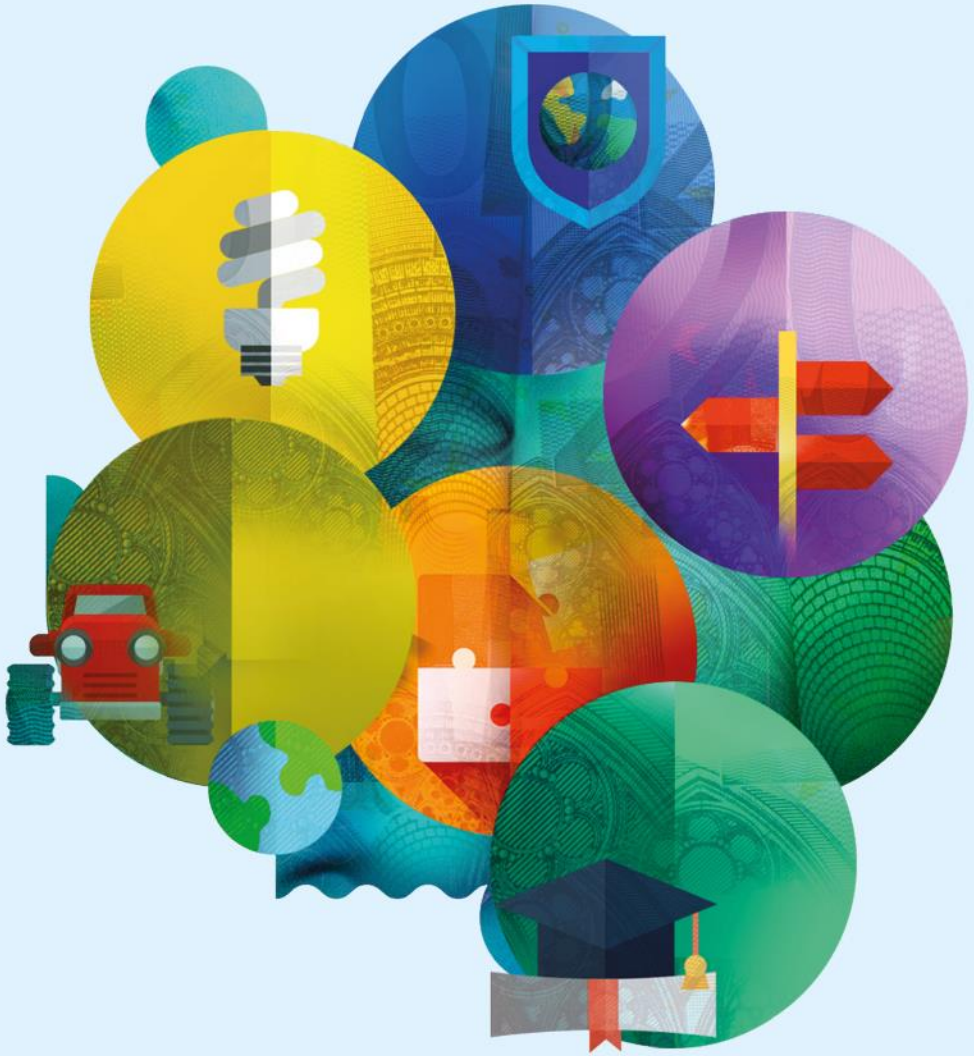
L’impact à l’échelle du programme-cadre

Suivi et analyse de l’impact d’Horizon Europe



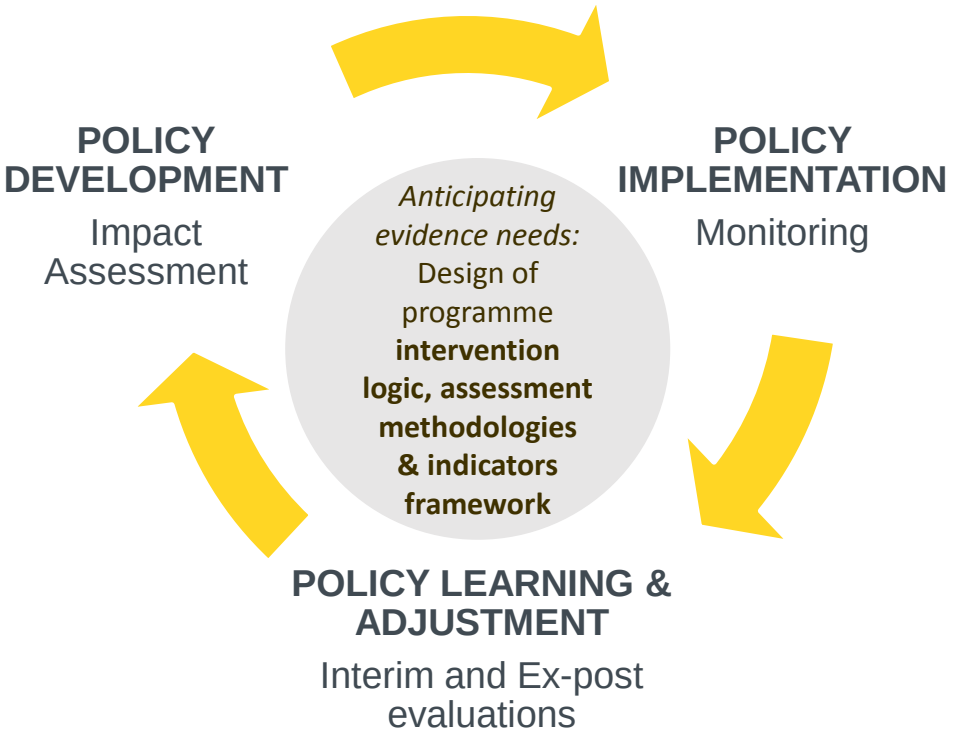
15 Octobre 2019
Nelly Bruno, Commission Européenne
DG Recherche et Innovation (DG RTD-A2)

