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Internal Carbon Pricing

A KEY ELEMENT OF
CLIMATE STRATEGY

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Internal Carbon Pricing

A Key Element of Climate Strategy

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Executive Summary

Carbon pricing—a market-based instrument that seeks to drive decarbonization by creating financial incentives—has emerged as a key policy measure to drive carbon reduction. It can be applied as a policy instrument at the national or regional level and at a corporate level in the form of an internal carbon price.

Insights for What's Ahead

While the pandemic is testing the resilience of carbon pricing initiatives, many jurisdictions are accelerating their efforts on climate action. Even during the pandemic, many jurisdictions (e.g., Denmark, France, New Zealand, Sweden, and the UK) reinforced their net zero CO_2 emissions target by building them into national legislation.[1] Today, there are 60 carbon pricing instruments implemented or scheduled for implementation on a national, regional, and subnational level, covering approximately 16 percent of global greenhouse gas (GHG) emissions.[2]

Internal carbon pricing can play an important role in helping companies transition to net-zero. Globally, an increasing number of companies are using an internal carbon price to reduce emissions across their value chains. In 2019, about 699 companies disclosed that they use internal carbon pricing.[3] Companies that have implemented an internal carbon price use the insights to inform decisions on capital investment and to measure, model, and manage financial risks. The key observation is that there is no one right way to implement an internal carbon price and companies can adopt an approach that is most suitable for them.

Adopting TCFD recommendations and setting science-based targets can help companies future-proof their climate strategy. Disclosing in line with the Taskforce for Climate-related Financial Disclosure (TCFD) recommendations can help companies understand how they are exposed to climate-related risks now and in the future. It encourages the use of scenario planning to analyze risk in the short, medium, and long term and evaluate what the impact could be on your business, strategy, and financial planning. Setting science-based targets—in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement—will help companies be ready for changing regulations and public policy. Delaying action will require more dramatic action later.

Companies have a vital role to play in building a low-carbon and climate-resilient economy. Those that proactively consider the opportunities, identify risks, think through what it means for them, and take concerted climate action will be better prepared to navigate the changing environment and build a competitive advantage for their organizations.

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1 "Net Zero Carbon Tracker," Energy and Climate Intelligence Unit

