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Excellence-in-ReSTI **Strategy and Roadmap**

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1. PURPOSE OF THIS DOCUMENT

This document defines current challenges to the management of science, technology and innovation projects within the Danube macro-region, and suggest steps for policy action with the intention to provide strategic direction for the improvement of the institutional framework conditions for research and innovation. It is based on the premise that the lack of adequate project management capacities, as well as the existing disparities among the countries within the Danube macro-region, particularly with regard to science, technology and innovation projects, can be successfully tackled by national and regional stakeholders.

The document aims at a broader policy audience in the countries in the Danube macro-region, including **national and regional governments, science and innovation policy-makers, and EU-funded programme administrators**. It focuses particularly on supporting measures **to improve and strengthen national actors' capacity to design, develop, manage, communicate and disseminate research and innovation projects, both nationally and in a cross-border context**. It will further be of particular interest to research administrators, university programme directors, curricula developers, as well as project managers in research-performing organisations, industry and governments.

The Strategy and Roadmap consist of three sections, presenting, challenges, recommendations and an outlook on the development of research, development, and innovation (R&D&I) in the Danube Macro Region.

Since the Excellence-in-ReSTI project offers a macro-regional approach, this Strategy and Roadmap does not strive to provide for country-specific solutions. The document however occasionally distinguishes between two broad categories of countries, hereafter referred to as IPA countries and ERDF countries, based on the funding sources utilised within the DTP¹. Thus readers may ascertain whether their countries face a particular challenge or a specific action is relevant in their country context.. The users of this document are encouraged to reflect upon the content of the Strategy and Roadmap, and use it as a source of reference in order to establish relevance to their own context.

The list of recommendations, presented in the section *Potential for Action*, is a **collective reflection** that integrates a variety of national and regional viewpoints. Unlike challenges, which are presented in terms of categories, the recommendations are not categorised since their implementation may be beneficial to more than one challenge. They present **viable policy options, based on actionable steps**.

It is not the intention of the document to provide already tested solutions, but rather **to inspire debate among stakeholders on how to best address previously identified gaps and hindering factors**, with respect to capacities for project management of R&D&I projects.

The document concludes by providing *A Vision for Change* as a reflection on the expected potential impacts, resulting from the implementation of the proposed measures.

¹ IPA countries include Bosnia and Herzegovina, Montenegro and Serbia, while ERDF countries are the countries currently members of the European Union – Austria, Bulgaria, the Czech Republic, Croatia, Hungary, and Slovenia.

2. THE MOST PRESSING CHALLENGES

The Excellence-in-ReSTI project identified a number of pressing challenges that require the attention of policy- and decision-makers across the Danube macro-region countries. Those challenges fall broadly into four distinct categories.

1. **Policies and institutions.** This category encompasses hindrances that are rooted in current political and institutional set-ups, and generally affect the innovation system as a whole.
2. **Project management training.** Formal and informal opportunities for acquiring project management skills with respect to research and innovation projects have been identified as insufficient.
3. **Project management practices.** These challenges stem from the approaches and practices of R&D&I project management, which cannot be solved on an individual level, but reflect skills attainment through trainings and a set of systemic influences on the experience, agility and connectedness inherent in the management of actual projects.
4. **Project management excellence.** These challenges concern both project management practices and the results achieved following the successful project implementation. It is argued that addressing these challenges will also positively affect shortcomings related to project management as a practice.

2.1. Policies and institutions

Challenges identified under this category reflect a shortcoming in current policy frameworks, including such affecting research and innovation, as well as more systemic ones that require more complex solutions. These challenges could best be addressed by the responsible public institution, but may also require dialogue and collaboration across areas of policy responsibilities, as well as broader public agreement.

Concentration of R&D&I capacities and activity only within big cities

- Innovations tend to converge in large residential areas such as the biggest cities – capitals and their surroundings where the economic opportunities tend to be concentrated. Extra-urban and countryside perspectives and potentials tend to get neglected, which is one of the factors why many countries are still experiencing internal migration processes between regions that are heavily directed toward big cities while the underdeveloped regions diverge even more.

Fragmentation in R&D&I management bodies

- In some countries of the region (both IPA and ERDF), there are many different, and often parallel, governmental bodies, institutions and organisations involved in management and implementation of R&D&I policies, as well as in funding science and research projects. This results in inconsistencies in policy developments related to innovation, due to conflicting priorities and decision-making structures, or a limited scope of responsibility coupled with limited cross-institutional convergence.
- In many countries in the region, stakeholders have noted the insufficient incentives to increase researchers' motivation to apply for international projects and to join international consortia. If such a situation persists, there is a significant risk to lag behind in terms of high quality scientific output. National innovation systems also suffer due to lack of exposure.

