9. Action 9: Promote international cooperation

1.1. Purpose of the Action and expected outcomes

ERA Action 9 has a strategic focus on promoting a positive environment and level playing field for international cooperation based on reciprocity. This approach considers shared values and principles, respecting high ethical standards, academic freedom, and human rights in international R&I cooperation, promoting rules-based multilateralism, pursuing reciprocal openness and modulating its bilateral relations in R&I in line with European interests and values to maintain the EU's strategic autonomy.

There are four specific outcomes that this ERA Action aims to achieve:

- Further develop values and principles for international cooperation in R&I as set out in the Council Conclusions on the Global approach to Research and Innovation - Europe's strategy for international cooperation in a changing world to be promoted in multilateral dialogues with partner countries and international fora;
- Launch one pilot initiative on the Team Europe approach for a specific world region and/or topic;
- Develop a European Science Diplomacy Agenda;
- Promote a coordinated joint approach for engagement in multilateral initiatives.

Action 9 is particularly related to Action 6: Deepening the ERA Through Protecting Academic Freedom. Both actions relate to the EU's strategic autonomy in protecting its researchers and innovation stakeholders. The EU intends to lead by example, in respecting high ethical standards, academic freedom and human rights when cooperating with countries and regions outside Europe.

1.2. Implementation of the Action

In May 2021 the European Commission published a **Communication on the Global Approach to Research and Innovation**. It sets out the EU's approach to international cooperation in R&I preserving openness, promoting a level playing field and reciprocity underpinned by fundamental values and strengthening multilateral partnerships. Key to this communication is the 'Team Europe' approach combining resources from the EU, its Member States, and the European financial institutions, in particular the European Investment Bank and the European Bank for Reconstruction and Development to achieve greater impact.

According to the Team Europe Initiative and Joint Programming Tracker managed by the European Commission's Directorate-General for International Partnerships, in the area of Science, Technology, Innovation and Digital Team 33 Country Team Europe Initiatives (TEIs) and 9 Regional Team Europe Initiatives have been launched by May 2023.[1] Regional TEIs have been launched in Latin America and the Caribbean, Middle East, Asia and Pacific, Neighbourhood and Sub-Sahara Africa.

In its **Conclusions on the Communication of the Commission on the Global Approach to Research and Innovation** (September 2021), the Competitiveness Council called on the Commission and the European External Action Service to 'develop a European Science Diplomacy Agenda and to present it to the Council, to explore designating science focal points in order to ensure adequate capacities for science in Union delegations, to foster cooperation with Member States' science counsellors in third countries, […] and to report to the Council on their progress by 2023.'[2]

The Council Conclusions on the Future Governance of the ERA recommended "setting up a standing subgroup of the ERA Forum, co-chaired by Member States and the Commission, to take into account and continue the work done by SFIC". On 15 February 2022, the mandate of the **ERA Forum Standing Subgroup on the Global Approach** was adopted. Its main tasks - as described in the mandate - echo the initiatives listed in the ERA Policy

[1] https://capacity4dev.europa.eu/resources/team-europe-tracker/dashboard/thematic
[2] https://data.consilium.europa.eu/doc/document/ST-12301-2021-INIT/en/pdf

Agenda. Until October 2023, the standing sub-group of the ERA Forum on the Global Approach has met nine times.

By mid-2023, after various consultations with stakeholders, a draft structure of a **European framework for science diplomacy** has been developed, which is also reflected in the Global Approach Implementation Report published in May 2023. Following a discussion about science diplomacy at the informal Meeting of Research Ministers on 28 July 2023 in Santander, informal working groups involving both the science and diplomacy spheres will be set up to develop concrete proposals to be included in a future framework. A European Science Diplomacy Agenda launch conference has been scheduled for the end of 2023.

As regards the **Multilateral Dialogue on Principles and Values**, the Commission launched the multilateral dialogue with a successful event in July 2022 following the Marseille Declaration and the Council Conclusions for Principles and Values for International Cooperation in Research and Innovation. Following this launch event, a series of thematic workshops, each focusing a specific value or principle in R&I, have been held.[3]

Two **Team Europe pilots** have been launched on China and on Africa. On R&I cooperation with China, work is being done in the framework of the EUKNOC 2.0, the EU R&I Knowledge Network on China. It has proven to be a valuable platform for Member States, stakeholders, and experts to exchange information and experiences regarding R&I cooperation with China and promote a common response. On R&I cooperation with Africa, a drafting team was established under the standing sub-group in 2022 which as a first step formulated an operational framework for how a Team Europe pilot might be developed in support of implementing the AU (African Union)-EU Innovation Agenda. The framework focusses on strengthened policy coordination as well as coordinated investment at EU and national level.