2 "Carbon Pricing Dashboard," World Bank, 2020

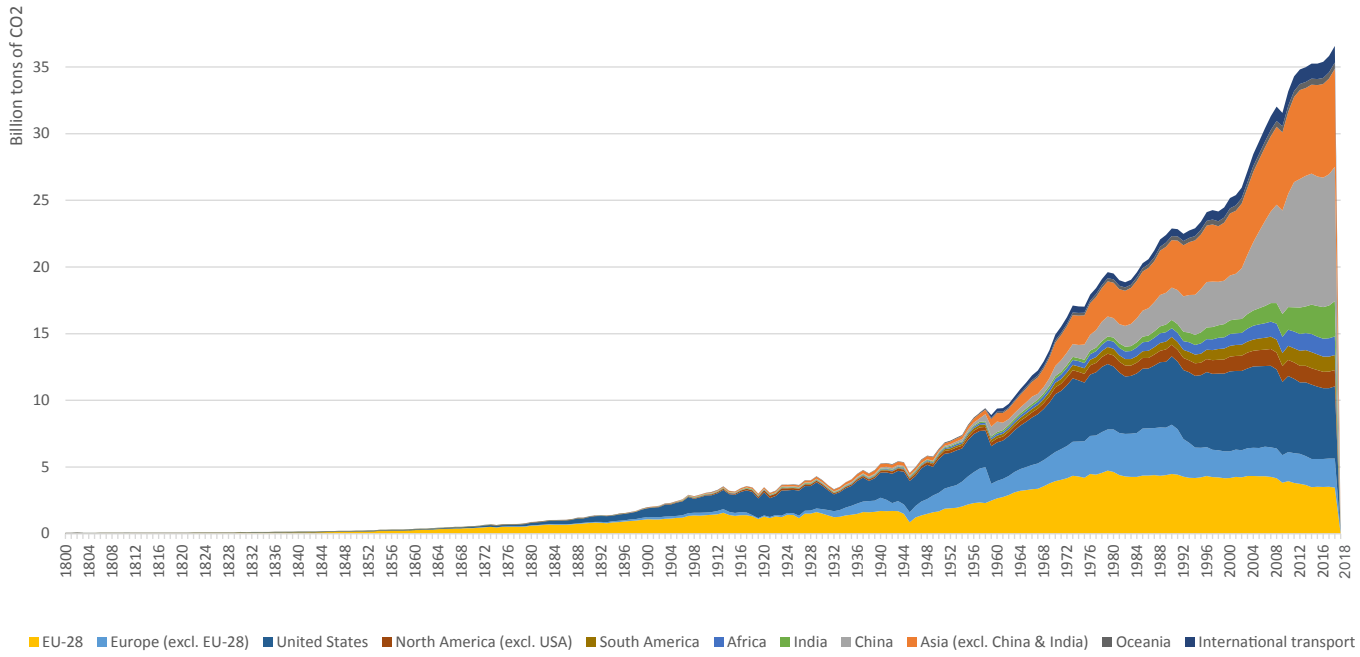
3 "Carbon Pricing," CDP

Trends in Global Carbon Emissions

Global carbon (CO_2) emissions have increased steadily over the last century, reaching an all-time high in 2018. China (28 percent), the US (15 percent), and India (7 percent) were the three biggest emitters in 2018. Global energy-related CO_2 emissions flattened in 2019 at around 36.8 billion tons according to current predictions, following two years of increases.[4, 5] Fossil fuels—coal (40 percent), oil (34 percent), and gas (21 percent)—are responsible for the majority of the global carbon emissions. Electricity and heat production (44 percent) are by far the biggest sources of CO_2 emissions. The other top sectors responsible for emissions are transport (26 percent), industry (19 percent), and buildings (9 percent).[6]

Figure 1

World CO_2 Emissions, Annual



Source: Our World in Data

Although the COVID-19 pandemic and its impact on economic activity around the world might have a negative effect on emissions in 2020—global CO_2 emissions are expected to decline by 7-8 percent—urgent action is needed to limit global warming to 2°C and to pursue efforts to limit temperature rise to 1.5°C, in line with the Paris Agreement.[7, 8] A crucial part of these actions are carbon pricing approaches using either trading or taxation systems to reduce emissions.

4 *CO_2 Emissions*, Our World in Data, 2020

5 *Global Carbon Budget 2019*, Global Carbon Project, 2019

6 *Global CO_2 emissions by sector 2018*, IEA, 2020

7 *Temporary reduction in daily global CO_2 emissions during the COVID-19 forced confinement*, Le Quéré et al., 2020

8 The Paris Agreement, United Nations

What Is Carbon Pricing?

Carbon pricing is a market-based instrument that seeks to influence actors' (e.g., corporations') behavior by creating financial incentives to reduce emissions. It is seen as a nonprescriptive measure to reduce emissions.

Carbon pricing can take the form of a carbon tax or fee, or a cap-and-trade system. Both systems incentivize the reduction of emissions by setting a price on emissions but differ in their fundamental functionality: Taxation schemes pertain to price regulation approaches, whereas cap-and-trade schemes are categorized as quantity regulation systems.

- **Taxation:** The main idea behind taxation schemes is to incentivize emitters to invest in more sustainable technologies. However, it requires that the expenditures needed to reduce emissions by a specific amount (also known as the abatement costs) are lower than the tax burden accumulating from this amount of emissions. As the abatement costs are hard to quantify, setting the right carbon tax is challenging. For example, if the abatement costs are higher than the tax burden, reductions in emissions can be far below the target.
- **Cap-and-trade systems**, on the other hand, consist of a limited number of emission certificates that authorize owners to emit a certain amount of greenhouse gas (GHG) that can be traded within the system. Consequently, emission reduction targets are the principal starting point, as they form the basis for setting the number of certificates. At the beginning, the total number of certificates are delivered by the state via auctions or free allocations. Afterwards, trading is induced by supply and demand, which determines the price of the certificate. Emitters are incentivized to trade their permits, if the price they receive from selling a certificate is higher than the abatement costs. Thus, emitters make a profit by selling the certificate to another emitter whose abatement costs are higher than the price of the certificate. As the abatement costs are also uncertain when using a cap-and-trade system, a sharp increase in the price of certificates is possible whenever abatement costs rise and hence the demand for emission certificates are high. This could lead to a disproportionately higher burden for emitters.[9]

Research has shown that implementing different instruments of carbon pricing simultaneously is inefficient. Consequently, well-designed carbon pricing schemes using the advantage of both approaches might be helpful to reduce GHG emissions effectively and efficiently.[10] The design of carbon tax schemes should therefore be continuously under consideration and open for adjustments.

