates (**Box 2**). Not only does Denmark spend more than the benchmark on green industrial policy instruments to decarbonise its economy, but it also relies on complementary policies and regulations, with a particular focus on reducing emissions from other (non-CO2) polluting gases.

Focusing on financial instruments; the lower support of Denmark with respect to the benchmark can be explained by lower export financing support and smaller SME-focused schemes.

Regarding export finance, while countries such as Canada[2] and Sweden[3] provided 3.7% and 1.9% of GDP in export finance support in 2021 respectively, the export insurance provided by Denmark's '*EKF Danmarks Eksportkredit' (*EKF Denmark's Export Credit Agency) was just 0.8% of GDP the same year.

With respect to financial instruments targeting SMEs, Denmark provided 0.05% and 0.02% of GDP on SME-focused loans and guarantees, respectively, while they represented 0.11% and 0.15% of GDP in the benchmark. For instance, the SME-focused loans granted by the '*Vaekstfonden'* accounted for 0.05% of GDP, which is much lower than similar loans granted by Canada's '*Business Development Bank*' (0.21% of GDP) and France's '*BPIfrance'* (0.34% of GDP). Similar differences are found for SME-focused guarantees: while the SME-focused guarantee scheme of the *'Vaekstfonden'* represented 0.01% of GDP, the Italian *SMEs Guarantee Fund* and the French '*Bpifrance - Garanties'* were much larger, representing 0.76% and 0.26% of GDP, respectively.

It is worth noting that 91% of Danish financial support does not require any eligibility criteria, with the biggest instrument in this category being the aforementioned export insurance (0.8% of GDP), followed by loans provided by the Nordic Investment Bank (0.1% of GDP) and the Green Investment Fund (0.03% of GDP). While the remaining 9% is mostly provided to SMEs and young firms by the '*Vaekstfonden*' (0.06% of GDP) mentioned above, followed by the Match funding scheme ('*Matchfinansiering'* , 0.01% of GDP).

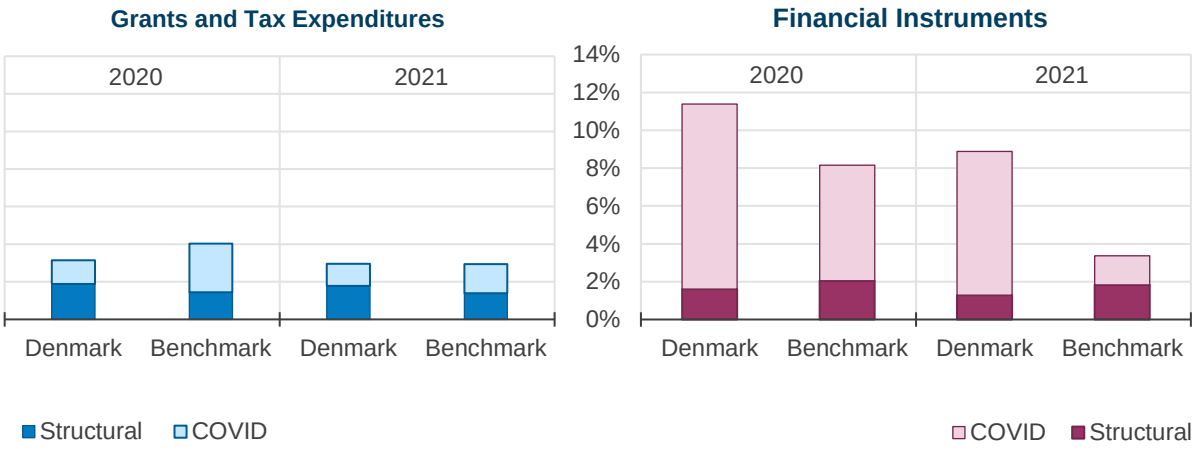
[1] In addition to the standard 100% deduction of R&D expenditure available in most OECD countries, which is not considered business support.

