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Sustainability Growth Innovation*

Opinion

SGIs IN THE CLEAN INDUSTRIAL DEAL

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Executive Summary

- **SGIs are essential to the development of Net-Zero industries.**
 - By **providing the services which industries require**, such as green energy, clean water, circular waste management and sustainable public transport, SGIs constitute the basis of the growth and competitiveness of the industries which contribute to the green transition.
 - At the same time, they independently develop innovative technologies which **allow for the creation of a circular economy and reduction of import dependencies** for raw materials.
- Because Net-Zero industries rely on SGIs to innovate, upscale, and grow, it is not surprising that **many of the challenges to upscaling Net-Zero industries** mentioned in the Draghi Report and the Commission's stocktaking of the Clean Transition Dialogues **relate directly to the provision of SGIs**. These include high energy prices, a lack of integrated value chains, insufficiently developed infrastructures, and high important dependencies for critical raw materials. In order to overcome them, the Clean Industrial Deal must:
 - **Strengthen the SGIs that provide clean energy production, storage and transmission;**
 - **Create IPCEIs covering infrastructures and the entire value chain**, involving SGIs;
 - **Support SGIs that recycle critical resources** needed for production, including critical raw materials.
- **SGIs are at the forefront of the creation of a circular single market.** Many SGIs recycle resources from waste and feed them back into the value chain, such as phosphorus and nitrogen from wastewater, biomethane from waste to energy systems, and black mass from batteries. However, these **secondary products can often not compete with the lower price of primary products**, and **a lack of uniform technical norms and standards means that recycling is still unnecessarily complicated and costly**. Therefore, the following elements must be part of the Clean Industrial Deal:
 - **Producers must be incentivized to use secondary products** for a functioning circular single market to be created. This should be achieved by establishing **recycled content criteria**, which could take the form of **tradeable quotas**.
 - Products should be made '**recyclable by design**' through the creation of **uniform technical norms and standards** and by **harmonising rules on the use of recycled products** across Member States.
- As specified in Article 14 TFEU, **SGIs play a central role in promoting social, territorial and economic cohesion in the EU**. Therefore, SGIs should be included as an essential pillar of the Clean Industrial Deal to ensure that it does not only increase the overall competitiveness of the EU but also **strengthens the single market and local economy in all European territories**. This will boost social cohesion and the long-term sustainability of Europe's economic growth and competitiveness. For this reason, **SGIs must be considered as a structural component of Europe's competitiveness rather than as actors which only come into play in situations of market failure**.

Introduction

One of the European Union's main objectives for the next five years is the development of strong Net-Zero industries. This will allow the EU to simultaneously achieve the climate ambitions set out in the Green Deal and improve its competitive position vis-à-vis other regions in the world.

The Clean Industrial Deal will be the overarching strategy for strengthening Europe's Net-Zero industries. Stéphane Séjourné, the proposed Executive Vice-President for Prosperity and Industrial Strategy, describes it as "a set of initiatives aiming to improve permits and access to infrastructures, access to energy and raw materials, access to public and private funding, access to skills and technologies". Clearly, the Deal will bring together many different elements of what is required to strengthen specific industries: raw materials, skills, infrastructures, and reduced administrative burden will all be included.

Any serious effort to strengthen Europe's Net-Zero industries will have to improve the current position of public services and services of general interest in the European economy. **Upscaling Net-Zero industries means developing and enhancing the services provided by SGIs which these industries rely upon**, such as the provision of affordable and green energy, reliable access to water, circular waste management solutions, and transport and digital infrastructures.

Strong SGIs are central to overcoming some of the main challenges to the development of Net-Zero industries in the EU. The Draghi Report and the Commission's stocktaking of the Clean Transition Dialogues point to several concrete problems – such as high energy prices, a lack of integrated value chains, insufficiently developed infrastructures, and high import dependencies for critical raw materials – which **can only be solved by supporting SGIs**. In addition, **it is critical that a market is created for secondary materials**, which offers an opportunity to move away from dependencies on important dependencies for critical raw materials by using recycled materials.

Finally, **SGIs are central to building competitive Net-Zero industries from the bottom up**. Only by basing the efforts to strengthen Net-Zero industries on the development of strong SGIs in all EU territories can it be ensured that rather than 'picking winners', the Clean Industrial Deal **also improves the EU's territorial, economic and social cohesion**. Strengthening the services on which Net-Zero industries rely for their growth and development is an organic manner of supporting these industries, which ensures that they can develop in all Member States, and not just those with the greatest fiscal capacity.

