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Reflections on ERCST' "Creating markets for low-carbon products in the EU" work stream

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This paper represents some take-aways and general reflections from the ERCST discussions on *creating markets for low-carbon products in the EU.*

Introduction

In line with the goals of the Paris Agreement, the European Union (EU) should achieve net-zero greenhouse gas (GHG) emissions by the second half of the century. The EC has proposed a target of net climate neutrality by 2050 in the EU Climate Law proposed in March 2020, which was also included in the European Green Deal (EGD).

As half of total GHG emissions comes from resource extraction and processing of materials, the transition to a fully circular economy with limited resource extraction thanks to reusage and recycling of products in the EU will be crucial to achieve the climate neutrality target. So far, the power sector has been at the core of the sustainable transition and achieved large part of the GHG emission reductions of the EU in the last decade. The transition was driven by a significant contraction in the use of coal for power generation and by a reduction in the costs of renewable technologies following the introduction of funding mechanisms and supporting policies at the EU and MS levels.

Despite some positive results, there has been less progress in reducing emissions from the industry, in particular from the most energy-intensive sectors. In the last decade, industrial emissions under the EU Emissions Trading System (EU ETS) remained almost flat compared to the power industry, as they received free allocation which was necessary in order to stay operational and to prevent carbon leakage. It is now urgent to find ways and means to make it possible to cut emissions from these sectors, including emissions from energy use, production processes and material consumption in industry. This means finding the right incentives, including through regulatory processes to create a market for low-carbon products.

The creation of markets for low-carbon products in the EU represents a critical component to foster the decarbonisation of the industrial sectors. Incentivising customer demand for green products could induce radical shifts in business models towards low-carbon production methods and products. This connection has only partially been recognised in the EGD, which refers to *the development of lead markets for climate neutral and circular products in the EU and beyond* as a key aim of the circular economy action plan. The EGD also mentions the example of supporting *breakthrough technologies leading to zero-carbon steel making process by 2030*, possibly through the help of the EU Emissions Trading System Innovation Fund, but does not explore more detailed policy options.

Radical changes are now required on both the supply and demand sides to support the deployment of low-carbon technologies and to incentivise consumers to buy low-carbon products.

Existing regulatory framework

The European Commission (EC) is committed to the green transition towards a carbon-neutral society and to the establishment of a circular economy. There already exist some initiatives at the EU level aimed at promoting sustainability aspects of products on a mandatory or on a voluntary basis. The two most relevant initiatives are the Ecodesign Directive and the EU Ecolabel schemes.

The Ecodesign Directive provides a framework applicable in all EU countries to improve the environmental performance of products by setting minimum requirements to be met in terms of energy efficiency for energy-related products such as household appliances and information and communication technologies. The EU Ecolabel scheme is broader in scope and rewards products and services with less negative impacts on the environment.

Both initiatives share the common goal of encouraging producers to improve the environmental performance and the circularity of their products. While initiatives to promote the transition to a circular economy already exist, there is still no comprehensive set of mandatory requirements to ensure that all products on the EU market progressively improve their carbon footprint.

In March 2020, the EC launched the new Circular Economy Action Plan (CEAP) as part of the EGD with many proposals of initiatives along the entire life-cycle of products, from design and manufacturing to consumption, repair, reuse and recycling of products. This initiative is not only for consumer products, but also for intermediate products such as steel and chemicals. In 2021, it is expected that the EC will propose a Sustainable Product Policy Framework aimed at expanding the Ecodesign framework to a much broader range of products to ensure that the circularity principles will be achieved on the entire EU market. In this sense, the EC aims at making green products become the norm and empower consumers to make more informed purchasing decisions.

Some mechanisms at the European level aimed at enhancing the sustainability of products already exist and will likely grow in number. However, besides the introduction of initiatives at the EU level, achieving the creation of markets for low-carbon products will likely require additional regulatory push and pull at a more focused governance level, specifically at the

national and subnational levels. Similarly to the national policies adopted by MS to promote the uptake of renewable energy sources, national regulatory measures will help to accelerate the creation of mass markets for low-carbon goods in each MS.

