



Policy Brief:

How Macedonia Can Use a Carbon Tax to Realize National Policy Goals

The introduction of a carbon tax presents an opportunity for the Republic of North Macedonia to meet its dual climate change mitigation objectives and international commitments:



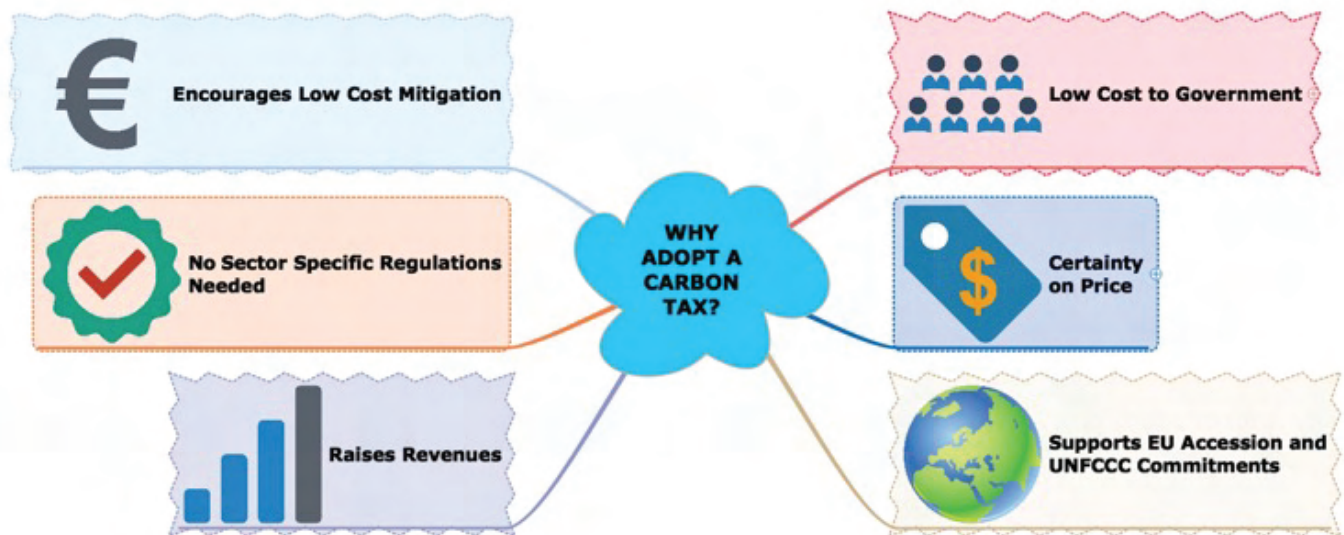
To support realization of its enhanced UNFCCC commitments, and



With respect to its EU accession negotiating strategy.

The Republic of North Macedonia took the important step of announcing an ambitious enhanced Nationally Determined Contribution (NDC) that sets a target of reducing greenhouse gas emissions by 51 percent in 2030 as compared to 1990 levels (adopted by the Government on April 13, 2021). Encompassing 63 mitigation measures across the economy, the Macedonian enhanced NDC sets out a plan to reduce harmful greenhouse gas emissions while promoting new investments, new industries and new jobs.

A carbon tax can support implementation of the Macedonian enhanced NDC by putting a price on activities based on their climate impacts. Affected sources will have an incentive to reduce emissions where the mitigation actions cost less than the carbon tax. In this way, a carbon tax will harness the power of the market to facilitate implementation of the low-carbon measures identified in the enhanced NDC, while also encouraging industry and consumers to innovate in finding other low-cost ways to reduce their carbon footprints.



At the same time, as part of the accession process, Macedonia is expected to progressively advance its climate agenda to match the EU commitments such that the country could adopt the EUETS by the time of accession. A carbon tax offers a way to establish a gradual carbon price path to reach this goal in a way that offers certainty to investors and minimizes volatility and disruption.