Strong SGIs: The basis of Net-Zero industries

Through their provision of – amongst others – green energy, clean water, circular waste management and sustainable public transport, **SGIs are the core of the development of Net-Zero industries**. SGIs enable the development of innovative technologies through the services and infrastructures they provide, whilst also independently developing both green and digital technological solutions.

There are many practical examples of how **the infrastructural foundations and services provided by SGIs contribute directly to the technological innovations made by other actors in the economy**. Technologies initially developed by other industries rely on SGIs to become competitive, as it is through testing in SGIs' renewable energy plants that technologies such as the Energy Dome in Italy, which uses CO₂ batteries to store renewable energy in between production peaks, can be scaled up and made profitable. Similarly, technologies such as Robot Picking, which uses AI to sort waste, rely on SGIs to be developed and made ready to be used in practice. Without high-quality SGIs such as these, critical new technologies would not be able to be developed as quickly or effectively.

Storing renewable energy using CO₂ batteries in Italy: Italian SGI A2A uses its renewable energy plants to allow for testing of start-up Energy Dome's technology. Energy Dome uses CO₂ batteries to store renewable energy. One of the main challenges of using more renewable energy is its intermittency: production levels of solar energy in particular vary enormously throughout the day. In order to be able to move away from using fossil fuels between peak production hours, innovative storage technologies such as Energy Dome are crucial. As part of its Corporate Venture Capital initiative, A2A uses its plants to help such critical green technologies to develop.

SGIs also independently develop technologies which are crucial to the completion of the green transition. For example, regarding waste management, the French local public enterprise Semardel was the first company to capture biogas from its landfill and convert it into heat for on-site use and electricity for the public grid.

Biogas from waste in France: Semardel is based in Vert le Grand, France. Its 150 hectare ecosite is home to several facilities dedicated to waste recovery. Semardel was the first company to capture biogas from its landfill. Originally converted into heat for use on its site, this gas is now used in part to fuel waste collection trucks, with the rest fed into the public gas network. The site's production amounts to 40,000 megawatts/hour, which is equivalent to the consumption of a town of 30,000 inhabitants.

Moreover, SGIs are central to the creation of a circular economy. For example, they are pioneers of urban mining, which allows for the collection of discarded products and the return of secondary raw materials to the economy. By treating waste as a resource, urban mining is crucial to meeting the increasing demand for raw materials. Other sectors, such as the railways, also recycle many different materials, which helps to reduce the scarcity of key metals such as steel and copper.

Urban mining in Heidelberg, Germany: The 'Circular City Heidelberg' project is creating a digital building material register which provides information on which recyclable materials will become available when a building is demolished or undergoes extensive renovation in future. Doing so allows for the identification of materials which can be used in other construction projects ahead of time. In the light of an ever-increasing demand for raw materials, it is crucial that waste can be used as a resource in this way.

Circular economy in the railways, France: Since 2015, SNCF Réseau has committed to an ambitious circular economy approach targeting track structural products: ballast, rails, sleepers and catenary contact wire. The aim is to move from managing waste to managing material capital. The objective is to re-using or recover 100% of the network's structural products resulting from maintenance works by 2025.

Upscaling Net-Zero industries by enhancing SGIs

These examples show that **Net-Zero industries rely on public services and services of general interest to innovate, upscale, and grow**. Therefore, it is of little surprise that many of the challenges to upscaling Net-Zero industries that are identified in the Draghi Report and the Commission's stocktaking of the Clean Transition Dialogues relate directly to the provision of SGIs. **Better access to affordable clean energy, more developed digital and transport infrastructures, and less dependency on imported critical raw materials can all only be achieved if SGIs are properly supported** in their provision of these essential services to industries. The upscaling of Net-Zero industries relies on strengthening SGIs in various manners:

Strengthen the SGIs that provide clean energy production, storage and transmission

In order to **reduce energy prices**, we should invest in sustainable energy production, battery storage, and electricity transmission through smart grids. SGIs, as the main providers of clean energy, are central to these efforts.

In terms of production, the EU should **diversify its energy production** to the fullest and embrace a **technology-neutral approach** to the creation of clean energy, including renewables, nuclear and waste-to-energy solutions. To facilitate the broader deployment of renewable energy, particularly for **industrial self-consumption**, it is crucial to overcome major obstacles such as permitting complexities and financing challenges.