Last, but not least, as regards **multilateral initiatives and platforms**, the standing sub-group concluded that further discussions regarding the scope and the added value of the initiative was needed. The focus of the exercise would be on the cooperation and coordination between the Commission and the Member States in the context of existing R&I multilateral initiatives/platforms.

Beside the work in the context of the standing sub-group, international R&I cooperation is also a key pillar of **Horizon Europe**, thus underpinning ERA Action 9. Horizon Europe includes targeted actions with key non-EU partners, including the first ever 'Africa Initiative' to enhance cooperation with Africa to promote actions targeted to finding locally adapted solutions to challenges which often hit Africa hardest. The calls for proposals require or encourage participation of African entities.[4]

The 2023 OECD STIP Survey provides additional insightful information on the **budget.** The policies related to Action 9 are rather small in the majority (under EUR 1M and EUR, 1M-5M). The four policy initiatives linked to the highest budget (more than EUR 500 M) are related to direct financial support and governance (Figure 20). The governance instruments include the Bulgarian National Strategy for Development of Scientific Research 2030[5] and the Romanian National Strategy for Research, Innovation and Smart Specialisation 2022-2027[6]. The direct financial support instruments include the contribution of the Slovak Republic to the Horizon Europe Framework Programme and the German membership to European Space Agency (ESA).

The policy instruments related to Action 9 fall mostly into two categories: direct financial support and governance. Guidance, regulation and incentives only account for few of the policies, while a considerable number of policies exist for collaborative infrastructures.

3 Full information on these workshops, including the notes setting out the concept and content of workshop, together with the final reports from the workshops is available on https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/europe-world/international-cooperation/multilateral-dialogue-values-and-principles_en.

4 https://www.eeas.europa.eu/eeas/africa-initiative-launched-part-first-horizon-europe-work-programme_en

5 'Updated National Strategy for the Development of Scientific Research in the Republic of Bulgaria 2017-2030' available at: https://www.strategy.bg/StrategicDocuments/View.aspx?lang=bg-BG&Id=1231

6 https://www.research.gov.ro/transparenta-decizionala/strategia-nationala-de-cercetare-inovare-si-specializare-inteligenta-2022-2027

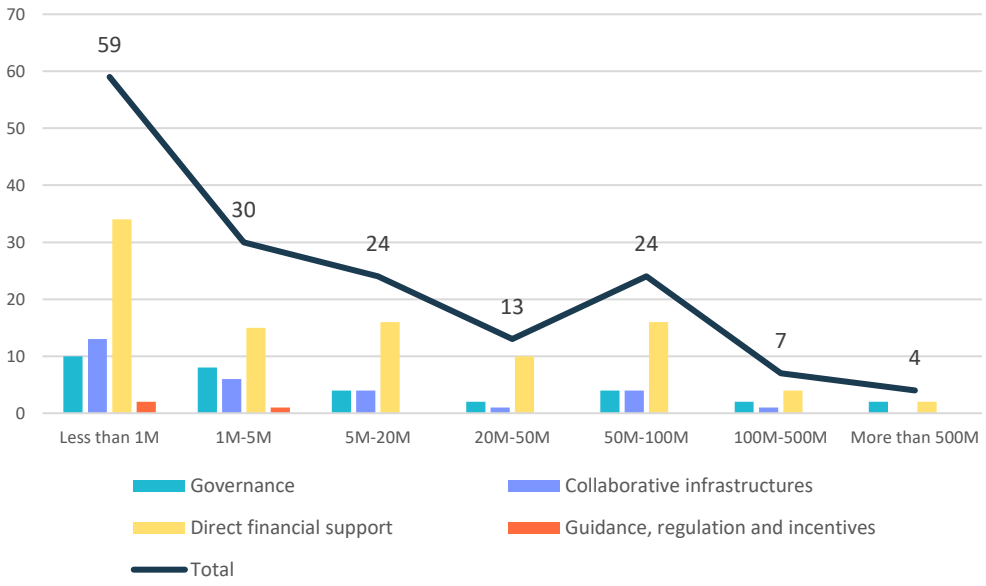

Figure 1: Action 9: Distribution of budget per policy instrument

KEY FINDINGS ERA PRIORITY 2: TAKING UP TOGETHER THE CHALLENGES POSED BY THE TWIN GREEN AND DIGITAL TRANSITION, AND INCREASING SOCIETY'S PARTICIPATION IN THE ERA