[2] Provided by Export Development Canada.

[3] Provided by the Swedish 'Exportkreditnämnden (EKN))' and '*Aktiebolaget Svensk Exportkredit*'.

B. Denmark used more financial instruments for COVID emergency support to businesses

Figure 5. COVID emergency support through grants/tax expenditures (left) and financial instruments (right), % of GDP



Source: OECD calculations based on the QuIS database.

The expenditure split between grants/tax expenditures and financial instruments flips when looking at COVID support (**Figure 5**). The country relied overwhelmingly on financial instruments to support firms during the COVID crisis. For example, tax deferrals (considered as loans) represent 7.2% of Danish GDP in 2020, vs 1.4% in Canada and 1.8% in the Netherlands for similar instruments. Conversely, COVID support channels less through grants and tax expenditures in Denmark than in the benchmark.

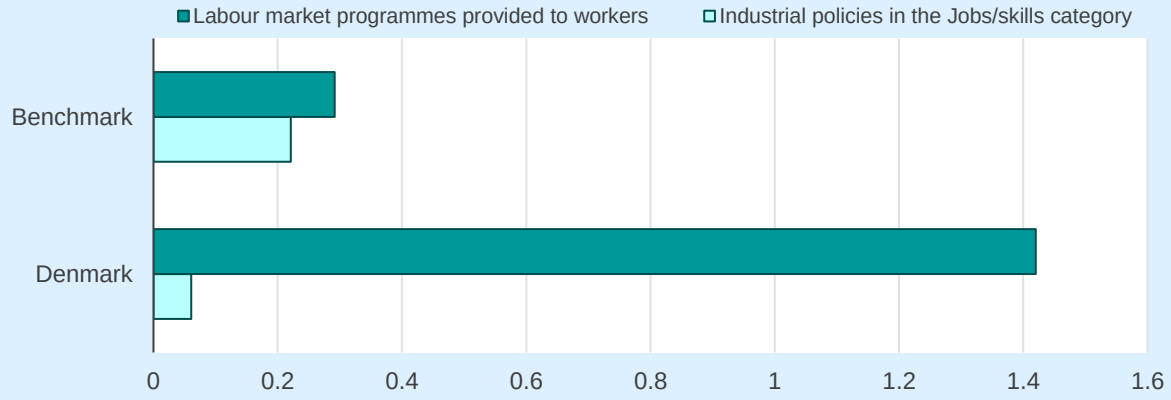
An important aspect of these quite different dynamics can be found in wage compensation schemes. In 2020, the '*Emergency Wage Grant*' in Canada represented 3.8% of GDP and the *'Noodmaatregel overbrugging voor behoud werkgelegenheid'* in the Netherlands was 1.7% of GDP, while the Danish '*Wage Compensation Scheme' ('Lønkompensationsordningen')* was only 0.4% of GDP that year. It is worth noting that Danish support for labour strongly relies on policies directed to workers (and not employers), which do not fall in the scope of this project, as they are not considered industrial policy instruments; however, they would (at least partly) substitute for the exceptional wage compensation schemes set up by many countries during the COVID crisis (**Box 2**).

Box 2. Interactions of Danish industrial policies in the jobs/skills category with active labour market programmes provided to workers

QuIS' scope includes labour policies geared towards enhancing competitiveness, investment or economic development by providing direct support to firms, linked to their wage bill, employment, hiring or training expenditures. Hence, active labour market policies that are directly provided to workers are excluded, such as public employment services, institutional training, 'sheltered and supported employment and rehabilitation' and direct job creation.