Regarding storage, the EU should also take a technology-neutral approach, **supporting storage in batteries, hydrogen and carbon dioxide**. A key challenge is the **supply of the critical raw materials required for batteries**. SGIs providing **recycling solutions** in waste management should be supported to overcome this issue.

Transmission infrastructures need to be upscaled. Many Member States face challenges in connecting all industries to the energy grids. Therefore, **investment in energy grids is critical**. Implementing **smart grid technologies** to balance energy supply and demand in real-time can help optimise electricity use and reduce peaks in energy prices. At the same time, the creation of **energy hubs** for business parks can help ensure that access to the grid is improved for industries that require a lot of energy.

Finally, **the industry must be supported in its efforts to electrify** and move away from reliance on fossil fuels. In order to do so, an **Electrification Bank** could be set up, similar to the existing Hydrogen Bank.

Create IPCEIs covering infrastructures and the entire value chain, involving SGIs

The objectives of creating integrated value chains and improving the infrastructure that businesses need to increase their competitiveness should not be seen separately. These infrastructures, in energy, digital, transport, and waste management, should be taken as a core part of the value chain and included in the support that sectors receive to integrate value chains and create economies of scale. **Without strengthening SGIs and the services and infrastructures that they provide, upscaling Net-Zero industries will be impossible.**

IPCEIs, if used in the correct manner, can help to integrate value chains and create economies of scale for Net-Zero technologies. For this to work, **the entire value chain of products must be included in the IPCEI**, starting from the **energy, infrastructures and resources required in production**, and ending with **waste management solutions which allow for recycling** of the critical raw materials and other materials that are used in the product. This means that SGIs should be included in the IPCEIs, as it is SGIs that provide the energy and infrastructures at the start of value chains and that ensure that waste is managed in such a way that critical resources can be recycled and fed into the beginning of the value chain.

Additionally, **SGIs are territorially rooted and, therefore, ensure that projects contribute to local and regional economic development, as well as enable all Member States to benefit equally from IPCEIs.**

Support SGIs that recycle resources needed for production, including critical raw materials

Strengthening Europe's circular economy could result in a reduction of import costs for materials such as iron, aluminium and copper by €42 billion by 2040. For this to happen, the EU needs to **support the SGIs which provide innovative waste management solutions.**

On the one hand, this means **investing in the development of recycling infrastructures for these SGIs**. On the other hand, a **functioning market for secondary materials must be created**. Currently, most secondary materials are not price-competitive with primary materials. In order to upscale the production and use of secondary materials, **producers must be incentivised to use these secondary materials.**

Creating demand for secondary materials through recycled content criteria and standardisation

Many **SGIs have developed ways to recycle resources from waste and feed them back into the value chain**. Key examples include the recovery of phosphorus and nitrogen from wastewater, recycling batteries, and the extraction of biomethane from waste to energy systems.

Currently, however, there is often no market for these secondary materials, as their primary equivalents are still available at a lower price. Therefore, the **use of secondary materials by producers must be incentivised in order to create a market**. The best way to incentivise the use of secondary materials is to introduce **recycled content criteria for key products**. This could be put into practice in the form of **tradeable quotas**, which would make the system more flexible than maintaining criteria for each individual product. Below, several sectoral examples are given that show how recycled content criteria could be put into practice.

Creating a market for phosphorus and nitrogen from wastewater

The potential of wastewater and sludge for resource recovery is undeniable, and so is its contribution to the circular economy and the competitiveness of the internal market. Despite this recognition and the progress achieved in some areas, it is still not fully exploited due to several reasons:

Secondary resources recovered from wastewater and sludge must have market access, if there is to be a circular economy in the EU. The huge limitation (or lack) of markets for resources and nutrients recovered from wastewater and sludge is one of the key hindering factors for the realisation of the potential of such recovery. The lack of market clarity about the form of the output and the quality required, as well as the lower costs of chemical fertilisers or primary raw materials such as raw phosphorus ore, lead to insufficient market demand for secondary raw materials, which restricts the use of recovered resources and nutrients

A pull in the market is essential to promote the use of recovered resources and nutrients; the market needs to be ready for those materials. This pull could come in the form of compulsory blend ratios (or a minimum amount) of recovered phosphorus and nitrogen in mineral fertilisers (similar to the compulsory ratio of ethanol blended in petrol), notably in the Fertilising Product Regulation, as well as subsidies for recovered raw material.

Incentivising waste heat recovery and usage in district heating

By collecting the waste heat from both industry and electricity production and using smart district heating grids, it is possible to save all of the natural gas currently used for heating buildings in Europe. This would result not only in monetary savings but also in a considerable reduction in CO₂ emissions.