Insufficiency and ineffectiveness of funding available to R&D&I

- Some countries in the region exhibit a number of inefficiencies when it comes to the allocation of funds to R&D&I. Budget for research is decided upon by several levels of government, but with conflicting ideas of foci and priorities due to fragmentation of responsibilities or competing policy visions. Negotiations for increasing funding, as well as agreeing on priorities and development paths, are often difficult and lack strategic focus. This results in significant hindrances, such as disincentives to publish scientific results in leading scientific journals, and a lack of modern scientific equipment.

Misunderstanding of social innovation and social entrepreneurship

- The failure to support social innovation in a broader sense represents a substantial hurdle for future growth and development. Contrary to certain interpretations in current policy reports, social innovation is not the same as social entrepreneurship. Even mainstream policy documents, however, often use both interchangeably, or merely use the term social innovation as an encompassing reference. If that practice is sustained, there is a growing risk of delegitimising social innovation, turning it into a general term denoting a policy area, without significant practical relevance.

2.2. Project Management Training

Challenges under this category concern mostly the contents of available project management courses in both formal and informal settings, including universities and private providers. However, these are not only limited to the content or quality of courses offered, but are also concerned with the context where project management courses are offered and their relevance to certain professions in the labour market.

Courses on project management do not focus on science and innovation

- Many of the available university courses tend to provide only general or highly theoretical content in their training curricula. In particular, despite the numerous formal and informal training offers, comprehensive project management training that includes specific content on the management of research and innovation projects are rare. The quite limited formal opportunities for project management training within the higher education system further hinders the acquisition of such skills. Although there are universities offering specialised Master's programmes or vocational training programmes in the field, many (popular) training opportunities on project management are concentrated in the private sector. Therefore young graduates lack competences to prepare and manage projects as complex as the EU-funded research and innovation projects, which hinders the development of managerial capacities in the R&D&I sector.

Lack of soft skills training in available PM courses

- The quality of training curricula, as well as its relevance to current labour market needs suffer from a prevalent lack of soft skills training. More specifically, (newly graduated or newly appointed) project managers often lack communication skills, intercultural competences, empathy and time management. A project's success greatly depends on the selection of appropriate partners, who are competent, experienced and could offer added value. Therefore the knowledge of and skills for networking, selection and negotiation are essential skills for effective project managers. Therefore, training in such soft skills should be integrated in the curricula of project management.

Inefficient or misunderstood connection between education and business

- In many of the Danube macro-region countries, education systems are perceived as rather inefficient in adapting to the rapidly changing professional landscape where demands for new skills and technologies rapidly change the market. Current miscommunication between business and formal education institutions (including universities) further contributes to unmet expectations that universities should provide training on the necessary set of knowledge and skills expected by the labour market, with a notably strong gap regarding project management skills.
- On the other hand, there are persistent disagreements among stakeholders as to the very scope of the educational offers and missions. It has been argued that educational offers should not be tied to the ever changing labour market needs, but ensure adequate preparation of young graduates to succeed and survive in a competitive and increasingly internationalising environment, especially with regard to collaborative R&D&I projects.

2.3. Project Management Practices

Challenges under this category stem from the approaches and practices of research and innovation project management. These are not likely to get better through a centralised approach, but individual organisations would likely improve once reflecting upon the extent these challenges affect them. Nonetheless, while individually addressing these challenges, organisations concerned would still benefit from an attempt to integrate their research efforts into international consortia or to foster trans-border collaboration of researchers.

Low level of participation in EU-funded programmes

- In many of the Danube macro-region countries, organisations find it challenging to prepare winning proposals in EU-funded calls, and are thus lagging behind the average of EU member states in terms of both the number of financed projects and the total EU funding provided. This may be attributed to the fact that, throughout most of the Danube macro-region, there is still a shortage of staff experienced in preparing and managing such applications. This situation also means that coordinating more complex EU-funded R&D&I projects, such as DTP or Horizon 2020 projects, is particularly challenging, also due to the inherent difficulties of coordination, and the lack of best-case examples in the Danube Macro-region (low number of coordinating organisations).
- Another dimension of the capacity problem is the persisting disagreement about the required level of synergy between administrative staff and researchers. Administrative staff still fall short in transforming the essence of scientific objectives into proper project jargon and performing daily management tasks in active projects.