9 *Das Flexcap – eine innovative CO_2-Bepreisung für Deutschland*, Traeger, et al., 2019

10 *Interactions Between Emission Trading Systems and Other Overlapping Policy Instruments*, OECD, 2011

Carbon pricing schemes

Various carbon pricing schemes have already been introduced at subnational, national, and regional levels to combat rising GHG emissions. In addition, several policies are under consideration or already scheduled for implementation. While the first carbon tax systems were introduced in the 1990s by Scandinavian countries (Finland in 1990, Norway and Sweden in 1991, and Denmark in 1992), the trading systems were not introduced until 2005. Further, while most taxation systems are at the national level,[11] the first trading system was introduced at the supranational EU level in 2005. A detailed overview of all regional and national taxation systems and trading schemes is included in Appendixes 1 and 2.

> Currently, there are 60 carbon pricing instruments implemented or scheduled for implementation on national, regional, and subnational levels. These initiatives approximately make up 16 percent of global GHG emissions.

Emissions coverage

While there has been a steady increase in the number of carbon pricing instruments (60), these initiatives will cover only 16 percent of global emissions in 2020. In 2019, the EU ETS system accounted for the greatest share of approximately 4.11 percent, followed by the Japan Carbon Tax (1.64 percent) and the Carbon Tax of South Africa (0.95 percent). In 2021, a substantial increase in the coverage of emissions is expected due to the introduction of the Chinese ETS system. The total coverage is expected to increase to 22 percent.[12]

European Union Emissions Trading System

At the EU level, a trading system was introduced by the European Commission in 2005 as the cornerstone of the EU's policy to combat climate change. More specifically, the EU Emissions Trading System (ETS) is set up as a carbon market with a cap-and-trade system that is set out to continuously reduce emission allowances. It is one of the largest and longest operating trading systems in the world and serves as a role model for other trading systems.[13] The EU ETS currently covers around 45% of European GHG emissions.[14] However, apart from only covering European emissions, this trading system is criticized for not reducing emissions to a sufficient extent to slow down global warming.[15] The surplus emissions allowances have meant that the carbon trading prices have been too low to spur any meaningful action.

11 *State and Trends of Carbon Pricing*, World Bank, 2019

12 "Carbon Pricing Dashboard," World Bank, 2020

13 *The European Emission Trading System and Its Followers: Comparative Analysis and Linking Perspectives*, Borghesi, et al., 2016

14 "EU Emissions Trading System," European Commission

15 "Kurz zum Klima: Der EU-Emissionshandel – bekannte Probleme, neue Lösungen?," Schmitt, 2017

Carbon price range

The price plays a central role in taxation systems as it determines the cut-off point at which an emitting firm would decide to adapt an emission-reducing innovation/ technology or instead pay the charges for its current emissions. The prices per ton of CO_2 (excluding purely fiscal fuel taxes) range from under US$ 1 in Poland and Ukraine to a maximum of US$ 119 in Sweden (Figure 2). The top five countries with the highest prices are Sweden, Switzerland, Liechtenstein, Finland, and Norway.[16]

Figure 3 displays the ranking of the prices of trading systems. The Korean trading system reports the highest price amounting to US$ 33 per ton of CO_2, followed by Switzerland with US$ 19 per ton of CO_2 and the EU trading system with US$ 18 per ton of CO_2. However, it should be noted that prices are not fully comparable, as, for example, sector coverage and exemptions differ between countries.

Figure 2
Carbon Tax Prices, US$ per ton of CO_2, 2020

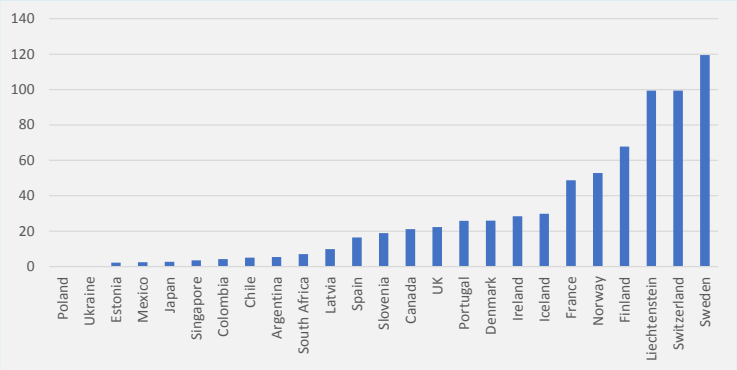
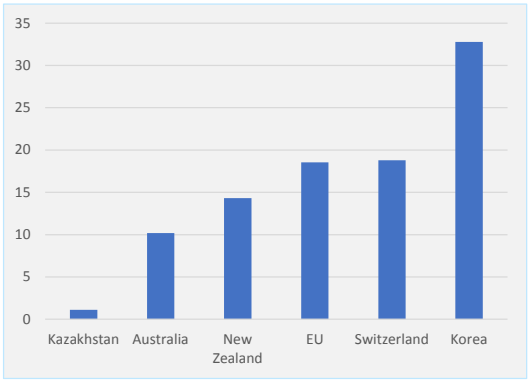