To understand the low expenditure on industrial policies in the jobs/skills category, it is useful to compare it with the expenditures on labour market programmes provided to workers from the OECD Labour market Programmes Database. In particular, while Denmark spends less than the benchmark on industrial policies in the jobs/skills category in 2020 (0.06% of GDP vs 0.22% of GDP), it spends much more than the benchmark on active labour market programmes provided to workers (1.42% of GDP vs 0.31% of GDP) . This reflects two major features: 1) labour policies in QuIS' scope and active labour market programmes can be considered by some countries as substitutes, and 2) Denmark focuses its employment support on policies provided to workers under the flex-security model. Indeed, Denmark mostly relies on policies such as 'supported employment and rehabilitation' (0.98% of GDP) and institutional training (0.29% of GDP) to increase the skill level and labour market engagement of its workforce. On the other hand, its industrial policies in the jobs/skills category are used for specific purposes such as supporting the water transport sector by reducing its labour costs through payroll tax exemptions representing 0.04% of GDP.

Figure 6 Industrial policies in the Jobs/skills category and labour market programmes provided to workers in Denmark and the benchmark, % of GDP in 2020

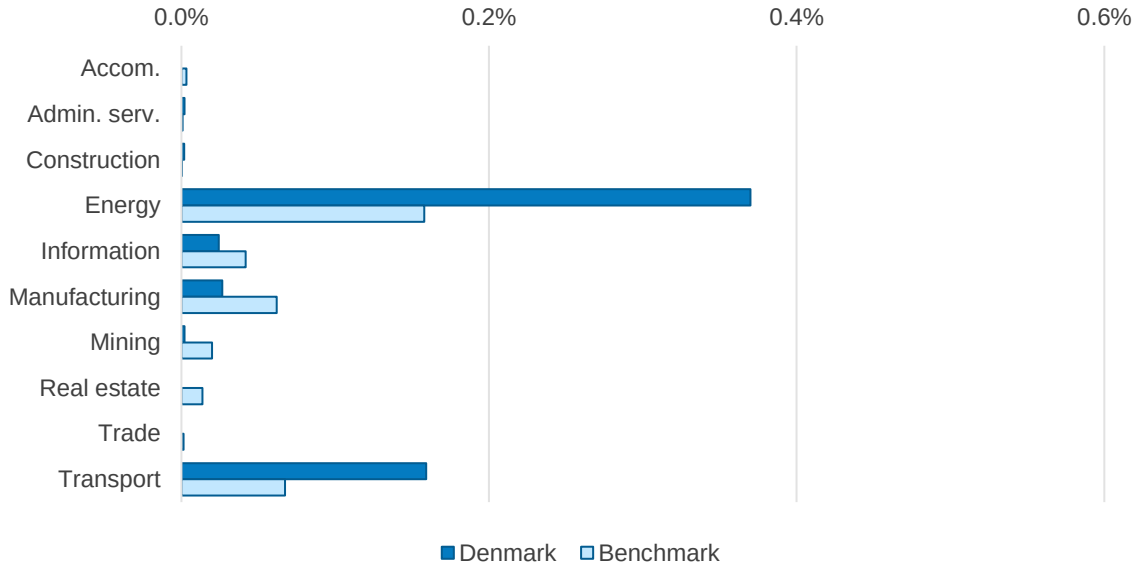


Source: OECD calculations based on the OECD Labour Market Programmes database and the QuIS database. Note: 2020 is the last available year of data on Labour Market Programmes. The labour market programmes considered were "Public employment services", "institutional training", "Sheltered and supported employment and rehabilitation" and "Direct job creation", which are the ones directly provided to workers. Passive labour market programmes (e.g., unemployment benefits) are not included since their main goal is to provide benefits to the unemployed rather than enhancing employment creation and human capital of the workforce.

Deep dive on Danish industrial strategy

A. Danish sectoral policies tend to be targeted to agriculture, energy and transport

Figure 7. Sectoral support by sector as a percentage of total GDP - Grants and tax expenditures, 2021



Note: Instruments targeting agricultural firms are excluded from the QuIS database and analysis. Includes 'Extraction of crude petroleum and natural gas'.*Reading example:* In Denmark, the amount of support, in the form of grants and tax expenditures, specifically directed to the energy sector represents 0.37% of total GDP, whereas it represents 0.16% in the benchmark.
Source: OECD calculations based on the QuIS database.