SUMMARY BOX: KEY FINDINGS ERA PRIORITY 2

This priority focuses on addressing the challenges posed by the twin green and digital transition. There have been mixed trends across the indicators under ERA Priority 2. Over the last decade, there has been a slight increase of the values for the indicators on synergies with sectoral policies and industrial policy, in order to boost the innovation ecosystem and an active citizen and societal engagement in research and innovation.

The indicators related to challenge-based ERA actions show stagnation over time except for government budget allocations for R&D (GBARD), which show a considerable increase since 2019. The indicators in the area of synergies with Education and the EU Skills Agenda have been experiencing a slight decrease.

Overall, data shows the need for further support to make progress towards the defined priority. Nonetheless, the EU has developed powerful policy instruments to ensure the accomplishment of the twin transitions. As highlighted in the report *Towards a green and digital future,*[7] both transitions are interlinked, and the EU can play a major role in advancing these areas. Not only the EU is a powerful actor to address this priority, but also the HEIs area. To fully accomplish this role these institutions therefore need empowerment and support.

The evidence available shows that HEIs are highly committed to this priority and crucial initiatives are bolstering this process, supported, for example, through the ERA Forum subgroup on Universities for ERA. Finally, this priority also aims at increasing societal engagement in research. Indicators show a positive trend in relation to research of societal topics and a good baseline situation with regards to trust in science.

Key findings by action

ERA Action 10 focuses on creating awareness and building ownership of EU R&I Missions at national level, regional and community level, on the one side, and monitoring the performance of Partnerships and how they contribute to the new ERA and its set of values and principles, on the other side.

Five EU R&I Missions have been launched under the Horizon Europe Framework Programme, with Mission Climate, Mission Cancer, and Mission Soil explicitly being incorporated in key EU policies, thus offering major opportunities for the advancement of this Action. Further, the European Mission Network bringing together key players from the private sector, academia, civil society organisations, and government, has been established. In June 2023 it had over 100 members.

As part of the implementation of this action, the Partnership Knowledge Hub published the first biannual monitoring report. An annual European Partnership Stakeholder Forum helps to provide the partnership community with an opportunity to connect and share knowledge and insights.

ERA Action 11 aims at setting and implementing strategic priorities within the ERA by prioritising investments in R&I towards the green transition. Activities around green hydrogen have been launched in the framework of the ERA pilot on Green Hydrogen. The Implementation Working Group on hydrogen was set up in 2023. Its tasks are to implement the Strategic Research and Innovation Agenda (SRIA) of the European Research Area pilot on green hydrogen and to coordinate the work on hydrogen. Another ongoing activity on the EU-level is the review of the SET Plan, aligning it with current EU policies. A Commission Communication on the SET Plan and a SET Plan Conference[8] are envisaged for autumn 2023 to communicate the changes to the public.

One key achievement of **ERA Action 12** focusing on the advancement of the green and digital transitions, is the adoption of Industrial Technology Roadmaps that have been developed by the Commission. These become crucial tools to accelerate the transfer of research and innovation outcomes to the green and digital transformation industry market across the EU.

[7] https://publications.jrc.ec.europa.eu/repository/handle/JRC129319

[8] setplanevent.presidencyeu.es

The roadmaps chart the way forward for research and innovation in key areas of industry at European and national level, with a focus on bridging the innovation gap between EU countries and better exploiting research and innovation results. The first two roadmaps have been published in April 2022 and January 2023 focussing on circular and low-carbon technologies.

ERA Action 13 aims at empowering Higher Education institutions to become key players in driving green and digital transitions. The action is implemented through the ERA Forum Subgroup 'Universities for ERA' and in close correlation with the work on promoting attractive and sustainable research careers (Action 4) in order to tackle, e.g., challenges in relation to intersectoral mobility.