Need for more balanced and practical training

- There is a multitude of non-formal project management training opportunities offered on the basis of in-service training, which are cost-intensive and have a special focus on employees in private businesses or public administrations only. Project managers trained in this way are not particularly efficient in managing research and innovation projects because they often do not pay sufficient attention to establishing synergies with those possessing disciplinary knowledge on the subject matter. The lack of interdisciplinary education, of which project management is part, tends to produce many specialised experts who cannot readily fulfil the requirements of holistic project management.
- Young graduates typically start their careers rather inexperienced in practical project management and it takes some time until they build experience and confidence. More

practical training would be especially helpful from the beginning, but also the mentorship by experienced project managers could contribute to more successful project processes and better outcomes.

- Since project management training opportunities are rarely focused on the EU programmes that support research and innovation, or hardly link R&D&I processes with project management, inexperienced project managers often misunderstand the particulars of project structuring and management and the full scope of requirements of the EU funding schemes and grants. A more balanced training approach and knowledge transfer on project management and project content are considered to be of particular relevance to remedy the situation.

2.4. Project Management Excellence

Excellence in project management relates to both the performance of all the planned tasks within the scheduled timeline and within the predefined budget, and how management organises teamwork and team procedures during project implementation. A further criterion is high quality and efficient managing of resources, which leads to an excellent scientific contribution, while producing minimal administrative overhead for both the managers and the managed.

Training in project management alone is not sufficient to be excellent

- Research and innovation project management skills are not unequivocally relevant in all labour markets in the region. Where such a need is recognised, there is a high demand on people in the field of research and innovation in general, and, in particular, in combination with research and innovation project management skills. However, education focused only on project management is not sufficient in order to achieve or claim excellence.

Communication – internal (between project team members), external (to stakeholders and the public) and across societal sectors

- Project managers play a central role in the way it is communicated in a project consortium. Communication skills that ensure respectful and transparent interactions are an essential part of project management. This includes the ability to listen to others and to recognise the opinion and expertise of others. Also, proper communication to external stakeholders, as well as a good understanding of target groups are essential to successful project management.
- A lack of connection between business and science was perceived as a significant gap in R&D&I capacities. This is especially important to young researchers, who need practical skills in order to connect knowledge to practice.

International cooperation

- All successful EU-funded activities rely on the essential level of international (cross-border) cooperation. This requires a number of skills, in addition to one's own subject matter expertise. Mutual understanding for different values, habits or ways of thinking is crucial to be able to work in an international environment. Project managers should be able to show empathy, open-mindedness, and sensitivity to cultural differences.

3. POTENTIAL FOR ACTION

The Excellence-in-ReSTI Consortium considers the following measures to have the potential to narrow down the identified gaps successfully. Not all of these will be applicable or feasible in all of the

countries of the Danube macro-region, but stakeholders are strongly encouraged to reflect on each of them:

1. Strengthen project administration capacities in scientific organisations

- Continuous project management training of administrative staff at (non-university) scientific organisations will enable organisations to ensure that staff members understand project issues and, at the same time, understand the essential content of the scientific objectives and tasks.
- Offer such courses to researchers that provide a basic understanding on the importance of EU-funded and other international projects, and how to prepare and manage them efficiently.
- Invest more in human and technical capacities in order to ensure the necessary conditions for enhancing the organisations' innovative potential.

2. Consider citizen-driven innovation in community problem-solving

- Citizen-driven innovation needs to be considered as an integral part of managing local community problems. Citizens themselves are a major source of ideas, knowledge and skills necessary to develop innovations. Engaging citizens brings different perspectives together, which helps to come up with new solutions to complex problems.
- Very often, public policy makers who are supposed to create solutions do not have the right information or the understanding of citizens' needs. Consider citizens as partners and collaborators rather than only passive recipients. In this way, co-production represents a model for public service reform. Citizen participation can further increase the legitimacy of decisions.

3. Improve administrations' capacities for project management and evaluation

- Increase the administrative capacity of managing authorities for project evaluation and project management.
- Create (or integrate) extensive benchmark analysis to compare national performance to that of similar countries and of the world leaders in the R&D&I field.
- Conduct detailed analysis of the decisions of existing national R&D&I funding programmes to identify the gaps in the process and refine the procedures.
- Prevent favouritism and conflicts of interests in the process of project evaluation and consider internationally applied, transparent methodologies for the assessment of project proposals.

4. Improve link between theory and practice in project management training

- Introduce mandatory internships in the curricula and involve experienced project managers as mentors. Funding programmes can authorise activities such as specific training sessions with senior experts in project management. On a broader scale, knowledge about these competences can be spread by funding accompanying measures targeting the exchange of best-practices and know-how.
- The various funding programmes can fund accompanying measures to spread and improve the existing administrative and content related knowledge needed to submit and manage a project.
- Develop project management training (and management education in general) by enabling more opportunities for connecting to practical experiences. Universities would

be the most powerful actors in implementing these, and should seek the support of the relevant authorities.