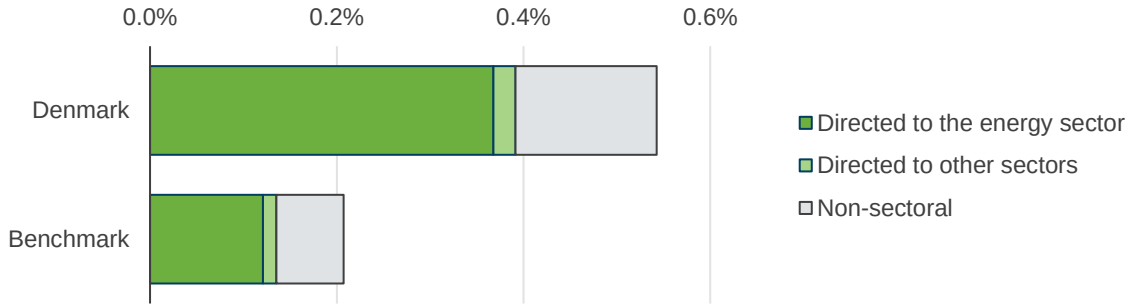
An industry-level perspective reveals that sectoral industrial policy in Denmark overwhelmingly focuses on two sectors: Energy and to a lesser extent Transport (**Figure 7**). Sectoral support, as a percentage of GDP, is higher than in the benchmark for those industries: Energy (0.37% vs 0.16%) and Transport (0.16% vs 0.07%). In contrast, Danish support to manufacturing is much lower than in the benchmark (0.03% vs 0.06% of GDP). This picture is not significantly affected when comparing support rates (i.e., support as a percentage of sectoral GDP).

Denmark relies on a series of large instruments to support their strategic sectors. For instance, in the energy sector, this is driven by the already mentioned grants to wind turbine electricity (0.16% of GDP) and for renewable energy plants (0.10% of GDP), while in transport, it relies on schemes such as tax exemptions on wage tax in ships *('Skattefritagelse for løn ved arbejde om bord på skibe registreret i Dansk Internationalt Skibsregister'* , 0.04% of GDP) and on fuel tax for trains, ships and airplanes (0.07% of GDP).

As mentioned above, support to manufacturing is significantly lower in Denmark when compared with the benchmark. For instance, countries such as France and the United Kingdom spend 0.27% and 0.07% of GDP in manufacturing support, respectively, vs 0.03% in Denmark. The largest instruments supporting manufacturing in France are reductions in energy tax for manufacturing firms (totalling 0.10% of GDP), while the largest schemes in the UK are the '*Industrial Relief Scheme*' (0.05% of GDP) for excise duty on oil used in manufacturing and tax exemptions for inputs used in metallurgical processes (0.01% of GDP). Conversely, Denmark provides much smaller manufacturing support through two instruments: a grant based on energy savings in industries (*'Energibesparelser i erhvervene*' - 0.02% of GDP) and an R&D grant towards the food processing sector *('Udviklings- og forskningsaktiviteter inden for fødevaresektoren, GUDP*' - 0.003% of GDP).

B. Danish green policies support the energy sector through grants

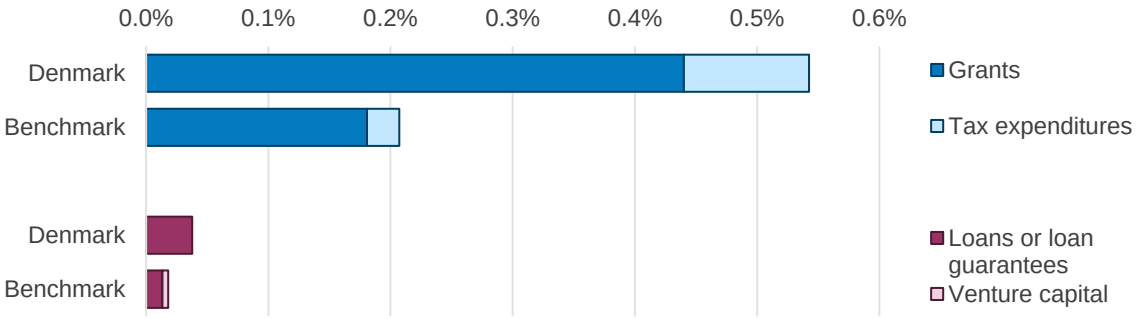
Figure 8. Sectoral composition of green support in Denmark, % of total green industrial support, 2021



