Strengthening the knowledge base and reducing fragmentation

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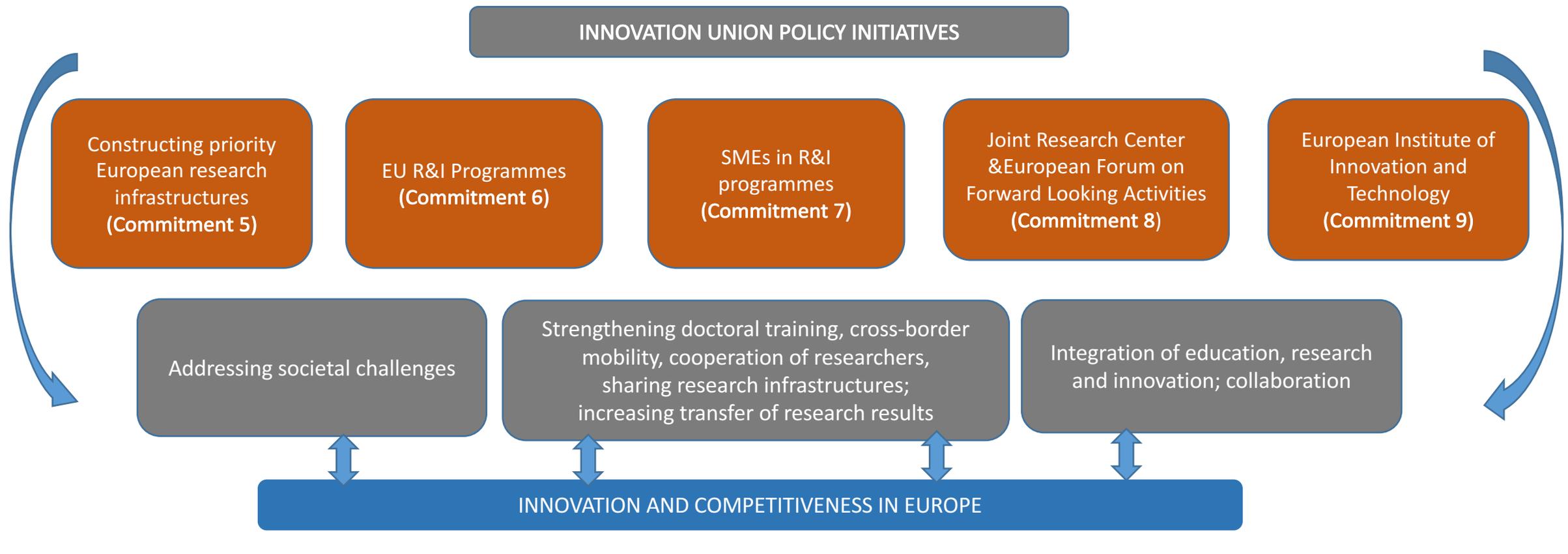the European Union

Research objectives

Main objective: to evaluate the effects of EU policy instruments that promote a stronger European dimension of the R&D base in the European Union.

5 specific objectives that reflect 5 Innovation Union Commitments:

1. Identifying whether EU research and innovation programs address societal challenges and have industry-driven priorities and how they impact innovation and to what extent SMEs are involved in these programs;

2. Assessing involvement of SMEs in EU R&I programmes through an integrated EU finance programme directed specifically to SMEs needs in order to limit market failure in access to finance.

3. Evaluation of the advancement in the construction of priority European research infrastructures and their contribution to the innovation potential of the EU;

4. Evaluation of the role of the European Institute of Innovation and Technology (EIT) in stimulating innovation in Europe by integrating education, research and innovation, and contributing to excellence of European science through the introduction of the "EIT Degree".

5. Assessment of the contribution of the Joint Research Centre and European Forum on Forward Looking Activities to devising comprehensive and pro-active European research and innovation policies.

An overview of 5 Innovation Union policy initiatives aimed at strengthening the knowledge base and reducing fragmentation

- All of WP2 committments are elements of the EU framework programmes (FP7 & H2020)

The main research questions:

- To what extent have these diverse policy initiatives been implemented after seven years since the Innovation Union launch? How are they integrated into European innovation system?

- What are the effects of these policy initiatives implemented at the EU level?

- What are the policy implications and lessons learned?

To what <u>extent</u> have these diverse <u>policy initiatives been implemented</u> after seven years since the Innovation Union launch

- **R&D programmes (C6)**, i.e. FP7, CIP, H2020 - implemented successfully on a „macro" level and they have produced output, which has contributed to the increase in the level of innovation in the EU, but not all programs are equally efficient in achieving the final goal of a given innovation output (C6)

- **SMEs in EU R&I programmes (C7)**: The policy plans for increased SMEs participation in EU R&I funding have been fulfilling above the targeted 20% of the planned budget. State of implementation success for the initial three years of Horizon 2020's implementation is 120% - i.e. 23.9% of the budget was granted to SMEs in LEIT and Societal Challenges calls

- **European research infrastructures (C5)**: in terms of the number of RIs completed or launched, exceeding agreed target of 60% of RIs from ESFRI Roadmaps 2008 and 2010 (78% were at least initiated)

- **EIT strategic agenda (C9)**: implemented in at least 83 per cent (5 out of 6 components of the commitment have been successfully completed, the components are here equally weighted)

- **Evidence –based policy – JRC & EFFLA (C8)**: efforts to strengthen the base for policy making are still fragmented: JRC budget and human resources have been reduced, in particular in the years 2014-2015; JRC output measured by the number of publications fluctuated up and down since 2010; publication structure changed towards the growing role of scientific, policy and technical reports in the total number of the JRC publications (C8)

What are the <u>effects</u> of these policy initiatives implemented at the EU level?