Finally, **ERA Action 14** highlights the importance of citizen engagement in research. The action is implemented through initiatives such as the Plastic Pirates – Go Europe! Aiming to measure and reduce plastic waste in water across Europe. Furthermore, greater attention is being placed on citizen engagement in research at the EU level, also at the policy level. This is recognised as an important area on national level across the different EU Member States, with policies and initiatives being implemented.

PROGRESS TOWARDS THE OBJECTIVES FOR ERA PRIORITY 2

ERA Priority 2 focuses on the challenge-based actions, aiming to increase cooperation in the areas of education, research and innovation, while fostering the green and digital transition. Collaboration between universities and non-academic institutions well as the engagement of citizens and local communities with the scientific process are perceived as facilitators to boost the green transition and innovation processes.

This priority reaffirms the EU commitment to climate neutrality, underlining the critical role of R&I for achieving it, in accordance with the EU Skills Agenda ERA Priority 2 covers 4 sub-priorities with currently 10 associated indicators to monitor the progress.

Similar to the above, there have been mixed trends across the indicators linked to ERA Priority 2. There has been a slight increase with a view to **synergies with sectoral policies and industrial policy, in order to boost innovation ecosystem** and **active citizen and societal engagement in research and innovation**. However, for some indicators under this sub-priority available data is not sufficient to observe overall trends. The indicators related to **challenge-based ERA actions** show stagnation over time with the exception of government budget allocations for R&D (GBARD), which shows considerable increase since 2019. The indicators in the area of **synergies with Education and EU skills Agenda** show a slight decrease.

Sub-priority 2.1: Challenge-based ERA actions

Figure 21 illustrates the **government budget allocations for R&D (GBARD)** according to the nomenclature for the analysis and comparison of scientific programmes and budgets (NABS) as share of the total GBARD. The GBARD includes all allocations for R&I for the public, private, non-profit, higher education, and external development sectors across federal, regional and local levels. However, they refer to budget provisions, rather than actual expenditures. The GBARD is broken down according to the NABS 2007 classification system.

Figure 21 shows the average GBARD across EU-27 in million Euros, broken down by investment in environment, energy and transport, telecoms and other infrastructure. The highest growth was in the energy sector, where GBARD grew from an average of EUR 133.03 million in 2010 to an average of EUR 188.04 million in 2021. Environment investment has also increased over the past decade, although at a smaller rate, from EUR 79.91 million in 2010 to EUR 106.71 million in 2021. Finally, transport, telecommunication and other infrastructure investments declined from 2010 to 2015, followed by stagnation, but increased during the recent years from 2019 to 2021.

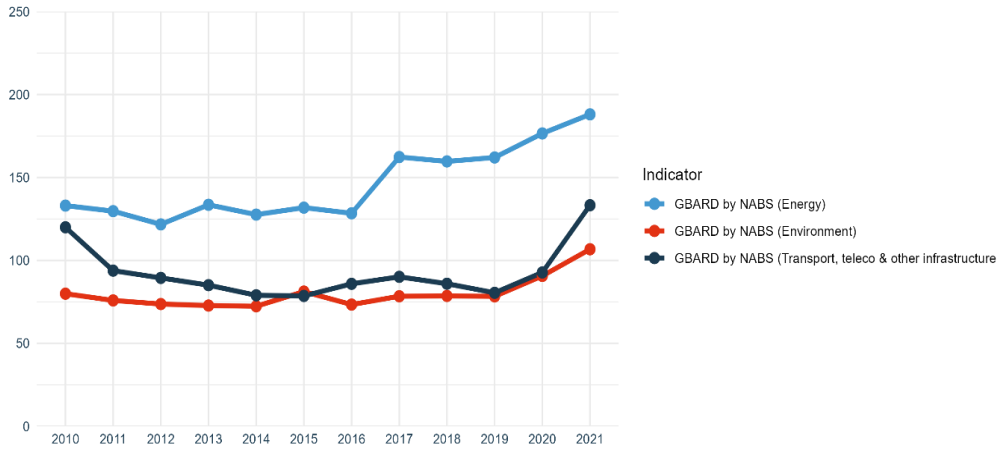

Figure 2. Government budget allocation for R&D (GBARD) by NABS: environment; energy; transport, telecommunication and other infrastructure.

