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Pathways to a climate-neutral industrial sector in the aftermath of the coronavirus pandemic

Discussion paper by the working group on policy frameworks

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Ministry of Economic Affairs,
Innovation, Digitalization and Energy of the
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Bibliographic information

Publisher:	IN4climate.NRW GmbH
Date of publication:	June 2020
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Please reference as:	IN4climate.NRW (pub.) 2020: Pathways to a climate-neutral industrial sector in the aftermath of the coronavirus pandemic. Discussion paper by the working group on policy frameworks. Gelsenkirchen.

1. IN THE CONTEXT OF THE GLOBAL PANDEMIC

The COVID-19 pandemic has struck in a year during which important steps were supposed to be taken in order to protect the climate. At European level, this includes fixing targets as well as specifying the instruments and measures required to achieve them within the framework of the European Green Deal, in particular with regard to the adjustment (increase) of the EU climate protection targets for 2030 that is currently under discussion. At national level in Germany, key decisions relating to the implementation of the country's road map for phasing out the use of coal are pending, as are the development and adoption of a hydrogen strategy, the adaptation and further development of incentive systems to support the expansion of renewables (Renewable Energy Sources Act) and the energy efficiency of buildings. Last but not least, the Conference of the Parties (COP 26), which had been scheduled for November 2020, should have been a source of vital momentum in terms of strengthening global efforts to protect the climate.

Although it is right that combatting the acute dangers posed by the coronavirus pandemic is the top priority for the time being, these strategic decisions are still of key importance. The current crisis and climate change must not be seen as unconnected challenges, competing for attention and limited resources. Alongside other challenges, protecting the climate remains the major issue facing the world for the next decades. The present need to focus on the coronavirus crisis must not be allowed to result in a weakening of our efforts to protect the climate. Climate change is not taking a break.

However, the coronavirus crisis has shown that far-reaching responses to major challenges are possible at both political and social level – when the pressure to act is immediately apparent. Similarly resolute action – but this time without the loss of economic activity and the restrictions to personal freedoms – is necessary to protect the climate; although such efforts will need to be made over a period of years and decades. The crisis has also revealed that today's economic and social systems are extremely fragile and measures must be taken to increase resilience and adaptability to be better prepared in the event of future crises.

Three phases define the response to the coronavirus pandemic

It is absolutely right and important that scientific expertise all around the world is currently being mobilised with great urgency to improve the understanding of the medical mechanisms behind the spread of COVID-19 and to develop a suitable vaccine. In terms of bringing the pandemic to an end, this work is as much a top priority as maintaining the ability of the healthcare system to function and looking after people who are ill with the virus **(phase 1)**.

At the same time, it is imperative that suitable instruments should be put in place to cushion the huge, short-term economic impacts of the coronavirus crisis, so that companies in the country are able to continue operating and contribute towards the recovery of the nation's economy in the wake of the crisis **(phase 2)**. Responding with sufficient speed and achieving wide-ranging effectiveness will require uncomplicated, pragmatic and unbureaucratic formats. To maintain the ability of German business to innovate in preparation for future challenges, special protection must be given not only to established companies but also, and in particular, to start-ups and recently founded businesses with less capital to draw on.

Mechanisms to support crisis management in the medium and long term must also be put in place **(phase 3)**. Individual countries typically roll out extensive stimulus packages to revive economic activity. This approach is required to deal with the coronavirus crisis, too. The experience of the financial and economic crisis of 2008/2009 has taught us that it is well worth considering at a very early stage how the funds that are made available should be used and how the greatest possible impact can be achieved. With regard to the longer-term aid measures to be provided in the third phase – and in view of the limited availability of funds and the complexity of the social challenges involved – providing economic stimulus must not be the sole objective. Instead, there must also be a clear emphasis on establishing an economy and society that are both sustainable and robust.