1. INTRODUCTION

- **Context** of Horizon Europe proposal: socio-economic pressures, budgetary austerity
- Need to demonstrate and communicate **why** EU investments in research and innovation matter
- Aim to **maximize impact** of the Framework Programme: incl. Programme structure based on a more systemic approach; Clusters ; Missions; EIC; Rationalised approach to European Partnerships; Synergies; Efficient implementation
- **Key Impact Pathways** as backbone of Horizon Europe indicator framework (Art. 45 & 47, Annex V)
- Need to **reconcile** policy needs with methodological challenges

Better regulation agenda

´Make sure every action delivers maximum performance & value added´



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2. THE CHALLENGE OF CAPTURING R&I IMPACTS

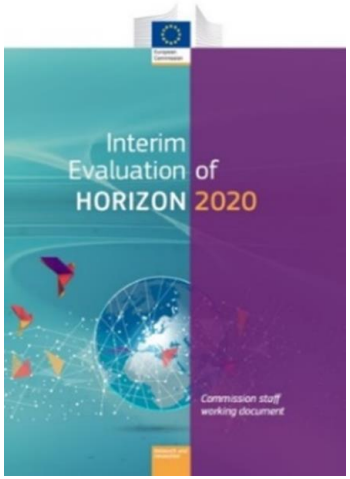
- **Better Regulation:** evaluations to look not only at what happened, but also *why* and *how much* with evidence of causality
- Evaluations are needed to inform the policy cycle (cannot wait 25 years to know what works or not) but they also need to be informed
- Specific challenges of R&I programmes evaluations:
  - **Uncertainty and risk:** need risk taking, trials and errors, role of public intervention when markets fail, what to measure
  - **The time lag issue:** possibly very long timeframe before impact occurs, when to measure
  - **The attribution/contribution problem**: nature of knowledge (non-rival, cumulative), other projects running, R&I systems influence
- Particularly difficult when it comes to measure outputs/results/impacts

3. LEARNING FROM OTHER INDICATORS FRAMEWORKS

- **No one-fit-all solution** (Graham et al., 2018): mainly accountability/ advocacy purpose (more quantitative, comparable) than learning
- Traditionally two main areas of indicators on outputs side: 1) scientific **publications** and citations; 2) **patent** applications, awards and citations
- Now (van den Besselaar, Flecha, Radauer, 2018) turning to **economic impact** data (jobs, turnover), but other types of IPR rather unused, missing data links on market reach of innovations
- Most agencies and models do not consider **societal impact** from R&I at all. Some attempts with indicators *leading* to societal impact (SIAMPI)

4. LEARNING FROM PAST FRAMEWORK PROGRAMMES

- Since 1984, **multiple evaluations of FP:** different approaches, inadequate timing, limited data, difficulty to capture wider effects
- Evolution for Horizon 2020: **Key Performance Indicators**
- **Horizon 2020 Interim evaluation:** triangulation of data, long-term impact of FP7, 3 categories of impact, counterfactual analysis on research outputs, econometric modeling on jobs & growth
- But **limitations:** data availability, reliability, aggregation; lack of benchmarks and baselines; attribution/contribution



- **Need to tell the difference EU funding is making:** for the FP as a whole, according to its objectives
- **Need to set realistic** indicators to track progress in **short, medium** and **long term**
- **Need to further simplify & minimise burden** on participants
- **Need to distinguish** between management data & impact indicators

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5. EVOLUTION FOR HORIZON EUROPE

Horizon 2020 system	Evolution for Horizon Europe
▪ 3 headline indicators **not directly attributable** to the programme* ▪ **55 Horizon 2020 Key performance and Cross-Cutting issues** indicators: • 27 are related to **management and implementation data** (e.g. funding, participation) • 28 are related to **outputs, results or impacts**, out of which: • none is related to the whole programme (covering only programme parts) • 9 relate to publications • 7 relate to intellectual property rights and innovations • 4 relate to leveraged funding • 4 relate to researchers' mobility and access to infrastructures ▪ Strong reliance on self-reporting by beneficiaries or surveys	▪ All Horizon 2020 indicators related to outputs, results and impacts are maintained but **streamlined and further specified** to cover the whole Programme ▪ Management and implementation data are still collected and made available in close-to-real time through **online Dashboard** but are not part of "impact indicators" ▪ Key indicators are set at **Programme level** according to the Programme objectives and are attributable to the Programme ▪ Programme objectives are tracked according to **nine key impact pathways**, through short, medium and long term indicators – for more accurate reporting over time including via the Dashboard ▪ Higher reliance on external data sources, qualitative data and automated data tracking to **minimise burden on beneficiaries** ▪ Possibility for programme part or action specific indicators (but not in the legal base)

