This research explores the intersection of the green transition and digital transformation—the so-called twin transition—and how it supports economic development and regional resilience. It focuses on the specialisation patterns of green and digital technologies across European regions, with a particular emphasis on how regional digital capabilities influence green innovation uptake and diversification. The findings highlight the enabling role of digitalisation in advancing green strategies and supporting regional progress toward climate neutrality.

To examine the knowledge base on the twin transition and its link with inequality, I conducted a comprehensive review of scientific publications drawn from Scopus and Web of Science. The documents were selected through structured keyword queries related to green and digital inequalities ("green AND inequalit*, disparit*, equit*" and "digital AND inequalit*, disparit*, equit*"). I applied author network analysis to detect key research communities and used text mining to identify dominant thematic clusters, classified under green, digital, and twin transition topics. Each of these themes is further associated with different forms of inequality (social, economic, territorial, gender, etc.), helping to map knowledge gaps and emerging intersections in the academic discourse.

To understand how the twin transition is addressed in policy, I analyzed a selection of EU policy documents. These were examined using natural language processing (NLP) and topic modeling techniques to identify recurring themes and how they have evolved over time. I also used classification models to distinguish between green, digital, and twin transition policies. Through network analysis, I was able to highlight the extent to which these strategies align or diverge—revealing a frequent disconnect between green and digital agendas, which are often pursued separately rather than as part of a cohesive strategy.

On the technological front, I study patent data to track regional innovation in areas linked to climate goals. Using the International Patent Classification (IPC) system—which categorizes patents by technology domain—I assess where green and digital technologies are emerging. I also link Net Zero strategies with patent records to evaluate how well policy ambitions align with innovation activity, and I am developing a classification for Net Zero-related patents to better trace their contribution to sustainability targets.

In my presentation, I will showcase these findings using maps, visualizations, and statistics to illustrate regional TT dynamics and their policy implications. I will discuss the importance of integrating green and digital strategies, showing how such coordination can improve innovation outcomes, reduce inequalities, and inform targeted interventions.

Overall, my research contributes to understanding how the twin transition—and its relationship to inequality—is unfolding across Europe. It highlights where these transformations are concentrated, and where structural disadvantages persist. By examining spatial and socio-economic disparities in technology access and capacity, this work offers insights into how uneven progress toward Net Zero may exacerbate or reduce existing inequalities. The findings aim to support evidence-based policymaking that ensures the twin transition is not only sustainable, but also inclusive and regionally balanced.