Vision for positioning scientific research at the national and regional level Twin2Green project

Introduction

The Twin2Green project aims to strengthen the scientific and innovation capacity of the Faculty of Economics and Business Administration at Sofia University and its regional partners (North Macedonia, Romania, Greece, Albania) by enhancing excellence in research and innovation for the twin green and digital transitions. The current project is a natural upgrade of the previous twin project TWIN4ECO, which ensured significant progress in publication activity and integrated many young researchers into the scientific work of the faculty. In some areas, it laid the foundations for science-based education.

Through collaboration with leading European institutions (University of Cologne, University of Groningen, TU Dublin), Twin2Green seeks to position Bulgarian and regional research more strategically within the European Research Area (ERA) and to contribute to sustainable economic and social transformation.

This Vision document outlines a strategic framework for positioning scientific research at the national and regional level, building upon Twin2Green's mission to promote open science, interdisciplinary collaboration, and long-term policy relevance.

Strategic Vision

Twin2Green envisions a connected, and impactful research ecosystem that accelerates the twin transition. The term is used for policies and as a transition instrument, since everything happens more efficiently when two partners work together, one of whom is leading and more experienced. From a political perspective, it is mostly used in the context of digital and green transformation. Challenges include mutually dependent processes, higher costs, ensuring social impact, and a lack of certain skills that need to be provided for the future by linking high-quality academic research with innovation, business, and policymaking, because Bulgaria has been in the category of catching-up innovators for a very long time. The linkage is necessary because the faculty has the most clearly developed base in these areas, could advance them more easily, and they are prioritized in the goals of the Faculty, reflected in its accreditation, and positioned as leading. At the core of this vision lies the ambition to make the Faculty of Economics and Business Administration a regional centre of excellence for sustainability and green transition research, integrated into European and global networks as these areas share many common objectives, generate impact on closely related systems such as energy and resources, and have shared ecological and socio-economic dimensions. Research on the green transition represents an applied part of the broader scientific paradigm of sustainable development, aiming - through technological, policy, and economic instruments - to achieve long-term resilience, integrated into European and global networks.

Co-funded by the European Union

A regional centre in the field of sustainability leverages regional networks to facilitate the circulation of knowledge and the dissemination of best practices, while remaining fully integrated into European and global research networks.

The project aims to build sustainable capacity through the deployment of digital tools for energy analysis, management, and decision-making, alongside innovative solutions. This approach will enhance analytical capabilities, improve the efficiency and quality of strategic and operational decisions, and strengthen innovation potential. As a result, it will generate long-term added value for the organization by supporting more effective resource management, informed policy and business choices, and sustained institutional development.

Taking into account the mission of the project, three key principles are proposed within the vision.

1. **Scientific excellence** – building research capacity and quality aligned with European standards.
2. **Societal relevance** – ensuring that scientific outputs address national and regional sustainability priorities.
3. **Collaborative openness** – fostering partnerships across disciplines, sectors, and borders.
4. **Building Research Capacity and Targeted Networks -** in line with the relevant recommendations, the development of research capacity and targeted networks is identified as a key priority. This objective can be effectively achieved through project-based support within the framework of the National Programmes for Research Capacity, which are specifically designed for research universities. These programmes provide an appropriate institutional and financial mechanism to strengthen human capital, research infrastructure, and strategic networking, enabling sustainable capacity building and long-term integration into national and international research ecosystems.

Objectives

To achieve this vision, Twin2Green promotes the following strategic objectives:

1. Strengthen research excellence and capacity, including human resources, in green transition, sustainable business, and innovation policy, through targeted analyses and research, the applicability of their results, measured through specific KPIs; align research agendas with national and EU policy priorities such as the European Green Deal, the Digital Europe Programme, and Horizon Europe missions.
2. Integrate national and regional research actors into European collaborative frameworks and funding mechanisms. Based on targeted networks and European initiatives financed by European instruments (Horizon, Interreg) and national programmes.
3. Promote open science practices for transparent, reproducible, and accessible research outcomes.

Strategic Directions

1. Building Research Capacity and Excellence

Twin2Green supports the establishment of research clusters and working groups that advance innovative methods, policy analyses, and applied sustainability research in the fields of:

- Green and circular economy transformation and energy efficiency;
- Green innovation and entrepreneurship;
- Digital tools for sustainability transitions.

Collectively, these actions contribute to advancing approaches to the green transition.

By promoting capacity building through training, mobility, and international cooperation, Twin2Green strengthens both individual and institutional competencies in cutting-edge scientific areas relevant to national development with the active participation of partners, with whom initiatives and publications will be jointly implemented, including the organization of schools for young researchers.

Particular emphasis will be placed on the development and use of digital models (digital twins) for the simulation and analysis of energy scenarios, enabling informed decision-making and scenario-based planning. In parallel, the development of digital skills will be developed through targeted training, with a strong focus on advanced research-oriented education and capacity building.

2. Strengthening National and Regional Research Networks

Twin2Green fosters cooperation among universities, research centres, and public institutions to form a regional knowledge and innovation ecosystem.