6. TRACKING IMPACT IN HORIZON EUROPE – 'PATHS' PRINCIPLES

- **P**roximity - Knowing who the individual researchers and companies are, for example through unique identifiers such as VAT numbers, researchers IDs, funder ID
- **A**ttribution – Microdata collection supporting the identification of control groups for counterfactual analysis
- **T**raceability – Minimised burden on beneficiaries through automatic data harvesting from existing databases; use of additional primary (including qualitative) data sources such as project evaluators and reviewers
- **H**olism - Telling the story of the progress of the Programme as a whole according to the objectives, at any moment in time
- **S**tability - Building on the current systems, piloting evolutions in Horizon 2020

This requires:

- Adaptations of current **templates** and forms, while simplifying
- **Piloting and testing new approaches**, e.g. for accessing microdata on businesses, and for tracking societal impact

7. TRACKING IMPACT IN HORIZON EUROPE

THREE TYPES OF IMPACT BASED ON OBJECTIVES

Scientific impact

Promote scientific excellence, support the creation and diffusion of high-quality new fundamental and applied knowledge, skills, training and mobility of researchers, attract talent at all levels, and contribute to full engagement of Union's talent pool in actions supported under the Programme

Societal impact

Generate knowledge, strengthen the impact of R&I in developing, supporting and implementing Union policies, and support the uptake of innovative solutions in industry, notably in SMEs, and society to address global challenges, inter alia the SDGs

Economic/Technological impact

Foster all forms of innovation, facilitate technological development, demonstration and knowledge transfer, and strengthen deployment of innovative solutions

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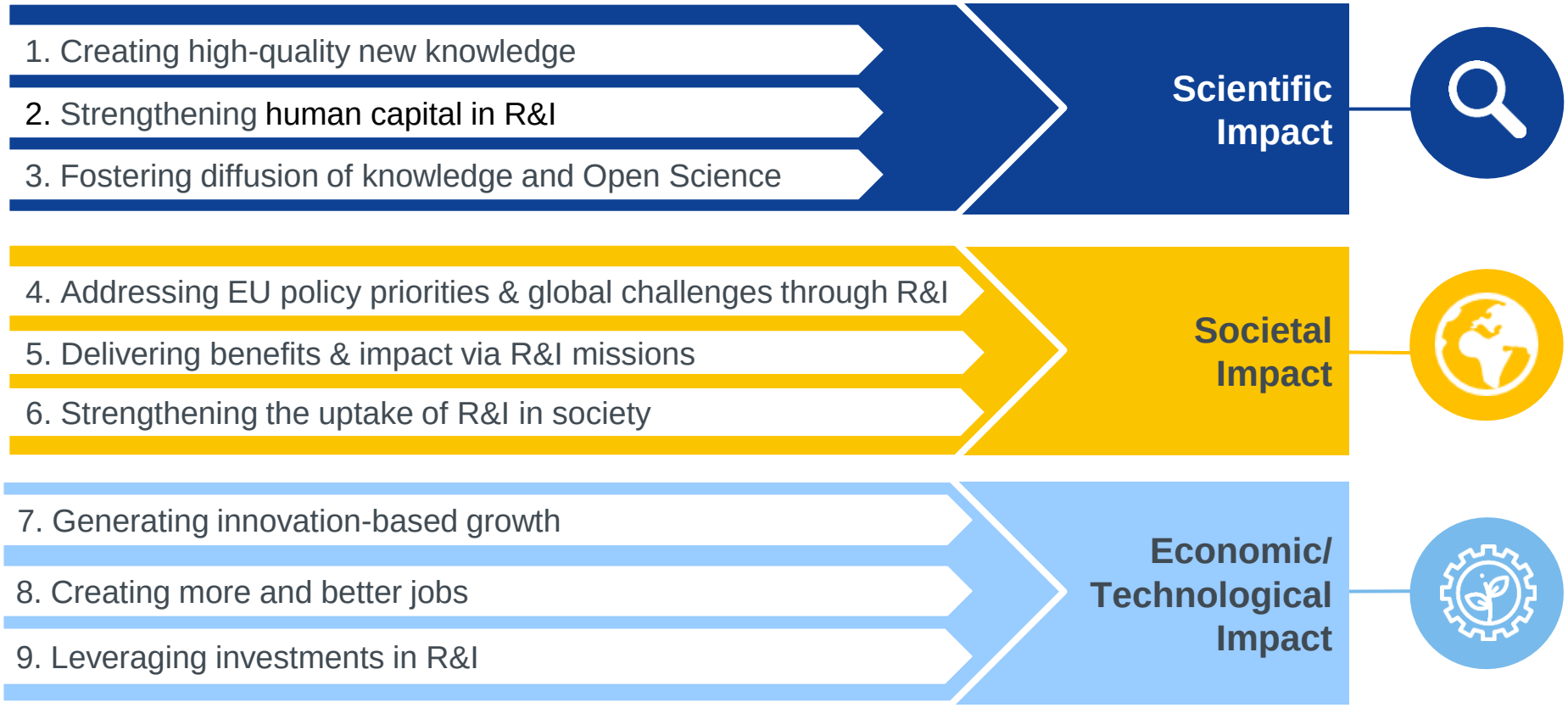
8. TRACKING IMPACT IN HORIZON EUROPE

NINE KEY IMPACT PATHWAYS TO TRACK PROGRESS OVER TIME



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Pathway 1. Creating high quality new knowledge

STORY LINE: The FP creates and diffuses high quality new knowledge, as shown by the high-quality publications that become influential in their field and worldwide.