*'Non-sectoral' refers to policies that are not targeted to a specific sector. Nevertheless, some beneficiaries of these policies may belong to the energy sector.
Note: Includes EU support.
Source: OECD calculations based on the QuIS database.

Green industrial policies are more sectoral than in the benchmark (0.40% vs 0.16% of GDP, **Figure 8**). The Danish energy sector receives around 68% of the support provided by green policies (0.37% of GDP), higher than in the benchmark (58% - 0.12% of GDP). The largest green and sectoral instruments include the grants for wind turbine electricity *('Tilskud til vindmølleelektricitet'* - 0.16% of GDP) and the grants for renewable energy plants *('Tilskud til VE-anlæg, decentrale kraftvarmeværker mv.'* - 0.10% of GDP). Furthermore, among the large non-sectoral green instruments, Denmark provides a tax exemption for renewable energy usage from biomass in the business sector[4] ('Afgiftsfritagelse af vedvarende energi fra biomasse' - 0.06% of GDP) and an exemption of the registration tax of electric vehicles for businesses (*'Indfasning af nul- og lavemissionsbiler i registreringsafgiften'* - 0.04% of GDP).

Figure 9. Distribution of green expenditures by instrument type in 2021, % of GDP



Note: Includes EU support.
Source: OECD calculations based on the QuIS database.

Most of the green support is provided through grants (0.44% of GDP, while tax expenditures represent 0.10% of GDP, **Figure 9**), the opposite trend compared to non-green instruments, both for Denmark and the benchmark**.** Regarding green financial instruments, Danish support is exclusively provided through loans of the 'Danish Green Investment Fund - *Grønne Investeringsfond*.' In addition, up until 2021, there was no venture capital

[4] The tax exemptions for renewable energy usage from biomass ('*Afgiftsfritagelse af vedvarende energi fra biomasse*') includes the tax relief for biogas '*Afgiftslempelse for biogas mv.*'.