Existing challenges

While different types of green products are starting to emerge, a number of issues are preventing the creation and establishment of markets for low-carbon products in the EU in the short- and in the long-term. Existing challenges can be identified for companies and customers on the supply and demand sides of the market. Other aspects have been identified, such as gaps between EU and MS level regulation incentivising such behaviour and demand.

Problems on the supply side

On the supply side, companies are not extensively investing in breakthrough low-carbon technologies due to scarce prospects of a strong demand for low-carbon products in the future. As low-carbon products are often more expensive than their carbon-intensive alternatives from inside and outside the EU and the competition on the market is essentially price-based, their sales volumes remain limited. The absence of a profitable low-carbon market limits companies' ability to recover the additional costs associated with the low-carbon production methods, which are frequently more expensive than traditional carbon-intensive methods and are needed to reduce the carbon content of products.

Besides the weak customers' demand, the carbon price signal from the EU ETS is currently not sufficient to justify investment in low-carbon technologies. The free allocation of emission allowances in sectors other than power generation muffles the incentives for industrial sectors to decarbonise, while the instability of the carbon price increases the risks associated with investments in emission reduction technologies.

Most of the innovative technologies to decarbonise the production processes of industries are still not commercially viable and are currently deployed only in small pilot demonstrations. As investments in these technologies are highly capital-intensive, there are significant economic risks for the first movers on the market.

Once completed, they run on higher operating costs compared to conventional technologies due to their reliance on more expensive renewable electricity, provided that this will be available in quantity required. Besides renewable electricity, another critical element will be to ensure that

the equipment required to install and run low-carbon production processes will be effectively available in the required supply.

In general, as these types of investments have a long-term horizon, companies necessitate a stable and predictable regulatory framework for the next decades.

Problems on the demand side

On the demand side, there are several reasons explaining why sales volumes for low-carbon products are remaining low.

First, low-carbon products are often more expensive than their carbon-intensive alternatives that are imported or produced in the EU, and only environmentally conscious audiences are willing to pay a premium to buy them. Competition on the market for these products is mostly price-based, with the price element being particularly relevant in the case of commodities and raw materials which are sold to companies for further processing or are used as inputs to create the final products e.g. steel, cement and glass in the construction sector. As an example, low-carbon steel in Europe is currently between 35-100% more expensive than conventional steel, mostly due to higher operating costs (green electricity).

However, when considering the products that are directly sold to end consumers, the impact that the adoption of low-carbon production processes would have on end consumer prices is likely to be small. According to a report of the Energy Transitions Commission (ETC)[1], using green steel would add about $180 to the price of a car, and low-carbon plastics would add $0.01 to the price of a bottle of soft drink.

Second, consumers are not buying low-carbon products because the carbon emissions embodied into products are invisible to them. A standard and clear labelling scheme for products such that consumers can differentiate between low-carbon products and products with a bigger carbon footprint is missing.

Finally, the carbon cost of products is not internalized by every producer and seller. On one hand, the free allocation of allowances muffles the carbon price signal. On the other hand, products imported from outside the EU are currently not covered by a carbon pricing scheme. While the carbon costs of products under the EU ETS are charged on end-consumers, they contribute only in a minimal part to the final price of products, and the price signal remains hidden.

[1] The report is available at: http://www.energy-transitions.org/mission-possible

Overall, these elements highlight the need to better reflect the embodied emissions and their respective carbon cost in the price of products.

Policy Solutions

To solve the existing problems on both the supply and demand side of the market, a set of policy tools should be introduced to incentivise investments and support market demand for low-carbon products. The envisaged policy tools could follow a support-based approach in favour of low-carbon technologies and products or a restrictions-based approach to reduce the role of conventional carbon-intensive products.