Figure 3
Carbon Trade Range, US$ per ton of CO_2, 2020



Source: World Bank

EXEMPTIONS

Most carbon price schemes have exemptions for specific sectors, fuel types, or energy intensive processes. National governments usually argue that exemptions are necessary to protect energy-intensive sectors and the international competitiveness of their national economy. Appendix 3 gives an overview of (partial) exemptions of national and regional carbon pricing schemes. In general, emitters in European countries that are already covered by the EU ETS are (partly) exempted from national carbon pricing schemes. The most common exemptions refer to transportation (including international aviation and shipping) as well as power and heat production.[17] However, these sectors account for a large proportion of emissions (see Appendix 3). Hence, against the background of climate targets, criticisms of such exemptions have arisen.[18, 19]

16 "Carbon Pricing Dashboard," World Bank, 2020

17 "Carbon Pricing Dashboard," World Bank, 2020

18 "Carbon Pricing Dashboard," World Bank, 2020

19 *CO_2-Bepreisung im Wärme- und Verkehrssektor: Erweiterung des Emissionshandels löst aktuelles Klimaschutzproblem nicht, Kemfert et al., 2019*

Internal Carbon Pricing

The concept of carbon pricing is not just limited to national legislation. The principles can also be applied at a company level, in the form of an "internal carbon price." Internal carbon pricing allows companies to place a monetary value on emitting carbon. It allows emissions to be translated into a financial metric with the objective of incorporating carbon into the decision-making process. An internal carbon price can help companies measure and model risks associated with potential carbon pricing regimes and identify business opportunities and adjust strategies accordingly.

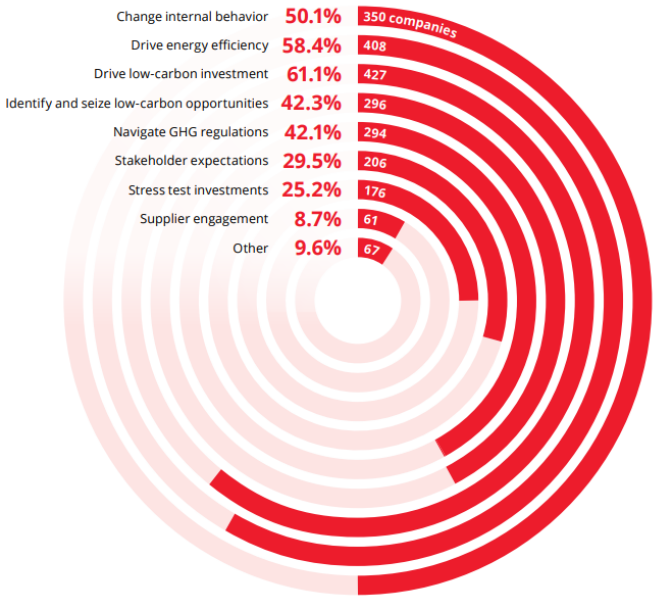
Internal carbon pricing trends

Internal carbon pricing has emerged as a powerful tool to help companies manage risks, contribute to low-carbon transition, and capitalize on emerging opportunity. In 2019, 699 companies reported to CDP that they were using an internal price on carbon, an increase of 92 companies compared to 2017 (150 in 2014). In addition, 915 companies indicated that they intend to internally price their carbon emissions within the next two years.[20]

> The number of companies using an internal price of carbon have increased by almost five times over the past six years.

Companies use internal carbon pricing for multiple reasons, including changing internal behavior, driving low-carbon initiatives, and managing risks.

Figure 4
Objectives for implementing internal carbon pricing



Source: CDP

20 *The effect of carbon price tax on per capita CO_2 emissions,* Lin and Li, 2011

Internal carbon price implementation

Internal carbon price can take the form of a carbon shadow price or internal carbon fees.[21]

- **Carbon shadow price** creates a hypothetical cost of carbon (per ton CO_2) that can be factored into the planning of major projects and guide decision making. Carbon shadow prices can help reveal risks as they help incorporate the future costs of carbon in investment decisions. Shadow price can be based on the prevailing and/or forecasted price of carbon regulations and can vary by location or activity.
- **Internal carbon fees** in contrast allocate the actual cost of carbon—based on usage—to individual business units for every emitted ton of CO_2. The proceeds stay within the company and may be used for projects that can help meet the company's carbon reduction goals.