The following indicator shows the **government budget allocations for R&D (GBARD) allocated to European transnational, bilateral or multilateral, public R&D programmes per FTE researcher in the public sector**. Figure 22 shows that the level of funding allocated at the EU level has remained largely consistent since 2012, reaching its highest level in 2015.

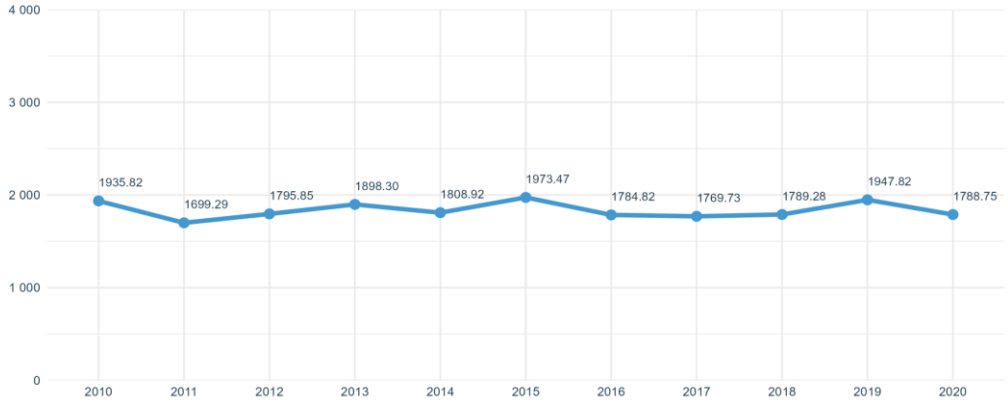

Figure 3. Government budget allocations for R&D (GBARD) allocated to Europe-wide transnational, as well as bilateral or multilateral, public R&D programmes per FTE researcher.

With a view to the situation in the Member States (shown in **Error! Reference source not found.**8, Annex 3) substantial variation across countries as well as within countries can be observed over time. For example, **Belgium** stands out as a country with a largely consistent, high level of funding for R&I. **Austria** had the highest level of funding amongst Member States from 2012-2015. Although this has decreased since, Austrian investments remain above the EU average. The situation is similar in **Cyprus** where the level of funding was close to the EU average in 2012 and then grew to become one of the countries with highest R&I funding in 2018, 2019 and 2020. **Sweden** has also consistently had one of the highest levels of funding per FTE in the public research sector.

Figure 23 illustrates an indicator related to the green transformation. The indicator **environmentally related government R&D budget as percentage of total government R&D budget (EU-average)** shows that the budget share has peaked in 2015 and reached its low in 2021, when the latest data is available.

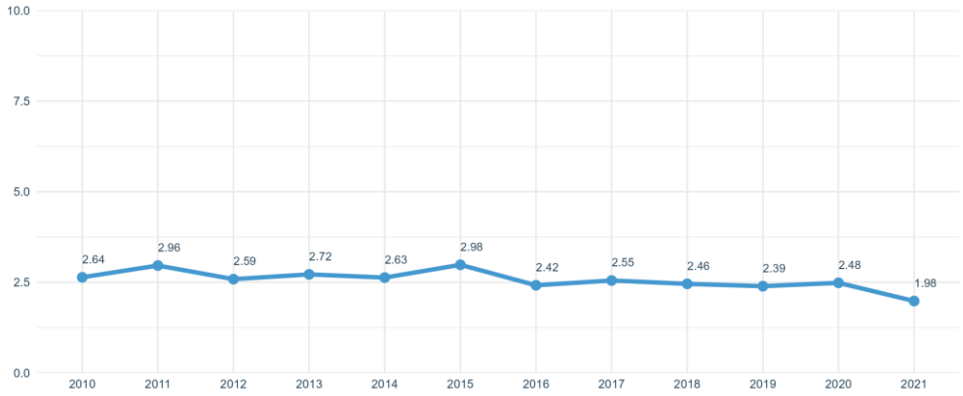

Figure 4. Environmentally related government R&D budget as percentage of total government R&D (EU-average).

Regarding the indicator shown in Figure 24, **OECD Patents on environment technologies as percentage of total technology patents**, there has been a decline since 2011 with reaching its low in 2016. Between 2016 and 2018 the number of patents has slightly increased but is still significantly below the 2018 levels.