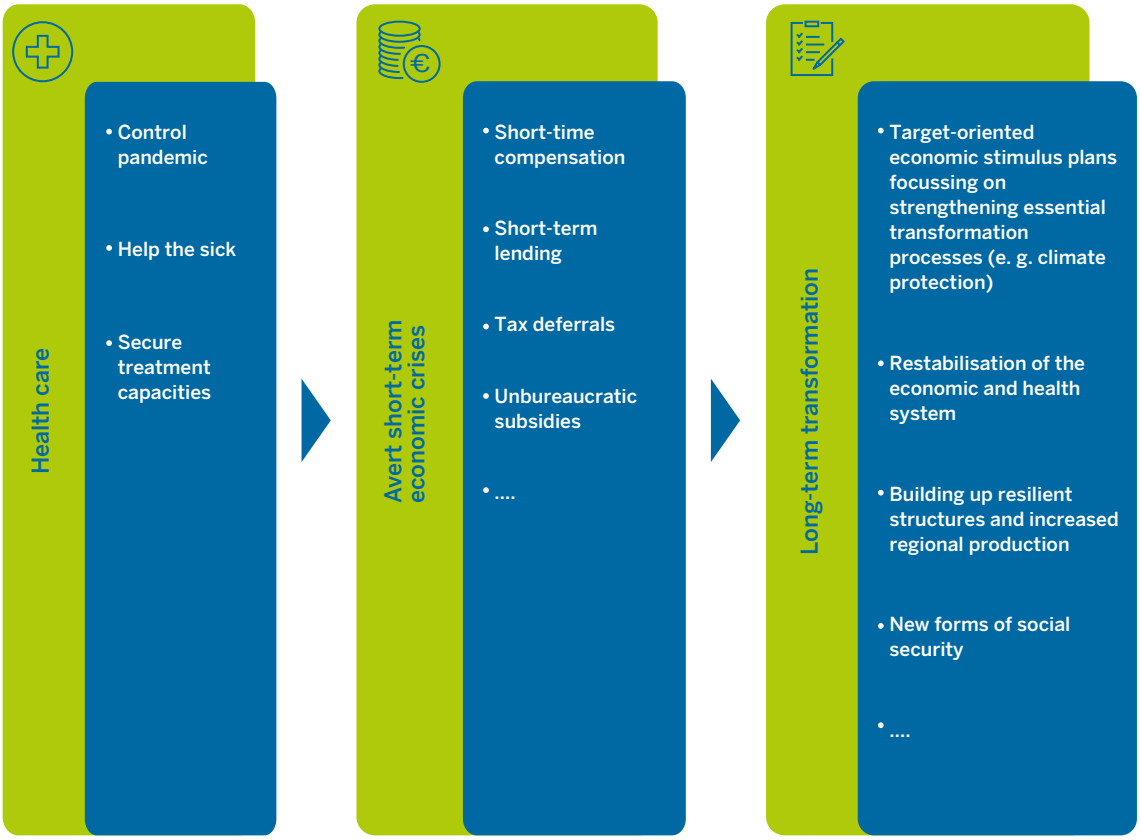

Figure 1: Three-phase model for responding to the coronavirus crisis (Source: Fischedick, Manfred; Schneidewind, Uwe (2020))

Efforts to protect the climate are particularly important in this context, because climate protection is and will remain a core issue for the long term at a global as well as national and regional level, in addition to being a key means of preventing future crises.

Transformation towards a climate-neutral industrial sector is vital if we are to protect the climate. This is particularly true in North Rhine-Westphalia, because of its high concentration of energy-intensive industry. At the same time, restructuring the industrial system requires large-scale investment, and must be implemented in such a way that companies and industrial locations can compete in the global market. Economic measures introduced in the context of the coronavirus crisis can play an important role in stimulating the transformation process and helping to make it a success. This paper presents initial strategies and possible measures to be included in public-sector stimulus packages from the perspective of businesses and scientific institutes participating in the IN4climate.NRW and SCI4climate.NRW initiatives.

(See: Fischedick, Manfred; Schneidewind, Uwe (2020): The Corona-Crisis and Climate Protection – Keeping Long-Term Goals in Mind. Discussion paper. Wuppertal Institute. Online: https://wupperinst.org/fa/redaktion/downloads/publications/Corona_Crisis_Climate_Protection.pdf)

2. KEY REQUIREMENTS FOR PUBLIC-SECTOR STIMULUS PACKAGES TO SUPPORT AN INDUSTRIAL RECOVERY PROGRAMME

The partial standstill of Germany's economy and the financial challenges of a collapse in demand necessitate the provision of support through various public-sector instruments both during and after the crisis. Stimulus packages that cement old structures via the related funding would appear to be less promising and sustainable in these circumstances than those that support new processes and structures designed to ensure value creation in the long term. Different considerations will take centre stage depending on the phase. For example, the measures in phase 2 must take effect quickly and be sufficiently focused to prevent lock-in effects that would run counter to a long-term and sustainable orientation of the packages in phase 3. Economic stimulus measures are by definition put in place at short notice and should even be of limited duration, because their objective is to provide impetus to economic activity. However, measures are particularly constructive in cases where short-term stimuli can produce a long-term, sustainable impact. This may include bringing forward investments in climate protection that were already planned or required, or investing in the transformational infrastructure needed to put industry on a climate-neutral footing. In addition, it is essential that economic stimulus packages are supported by appropriate political measures in order to produce the necessary sustainable impact (particularly measures aimed at creating markets for "green" products).