5. Increase mobility of researchers and engage in networking with policy and scientific stakeholders

- Ensure continuous maintenance and updates of existing infrastructures, as well as the building of new ones, and make them accessible to interested scholars from other countries, particularly from renowned institutions in the field. Second, it is important to work in a diligent and coordinated manner in European institutions where the calls for proposals are developed.
- Support and encourage researchers' international mobility, both to and from other countries.

6. Increase visibility of research and research performance

- Partners of successfully completed EU-funded projects can be invited to give lectures and share knowledge of their experience, with a particular emphasis on advice for project partner selection (criteria, process, timeline, communications, collaborations).
- The educational system should encourage oral presentations of the (research) work as it would improve expressing thoughts and ideas, and encourage synergy among peers.
- Independent and impartial National Information Centres can be introduced as help desks connecting science and business to provide support to project managers and researchers, and facilitate interchange between them.

7. Promote and enhance links between industry and science

- Promote and encourage links between industry and scientific and research institutions with a focus on innovation.
- Introduce incentive measures (i.e. Centres of Excellence, Technology Parks, Science Hubs) to connect small and medium-sized enterprises with scientific research institutions in order to enable easier technology transfer, develop innovations and foster economic development.
- Businesses should be more involved and should encourage employees to get certified knowledge on project management.

4. A VISION FOR CHANGE

The Excellence-in-ReSTI Project Consortium believes that timely action on the measures suggested has a significant potential to reduce the current gaps in national capacities for research and innovation project management, and create benefits to the societies in the Danube macro-region countries. Notably, the following results could be expected:

Enhanced public-private partnerships in R&D&I

- Implementing described activities to overcome identified gaps would greatly contribute to enhancing capacities towards better utilisation of research and science within the economy, thus contributing towards the development of a competitive and sustainable economy based on knowledge and innovation.

Improved cooperation between science, educational providers and businesses

- The outcomes of improved science-business link will result in young project managers being aware of business needs, how the businesses operate and how to introduce innovations in the market, reducing the trial-and-error phases.

Improved networking - across scientific disciplines and economic sectors

- Researchers will be strongly motivated to engage in international consortia and projects.
- The outcome of improved project partner selection process and consortium forming will result in better performance; reduced time to achieve results (less negotiations and communication alignment needs) and also internationalisation of projects.

Improved project visibility and efficiency

- By the integration of soft skills in project management curricula, project managers gain the ability to better deal with issues regarding teamwork, to understand different perspectives and to show empathy for any kind of problem. This will result in a better internal and external communication in projects, and therefore to better project results achieved faster.
- Linking theory to practice would ensure more efficient research and innovation project management. If students get specific trainings in practical project management, they will be better prepared to meet the actual challenges when managing a project. A motivated young project manager accompanied by an experienced one will have a much steeper learning curve. This will speed up the take-up and adaptation of new project management related methods and tools as well.
- Good administrative support with the ability to understand the researchers' needs and goals, and transforming them into a project application.

Overcome scepticism to citizen engagement with innovation

- Local governments in the region will be a catalyst to encourage citizen participation. Policy makers will recognise citizen engagement not as a strain on already tight local budgets, but as contributors to long-term local development.
- The design thinking approach (i.e. carried out by design labs) would be particularly useful in the improvement and re-design of public services and business planning. Public sector administrators, and local governments in particular will increasingly engage the creative sector (designers, architects, ICT experts) in co-creating activities and projects with a social impact.

Project managers will have a deeper understanding of the content of their projects

- Project managers can directly link the project content with the management and achieve results of a higher quality. Moreover, linking content and management better enables the whole project to have a clearer structure, thus also improving efficiency. Addressing more fully the obligatory management-related requirements will translate into a stronger focus on the research-related content, resulting in higher quality outcomes and goals achieved in an efficient and timely manner.

Transparent, recognised and accountable project evaluations directly steer project excellence

- Strengthening the quality of project evaluation and management by considering internationally applied methodologies will ensure objectivity and transparency of the assessment process. This is likely to encourage more organisations to submit projects, which, in combination with the increased administrative capacities of managing authorities, increases the chance of more successful projects being submitted and approved by the funder.

- The impact of national funding of R&D&I projects will be manifold. First, it will increase the overall level of funding, second it will energise a broader range of scientists and innovators. Next, it will introduce explicit scientific evaluation criteria as the only indicator of excellence. That should produce a larger number of projects and activities in the domain, and involve more people in R&D&I.
- The expected benefits would be an increasing impact of the grants, as well as the funding of the best possible R&D&I projects.