

***Em Análise:***

## **Open Strategic Autonomy and the Green Transition** <sup>1</sup>

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### **ABSTRACT**

This document discusses how Open Strategic Autonomy (OSA) and the green transition are related. On the one hand, OSA refers to the balance between the capacity of acting autonomously and openness in strategically important policy areas, which enhances the resilience of countries. On the other hand, the green transition means a departure from fossil fuels and overconsumption to a low-carbon paradigm and a sustainable model of growth, addressing environmental challenges such as climate change and resource overexploitation. **The green transition has the potential to mitigate strategic dependencies across various sectors**, including energy, food and agriculture, **but it can also pose novel challenges** by requiring the acquisition of critical raw materials, **exposing countries to new geopolitical risks and supply interruptions**. New technologies and innovation play a crucial role in achieving OSA, with a focus on finding sustainable alternatives and the competitiveness of the industries. This goal also requires a collaborative and strategic approach, with a special attention to less developed countries and regions, in order to ensure that no one is left behind. Finally, the document highlights the challenging balance and potential synergy between OSA and the green transition in the path towards a sustainable future.

### **KEY WORDS**

Open strategic autonomy; strategic dependencies; green transition; innovation; environmental challenges

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## 1. INTRODUCTION

**In a fast-evolving global economic landscape, the balance between openness and self-sufficiency is key to the resilience and autonomy of regions, countries and economic blocs.** The resilience and autonomy of a region, country or economic bloc can be supported by the proper balance between openness and self-sufficiency in core strategic areas, in other words, their Open Strategic Autonomy (OSA). This balance promotes the resilience of countries or blocs, by ensuring the strategic independence, security and resilience in the core sectors of the economy.

Currently, the world faces several environmental challenges, such as pollution and the depletion of natural resources. As we address escalating environmental challenges, the need to a climate transition becomes even more pressing. To mitigate the risks, the concept of green transition is key to shift from an economy based on fossil fuels to a sustainable and greener model of growth. These changes encompass a wide range of sectors, such as energy, agriculture and transportation and require new practices and scale up of green technologies.

This analysis aims to explore how innovation can enhance OSA in this transition, empowering regions, countries and economic blocs to maintain control over their economies amid global uncertainties. Furthermore, it seeks to discuss how investment in research and development (R&D) can foster innovation in key fields like renewable energy, alternative materials and efficient manufacturing processes. To ensure a more inclusive economy, it also examines the need for focused investment in R&D, industry-level training programs and support for small and medium enterprises in regions and countries lagging in income and investments.

By examining, in a succinct approach, these dimensions of the green transition, this analysis intends to shed light on the role of innovation and strategic planning in achieving OSA in the face of environmental and geopolitical challenges.

## 2. Balance between Openness and Autonomy in Core Strategic Areas and Green Transition: Key dimensions

The balance between openness and autonomy in core strategic areas is crucial for strengthening the resilience and stability of a country or bloc. Strategic dependencies, or the reliance on materials controlled by other countries, pose potential risks to economies vulnerable to geopolitical threats and supply disruptions.

The green transition offers solutions to these issues by addressing problems such as climate change, overexploitation of natural resources and loss of biodiversity. The shift from a fossil fuel-based economy to a more sustainable model of growth driven by renewables impacts various sectors requires new practices and technologies. This transition aids in mitigating strategic dependencies and enhancing OSA across different sectors.

In what follows, we describe six key dimensions to be considered in this balance:

### **1) Energy**

As pressure mounts to abandon fossil fuels, including by political commitments and common policy goals, investment in renewable alternatives like solar, wind, hydropower and geothermal energy can reduce dependence on imported oil and gas. These measures enhance national resilience and energy security by mitigating exposure to geopolitical risks, supply shocks and price volatility. Energy efficiency, promoted through measures like energy-efficient standards and renewable heating and cooling systems, can also bolster self-resilience by reducing the total demand for energy in industry and households.

Some difficulties have been encountered when adopting renewable energies, such as the significant upfront investments in infrastructure, the intermittency of renewable energies that require storage systems and the grid integration.

### **2) Critical raw materials**

The green transition changes the strategic dependencies landscape, requiring a significant amount of new raw materials, some of which are considered critical due to their scarcity and ownership. Increased global production concentration of these materials over the past decade has led to increased strategic dependencies, posing additional national security risks. However, measures such as resource efficiency, new recycling techniques, supply chain diversification and development of domestic production chains are being implemented to mitigate these risks.

### **3) Resource efficiency**

Promoting resource efficiency and the circular economy is a key element of the green transition. Practices such as product redesign and material recovery and reuse from end-of-life products can minimize waste and maximize resource use, namely for critical raw materials. This ultimately promotes national self-sufficiency by reducing reliance on foreign material sources.