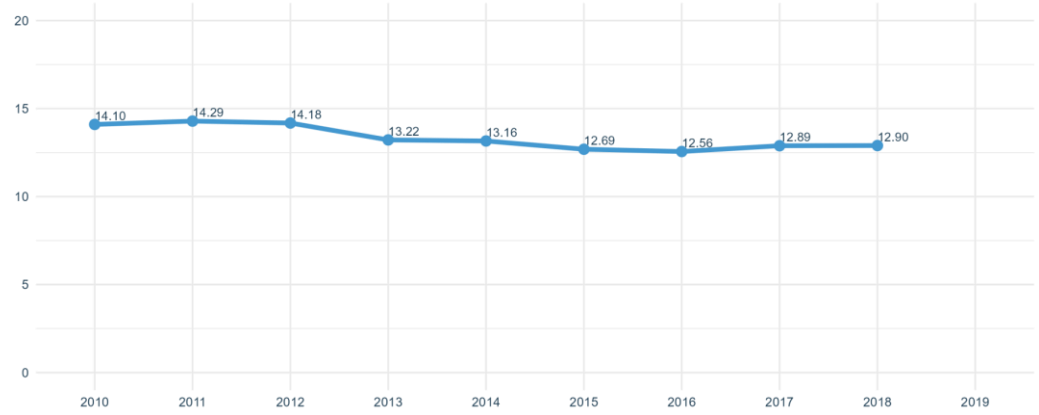

Figure 5. OECD Patents on environment technologies as percentage of total technology patents.

Sub-priority 2.2: Synergies with education and the European Skills Agenda

A sub-priority within ERA Priority 2 relates to the enhancement of synergies with education and the EU Skills Agenda. The indicator on the **Share of researchers receiving transferable skills training** provides valuable insights about the promotion of relevant skills across researchers from Higher Education Institutions. Figure 25 shows that at the EU level there has been a slight decrease of 3 percentage points from 49.5% to 46.3% during 2016 to 2019[9].

The figure illustrates national trends in comparison to the EU level. Nonetheless, there is no overall trend applying to the majority of countries. There are rather some countries, such as **Austria** or **Romania**, which show an increase of more than 40 percentage points from 2016 to 2019. Other countries, including **Lithuania**, **Portugal** or **Belgium,** have stagnated over the period, while a third group of countries, **Bulgaria** or **Slovenia** amongst

[9] Data only available for these years. Retrieved from https://www.more-4.eu.

others, has experienced a decline. Therefore, national differences clearly persist in relation to the share of researchers receiving transferable skills training.

Figure 6. Share of researchers receiving transferable skills training.

One indicator which helps to deepen the understanding of the empowerment of HEIs is the **number of innovative enterprises that co-operated on R&D+I with universities and HEIs**. This indicator captures the level of cooperation and collaboration between HEIs and the private sector, a key actor within the R&I ecosystem. Collaboration across actors helps to ensure a more competitive R&I ecosystem. Figure 26 shows that the EU average of innovative firms cooperating with the education sector was at around 1,500 in 2020.

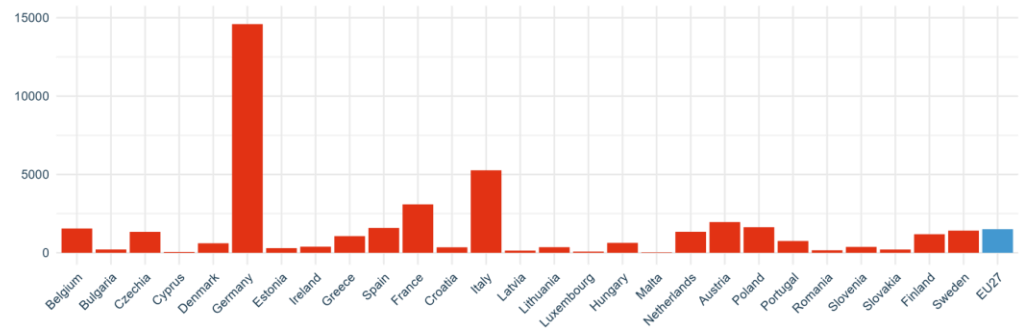

Figure 7. Innovative enterprises that co-operated on R&D+I with universities and HEIs.