➤ **R&D programmes (C6)**, i.e. FP7, CIP, H2020

• There is **a high concentration of funds in the top recipients** in each category of actors, i.e. Germany, UK, Netherlands, France, Italy, Sweden;

• **Economies with low level of involvement in FP7 and H2020 significantly underperform** overall in comparison to economies that have a very high or high relative level of involvement in at least two actor categories simultaneously.

• The group of **countries that outperform** others **has relative high involvement of private companies, higher education institutions and research organizations for FP7 and in private companies, public bodies and research organizations in H2020.**

➤ **SMEs in EU R&I programmes (C7):**

• There is a **positive relationship** between increased innovation investments and productivity of the SMEs.

• Receiving public funding from EU **increases the total expenditures on innovation activities in SMEs and** probability **to introduce product innovation (compared to those that did not receive EU funds).**

• The data show **a traditional dichotomy among old (EU15) and new (EU13) member states in terms of participation and success rates in received funding**, (EU-15 countries received 85.7% of the total EC contribution, compared to only 8.4% for EU-13 countries).

• Despite smaller funding, EU-13 SMEs demonstrated significantly improved capability for catching-up.

What are the <u>effects</u> of these policy initiatives implemented at the EU level?

➤ **European research infrastructures (C5)**:

- the main direct effect: the strengthening of European research base that produces knowledge (new infrastructures)

- the main indirect effects: stimulation of **cooperation and networking** between actors forming innovation system in Europe

- **knowledge** created in Ris may be used as inputs to the further production of knowledge and/or **directly applied to industrial production** (through the involvement of companies)

- **RI mostly focused on research organizations and HEIs;** the latter has a growing role in EU financing in H2020

- **support dedicated also for private companies**, demonstrating that RIs are not only about knowledge generation, but also technology transfer to industry

- **the strongest relations within Ris exist between Western European countrie**s, like: Germany, Italy, Spain, France, Netherlands, and the United Kingdom.

- **CEE countries have not yet established strong connections**, neither with one another n or with the countries from Western Europe.

What are the <u>effects</u> of these policy initiatives implemented at the EU level?

➢ **EIT strategic agenda (C9)**:

- Direct impact : **the strategic EIT agenda visible in various KIC actions** led to expected policy results in terms of stimulating innovation in Europe.

- Qualitatively, **KIC actions facilitated creation and growth of SMEs,** brought increase in European innovation and research taken up by business firms and universities, brought positive changes in European educational systems,

- Increased cooperation **allowed to achieve efficiency gains in managing energy, resources and waste** (environmental impact).

➢ **Evidence –based policy – JRC & EFFLA:**

- **The impact of JRC** activity (measured by no of publications and their citations) on innovation in Europe **is growing slightly, but is still limited**

- The **higher the decision level** (EU / Country / Region) **the more important is scientific evidence** for policy making

- Using scientific advice during **problem recognition stage or evaluation stage** is related **to higher assessment of impact** of such advice on innovation.

What are the policy implications and lessons learned?
<u>Design</u> of policy initiatives

- The design an innovation strategy and policy should be based on a **wider involvement of all stakeholders** in setting policy agendas and **co-creating policy objectives**.

- Designing evidence-based policies can be facilitated by **broader interactions between research and policy**.

- **Better prioritisation of innovation public funding policies at EU and national levels** could surmount duplication and fragmentation of efforts and increase synergy.

- It is important the projects designed to increase innovation **focus on both aspects of innovation**, i.e. invention measured by publications and patents) and commercialization

- Not only strengthening the knowledge base for policy making, but **also coherence among different policy levels** (local, regional, national, European) is indispensable in order to share skills, talents and experiences and increase policy impact.

- Access to **mentoring and coaching of SMEs** as important tools for enhancing their participation in EU R&I funding should be further strengthened as a critical part of successful SME start-up and scale up eco-system;

What are the policy implications and lessons learned?
Governance/management

- **Focus on linkages and synergies between different policy interventions** and a proper **coordination** between them can help to create more effective support systems for both researchers and innovative companies.

- Ensuring **strong participation of the countries representing all types of innovation system** is an important challenge for European innovation policy, especially in terms of developing European Research Area (ERA).

- **Removing obstacles in the system**, especially the barriers connected with IPR-related issues, in particular open data access policy, and data ownership regulations.

- **Making KICs more homogenous in terms of governance modes** not to waste resources while negotiating with potential KIC partners; better regulations and guidelines given by the EIT for KICs' management.

- Facilitating **incorporation of "bottom up" industry knowledge and experience** as well as industry regulations of KICs functioning.

- As wider dissemination of JRC policy papers as well as foresight studies is indispensable

What are the policy implications and lessons learned?
Evaluation/impact assessment

- **Any further innovation-based initiatives should encompass all measures of output**, i.e. the creation of new intellectual property, new knowledge and its dissemination as well as the commercial aspect.

- For evaluation process, **specific quantitative objectives** are necessary, which can be put on a measurable scale, rather than unmeasurable qualitative objectives (this however makes thinking outside the box very hard).

- In addition to the end indicators, **programs should have interim evaluation indicators** for all of the planned programs.

- **Data collection** on these indicators should be mandatory and start from day one.

- Development of **more sophisticated Key Performance Indicators especially qualitative ones.**

- Collecting of **more sophisticated, historical and open quantitative micro data** at the EU level in support of **better monitoring, measurement and evaluation of downstream impacts** of EU funding for SMEs.

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Thank you for your attention

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