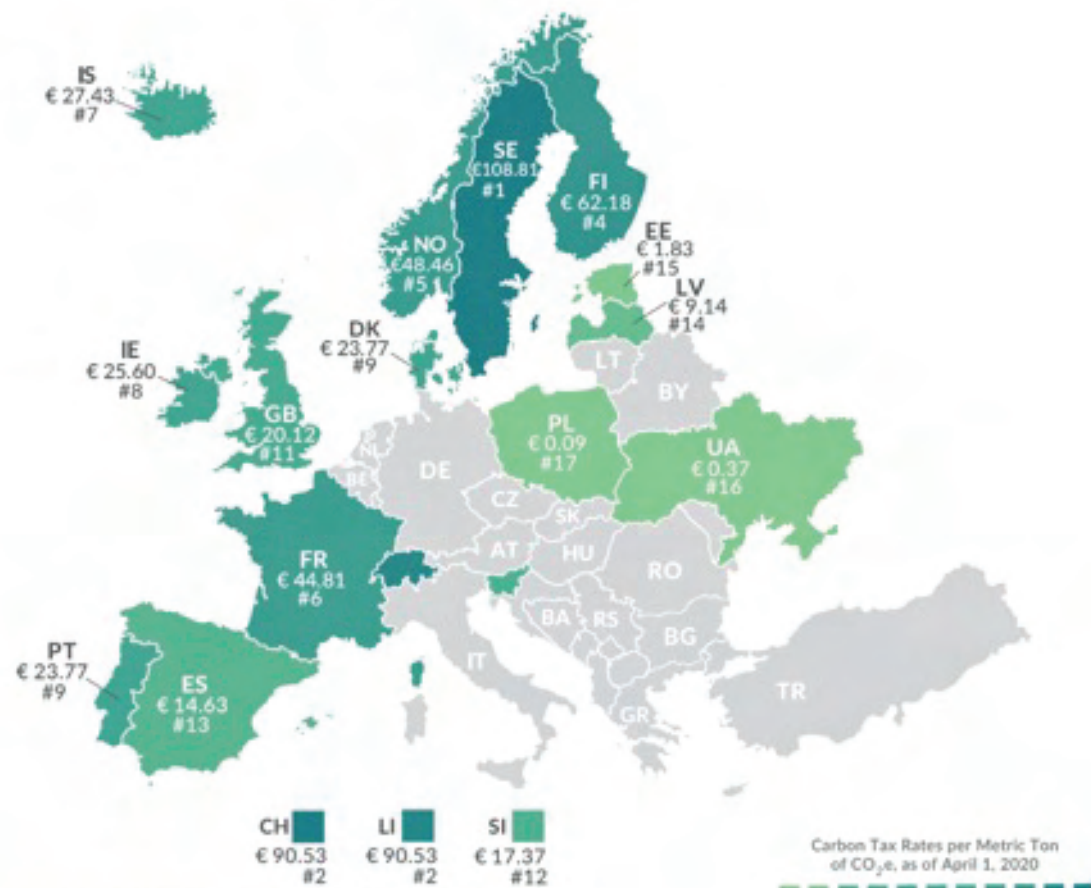


Carbon Taxes in Europe

In 2021, 21% of global greenhouse gas emissions are covered by carbon pricing mechanisms. The first countries to introduce a CO2 tax were Finland and Poland in 1990. In 2005, the EU ETS system was introduced, which significantly increases the coverage of GHG emissions with carbon pricing, but is also an example for other countries in the world such as South Korea and China. Many countries have implemented both carbon pricing mechanisms -- CO2 tax and ETS. It is interesting for Europe to note that 16 countries, in addition to participating in the EU ETS system, have introduced a CO2 tax mainly for emissions and installations that are not covered by the EU ETS (Figure 1). Also, starting in 2021, Germany, in parallel with ongoing participation in the EU ETS, has introduced a national ETS system for emissions from heating and transport.

Carbon Taxes in Europe

Carbon Tax Rates per Metric Ton of CO₂e, as of April 1, 2020



Note: The carbon tax rates were converted from USD to EUR using the currency conversion rate as of April 1, 2020.
Source: World Bank, "State and Trends of Carbon Pricing 2020."

How the Impact of a Carbon Tax in Macedonia was Assessed?

