Dorottya Edina Kozma Ph.D. – Green Finance, Cohesion Policy, and Europe's Long-Term Development Pathways

1. Introduction

The European Union's development strategy over the long-term is increasingly framed by the twin goals of environmental sustainability and territorial cohesion. Within the context of the European Green Deal, green finance is a priority policy tool to underpin climate neutrality while sustaining economic competitiveness and social inclusion. Simultaneously, EU Cohesion Policy remains the main approach for tackling regional inequality and fostering balanced territorial development. The increasing intersection of these two agendas creates critical questions as to how green financial flows interact with cohesion-oriented interventions and whether or not they contribute to convergence or reinforce existing spatial inequalities across Europe.

Green finance is no longer confined to niche environmental projects but has become a structural driver of regional economic transformation. Investments in renewable energies, energy efficiency, sustainable mobility, and green innovation increasingly shape regional production structures, labour markets, and resilience capacities. However, the territorial distribution of these investments remains uneven: more developed regions often enjoy higher institutional capacity, innovation ecosystems, and financial markets, thus being better able to attract and absorb green investments. Conversely, less developed and peripheral regions may be held back by structural barriers that limit their full participation in the green transition, despite being a core target of cohesion policy.

This research will aim to understand the nexus of green finance with cohesion through the lenses of long-run development trajectories of Europe as a region. What is the fit between green investment styles and those of cohesion? Do they act as a driver for further divergence? Through the implementation of a regional development model with the addition of the Green Dedicated Investments (GDI) indicators, this research will hope to determine the impact of sustainable financial flows to structural improvements across Europe as a whole.

The article adds to the growing literature on the geography of green finance through its explicit connection between investment indicator and cohesiveness policy goals. Further, the article adds to the existing debate on sustainable measurement through its investigation of the potential value of GDI-style indicators as a means of assessing policy coherence between environmental and regional concerns. In so doing, it contributes useful evidence for policymakers seeking to shape future cohesiveness policies within a rising climate ambition.

2. Literature Review

Research on green finance has seen an exponential growth in recent years due to increasing recognition of the contribution to be made by finance in the context of a green transition. Early works on green finance mainly centered on financial instruments and tools such as green bonds, climate funds, and sustainable banking. Recent works have adopted a more holistic approach to green finance and established its contribution to systemic change.

Parallel to this research strand, the regional development literature has a long research tradition on the determinants of territorial disparities within European regions. Cohesion policies emphasize the significance of institutional quality, absorptive capacity, and territorial approaches to regional development. In some periods, EU cohesion policies have a proven track record of promoting income convergence; however, their effectiveness is nonetheless limited and questionable in the context of structural change and innovation-driven growth.

It is only in recent times that these two dimensions have started to converge. There is growing recognition of the fact that the green transition has a strong territorial dimension, and its success and its outcome are closely associated with certain regional factors, including industrial specialisation, human capital, and governance capabilities. As such, green finance may perpetuate advantage or act as a catalyst for change in lagging regions, depending on how it is designed and implemented.

Several studies suggest that green investments tend to concentrate in regions with pre-existing technological capabilities and strong innovation systems. This might favor "green divergence," or the process whereby leading regions accelerate their development paths, while peripheral areas struggle to catch up. Other contributions, however, maintain that targeted public intervention, in particular through cohesion policy, may use green finance to promote inclusive development by means of capacity-building and risk-sharing mechanisms in less developed regions.

An important limitation in the literature consists in the absence of harmonised indicators for measuring the depth of green investments and their connectivity. In other words, the accuracy of the available sustainability indices varies when they measure the financial inputs rather than the environmental outputs of investments. However, with the development of the Green Dedicated Investments (GDI) indicators, it becomes possible to quantitatively measure the sustainability-oriented investment flows at regional/firm levels.

Although such potential exists, these indicators have so far rarely been used to evaluate links between green finance and cohesion policy. The vast majority of empirical research has so far assumed that green finance and regional policy are two separate fields, failing to take into account the joint effect on long-term development trajectories. In this paper, these indicators will be incorporated into a cohesion-based supporting framework, so that a more comprehensive evaluation can be carried out regarding their impact on territorial development in Europe.