- **Indicator (short, medium, long-term)**

Data needs: Identification of publications co-funded by the FP through the insertion of a specific funding source ID when publishing, allowing follow-up tracking of the perceived quality and influence through publication databases and topic mapping.

Pathway 4. Addressing EU priorities & global challenges through R&I

STORY LINE: The FP helps addressing EU policy priorities (including meeting the SDGs) through research and innovation, as shown by the portfolios of projects generating outputs contributing to tackling global challenges.

Portfolio-level EXAMPLE: After 3 years, from all projects pursuing reduction of CO2 emissions, 8% already produced relevant innovations and scientific results. After 5 years, experts estimate that all achieved solutions together can contribute to a reduction of CO2 emissions of 0.1% based on current market & policy trends

- **Indicator (short, medium, long-term) - for each identified priority**

Typically As of YEAR 1+	Typically As of YEAR 3+	Typically As of YEAR 5+
Number and share of outputs aimed at addressing specific EU policy priorities & global challenges (including SDGs)	**Number and share of innovations and scientific results addressing specific EU policy priorities & global challenges (including SDGs)**	**Aggregated estimated effects from use of FP-funded results on tackling specific EU policy priorities & global challenges (including SDGs) including contribution to the policy and law-making cycle (such as norms and standards)**

Data needs: Projects classified according to specific EU policy priorities pursued (including SDGs) and follow-up tracking of their outputs, results & impacts. Portfolio analysis on effects from scientific results & innovations in specific EU policy priority/SDGs areas, text mining.

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Research and innovation

Pathway 7. Creating more & better jobs

STORY LINE: The FP generates more and better jobs, initially in the projects, and then through the exploitation of the results and their diffusion in the economy.

Counterfactual EXAMPLE: After 3 years, on average, a company that participates in Horizon Europe has created 1,5 more jobs than a similar company not participating.

- **Indicator (short, medium, long-term)**

Typically As of YEAR 1+	Typically As of YEAR 3+	Typically As of YEAR 5+
Number of FTE jobs created, and jobs maintained in beneficiary entities for the FP project (by type of job)	Increase of FTE jobs in beneficiary entities following FP project (by type of job)	Number of direct & indirect jobs created or maintained due to diffusion of FP results (by type of job)

Data needs: Collection of information on individuals involved in FP projects, including their workload (Full Time Equivalent) and job profile allowing follow-up tracking of employment in beneficiary organisations. Longer-term indicator to be estimated based on dedicated study.

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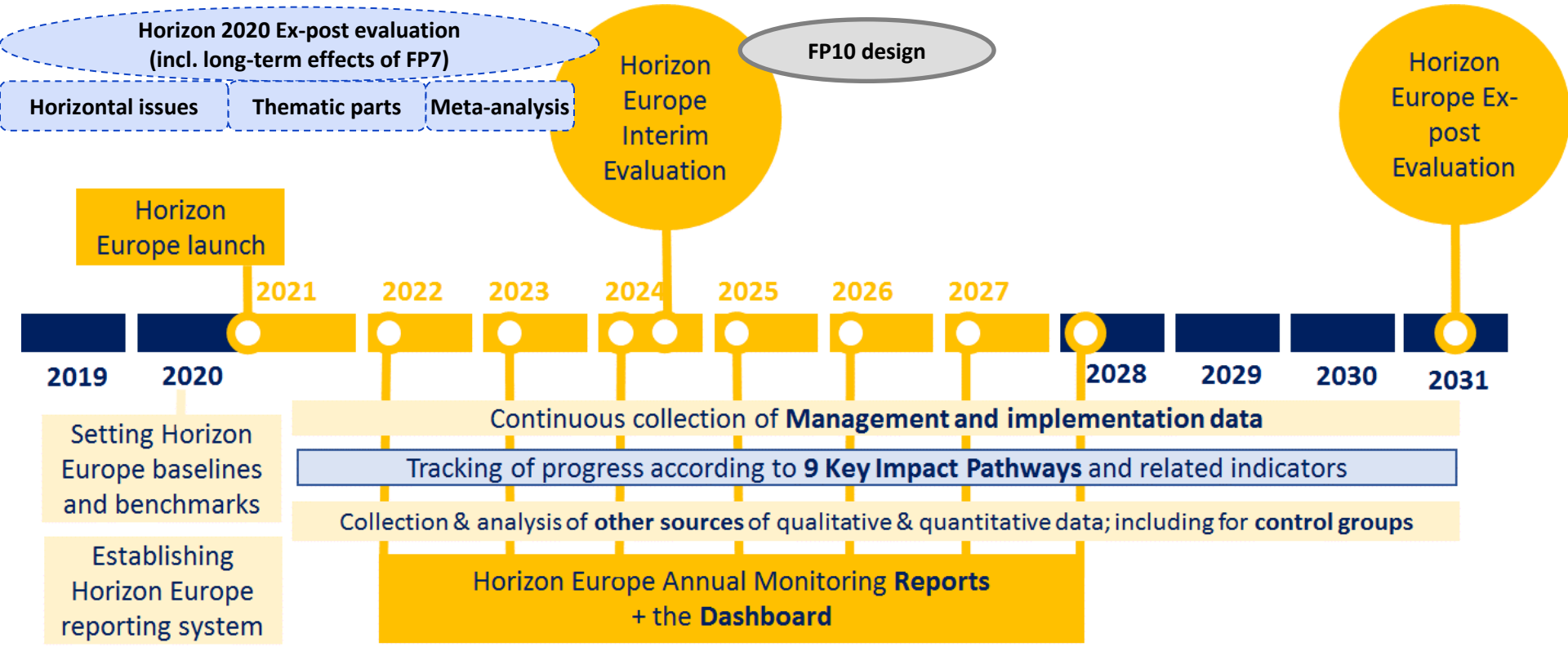
Research and innovation

