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Addendum

Industrial Energy Efficiency

I. Introduction

1. While neither a timeline for the pandemic state continuance, nor a clear understanding of the magnitude of its impact on the pillars of sustainable development are defined, it stands to reason, nevertheless, that the post-COVID-19 recovery plans should incorporate activities that are guided by the 2030 Agenda for Sustainable Development and the goals set out in the Paris Agreement, with the overall vision of 'building back better'. From there, the opportunities to not only rebuild economies, but to make them more resilient and expedite their sustainable transformation, will broaden.

2. Careful attention needs to be paid to what is already in place, i.e. buildings, infrastructure, plants, vehicles, goods, etc., by seeking to improve the status quo through upgrades and retrofits. Yet the highest emphasis ought to be put on the opportunity to ensure that everything newly designed and commissioned is shaped in a manner that allows reducing greenhouse gas emissions and the carbon footprint of each sector.

3. This puts the industrial sector in a unique position as it decides on design, sourcing, performance, longevity and recyclability, carbon and energy footprint, as well as amount of resource, water and energy consumption during production of goods and services of any type.

4. Acknowledging that the current level of production of clean energy is limited, measures leveraging its more efficient use need to gain in profile. The work of the United Nations Economic Commission for Europe (ECE) on sustainable energy, and in particular its Task Force on Industrial Energy Efficiency (the Task Force) that addresses digitalization and attainment of carbon neutrality among other issues, provide the opportunity to attach significance to energy efficiency.

II. Assessing the Baseline in Industry Sectors

5. To develop successful approaches and solutions, clarity on the tasks ahead is as much needed as the understanding of the current state the industrial sector is in. As the ECE region

is very diverse, so is industry. Thus, general macro-level awareness is insufficient to understand the micro-level realities facing the industrial sector and to tailor fitting solutions.

6. Assessing the energy use per sector and source of energy, as well as the associated carbon emissions are as much needed as an understanding of the degree to which energy efficiency potentials have been harnessed already. Additionally, it is recognized that a necessary (yet insufficient) condition for better understanding is mutual acceptance of the terminology, targets to be served and methodology used to assess the progress.[1]

7. Whilst shaping the path for a sustainable post-COVID-recovery and a low-carbon economy requires understanding of the starting point, progressing on it effectively requires understanding of the industrial side's assessment of the situation and its intentions to act.

8. As realities differ a lot also depending on company size, manufacturing sector, degree to which emissions can be avoided, energy intensity, geography and other factors, a thorough understanding of these realities gained on a company level is essential, e.g.:

(a) How effective are policy options considered to facilitate an increase in energy efficiency in industry?

(b) What measures, if any, are taken by companies to reduce carbon footprint?

(c) Are energy, resource and carbon footprint considered during product development? In terms of the process, or in terms of the whole life cycle? Which of these has the highest priority?

(d) Do companies aim at net-carbon neutrality? If so, where do they stand in this effort? By when do they plan to reach the goal? If not, what is or are reasons for that?

(e) What factors motivate companies reduce their emissions?

(f) What emission reduction do companies aim for within the next five years? How much of this do they associate with which type of measure?

(g) Which factors are most decisive in determining the above set of measures?

(h) In what way does the COVID-19 pandemic affect companies' energy efficiency and strategy to reduce carbon footprint?

9. Interim data, so far collected on the European businesses and assessed by the Task Force, indicate, in general, that:

(a) Policy options directly addressing carbon reduction are seen most effective;

(b) Measures chosen to reduce carbon footprints are mostly of local nature such as reduction of energy consumption and on-site renewables-based power generation. Purchasing renewable energies and optimizing CO_2 throughout supply chains also play a considerable role in companies' strategies;

(c) The footprint is considered by three out of four companies, more than half of these in relation to production. Energy intensive companies, however, lag behind. Particularly micro and large companies attach the highest priority to energy consumption;

(d) More than half of companies to date plan for carbon neutrality, of which half have already started implementation. For the majority of those not having such a plan, technical reasons outweigh economic. Most companies planning for carbon neutrality aim to achieve this goal within the next five years;

(e) The most motivating factors to reduce emissions are long-term economic advantages, a reduction of cost risks, as well as corporate social responsibility;

(f) On average, companies so far state that they plan to reduce their emissions by 20 per cent based on the 2019 figures in five years, with large companies usually surpassing the 20 per cent bar. Importantly, 60 per cent of measures to achieve the reduction are on-site;

[1] See: https://www.unece.org/fileadmin/DAM/energy/se/pdfs/geee/geee7_Sept2020/GEEE-7.2020.INF.2_final_v.2.pdf

(g) The most decisive factor in determining this mix of measures are the costs per tonne of avoided CO_2 and the level of the investment required overall. Technical aspects and expected increases in productivity play a considerable role in the decision as well;

(h) Even though the COVID-19 pandemic has a significant impact, every third company does not change its energy efficiency strategy, and only about quarter of companies indicate a reduction of ambition or a delayed implementation. All other companies either expedite or expand their activities.[2]

10. Data collection and assessment is an ongoing exercise, and, once data from companies from across the ECE region become available, the picture may change. Whilst this may less be the case on aggregate, there will certainly be considerable differences across geographies, company sizes, sectors and energy intensity of companies.

III. Optimizing Energy Efficiency and Productivity and Facilitating Development of Carbon Neutrality Strategies

11. Companies increasingly look to reduce their carbon footprint for strategic reasons, specifically due to societal expectations, image, competition for skilled personnel and overall market conditions. In monetary terms, it is often shareholders who are best placed to invest in sustainable business models, notably to avoid stranding investments.

12. Provided the sufficient response rate and level of disaggregation, understanding the level of ambition in terms of decarbonization goals and intended weight of measures may allow to assess how much emissions reduction the respective industrial sector estimate to achieve through independently determined action, thus helping policymakers to focus on removing barriers and addressing the remaining emissions gap.

13. Electricity consumption in industry to date is already higher than the amount of clean electricity available, and with the move towards broader electrification this gap may increase even further. This is also of particular relevance as switching the source of energy might be the easiest intervention to reduce the environmental footprint in many instances.

14. Obtaining an indication of what types of a company's activities towards carbon neutrality are envisaged to what extent and by when, may allow estimating the amount of carbon emissions that a company is planning to deal with through an energy-related optimization of its operation in conjunction with change of processes and on-site energy production. Similarly, it allows estimating what amount of emissions companies seek to cater through acquiring clean energy and compensation schemes, and thus to estimate the required adjustment to sustainable energy expansion plans and planning authority capacities.

15. Taking these results into account while evaluating motivations, priorities, and concerns may support further tailoring of effective energy efficiency measures and developing targeted strategies for reducing greenhouse gas emissions of the energy sector.

16. The varied industrial sector has a pivotal role in enabling achievement of the sustainable energy targets, understanding the sectors' intended actions, plans and ambitions provide valuable insights to inform further deliberations.

IV. Further information

17. For further information on ECE's work on industrial energy efficiency, visit the ECE website on Energy Efficiency in Industry[3] or contact the secretariat at energy.efficiency@un.org.

[2] In an effort to reduce costs, COVID-19-induced production down times are used for optimization activities that would not be feasible during normal operations – notably companies in the chemical industry seem to expedite planned measures.

[3] See: https://www.unece.org/energywelcome/areas-of-work/energy-efficiency/activities/energy-efficiency-in-industry-sector.html