3. Methodology

In terms of empirical analysis, the approach will focus on the regions in Europe at the NUTS-2 level over a range of years. Here, the explanatory variable will be the Green Dedicated Investments (GDI) indicator. Where the data allows, the analysis will also include the firm-level extension of GDI at the regional level.

In order to be able to analyze the interaction between green finance and cohesion policy, the model includes variables representing the exposure to EU funding through cohesion policies, disaggregated by policy objectives as well as funding intensity. Additionally, there are control variables controlling for regional economic structure, regional innovation potential, regional labour market features, as well as quality of regional institutions.

The suggested empirical strategy involves descriptive spatial analysis and econometric modeling. So first, we would draw a spatial analysis of the green dimension of investments. Then, panel regression models would be applied. In the spatial analysis, green investments intensity groups and their coincidence with regions targeted by cohesion policy would be identified. In econometric analysis, the connection between green finance, cohesion policy, and sustainable growth will be investigated.

In order to take into account the heterogeneity of the regions, the model will assess the existence of interaction effects with variables related to cohesion policy and GDI. With this strategy, it will be possible to verify whether green finance instruments produce different effects in less developed and more developed regions. Finally, tests of robustness include different model and lag structures of investment effects on regions.

Although a quantitative approach is largely employed in this paper, it is driven by a conceptual framework that considers regional development as a path-dependent process influenced by patterns of investments, institutional factors, and policy congruence. This is important in understanding results in light of medium-term rather than short-run growth effects.

4. Results

Looking into the results, a significant diversity in the territorial distribution of green finance can be observed, as indicated by the GDI results. GDI plays a role in signifying the focus on economic development, innovation, and institutional quality in regions where green investments are highly concentrated.

Meanwhile, it is also important to note that cohesion policy funding still accentuates less developed regions. However, the convergence between high cohesion funding intensity and high green investment intensity is rather limited. This may indicate some mismatch between green finance flows and cohesion policy, particularly in those regions facing structural challenges in development.

The econometric evidence shows further that green finance is correlated positively with significant longer-term regional development outcomes, although such effects vary considerably across the different regions. In more developed regions, investments made through green finance are strongly correlated to growth paths driven by innovation; conversely, in less developed regions, green finance exhibits a reduced and perhaps conditional link to longer-term growth paths.

Interaction effects indicate that through its impact on the effectiveness of green finance, a cohesion policy may also play a crucial role by emphasizing capacity-building measures and institutional development support. In essence, regions that benefit from moderate levels of green financial support, combined with high levels of cohesion support, may follow a more favourable development path than those where a single tool is applied.

The results also suggest that, in the absence of targeted action, green finance could drive further divergence in a new form, as it catalyses further advancement in already advantaged regions.

This serves as yet another warning that, in the absence of spatial policies, green transition driven by market-based investment instruments could undermine cohesion ambitions.

5. Conclusion

This paper provides new evidence on the relationship between green finance, cohesion policy, and Europe's long-term development pathways. By integrating GDI indicators into a regional development framework, it demonstrates that green investments play a significant but uneven role in shaping territorial outcomes across Europe.

The results indicate that, while green finance is beneficial for transformation and building resilience, its geographical distribution does not automatically support cohesion policy objectives. Thus, green investment may perpetuate regional inequalities unless complemented by policy support to ensure the importance of cohesion policy in supporting green transition for inclusive development.

From this viewpoint, it should be noted that in terms of policy implications, the findings emphasize the importance of facilitating heightened cooperation between green finance initiatives and cohesion policies. In that context, the development of cohesion policies with the goal of increasing regional absorptive capacities for green investments would be expected to provide support with regards to congruence between environmental and territorial policies. In terms of its implications for further research in the field, it should be noted that the current study serves to demonstrate the use of GDI indicators in supporting analysis with regards to the regional patterns of sustainable finance.

Future extensions of the approach could also build on the firm or social level/dimensions and the interface between green finance and digital investments. Because of the rise in climate ambitions in Europe, understanding the interface of green finance and regional development will remain key in achieving the future sustainable and cohesive Europe.