Sub-priority 2.3: Synergies with sectoral policies and industrial policy, in order to boost innovation ecosystem

The following indicator on **Direct government support plus Indirect government support through R&D tax incentives as a percentage of GDP** allows to gain insights into key synergies with sectorial policies and industrial policy. Figure 27 shows that this indicator has experienced a slight increase from 0.15 in 2010 to 0.18 in 2020. At the country level (see **Error! Reference source not found.**2 in Annex 3) **Austria**, **Belgium**, and **France** have consistently higher shares than the EU-27 average.

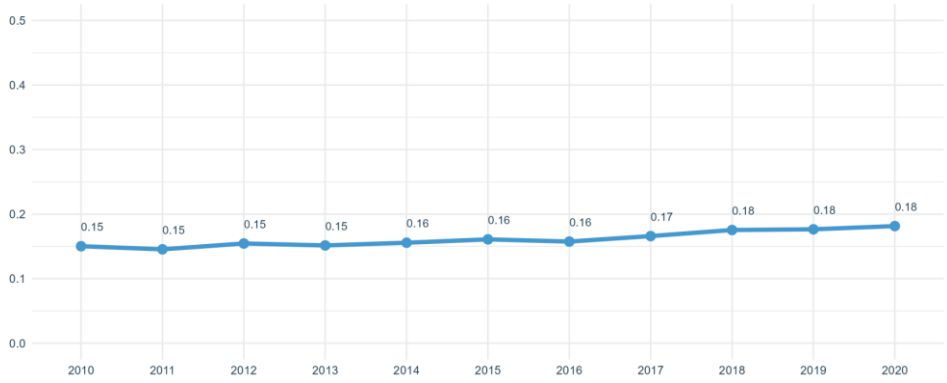

Figure 8. Direct government support and Indirect government support through R&D tax incentives as a percentage of GDP (EU-average).

Sub-priority 2.4: An active citizen and societal engagement in R&I in all its dimensions

In order to measure how science is incorporating the societal aspect within R&I, one indicator measures the **number of publications on 'social innovation' or 'social entrepreneurship' per million population.** This indicator captures insights into research contents over the past decade. The EU trend experienced a slight decrease from 10.1 in 2010 to 9.8 in 2020.

Error! Reference source not found.63 in Annex 3 illustrates the EU average as well as Member States trends. Overall, it shows that some countries, such as **Croatia**, have a better performance, reaching a peak of 10 publication per million population.

A key dimension within this Priority is citizens' trust in science. As such, indicator 48 in the ERA Dashboard refers to **citizen's trust in science** based on Eurobarometer data in 2021. Survey respondents were asked several questions regarding:

- The overall influence of science and technology on society;
- Whether science and technology can sort out any problem;
- Whether science prepares the younger generation to act as well-informed citizens;
- Whether thanks to science and technology, there will be more opportunities for future generations.

At the EU level, slightly less than half of the individuals (43.2%) do trust in science. As illustrated, in 10 Member States, more than a half of the population shows trust in science, with some countries evidencing higher levels of trust.

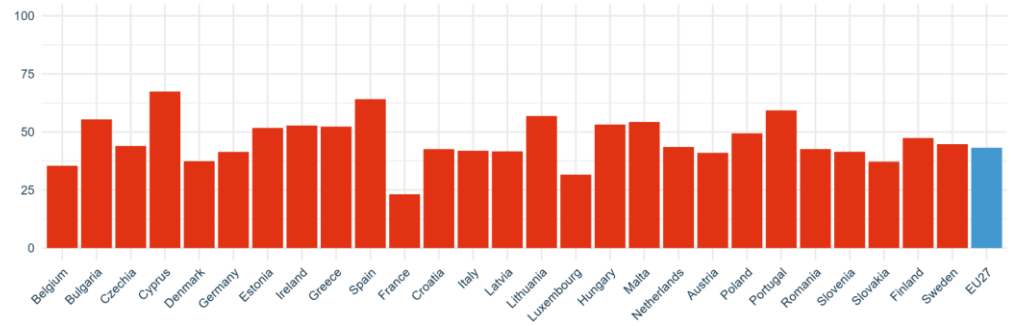

Figure 9. Trust in science.