To effectively create markets for low-carbon products in the EU, a number of other issues need to be addressed, and the following questions should be addressed:

1. How to incentivise companies to invest in low-carbon production technologies?
2. How to incentivise consumers to buy low-carbon products?
3. How to create a level playing field for low-carbon products?
4. Who pays the bill? The polluter, the government, the society?

1. Incentivising companies to invest

One way to incentivise companies to invest and support the development and deployment of innovative low-carbon technologies is through public procurement. This mechanism consists in the inclusion of environmental quality dimensions, such as the use of low-carbon materials, as technical requirements for the award of public contracts. In other words, low-carbon products would be prioritised in any buying decision.

Given the large purchasing power of public authorities, green public procurement could represent a valid option to create a significant demand for low-carbon products and facilitate the transition to a mass market. It could potentially apply to many economic sectors, for example through the purchasing of low-carbon vehicles or via setting shares of low-carbon materials in public construction projects. A regulatory framework for green public procurement already exists at the European level, but it is voluntary in nature, and no binding targets are set.

Another instrument to incentivise businesses to invest is represented by project-based carbon contracts for differences (CCfD), which build on the previous experience of the contracts for

differences in the power supply sector. CCfD cover the gap between the project-specific abatement costs and the actual EU ETS carbon price by paying the difference between the strike price and the yearly average auction price of emissions allowances (EUAs). Therefore, they secure a stable stream of revenues for investors in the future and guarantee security of investment.

In terms of its implementation, the producer has to identify the quantity of emissions avoided with the new technology and compare it with the EU ETS benchmarks, which provide counterfactual information. This process could potentially be further finetuned by requiring an independent verification of production, avoided emissions and incremental costs.

CCfD come however with some limitations. Their scope is very targeted and project-specific and could not be applied across all sectors of the economy. To make innovative ultra-low carbon technologies commercially viable on the market, CCfD would need to be very high. As the government pays to cover the carbon price gap, CCfD would however be limited by the availability of public funds. Nonetheless, they could be financed by additional policies such as a consumption charge.

Information asymmetries could also make it hard for governments to gauge the true cost of technologies and the required carbon strike price. To partially close the information gap between the government and the project developers, CCfD could be awarded via an auctioning process to ensure competition in the market.

While providing a clear signal of governments' commitment to long-term decarbonisation policy goals, CCfD should be complemented with supporting measures aimed at minimising the financial risks for first movers in the market e.g. loan guarantees and funding from the EU ETS Innovation Fund, and sunset clauses for high carbon technologies to clarify the speed of transition.

Besides the introduction of specific policy tools, in some cases the adoption of a more holistic and technology neutral approach could allow the inclusion of flexibilities and regulatory linkages across sectors and provide an incentive for manufacturers to reduce their emissions and to rely on climate-friendly inputs. In this sense, the introduction of well-to-wheel (rather than tank-to-wheel as in the current regulatory framework) carbon fuel standards for light- and heavy-duty road vehicles could encourage fuel manufacturers' investments for the development of low-carbon fuels.

Overall, companies will look for governments to provide an appropriate business environment and a consistent and credible carbon regulation which is favourable to low-carbon investments. All of the proposed policy measures should remain in place at least while low-carbon

technologies are in their early stages of development and deployment and, in general, while they are more expensive than conventional technologies.

There remains however a question on which types of low-carbon technologies should be supported, especially as technologies such as CCS remain technically and socially controversial. Criteria to select the key technologies in which investments should be focussed could be developed, for example related to the potential contribution of each technology in terms of emission reductions, economic and employment implications and other social impacts.

Besides the introduction of new policy options, a clearer and stronger price signal from the EU ETS could be an effective tool in creating a market for low-carbon products. A long-term and high enough carbon price would remunerate capital-intensive investments in climate friendly-technologies and would also close the price gap between low-carbon and carbon-intensive products, acting as a measure to incentivise consumers' demand. However, once a EU market for low-carbon products is established, the EU ETS could become a redundant measure.