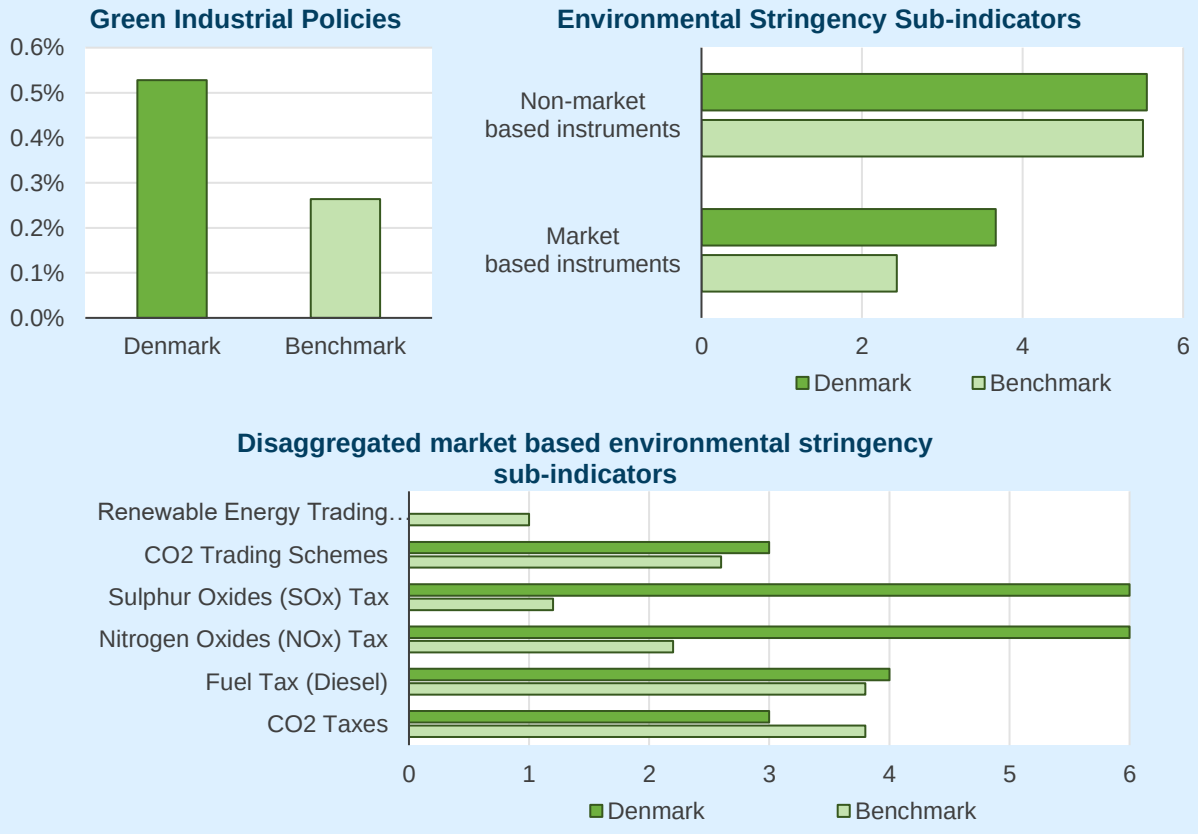
instrument specifically targeting the green transition in Denmark, even though the greening of firms is streamlined in the *Vaekstfonden* agency's broader instruments. *Vaekstfonden* received DKK 4 billion in the period 2020-2022 for this purpose[5]. By contrast, in the benchmark, green financial instruments are provided through a combination of venture capital and loans.

[5]Numbers reported in an official report of Denmark's Green Future Fund (Danmarks Grønne Fremtidsfond): https://dgff.dk/wp-content/uploads/2020/12/Politik-DGFF_EN.pdf.

Box 3. Interactions of Danish green industrial policies with environmental policies

While Denmark spends a higher share of GDP on green industrial policies relative to the benchmark in 2020[6] (0.53% of GDP vs 0.27% of GDP, upper-left part), its environmental policy stringency is also higher than the benchmark for market-based instruments while it does not differ from the benchmark for non-market-based instruments (Figure 10, upper-right part). At a more disaggregated level, the higher stringency of market-based instruments in Denmark is driven by taxes on Nitrogen Oxides (NOx) and Suplhur Oxides (SOx) (Figure 10, lower part) - two gases produced by the burning of fossil fuels with the former being a greenhouse gas and the latter being an aerosol with negative consequences for plant growth, ecosystems and waterways - while the Danish market-based stringency for CO2 is not particularly different than the benchmark. This simple comparison sheds light on some complementarities in the Danish green policy toolkit. Specifically, Denmark seems to use two tools to reduce pollution: grants to renewable energy, and taxes and regulations.

Figure 10. Green industrial policies (left, % of GDP) and environmental stringency sub-indicators (right, indicator from 1 to 6) for Denmark and the benchmark, 2020. Disaggregation of market and non-market environmental stringency sub-indicators below (indicator, from 1 to 6)



Source: Own calculations based on OECD Environmental Policy Stringency Indicator database and QuIS database. Note: 2020 is the last available year of the Environmental Policy Stringency Indicator database.

[6] This box uses green industrial policy expenditures of 2020 since this is the last available year for the OECD environmental stringency indicators.