For waste heat's potential to be utilised, both those producing waste heat and those with the potential to use it are incentivised to take the necessary steps. Installing waste heat recovery systems needs to be incentivised through tax incentives or credits, and the option of waste heat as an energy source should be encouraged through competitive pricing models.

In the long term, **incentivising producers to use secondary materials will cause the price of secondary materials to drop**, as recycling will become cheaper and more efficient. In the short term, however, production costs might increase due to the current high prices of secondary materials. **In order to avoid weakening the competitive position of the EU's Net-Zero industries in the short term, it must be ensured that the Carbon Border Adjustment Mechanism is properly developed to avoid giving an unfair advantage to non-EU producers with regard to emissions, including the use of secondary materials.**

Besides incentivising producers to use secondary materials through recycled content criteria, it is also necessary to ensure that it becomes easier to recycle products by creating **uniform technical norms and standards**. Disassembling and recycling products such as batteries would be made much easier if there were fewer types of batteries and if batteries were '**recyclable by design**'. Moreover, it is critical that **the rules that determine how recycled products can be used be harmonised across Member States**. For example, EU standards should replace the divergent national rules on how digestate, the solid residue from the biomethane production process, can be used as a fertiliser.

Making batteries 'recyclable by design'

With the foreseen increase of electric mobility in Europe, the EU must ensure that the necessary enabling conditions are in place to take proper care of the end-of-life stage of EVs and batteries. Stepping up the recycling of exhausted batteries in the EU will reduce our need to import critical raw materials from abroad and support the growth of domestic battery manufacturing. This is also foreseen by the new targets for battery recycling and recycled content materials in the new EU Battery Regulation.

To make battery recycling easier across the EU, uniform technical norms and standards on battery design are necessary. For example, waste management operators that can collect exhausted batteries and prepare them for recycling by opening the battery case and extracting the black mass would benefit from EU standards that ensure batteries are 'recyclable by design'. Such EU standards could, for example, set uniform requirements for battery case design, which would allow the automation of the disassembly and pre-treatment of battery packs using robotic technologies.

Harmonising rules for the use of biomethane as a fertiliser

Biomethane has tremendous opportunities to contribute to the development of a circular economy in the EU. Biomethane production can absorb organic waste from households, agriculture and husbandry and turn it into a valuable renewable gas. Digestate, the solid residue from the biomethane production process, is a precious natural fertiliser that can be used in agriculture and replace expensive chemical fertilisers.

To foster the development of a market for digestate, the EU should set uniform rules across all Member States for the use of digestate as a fertiliser, replacing diverging national regulations currently in place that often restrict the possibility of using these residues and close the circularity loop.

Strengthening Net-Zero industries and cohesion simultaneously through strong SGIs

Finally, it is paramount that investments in Net-Zero industries benefit all regional economies, strengthening the Single Market as a whole and creating jobs in all areas of the EU. In order to do so, **the Clean Industrial Deal needs to ensure local and regional targeting of investment**. Currently, there is a clear risk that a ‘two-speed Europe’ emerges of Member States with and without the fiscal capacity to invest in Net-Zero industries.

If investments are too imbalanced between Member States and between regions, **this risks damaging the investment dynamic of the EU and the functioning of the Single Market as a whole**. Additionally, it will result in an **imbalance in the distribution of jobs** throughout the EU, which will significantly **weaken social, economic and territorial cohesion**. Cohesion is a fundamental pillar of the European project, without which it is bound to lose support from citizens.

Well-organised local economies are in the best position to use investments efficiently and in a manner which contributes not only to overall economic growth but also to the creation of local economic opportunities and social cohesion. **The best way to channel investment directly to local and regional levels is to invest in SGIs.**

On the one hand, investments in SGIs create a stronger European economy overall, as **SGIs provide affordable and green energy, reliable access to water, circular waste management solutions, and transport and digital infrastructures which other businesses need to innovate, expand and contribute to a competitive economy**. On the other hand, **investing in SGIs increases the strength of local and regional economies**, as the essential infrastructure and services they provide are present ‘on the ground’ in all EU territories.

In sum, **only through investment in SGIs can Europe’s clean industries be built from the bottom up** and can create a clean and competitive economy be unified by strengthening the EU’s social, economic and territorial cohesion. Therefore, SGIs should receive structural support for the essential services that they provide and should not be considered an option to turn to only in cases of market failure.