Long-term climate neutrality of the industrial sector as a criterion for stimulus packages

A climate-neutral industrial sector requires the introduction and implementation of new technologies and processes, the establishment of new or the conversion of existing infrastructure, incentives and frameworks for the sale of climate-neutral products and large quantities of renewable energy produced both domestically and abroad. Stimulus packages can be effective when they help to bring forward investments that would be worthwhile in any event. It is already possible to identify developments that are necessary to sustain value creation, jobs and sales markets in a climate-neutral industrial sector, which would benefit from a major boost as a result of a stimulus package of this kind. These include:

- Safeguarding and expanding sustainable value chains in North Rhine-Westphalia
- Gradually but steadily closing material cycles within the framework of an increasingly circular economy
- Providing the impetus for the demonstration of process innovations (e. g. switching over steel production to hydrogen-based (green) production processes)
- Gradually but completely changing over to an energy/power-supply system fuelled entirely by renewables while guaranteeing security of supply and competitiveness
- Constructing and developing core infrastructure as an enabler (prerequisite for the implementation) of industrial transformation
    - Establishing a hydrogen economy with the corresponding supply infrastructure
    - Making flexibilities available to support the expansion of renewable energies in the power sector, such as by means of innovative thermal storage technology or transitioning to more flexible processes in the industrial sector

- Investing in the development of "markets for green products", such as through targeted governmental incentives via public procurement or (voluntarily) setting product standards (e. g. climate-friendly steel, aluminium and plastics for car production)

- Simultaneously making a pact between industry and society (to build acceptance for the strengthening measures as part of the stimulus packages and also provide the basis for industrial transformation).

Planning security and competitiveness with regard to extensive investments in technology and infrastructure must be ensured in this context. Due to the long service life of industrial process technologies and correspondingly long reinvestment cycles, decisions taken now must be compatible with the objective of climate neutrality in order to avoid stranded investments in the future.

Alignment with the main principles and objectives of the European Green Deal

An integrated climate and industrial strategy is of critical importance when it comes to protecting the climate, because around 20 per cent of all greenhouse gas (GHG) emissions in the EU and around the world can be attributed to the production of steel, aluminium, cement, basic chemicals, glass, paper and other materials. Even in a GHG-neutral future, it will not be possible to do without these materials – as the coronavirus crisis has shown us to striking effect. At the same time, producing these materials without creating emissions is especially challenging, both in terms of technology and in view of the required infrastructure. Because almost all industrial manufacturers of basic materials operate in a highly competitive world market, they cannot bear the cost of investing in climate-neutral production and the necessary energy infrastructure without support. To achieve these goals, the various stakeholders must join forces. That is why aligning the structure of the stimulus packages with the main principles and objectives of the European Green Deal at all levels of political intervention is fundamental when it comes to an integrated European strategy for economic development and an industrial transformation towards climate neutrality for North Rhine-Westphalia.

Impetus for greater cooperation and collaboration across sectors and value chains

At its core, this kind of cooperation necessitates value chains for raw materials that are, as far as possible, climate neutral and circular. The key technological challenge involved in the transformation of the primary sector lies in taking a joint approach to the optimal use of materials and energy. Recycling loops and extensive cuts to GHG emissions must be interlinked in a suitable form that is not bound to a particular ideology or technology, while keeping an eye on the economic and environmental impacts. This will require collaboration across individual value chains. Advanced process technologies and digitalisation can help to drive forward implementation.

Carefully considered, mature and market-orientated policy strategies will be needed at each stage in the value chain. The transformation towards a climate-neutral industrial sector cannot be achieved by business alone. Instead, it calls for broad support by society as well as active and integrated policy-making. These policies must be geared to every stage of the value chain in order to maintain the overall system with existing and future jobs.

Funding the packages

Stimulus packages are associated with substantial levels of investment, which either lead to increased government debt or need to be refinanced in a specific way. In this context, care must be taken to ensure that the chosen pathway does not generate counterproductive effects (e. g. through levies) that frustrate measures and developments initiated and intended by the stimulus package.