At the national level, the project contributes to aligning research priorities with the Bulgarian Smart Specialisation Strategy and National Recovery and Resilience Plan.
At the regional level, Twin2Green acts as a catalyst for connecting the academic community with regional development agencies, municipalities, and businesses, ensuring that research contributes to real-world challenges and sustainable regional growth – networks and joint initiatives.

The activity focuses on the building or upgrading of networks, including virtual ones, with the objective of establishing a sustainable and functional cooperation framework. The network will operate as a platform for collaboration, digital connectivity, and the joint development of solutions among partners. Through structured interaction and knowledge exchange, it will accumulate and mobilize diffuse research and innovation capacity, facilitating synergies, strengthening complementarities, and supporting the effective transfer of knowledge and good practices.

3. Enhancing Policy Impact

Through the production of policy-relevant analyses and recommendations, Twin2Green ensures that scientific evidence informs policymaking processes at multiple levels. Providing policy support by research studies and analysis.

The project's results will be disseminated through policy briefs, dialogues, and workshops targeting national and regional authorities, with the goal of:

- Integrating scientific insights into policy design (energy and innovation, which are the focus of the country's strategies) and evaluation;
- Strengthening science policy interfaces;
- Supporting evidence-based decision-making in sustainability transitions.
- Implementation of social intervention models based on measurable assessments.

The regional hub will enrich the set of activities to achieve the desired policy impact.

4. Promoting Open Science and Knowledge Transfer

Twin2Green fully aligns with the European Open Science Agenda. The project's Open Science strategy promotes:

- Open access to publications, data, and training materials;
- Adoption of FAIR data principles;
- Engagement of stakeholders in co-creation processes;
- Use of digital platforms for visibility and dissemination.

Knowledge transfer activities will further ensure that research findings are translated into practical applications, supporting innovation, entrepreneurship, and sustainable business practices. All national organizations will benefit. In Bulgaria, there is an open science policy, and the Ministry of Education and Science provides the opportunity and maintains a repository for open science, accessible to all national organizations. Regional access is possible after authorization. We will liaise with the national portal.

5. Supporting Human Capital and Next-Generation Researchers

A core component of Twin2Green's vision is the development of a new generation of researchers capable of bridging academic excellence with societal needs. Through mentoring, mobility schemes, and advanced training, Twin2Green empowers young scientists to:

- Digitalise research processes, including modelling, analysis, and development of digital twins.
- Develop long-term research partnerships focused on strategic priority area.

- Participate in international research consortia and lead interdisciplinary projects that combine digital and green competences.
- Engagement with EU and transnational funding opportunities and collaborative initiatives.

Based on additional specialized training, scientific exchange, the organization of research schools, encouragement of participation in scientific conferences, and the introduction of periodic evaluation of results, in order to reassess activities and make adjustments if necessary.

Implementation Pathways

Twin2Green will operationalize its vision through five main streams of action:

1. Research Strategy – focusing on developing excellence and aligning research with EU priorities.
2. Mobility and Training – building individual competencies and institutional learning – Intersectoral and transnational mobility, short-term training at partner universities.

   Indicators – number of mobilities, number of trainings.
3. Capacity Building – reinforcing and upgrading research infrastructure (access to databases, continuous updating of software tools for the faculty's work, including Orbis), management, and administrative support.
4. Indicators – number of new infrastructures, number of upgraded infrastructures. International Participation and Networks – enhancing integration into the ERA – Expansion and inclusion in new networks.

   Indicators – number of new networks, number of joint initiatives based on networks.
5. Dissemination and Business Models – promoting sustainable exploitation of results and collaboration with industry.

   Indicators – number of scientific events presenting new research developments, number of models presented and/or applied in the project's priority areas.

These activities will have a particular impact on Key Objectives 1 and 3. Each stream will be guided by clear performance indicators and milestones, ensuring consistent progress and long-term resilience.

Long-Term Vision and Resilience

Beyond the lifetime of the project, Twin2Green aims to establish a permanent institutional and regional platform for green and digital transition research.
Resilience will be achieved through:

- Embedding project outputs into educational programmes; inclusion in master's courses in the Energy program and the Intellectual Property MSc program. Maintaining research networks through memoranda of understanding and follow-up projects;

- Ensuring continuous knowledge exchange between academia, policy, and industry;
- Partnerships for research support in business, exchange, and involvement of business lecturers for practical sessions. Securing additional national and European funding for expanding Twin2Green's thematic focus.

This long-term approach will transform Twin2Green into a catalyst for national and regional research excellence, supporting Bulgaria's active participation in the European Research Area and its contribution to global sustainability challenges.

Conclusion

The Twin2Green Vision represents a forward-looking strategy to position scientific research as a driver of sustainable transformation at both the national and regional levels. By combining excellence, openness, and collaboration, the project establishes a foundation for long-lasting impact - where research not only generates knowledge but also informs policy, empowers institutions, and fosters innovation across society.

Twin2Green thus contributes to building a resilient, knowledge-based, and sustainable future for Bulgaria and the wider European region.