2. Incentivising consumers to buy

To incentivise consumers to buy low-carbon products, measures aimed at closing the price gap with carbon-intensive products and assigning value to the carbon-content of products should be introduced. A signal to consumers could emerge in three different modes:

- through the introduction of taxes,
- norms or standards, and
- a market-based system.

To close the price gap, a consumption charge could be introduced in the form of a contribution to mitigate climate change. This charge would be imposed on the consumption of a limited number of carbon intensive materials such as steel, aluminium and cement based on EU benchmarks of carbon emissions per tonne of material. The imposition of this climate contribution would allow to recover the costs from consumers and incentivise a more efficient use of materials and substitution with greener materials. Theoretically, it could be designed to comply with the trade rules of the World Trade Organisation (WTO) and would represent a politically feasible option. It would also introduce a new source of revenues for governments.

Notwithstanding its strengths, a consumption charge would not per se incentivise intra product class carbon competition, nor reductions in the GHG-intensity of products unless the carbon-intensity of all products is explicitly taken into account. Instead, it would only promote a more efficient use of resources and material substitution. It would also not represent a valid option to

minimise the risk of carbon leakage from an increasingly ambitious carbon price. Finally, the use of a consumption charge as a tool to incentivise low-carbon products is questionable as it would explicitly go against the so-called "polluter-pays" principle and impose a monetary burden on final consumers.

To give value to the carbon-content of products, numerous policy tools are available. One way would be to launch an environmental labelling scheme to highlight the environmental performance of products. This certification would give buyers a solid guarantee of a product's environmental credentials and would stimulate demand from end-consumers. By adopting a low-carbon certification, companies would also highlight their environmental responsibility and give a signal to investors, employees and customers.

The environmental performance at every stage of a product's life-cycle could be calculated through life-cycle analysis (LCA). The LCA approach can be used to calculate the carbon content of products for each stage of the value chain and to inform decision making and consumers. However, the adoption of an LCA approach can pose numerous administrative and methodological challenges due to its inherent complexity.

Another mechanism to make visible the carbon content of products to final consumers is the carbon added tax. This tax would act as a consumption charge applied to the entire embodied carbon-content (rather than value) of all products and not only to a limited number of carbon-intensive materials. This tax would give an incentive for companies to reduce their emissions and, in general, to choose lower carbon products in their processes. It would also make the price of low-carbon products more competitive and ensure a fair competition.

By defining the environmental standards for each product category, the legislator would foster companies' investments to green their range of products and would progressively push products with a high carbon footprint out of the market. An example is the introduction of raising energy efficiency standards for buildings, vehicles, or other goods to stimulate the take-up of more energy efficient solutions. Ideally, standardisation should be done at the global level to also include imports from outside the EU, but this possibility is politically challenging.

Besides the proposed policy options, there is a need to set a favourable context for the establishment of markets for low-carbon products in the EU. Consistent policies and a carbon price with long-term credibility will be essential for low-carbon products to succeed in the market. While capital costs for the deployment of low-carbon technologies are substantial, it will be vital to reduce the operating costs of low-carbon production processes, such as the costs to buy renewable electricity (currently expensive compared to other markets) and hydrogen. This

would allow to reduce the price differential between "green" and "black" products and would help safeguarding that low-carbon products are produced by EU manufacturers rather than by their foreign competitors.

3. Creating a level playing field for low-carbon products

The creation of a level playing field for low-carbon products is crucial to establish a fair competition with more carbon-intensive alternatives on the market. This means ensuring that low-carbon products are subject to the same level of regulation that is imposed on products with bigger carbon footprints produced in the EU or imported.

One way of assuring fair competition consists in the introduction of carbon footprint performance standards. If introduced in a coherent and clear framework, standards can encourage investments in low-carbon technologies and product innovation, with companies verifying their reductions in supply chain emissions and communicating their improvements to the final consumers. The standards could be set at increasingly ambitious levels over time to define and mandate the pathway towards net-zero emissions. This would have the effect of preventing imports of carbon-intensive products, which currently displace the low-carbon domestic production, and progressively phasing them out of the market. However, it is important to recognise that these policy instruments do not incentivise emission reductions beyond what defined by the standards.