A team of experts¹ used MARKAL-Macedonia—a model that captures the details of Macedonia's energy sector (the same tool used previously to support development of Macedonian enhanced NDC and Strategy for energy development). The team considered the implications of two carbon price paths for the Republic of North Macedonia and the surrounding region:

- A lower path (€8 to €28 per ton in 2025 and 2030, respectively, patterned off of an Energy Community carbon price study); and
- A higher carbon price path where the tax levels were set to approximate reaching the Macedonian enhanced NDC level of ambition for just the energy sector.

The team also looked at the implications of taxing CO₂ emissions from just the electricity and heat sectors as compared to taxing CO₂ emissions from the entire energy sector (electricity, heat, industry and transportation fuels). Finally, the team looked at a sensitivity run to understand the likely impacts of the Republic of North Macedonia adopting a carbon tax alone, without similar carbon prices in neighboring countries. These scenarios and results are documented in a Carbon Tax Assessment Report and were presented in a seminar to policymakers, climate change experts and academics.



¹ The team included Aleksandar Dedinec, Macedonian Academy of Sciences and Arts, and Stacey Davis and Stan Kolar from the Center for Clean Air Policy.

Main findings of this analysis are:

- It is recommended to apply the tax to all users of energy—electricity and heat producers; industrial, commercial and residential energy users; and transportation systems. Capturing a broad set of energy users would help ensure that low-cost solutions are not overlooked. By applying the tax equally to all fuels based on the CO₂ emissions they are expected to produce puts all fuels on a level playing field and avoids economic distortions that can happen when some fuels and sectors are taxed and others are not.
- A carbon tax can substantially reduce energy sector emissions. The lower price path evaluated in the study was high enough to fully transition the electricity and heat sectors away from coal-fired power generation. This lower price path will also encourage investments in lower-cost mitigation measures in the industry and transportation sectors. However, this price path would not be enough to realize the full level of effort assigned to the energy sector within the Macedonian enhanced NDC. For that, it is suggested to pursue more direct policies and measures to avoid adverse effects to the economy from a substantially higher carbon price.
- A carbon tax raises revenues that can be used to help build support for the tax and/or assist in reaching the national climate goals.



How a Carbon Tax Works in the Energy Sector?

A carbon tax in the energy sector works by increasing the cost of carbon intensive fuels based on their relative impact on the climate. Fuels and/or sources that are more carbon-intensive would pay a higher price than those with lower carbon emissions. Likewise, zero-carbon alternatives powered by solar, wind and water would not pay the carbon tax at all. In this way, a carbon tax boosts the economic competitiveness of cleaner energy sources, inducing investment decisions that could fundamentally transform the energy sector. The tax would lead to shifts away from coal and towards low- and zero-carbon alternatives, including enhanced efficiency and conservation. A carbon tax would support these investments without needing to separately regulate emissions from each sector or sub-sector.



How Should Macedonia Set the Carbon Price?

According to the analysis, it is recommended to introduce a carbon tax that will start at around 8 EUR/tCO₂ and reach 28 EUR/tCO₂ in 2030. This tax level would make substantial progress towards reaching the overall national climate goal set under the Paris Agreement for the energy sector. To prevent an increase in electricity imports from power plants outside of the country, Macedonia should be proactive in working with neighboring Energy Community countries to adopt a comparable carbon price. It is suggested that a clear carbon price trajectory be set up front.

Impacts of a Carbon Tax

The level of the tax for each type of fuel is calculated by applying the defined CO₂ tax rate to each fuel's emission factor. IPCC emission factor values are used with the exception of lignite. In this case, a domestic emission factor is applied consistent with the assumptions used to prepare the GHG inventory. Table 1, below, shows the results of these calculations for suggested CO₂ prices of 8 and 28 EUR per ton in 2025 and 2030, respectively. As shown, the effective carbon tax value in 2025 would be 1.1 MKD/l of gasoline and 1.3 MKD/l of diesel. Lignite used for electricity generation would see an increase of 53 MKD/GJ. In 2030, it is expected that gasoline prices would increase by about 4 MKD/l, diesel would increase by about 4.6 MKD/l and coal costs would increase by 186/GJ.

Fuel	Unit	Suggested 2025 carbon tax rate in Denars	Suggested 2030 carbon tax rate in Denars
Unleaded petrol	liter	1.12	3.92
Diesel	liter	1.31	4.58
Natural gas	nm ³	0.92	3.22
Coal (domestic lignite) for electricity production	GJ	53.08	185.77

What Should Macedonia Do with the Revenues From a Carbon Tax?