Both internal carbon pricing mechanisms can facilitate mitigation measures. In practice, about 400 companies (of the 699 that use internal carbon price) use a shadow price and about 150 companies use some form of an internal carbon fee or trading system. The reported corporate carbon prices in use are diverse, ranging from US$ 0.01/tCO_2e to US$ 909/tCO_2e. More and more companies are integrating carbon pricing as part of the climate change strategy. Here are a few examples of companies that have applied internal carbon pricing. The key thing to observe is that there is no one right way to implement an internal carbon price and companies can adopt an approach that is most suitable for them.

Ferrovial, a global operator of sustainable infrastructure, uses shadow carbon pricing when assessing the risks and opportunities inherent in new investments. It has established carbon prices that vary by project type (such as airports, highways), time horizon (2020, 2030, 2040, and 2050), and geographies. This allows Ferrovial to adopt a carbon price that reflects regional climate change policies and consider both medium- and long-term risks of climate change.

Microsoft established an internal carbon tax in 2012 to hold its business divisions financially responsible for reducing their carbon emissions. The current internal carbon fee is US$ 15 per ton. It uses the funds to maintain its carbon neutrality and to invest in technological solutions to create sustainable outcomes.

Solvay introduced an internal carbon price in 2016 at €25 (US$ 29) per ton and subsequently increased it to €50 (US$ 58) per ton. Its primary objective was to incorporate climate challenges in its long-term economic decisions.

The Walt Disney Company uses a combination of a shadow price and internal carbon fees. It uses a shadow price as part of its capital planning process to make decisions on capital allocation for new projects and uses an internal carbon fee ranging from US$ 10–US$ 20 per metric ton to drive action toward its net-zero goal. Overall, the two approaches are complementary.

21 *State and Trends of Carbon Pricing,* World Bank, 2020

Unilever began internally pricing emissions from its manufacturing operations in 2016. It subtracts the emissions from the capital budgets allocated to each business division at the start of the year and invests the funds—€50 million a year—to install low-carbon technologies at its sites.

Setting an internal carbon price

The range of internal carbon prices adopted by companies globally vary widely. While companies are free to choose and set an internal carbon price, it is important to set the price high enough to materially affect decisions to drive down carbon emissions. The UN Global Compact encourages businesses to set an internal carbon price of at least US$ 100/tCO_2e by 2020, which will be needed to keep GHG emissions consistent with a 1.5–2°C pathway.[22]

Setting an internal carbon price needs careful consideration. Companies need to think beyond current regulations and be able to anticipate the impact of regulatory changes on carbon price range. Undertaking internal carbon price scenarios can be a helpful exercise to evaluate the impact of extreme price range and guide strategy.

TCFD and Internal Carbon Pricing

The Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD) considers climate-related risks to be material and advises businesses to disclose their climate-related financial risks and opportunities under existing financial disclosure obligations. As part of this disclosure, the TCFD recommends companies and investors report the internal carbon prices that are used to manage these risks and opportunities. Organizations are encouraged to disclose the parameters used for scenario analysis of climate-related risks and opportunities and explain their assumptions, including the internal carbon price scenarios used.

Companies that have not yet investigated internal carbon pricing can start by exploring the How-to Guide to Corporate Internal Carbon Pricing, which provides a step-by-step guide to establish an internal price of carbon. Another useful resource is the Carbon Pricing Corridors Initiative—an initiative by CDP and We Mean Business coalition—which identifies industry-specific carbon price levels necessary to achieve the Paris Agreement goals. The initiative identified that the power sector would need a carbon price range between US$ 30–US$ 100 per ton by 2030 to limit global warming to 2°C, whereas for the chemical sector it identified a price range from US$ 30 to US$ 50 per ton in 2020, increasing to US$ 50 to US$ 100 per ton by 2035.

22 *Internal Carbon Pricing in Companies,* UN Global Compact, 2018

Future-proof Your Climate Strategy

Going by the recent trend on carbon pricing, it is safe to assume that momentum is growing to use it as a means of bringing down emissions and driving investment into cleaner options. An uptick of voluntary internal carbon pricing suggests that mainstream businesses find carbon pricing to be a realistic and useful tool to achieve their climate goals. But carbon pricing is just one part of the solution. Leading companies have adopted a multipronged approach to reduce their emissions and become more resilient.

Adopt TCFD recommendations

Disclosing in line with the TCFD recommendations can help companies understand how they are exposed to climate-related risks now and in the future. It encourages the use of scenario planning to analyze risk in the short-, medium-, and long-term and evaluate what the impact could be on the business, strategy, and financial planning. This can help companies to develop more adaptive and resilient strategies.