9. MEETING THE DATA NEEDS

- Building on Horizon 2020 but **streamlining**
- Relying much more on **microdata** and where possible unique persistent **identifiers** (researchers, companies, funder ID), allowing data **disambiguation and disaggregation**
- Further **simplifying** and minimizing the reporting burden on beneficiaries (data linking)
- Providing a solid basis for accountability, for **evaluations** to dive deeper into learning and identifying policy adjustments
- **Continuous process of evaluation and monitoring:** Interim evaluation to focus on relevance, coherence, efficiency + longer term assessment of past programmes for effectiveness/impact
- **Monitoring Flashes** on topical issues to analyse evidence on the go

10. MONITORING & EVALUATION FRAMEWORK



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12. CONCLUSIONS

Key Impact Pathways **novel, ambitious yet pragmatic** approach to reconcile policy needs with impact measurement challenges under Horizon Europe

Shall allow to **better communicate** the progress of Horizon Europe towards its objectives around a set of key storylines while managing expectations on what can be reported when

Shall allow to **better capture** the progress made by focusing on microdata collection and data linking, acknowledging multiple impacts of R&I investments as well as early identification of potential barriers or drivers to impact, while supporting simplification and data quality

A key element for improving the quality of programme **evaluations**, and their usefulness for **policy learning** and **policy design**

ANALYSING ON THE GO - MONITORING FLASHES FROM HORIZON 2020 TO HORIZON EUROPE

Monitoring flash reports "From Horizon 2020 to Horizon Europe" are available here:

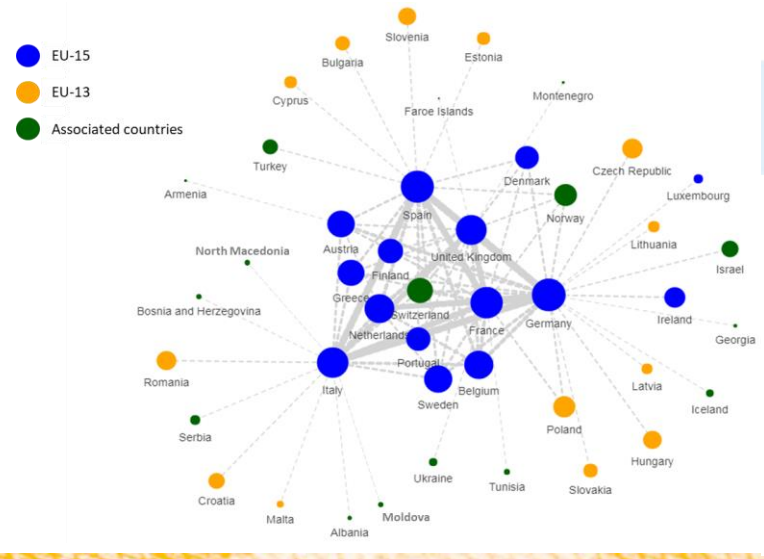
https://ec.europa.eu/info/publications/horizon-2020-monitoring-flash_en

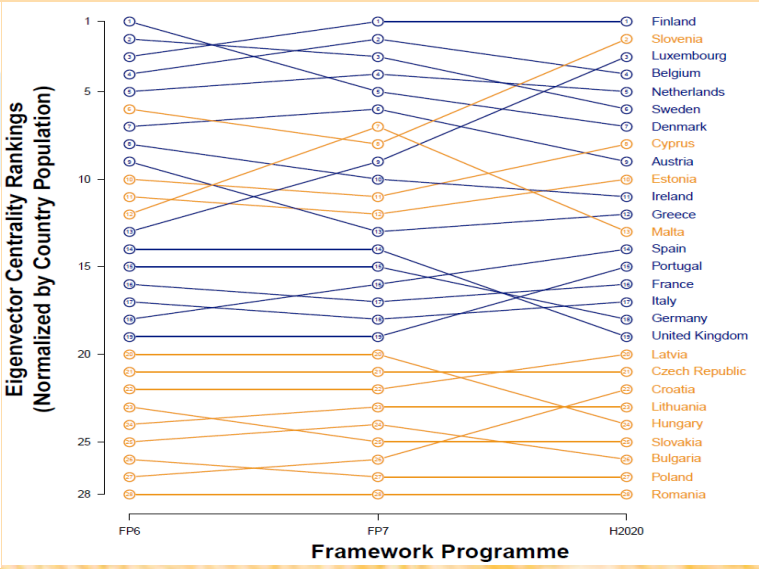
#1 Country Participation

#2 Dynamic Network Analysis

#3 International Cooperation

… To continue





Thank you!