Another suitable tool to achieve a level playing field is taxation at the border. A tariff applied on imported products based on their carbon content would allow to limit imports from countries with laxer environmental regulations, with the result of creating a level playing field between EU and non-EU industries. In this sense, the EC could make a proposal in 2021 for a Carbon Border Adjustment Mechanism (CBAM) to replace (or complement) the current free allocation of emission allowances as a safeguard mechanism to prevent carbon leakage. However, the implementation of such a tax mechanism at the border is challenging from a political point of view and could possibly be in contrast with the trading rules of the WTO.

4. Who pays the bill for low-carbon products?

Once defined the set of policy tools to be introduced in the legislation with the aim of promoting investment, incentivising buyers and creating a level playing field for low-carbon products, the question of how to finance these policies in the coming decades should be addressed.

The identified policy tools have different implications in terms of who is going to pay the bill. If public procurement could come at a higher purchasing cost for the public authorities, the introduction of a consumption charge would impose a financial burden directly on consumers. While a CCfD could be financed with public funding or with the revenues coming from the imposition of a levy e.g. the consumption charge, a carbon added tax would be paid by both consumers and producers. However, while consumers would pay the full carbon cost of the emissions embodied in products i.e. the emissions accrued over the entire supply chain, producers would only pay for the emissions that they released.

It is particularly relevant to consider different potential financing mechanisms in light of the current economic crisis. The isolation measures that national governments implemented in Europe and across the world to cope with the COVID-19 pandemic provoked an unprecedented economic and social crisis. Given the urgency to assign substantial funding to the economic and social recovery plans, national governments will likely need to identify new sources of revenues to fund additional climate policies.

The demand for low-carbon products and production processes will penetrate all sectors of the economy, and the transition to a net-zero economy will create both winners and losers. As such, besides considering alternative funding mechanisms, it is important to assess early enough the likely consequences that these policies could have in terms of job and competitiveness losses and to put in place protective measures for the affected industries. This would also help to enhance the political and economic feasibility of such policies.

The reviewed policies to create markets for low-carbon products could be implemented at different levels of governance and, in particular, at the European or at the Member State level. Besides the initiatives from the EC, the EU MS will likely develop their national decarbonisations strategies and propose country-specific policy combinations to secure national industrial opportunities with the development of low-carbon industrial systems. National strategies are needed to address the regional disparities created by industrial development, as some regions could be disproportionally affected by declining industries, whilst others will always be more economically active.

Next steps

In the current version of the EGD, the creation of markets for low-carbon products as key mechanism to foster the decarbonisation of the EU industrial sectors is not sufficiently emphasised. This however represents a crucial element for the development of an effective

decarbonisation strategy to transition towards a carbon-neutral Europe and needs to be kept in the public debate, with existing solutions being publicised and new ones developed and pushed in front of policy makers.

Work has been done to analyze and provide solutions for the development of these markets, but this area remains a weak point in the toolbox for decarbonization.

ERCST will keep focusing on these issues during 2020, looking at ways to create markets for low-carbon products while ensuring that the EGD and, in general, the sustainable transition will represent opportunities not only to achieve the EU climate targets, but also to promote the industrial development and the economic growth of the EU.

There are number of ways to look at how these markets can develop and what is needed. A sectoral approach is important from the work done so far, as it is emerging that the same combination of policy solutions will not always be appropriate for all sectors. One way to do the analysis is to focus on the buying sectors, such as construction, looking towards the supply side of cement, aluminum, glass, windows and other inputs. Another potential approach is to look from the supply side to the consumers of intermediate products such as steel, cement, aluminum, etc.

Moving up the supply chain, another approach is to look at the market means of production that are necessary to deliver low carbon products. Is it simply a matter of incentivizing demand for low-carbon products and the machinery will be a by product?

A final approach is to look at what regulatory framework is needed at the different levels of governance, such as the EU, national or subnational levels.