Energy transition 2030: Academies describe path to carbon neutrality in Europe

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With the European Green Deal, the European Union has set itself the

goal of operating carbon-neutral by 2050. An important element of this commitment is an energy transition away from the use of fossil energy carriers towards generation and use of renewable energies. To this end, the German Academies of Sciences recommend "no regret" measures, the introduction of a standard cross-sector CO_2 price, including a minimum price, and comprehensive changes to the infrastructure. With their ad-hoc-statement published today, "Energy transition 2030: Europe's path to carbon neutrality," the academies present a compact series of recommendations in light of the German EU Council Presidency starting on 1 July.

The authors consider the challenges of climate protection policy against the background of the current crisis caused by the coronavirus pandemic. In order to cope with its consequences, financial resources must be mobilized. It will be crucial for climate protection that these funds are invested in accordance with the achievement of climate protection goals. To this end, the working group is identifying political, technological, and regulatory measures which, when implemented jointly, will enable an energy turnaround without overburdening society and the economy.

The EU's climate protection targets can only be achieved through a joint climate and energy policy strategy, which considers the member states' different preconditions. An open-minded attitude towards technology is desirable in principle, but should not lead to a delay of necessary investments due to a wait-and-see attitude. Researchers consider some technologies to be indispensable for meeting the climate targets of 2030 and 2050. Such "no regret" measures include strengthening wind energy and photovoltaics, an expansion of a high-performance transmission and distribution network, the expansion of electromobility and heat pump technologies. Hydrogen, being the first basic element in the chain from electrical energy to material energy carriers, will play a key role. Therefore, investments in this energy source and respective pilot systems

are necessary.

A regulatory framework in the form of systems of incentives would help to make the transformation as cost-efficient as possible. Europe demonstrating that a comprehensive transformation of the energy system can succeed without overburdening the national economy could also provide an important impetus for third countries to adopt climate-friendly policies and to convert to new energy systems, the statement notes. The authors see a cross-sectoral, EU-wide uniform CO_2 price as a cornerstone of climate protection—particularly in times of the coronavirus pandemic. Due to the recession resulting from the crisis, there is a risk that uncertainty about the long-term price development will increase. An effective minimum price for CO_2 is thus more important than ever in order to provide planning security and to set long-term incentives for sustainable investments in climate protection. In the longer term, a standard price for greenhouse gasses across all sectors is important, preferably achieved through an expansion of the European Union Emissions Trading System (EU ETS).

In addition, close European coordination is required in order to create a harmonized European energy system. A key part of this process involves striking the right balance between open market approaches and the need to develop the infrastructure quickly. It should also be borne in mind that energy will continue to be imported to Europe in the future. The necessary technologies would have to be brought to market, and global supply chains developed. Therefore, policy-makers must support the development of supply chains for green energy sources.

The ad-hoc-statement is a joint contribution by the German National Academy of Sciences Leopoldina, acatech—National Academy of Science and Engineering and the Union of German Academies of Sciences and Humanities. The Academies provide policymakers and society with independent, science-based advice on issues of crucial

importance for our future. Their members and other experts are outstanding scientists from Germany and abroad. In the energy sector, the Academies of Science have been providing science-based policy advice since 2013 in the Academies' Project ESYS—Energy Systems of the Future.

More information: Energy transition 2030: Europe's path to carbon neutrality: www.leopoldina.org/en/energy-transition-2030

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