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http://ec.europa.eu/horizon-europe

ANNEX

Pathway 1. Creating high quality new knowledge

STORY LINE: The FP creates and diffuses high quality new knowledge, as shown by the high-quality publications that become influential in their field and worldwide

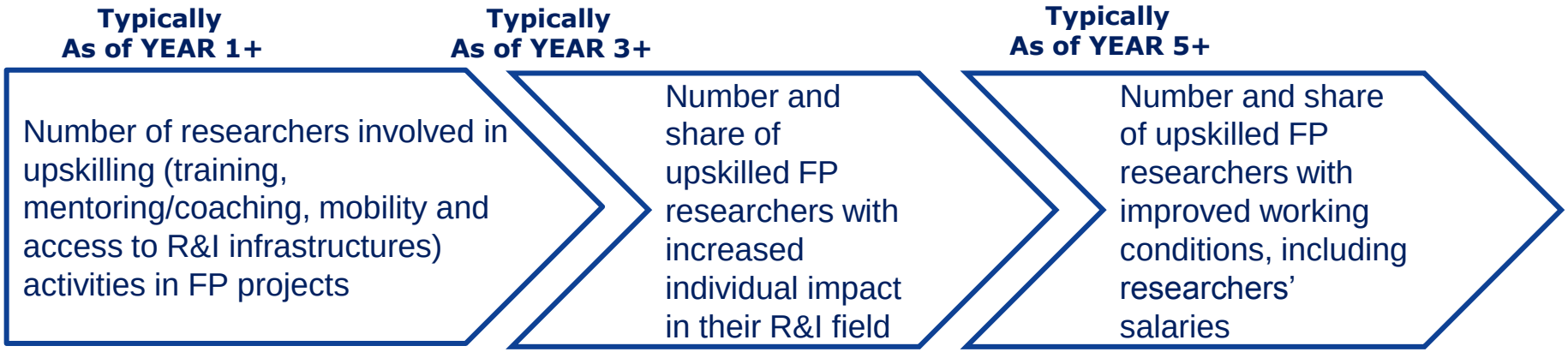
- **Indicator (short, medium, long-term)**

Data needs: identification of publications co-funded by the FP through the insertion of a specific funding source ID when publishing, allowing follow-up tracking of the perceived quality and influence through publication databases and topic mapping.

Pathway 2. Strengthening human capital in R&I

STORY LINE: The FP strengthens human capital, as shown by the improvement in skills, reputation and working conditions of participants

- **Indicator (short, medium, long-term)**

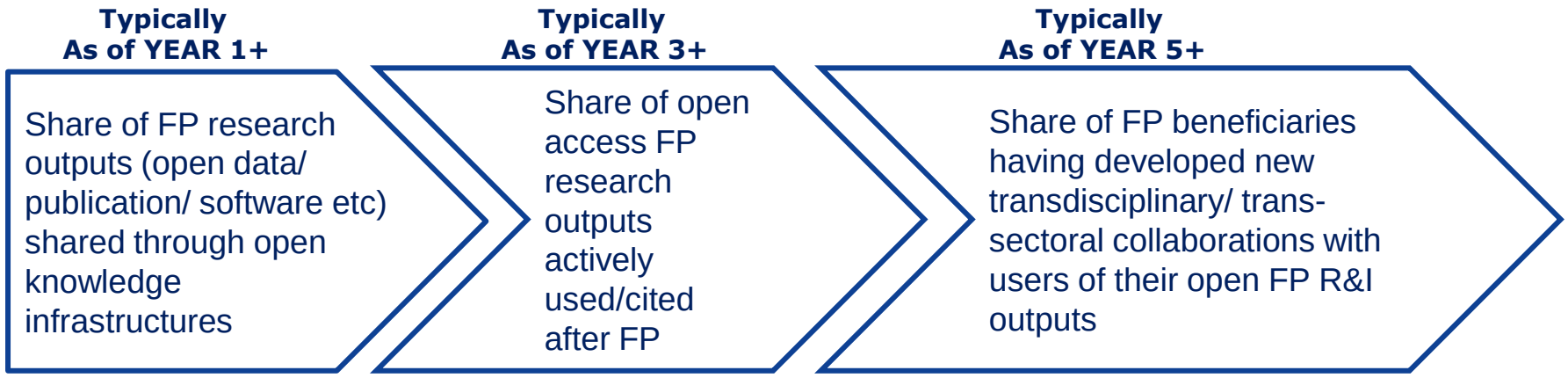


Data needs: collection of unique identifiers of individual applicants to the FP, allowing follow-up tracking of their influence in their field through publication and patent databases, awards and prizes, as well as evolution of working conditions through salary levels and benefits

Pathway 3. Fostering diffusion of knowledge and Open Science

STORY LINE: The FP opens up science, as shown by research outputs shared openly, re-used and at the origin of new transdisciplinary/trans-sectoral collaborations

- **Indicator (short, medium, long-term)**



Data needs: Identification of research outputs (esp. publications & research data) co-funded by the FP through the insertion of a unique identifier for FP funding when publishing or sharing openly (e.g. OA journals/platforms (publications) and open FAIR repositories (data)), allowing follow-up tracking of open access performance in terms of active use/citations and collaborations.