It is estimated that the CO₂ tax will generate revenues on the order of 60 million EUR in 2025 and 137 million EUR in 2030. The choice of how to use CO₂ tax revenues is a political decision. There will be a number of competing claims for these funds, so the alternatives should be weighed carefully. A few priority uses of funds, based on this assessment, include:

- 01 rebating energy costs to protect vulnerable, low-income consumers least able to afford the cost increase;
- 02 devoting a portion of the funds in the early years of the program to help workers in the coal sectors transition to jobs in other industries; and
- 03 ensuring a level playing field for competitive industry sectors by offering funds to sources covered by the carbon tax on a comparable basis to those deemed to be at-risk for emissions leakage by the EU.

Funds could also be used to increase the mitigation impact of the CO₂ tax and/or to lower the overall cost of the program.



What Legal Authority Should Be Used to Establish a CO₂ Tax?

It is recommended to establish a CO₂ tax via the existing excise tax authority. It is preferable to make use of the excise tax as it already applies to all fuels, so the main change required would be a change in the level of the tax according to the relative CO₂ emission factors of the different energy sources. The second-best option would be to make use of the existing environmental tax. However, this would require changing the tax authorization to add excluded fuels in addition to changing the level of the tax to be consistent with CO₂ emissions factors. Under either authority, the tax would be applied upstream, to fuel producers and importers. This is a straightforward way to introduce the tax in a way that covers all fossil fuels. Under this approach, the value of the tax would be passed through to energy consumers, encouraging efficiency improvements and shifts to lower-carbon energy sources. A review of possible legal authorities is summarized in the table below.

	Excise Tax	Environmental Tax	Climate Law
Application/Authorization	Applies upstream to all fuels and electricity; however, some tax rates are set to 0 (coal, natural gas, electricity)	Applies upstream to some fuels (diesel, gasoline, heating oil) and midstream for electricity	Carbon taxes are included as an example of authorized policies and measures to reduce CO ₂ . No details provided.
Exclusions (if applicable)		Coal, natural gas and industry are not covered	
Lead agency	Ministry of Finance	Ministry of Environment	Ministry of Environment
Changes needed to adopt a carbon tax	Set values based on CO ₂ emissions expected per unit of fuel, considering the fuel carbon content and CO ₂ price; ensure tax applies to all energy users	Add excluded fuels and sources; set values based on CO ₂ emissions expected per unit of fuel, considering the fuel carbon content and CO ₂ price	Would need to establish a new mechanism
Assessment	Fastest option to enact a CO ₂ tax, if there is political will.	Second-best choice.	Would take the longest to develop; likely duplicative with existing tax laws.

Next Steps for the Introduction of a Carbon Tax

Policymakers in the Republic of North Macedonia are recommended to undertake the following steps to socialize and support implementation of a carbon tax.

01

Undertake economy-wide modeling

The initial set of modeling runs built understanding of how a carbon tax could affect prices and investments in the energy sector. However, this model did not capture expected effects on the national GDP and jobs. Linking the MARKAL-MACEDONIA modeling results with a CGE model could provide an improved understanding of such effects and inform proposals for the use of revenues.

02

Build support from domestic stakeholders

The government should engage with domestic stakeholders (affected industries, consumer groups, subnational governments, academia and environmental groups) to (initially) gather feedback on the carbon tax design choices and (later) to communicate the recommended approach, including the rationale for the tax, the anticipated benefits, and planned uses of revenue to build buy-in and support.

03

Advocate comparable carbon price levels across the Energy Community

While the analysis suggests that Macedonia could tax carbon at a low rate without spurring an increase in energy imports from untaxed power plants outside its borders, there is an enhanced risk of competitiveness impacts and emissions "leakage" as the carbon tax increases. Accordingly, Macedonia's government should take proactive steps to encourage comparable carbon price levels across the Energy Community. In addition, outreach should inform EU policymakers on the planned carbon price path and the timeline to approach the EUETS, and enlist them as allies in promoting regional carbon pricing.

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