Set science-based targets

Today, more and more companies are setting big, bold, and ambitious targets to achieve "net positive" impact. Companies must consider setting "science-based targets," i.e., in line with what the latest climate science says is necessary to meet the goals of the Paris Agreement as well as set encompassing targets that include: Scope 1 (from direct activities); Scope 2 (indirect, from electricity and heat); and Scope 3 (from the full value chain, often the largest).

Establish internal carbon price

Companies may also work toward implementing an internal carbon price strategy. Having a monetary value on the company's own emissions that reflects carbon prices outside the firm is increasingly seen as a key factor that companies must consider in decision making. This is ever more pertinent as the final recommendations of the TCFD explicitly list internal carbon pricing as a key metric that an organization can use "to assess climate-related risks and opportunities."

Climate change will bring risks and opportunities, and companies will be compelled to act. Companies that show climate leadership will not only become resilient but also enjoy a competitive edge over their less adaptable peers.

Appendixes

Appendix 1

Regional and National Carbon Pricing Schemes Implemented[1]

Country	Scheme	Year Of Implementation	Short Description
FINLAND	Carbon Tax	1990	Component of energy tax covering full life-cycle emissions of fuels from mainly the industry, the transport, and the buildings sector with some exemptions for industry. It covers all fossil fuels except for peat.
POLAND	Carbon Tax	1990	Tax on GHG emissions from all sectors with some exemptions covering all fossil fuels.
NORWAY	Carbon Tax	1991	Consisting of an excise tax on mineral products and a specific law for petroleum activities on the continental shelf. It applies to GHG emissions from all sectors with some exemptions. It covers liquid and gaseous fossil fuels as well as natural gas that is emitted directly.
SWEDEN	Carbon Tax	1991	Component of energy tax for CO_2 emissions from the transport and buildings sector covering all fossil fuels. In 2019, the exemption for the use of diesel in mining was removed and the exemption for fuels in cogeneration facilities was reduced.
DENMARK	Carbon Tax	1992	Tax applying to GHG emissions from mainly the buildings and transport sectors covering all fossil fuels.
SLOVENIA	Carbon Tax	1996	Tax on GHG emissions from mainly the buildings and transport sector covering natural gas and all liquid and solid fossil fuels.
ESTONIA	Carbon Tax	2000	Taxes covering all fossil fuels applying to industry and power sectors generating thermal energy.
LATVIA	Carbon Tax	2004	Tax covering fossil fuels except for peat from the industry and power sectors not covered by the EU ETS.
EU	ETS	2005	Cap-and-trade system with four phases, including annual cap reductions and regular updates of exemptions and allowances. It targets CO_2 emissions from industry, power, and aviation sectors, including industrial processes as well as N_2O from certain chemical sectors and perfluorocarbon (PFC) emissions from aluminum production. Intercontinental flights are not included until the end of 2023.

1 This table focuses on national carbon tax and on regional and national carbon trading schemes. However, there exist subnational initiatives of carbon taxation schemes as well as subnational trading initiatives. For example, in Canada the regional government of British Columbia introduced a carbon tax in 2008, hence long before the federal state implemented a federal scheme. Moreover, the province of Alberta in Canada introduced an ETS system in 2007.

Country	Scheme	Year Of Implementation	Short Description
LIECHTENSTEIN	Carbon Tax	2008	Tax on CO_2 emissions from industry, power, buildings, and transport sectors covering all fossil fuels.
NEW ZEALAND	ETS	2008	Trading scheme where government distributes emission certificates to foresters to sell them on the market. Units bought by emitters must be again handed in to the government.[2] It targets GHG emissions (CO_2, CH_4, N_2O, SF_6, hydrofluorocarbons (HFCs) and PFCs) from industry, power, waste, transport, and forestry sectors, as well as emissions from industrial processes.
SWITZERLAND	ETS and Carbon Tax	2008	ETS: Mandatory cap-and-trade system for GHG emissions (CO_2, NO_2, CH_4, HFCs, NF_3, SF_6 and PFCs) from the industry and power sectors and for industrial process emissions. Tax: Applies to CO_2 emissions from all fossil fuels addressing mainly the industry, the power, the buildings, and the transport sector.
ICELAND	Carbon Tax	2010	Part of environmental and resource tax covering all fossil fuels from all sectors with exemptions for the power, industry, transport, and aviation sectors.
IRELAND	Carbon Tax	2010	Tax covering all fossil fuels from all sectors with exemptions.
UKRAINE	Carbon Tax	2011	Tax covering all fossil fuels from stationary sources, namely the industry, power, and buildings sectors.
JAPAN	Carbon Tax	2012	Tax covering all fossil fuels for all sectors with exemptions for the industry, power, agriculture, and transport sectors.
UK	Carbon Tax (Carbon price floor)	2013	Tax on CO_2 emissions from power sector with some exemptions and covering all fossil fuels.
KAZAKHSTAN	ETS	2013 (suspended in 2016-2017), reintroduced 2018	Cap-and-trade system for emissions of large emitters with free allowances based on historical emissions or product-based benchmarks.
FRANCE	Carbon Tax	2014	Part of tariffs on consumption of energy products targeting mainly the industry, buildings, and transport sectors with some exemptions. It covers all fossil fuels from all sectors with exemptions.