Pathway 4. Addressing EU priorities & global challenges through R&I

STORY LINE: The FP helps addressing EU policy priorities (including meeting the SDGs) through research and innovation, as shown by the portfolios of projects generating outputs contributing to tackling global challenges

Multidimensional: for each identified EU priority

- **Indicator (short, medium, long-term)**

Typically As of YEAR 1+	**Typically As of YEAR 3+**	**Typically As of YEAR 5+**
Number and share of outputs aimed at addressing specific EU policy priorities & global challenges (including SDGs)	Number and share of innovations and scientific results addressing specific EU policy priorities & global challenges (including SDGs)	Aggregated estimated effects from use of FP-funded results on tackling specific EU policy priorities & global challenges (including SDGs) including contribution to the policy and law-making cycle (such as norms and standards)

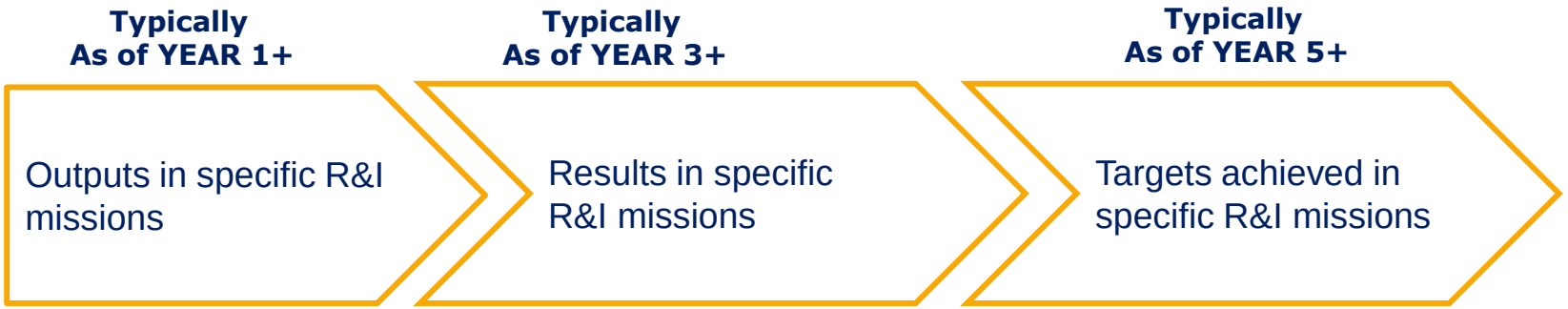
Data needs: Projects classified according to specific EU policy priorities pursued (including SDGs) and follow-up tracking of their outputs, results & impacts. Portfolio analysis on effects from scientific results & innovations in specific EU policy priority/SDGs areas, text mining.

Pathway 5. Delivering benefits and impacts through R&I missions

STORY LINE: The FP produces knowledge and innovation that contribute to achieving missions of EU interest.

Multidimensional: for each identified mission

- **Indicator (short, medium, long-term)**

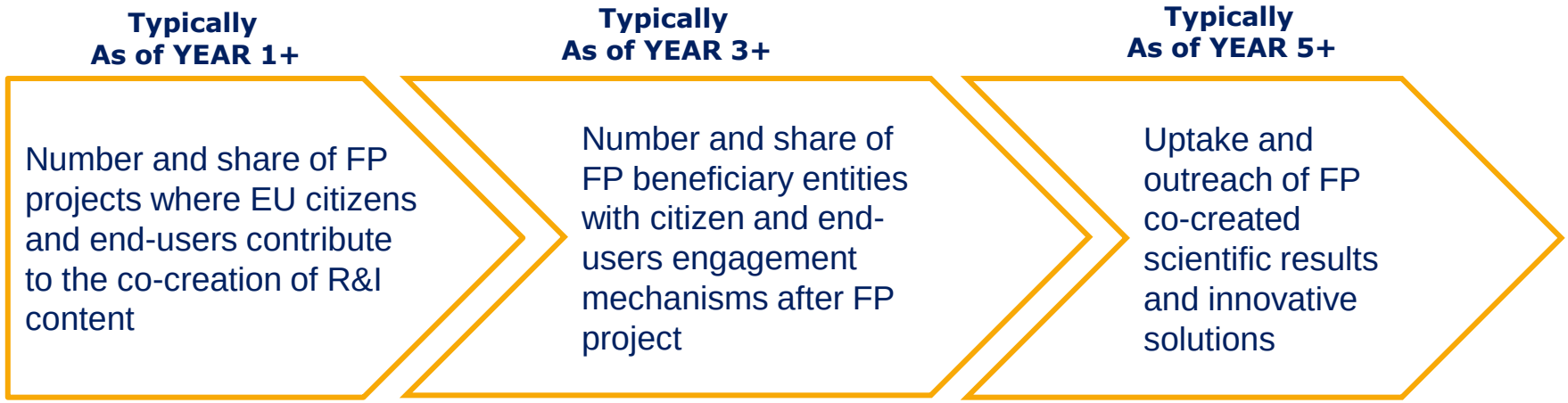


Data needs: Projects classified according to the missions pursued and follow-up tracking of their outputs, results and impacts according to the target set. Portfolio analysis on effects from scientific results & innovations in mission areas.

Pathway 6. Strengthening the uptake of innovation in society

STORY LINE: The FP strengthens the uptake of innovation in society, as shown by the engagement of citizen in the projects and beyond the projects by improved uptake of scientific results and innovative solutions

- **Indicator (short, medium, long-term)**



Data needs: Collection of data at proposal stage on the roles of partners (incl. citizen) in the projects, structured survey of beneficiary entities and tracking of uptake and outreach through patents and trademarks and media analysis.