#### 4) Food and agriculture

With about a quarter of all greenhouse gas (GHG) emissions resulting from food production<sup>4</sup>, the green transition advocates for sustainable agricultural practices and food solutions. Reduction of food loss and waste through circular economy principles and sustainable food systems can reduce strategic dependencies on food imports, especially crucial for countries with high food import dependency.

#### 5) Transportation

Accounting for over a quarter of total GHG emissions<sup>5</sup>, transportation systems require a major overhaul under the green transition. Adoption of electric vehicles (EVs) and implementation of low-carbon fuels can increase strategic dependencies on raw critical materials. However, this risk can be mitigated with diversified supply chains and development of domestic sources.

#### 6) Industry

The industry sector can play a pivotal role in achieving OSA by adopting renewable energy in production processes, redesigning processes, using advanced materials and promoting circular economy principles and material recycling.

Furthermore, the industry can have a leading role in the collaborative approach required by the green transition and the OSA. Industry can be pivotal in promoting partnerships with other stakeholders, such as academia, research organizations and collaborating with governmental and non-governmental organizations and international organizations.

### 3. Discussion

The adoption of OSA in the context of the green transition reveals interesting insights for policy, economy and society at large. Our discussion suggests that **innovation and investment in new technologies, particularly those related to renewable energy sources and resource efficiency, are critical to the shift towards more sustainable practices** in sectors such as transportation and industry.

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<sup>4</sup> <https://ourworldindata.org/food-ghg-emissions>

<sup>5</sup> <https://ourworldindata.org/co2-emissions-from-transport>

Contrary to some perspectives that argue for the primary role of policy changes<sup>6</sup>, we find that **the impact of technological advancements, such as artificial intelligence (AI), can be significant in the drive for both green transition and strategic autonomy**. However, this still puts emphasis on robust climate policies. As indicated by the European Commission<sup>7</sup>, a marriage between policy design and innovation can greatly speed up green transition.

Our analysis presents some limitations. It relies heavily on the assumption that countries and regions, countries and blocs can adopt and integrate new technologies swiftly. However, real-world scenarios might present unique socio-economic challenges that impact on these technologies' implementation pace (e.g., not yet mature technology, high cost of adoption and high initial investments, difficulties of integration).

**As the demand for critical raw materials increases with the green transition, regions, countries and blocs must ensure a strategic diversification of suppliers**. Over-reliance on certain nations can result in potential geopolitical risks. Also, fostering domestic production and recycling practices can be a part of a comprehensive solution.

**In the context of the European Union, the strategic adoption of the Fit for 55 legislation package will significantly support the green transition**, although the successful implementation of these measures will require collective action and international cooperation.

Further analysis would benefit from exploring the impact of the green transition on social equity and how potential job losses in traditional industries can be counteracted by job creation in green sectors, through upskilling, for instance. The mobilization of capital and how it can be optimized to support the green transition, is another crucial area for further exploration.

#### 4. Concluding remarks and future avenues for analysis

Our analysis of the green transition in relation to OSA has highlighted critical policy insights and offered **opportunities to reduce strategic dependencies in critical sectors** such as energy, critical raw materials, resource efficiency, food, agriculture, transportation and industry.

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<sup>6</sup> <https://unctad.org/news/green-technologies-coherent-policy-action-needed-developing-countries-reap-benefits>

<sup>7</sup> [https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal\\_en](https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal/delivering-european-green-deal_en)

However, **the green transition does not go without its challenges**. For instance, there is an increased demand for critical raw materials vital for a zero-emissions economy, which can create new strategic dependencies and geopolitical risks. We find that the effective mitigation of these risks may rely in measures centred around **resource efficiency, circular economy practices, advanced recycling technologies and significant investments in domestic sources of critical raw materials**.

**The green transition presents a unique opportunity for regions, countries and economic blocs to establish their OSA**. Not only can this transition support climate targets, but it can also act as a catalyst for technological innovation, particularly in areas such as AI and advanced materials. Moreover, it calls for a substantial mobilization of capital and resources (e.g., innovative technologies, specialized knowledge, sustainable infrastructure and responsibly managed natural resources) towards the low-carbon economy.

We emphasize the **criticality of fostering inclusive economies** throughout this process, with a special focus on underserved and vulnerable countries and regions (countries and regions that do not receive sufficient attention or resources, particularly in terms of economic development, infrastructure, access to technology and opportunities for education and healthcare). This means a concerted effort towards the creation of green jobs, promotion of entrepreneurship and the development of industries in alignment with the green transition.

Lastly, we propose that **international cooperation, multilateral agreements and negotiations are vital to achieving the green transition and reducing strategic dependencies**. Hence, we must engage in a comprehensive and collaborative approach involving all stakeholders, including policymakers, industry and civil society, to chart a path towards a decarbonized future where regions and countries are effectively energy-independent and free from reliance on fossil fuel imports. This comprehensive approach will play a fundamental role in shaping the future of our planet and the generations to come.

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