2 https://www.mfe.govt.nz/climate-change/new-zealand-emissions-trading-scheme/about-nz-ets

Country	Scheme	Year Of Implementation	Short Description
MEXICO	Carbon Tax	2014	Excise tax under tax on production and services targeting additional CO_2 emission content compared to natural gas. It applies to all sectors and covers all fossil fuels except natural gas.
SPAIN	Carbon Tax	2014	Tax on fluorinated GHG emission (HFCs, PFCs, and SF_6) from all sectors with some exemptions.
PORTUGAL	Carbon Tax	2015	Excise tax on consumption for CO_2 emissions covering all fossil fuels and applying mainly to the industry, buildings, and transport sectors with some exemptions.
SOUTH KOREA	ETS	2015	Cap-and-trade system with benchmark-based allocation of certificates and auctioning. It targets GHG emissions (CO_2, CH_4, N_2O, PFCs, HFCs and SF_6) from the industry, power, buildings, domestic aviation, public sector, and waste sector. The ETS covers 610 of the country's largest emitters, which account for ~70% of national GHG emissions.
AUSTRALIA	ETS (ERF Safeguard Mechanism)	2016	Baseline-and-offset system for large emitters incentivizing emissions to be held below specific baselines that are regularly updated. Above the baseline, Carbon Credit Units must be purchased. The system targets direct emissions including emissions from energy production.[3] It targets emissions from the industry and the power sectors, including industrial processes.
CHILE	Carbon Tax	2017	Part of the tax on air emissions from contaminating compounds covering all fossil fuels, mainly taxing the power and industry sectors emitting 25,000 tCO_2 or more or emitting more than 100 tons of particulate matter per year.
COLOMBIA	Carbon Tax	2017	Tax covering all liquid and gaseous fossil fuels used for combustion targeting all sectors with some minor exemptions.
ARGENTINA	Carbon Tax	2018	(Annually increasing) tax covering almost all liquid fuels and coal targeting all sectors with exemptions.
SINGAPORE	Carbon Tax	2019	Tax targeting GHG emissions from all fossil fuels used by facilities from the industry and the power sector with annual emissions of 25 $ktCO_2e$ or more; exemptions apply to some sectors.

3 https://www.environment.gov.au/climate-change/government/emissions-reduction-fund/publications/factsheet- erf-safeguard-mechanism

Country	Scheme	Year Of Implementation	Short Description
CANADA	Carbon Tax and ETS (Federal OBPS)	2019	Regulation for all provinces and territories without carbon pricing scheme or without system aligned with federal standards. It consists of a tax-like component on fuels and a baseline-and-credit ETS (OBPS) for emission-intensive and trade-exposed facilities that emit more than 50 $ktCO_2e$ annually. Industrial facilities with emissions above 10 $ktCO_2e$ per year can opt in.
SOUTH AFRICA	Carbon Tax	2019	Tax on GHG emissions from the industry, power, buildings, and transport sectors irrespective of the fossil fuel used, with partial exemptions for these sectors.
MEXICO	ETS	2020	Applies to CO_2 emission from the power and industry sectors, currently in first pilot phase until 2021.

Source: World Bank

Appendix 2

Regional and National Carbon Pricing Schemes Scheduled[4, 5]

Country	Scheme	Year	Short description
CHINA	ETS	2021	Will apply to CO_2 emissions from the power sector, including CHP and power plants from other sectors. Other sectors will be included gradually.
GERMANY	ETS	2021	Will apply to heat and road transport sectors, which are not covered by the ETS of the EU, targets fuel suppliers.