Pathway 7. Creating more & better jobs

STORY LINE: The FP generates more and better jobs, initially in the projects, and then through the exploitation of the results and their diffusion in the economy

- **Indicator (short, medium, long-term)**

Typically As of YEAR 1+

Number of FTE jobs created, and jobs maintained in beneficiary entities for the FP project (by type of job)

Typically As of YEAR 3+

Increase of FTE jobs in beneficiary entities following FP project (by type of job)

Typically As of YEAR 5+

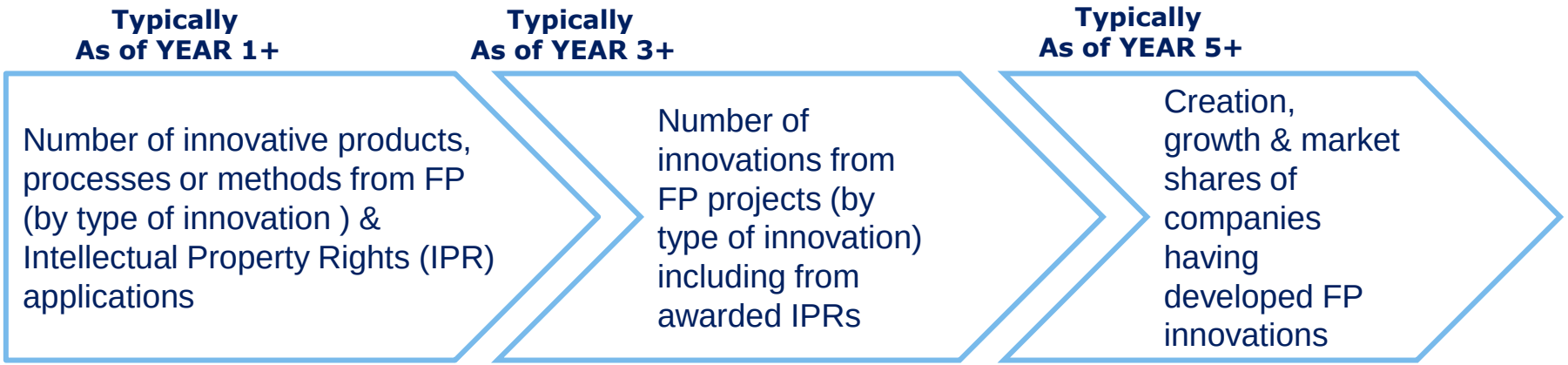
Number of direct & indirect jobs created or maintained due to diffusion of FP results (by type of job)

Data needs: Collection of information on individuals involved in FP projects, including their workload (Full Time Equivalent) and job profile allowing follow-up tracking of employment in beneficiary organisations. Longer-term indicator to be estimated based on dedicated study.

Pathway 8. Generating innovation-based growth

STORY LINE: The FP is a source of economic growth, as shown by the patents and innovations that are launched on the market and generate added value for businesses

- **Indicator (short, medium, long-term)**

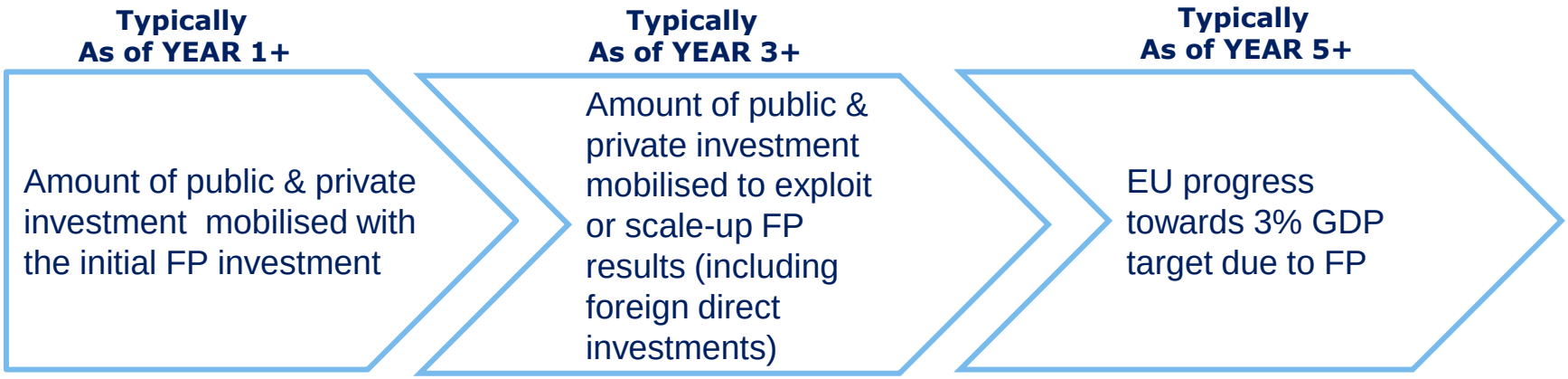


Data needs: Reporting of beneficiaries on innovative products, processes or methods from FP and their practical use, and insertion of a specific funding source ID when filling IPR applications, allowing follow-up tracking of the patents through patent databases & trademarks.

Pathway 9. Leveraging investment in R&I

STORY LINE: The FP is leveraging investments for research and innovation in Europe, initially in the projects, and then to exploit or scale-up their results

- **Indicator (short, medium, long-term)**



Data needs: Data on co-funding in FP projects by source of funds including other EU funds, collection of unique identifiers of applicants to the FP (e.g. VAT), allowing follow-up tracking of their capital. Longer-term indicator to be estimated based on dedicated study.