Considering current developments in stimulus packages

The capability of stimulus packages to contribute towards the recovery of the economy and decisions over timing will depend to a great extent on the severity of the economic downturn resulting from the coronavirus crisis. This must be taken into account in the exact design of economic stimulus packages, as must changes in behaviour (e. g. a shift in consumer behaviour) and related changes in demand for products resulting from the coronavirus crisis and persisting in the long term. One example of the latter involves adjustments to mobility behaviour, which may impact in various ways on the demand for fuel (e. g. continued working from home and videoconferencing may lead to a fall in demand, whereas any reluctance to use long-distance trains at least for a time in favour of car use will have the opposite effect).

Measures with a rapid impact on job retention and creation

It is also a core mission of stimulus packages to make a swift and effective contribution to help to end short-time-working schemes and secure jobs. But at the same time, they should also provide the impetus for the development of new, secure (robust) employment relationships.

3. POSITION WITH REGARD TO PROPOSALS FOR STRATEGY AND MEASURES

Promoting the market ramp-up of low-carbon breakthrough technologies in the industrial sector

The application of low-carbon technologies in the primary sector and the upscaling of pilot projects must be supported with public funds, because these investments entail significant additional costs and cannot be financed by the companies alone without compromising their ability to compete. The financial resources for the direct support of innovation and investment in low-carbon breakthrough technologies should therefore be developed into a comprehensive investment programme. Conversely, no funding should be provided for investments in technologies that are not compatible with the long-term climate targets. Carbon Contracts for Difference can, for example, be used to reduce the cost of making climate-friendly investments in the industrial sector and thus to increase planning security.

Investing in renewables and in a stable power system

A climate neutral industrial sector will require large additional amounts of renewable energies, whether in the form of electricity or green hydrogen – and this power must be competitively priced. As a result, and despite improvements in efficiency, the demand for electricity generated from renewables will therefore rise substantially compared with current levels. Economic stimulus packages should prioritise investments in the production of renewable power, transmission grids, systems for the storage of electricity and heat as well as other measures to improve flexibility, networks and both European and transnational projects. Preference must be given to the domestic generation of renewables for reasons of security of supply, but this alone will not be able to meet the foreseeable energy demand. Imports of (renewable) energy will continue to be necessary and make economic sense. The increasing availability of renewables should be aligned with the needs of a transition to a climate-neutral industrial sector.

Advancing the establishment of a hydrogen economy

Using carbon-neutral hydrogen is a core strategy when it comes to the transformation towards an industrial sector that is compliant with the climate protection goals set out in the Paris Agreement. The development of a domestic hydrogen economy is central to this objective, including its production, transportation and use in industry. In this way, the financial resources directed towards crisis management can be combined with efforts to strengthen a forward-looking area of industrial policy. To facilitate the launch of a hydrogen economy, other innovative technologies with a positive GHG footprint must be given the same consideration as those used to produce conventional green hydrogen. Using green hydrogen should remain the long-term goal.

Investing in infrastructure for industrial transformation

Public-sector investments in infrastructure can drive economic activity and be specifically designed with climate-neutral industrial processes in mind. For example, an efficient hydrogen network is needed, as too are transport infrastructures for CO_2 and storage facilities.

Proactively boosting demand for climate-neutral products

A climate-neutral industrial sector is only conceivable in combination with demand for climate-neutral products. This calls for instruments to support demand, such as minimum standards for low-carbon industrial products via public procurement, for example.

Ensuring effective protection against carbon leakage

Effective protection against carbon leakage, especially in the case of energy-intensive industries, is an essential and necessary component when it comes to safeguarding the competitiveness of the industrial sector. Such efforts must be a fundamental element of any European or German industrial policy that aims to combine crisis management with climate policy.

Emergency government reserves of raw and basic materials of strategic economic importance

Many materials are of great importance to production systems as they are the roots of value chains. For example, metals are needed as primary materials in the food industry, mechanical engineering and medical technology. Establishing a government reserve of raw materials would ensure uninterrupted operations and secure the supply of important basic materials as well as enabling the provision of system-related services for the power network by stakeholders in the industrial sector. A government reserve of manufactured basic materials would ensure that the value chains depending on them are able to operate and safeguard the availability of important products. The strategic stockpiling of oil and gas in Germany could act as a model for other raw and basic materials.

Targeted training and further education for a climate-neutral industrial sector

The majority of the future technologies needed for a climate-neutral industrial sector have already been identified and will be ready for commercial application in the next ten years. It is not only investment in industry that is long term in nature – when it comes to training and further education, the need for different or new skills must also be addressed at an early stage.

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