Regional and National Carbon Pricing Schemes under Consideration

The following countries are considering carbon pricing schemes but have not yet scheduled the year of implementation and in some cases not even the scheme:

Austria (tbc), Chile (ETS), Brazil (tbc), Colombia (ETS), Cote d'Ivoire (carbon tax), Indonesia (ETS), Japan (ETS), Luxembourg (carbon tax), Montenegro (ETS), The Netherlands (carbon tax), Senegal (carbon tax), Thailand (tbc), Turkey (ETS), Ukraine (ETS), and Vietnam (ETS)

Source: World Bank

4 This table focuses on national carbon tax and on regional and national carbon trading schemes. However, there exist subnational initiatives of carbon taxation schemes as well as subnational trading initiatives. For example, in Canada the regional government of British Columbia introduced a carbon tax in 2008, hence long before the federal state implemented a federal scheme. Moreover, the province of Alberta in Canada introduced an ETS system in 2007.

5 "Carbon Pricing Dashboard," World Bank, 2020

Appendix 3:

Exemptions of Carbon Pricing Schemes

Carbon Price Scheme	(Partial) Exemptions from Carbon Pricing – Sectors								Others
	Agriculture/ forestry	Chemical processes	Export of fuels	Industry	International aviation	International shipping	Power/heat	Transport	
ARGENTINA CARBON TAX		*	*		*	*			Biofuel content of liquid fuels.
CANADA FEDERAL FUEL	*		*	*				*	
DENMARK CARBON TAX			*	*	*	*	*	*	Operators covered by EU ETS (except district heating and waste incineration plants).
FINLAND CARBON TAX				*	*	*	*		Peat.
FRANCE CARBON TAX				*	*	*	*	*	Operators covered by EU ETS.
ICELAND CARBON TAX					*				Operators covered by EU ETS.
IRELAND CARBON TAX			*	*	*	*	*		Operators partially covered by EU ETS.
JAPAN CARBON TAX	*			*			*	*	
NORWAY CARBON TAX			*		*	*			Operators covered by EU ETS (except for offshore oil production activities); share of biofuels in mineral oil.
PORTUGAL CARBON TAX				*				*	
SLOVENIA CARBON TAX			*	*	*		*		Operators covered by EU ETS that are deemed exposed to carbon leakage and/or energy intensive.
SOUTH AFRICA CARBON TAX								*	Exemptions of 60-95% depending on presence of fugitive emissions, level of trade exposure, emission performance, offset use, and participation in the carbon budget program.
SPAIN CARBON TAX		*	*						Note: Exemptions refer to fluorinated GHGs, additionally: use in new equipment and medication; F-gases with a global warming potential less than 150.

Carbon Price Scheme	(Partial) Exemptions from Carbon Pricing – Sectors								Others
	Agriculture/ forestry	Chemical processes	Export of fuels	Industry	International aviation	International shipping	Power/heat	Transport	
SWITZERLAND ETS/CARBON TAX							*		Allowances up to 100% of benchmark level for emission-intensive and/or trade-intensive sectors at risk of carbon leakage; operators in sectors with a high carbon tax burden and competitiveness risks, given that they reduce emissions by a certain amount; importers of transport; fuels.
UK CARBON PRICE FLOOR							*		

(Partial) Exemptions from Carbon Pricing – Special Regulations	
AUSTRALIA ERF SAFEGUARD MECHANISM	Emitters up to baseline emission level.
COLOMBIA CARBON TAX	Natural gas not in the petrochemical and refinery sectors; operators that are certified to be carbon neutral.
EU ETS	Allowances up to 100% of benchmark level for emission-intensive/trade-intensive sectors at risk of carbon leakage.
KAZAKHSTAN ETS	Operators receive allowances (largely) for free; small emitters.
KOREA ETS	Allowances up to 100% of benchmark level for emission-intensive and/or trade-intensive sectors at risk of carbon leakage.
LATVIA CARBON TAX	Operators covered by the EU ETS; use of peat in industry.
LIECHTENSTEIN	Operators covered by the EU ETS; operators in sectors with a high carbon tax burden and competitiveness risks given that they reduce emissions by a specific amount; importers of transport fuels.
MEXICO CARBON TAX	Tax is capped at 3% of the fuel sales price.
NEW ZEALAND ETS	Allowances of 60-90% of benchmark level for emission-intensive and/or trade-intensive sectors at risk of carbon leakage.
POLAND	Operators covered by the EU ETS; entities with an annual tax amount smaller than Polish złoty800 (US$ 210).
SINGAPORE CARBON TAX	Combustion of biomass and nonmanufacturing usage of refrigeration and air-conditioning equipment.
Carbon pricing schemes without exemptions: **Canada federal OBPS (ETS), Chile Carbon Tax, Estonia Carbon Tax, Mexico pilot ETS**	

Source: World Bank

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