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Research and Development in the EU Horizon 2020 and Horizon Europe

Lecture 6

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SZÉCHENYI 2020

Horizon 2020 and Horizon Europe

Lecture 6

In this lecture you will learn about:

- The basics of Horizon 2020 the current framework programme
- The basics of Horizon Europe the forthcoming framework programme
- The main differences and similarities between Horizon 2020 and Horizon Europe

The basics of Horizon 2020

Before going into the details on Horizon 2020, to understand this concept we have to remember what we learned in Lecture 5 about framework programmes.

Framework Programmes are the main research related policy instruments in the EU. They are funding programmes created by the European Commission to foster R&D&I in the European Research Area. Each framework programme has specific objectives and these objectives vary between funding periods.

Horizon 2020 is one of such framework programmes, it is the current one running since 2014 till the end of 2020 with the budget of 80 bn euros.

***"Horizon 2020** is the biggest¹ EU research and innovation programme ever. It will lead to more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to the market. Almost €80 billion¹ of funding is available over 7 years (2014 to 2020) – in addition to the private and national public investment that this money will attract."* (EC 2014)

So, Horizon 2020 is a funding instrument for R&D&I. It also helps to achieve the research goal of Europe 2020 (see more in Lecture 7) and helps the realisation of the Innovation Union (see more in Lecture 8) too. A big improvement compared to the previous framework programmes, that Horizon 2020 also concentrates on innovation as its full name implies: Horizon 2020 The

¹ Till the announcement of Horizon Europe it was the biggest, but Horizon Europe's budget will be 20 bn euros bigger. But note that this definition is from 2014. At that time it was true.

EU Framework Programme for Research and Innovation. This implies that research and innovation are now integrated at the EU policy level.

“Excellent science, competitive industry and tackling societal challenges are at the heart of Horizon 2020. Targeted funding will help to ensure that the best ideas are brought to the market faster – and are used in our cities, hospitals, factories, shops and homes as quickly as possible” (EC 2014 pp. 7). This shows that Horizon 2020 has 3 main pillars, 3 main priorities.

Excellent science: *“Horizon 2020 will bolster the EU’s position as a world leader in science, attracting the best brains and helping our scientists collaborate and share ideas across Europe. It will help talented people and innovative firms boost Europe’s competitiveness, creating jobs along the way, and contributing to a higher standard of living – benefiting everyone.”* (EC 2014 pp 7)

Industrial leadership: *“To be the best at what it does, Europe needs to invest in promising and strategic technologies, such as those used in advanced manufacturing and micro-electronics. But public funding alone is not enough: the EU needs to encourage businesses to invest more in research, and target areas where they can work with the public sector to boost innovation.”* (EC 2014 pp. 9)

Societal challenges: *“The EU has identified seven priority challenges where targeted investment in research and innovation can have a real impact benefitting the citizen”* (Ec 2014 pp. 11)

Each pillar has specific objectives or focus areas.

The Excellent science pillar has 4 specific objectives (EC 2014):

- **Frontier research funded by the European Research Council** – this action supports the funding of such research even though their end result is rarely in the form of commercial products, but such research stimulate other innovations; yet it can be difficult to get support. Here the only criterion for funding is excellence
- **Marie Skłodowska-Curie Actions** - this action concentrates on the training and career development of researchers. Support is offered to both young and experienced researchers to reinforce their career through either trainings or moving to another country or placement in the private sector.
- **Future and emerging technologies** - this action supports cutting edge new technologies and funding is provided to make Europe the best environment for dynamic multi-disciplinary cooperation on technologies.
- **World-class infrastructure** - this action concentrates on research equipment that can be complex and costly, so EU funding supports the pool of the resources for large-scale projects and provides researchers the latest infrastructure.

The Industrial Leadership pillar has 3 specific objectives (EC 2014):

- **Leadership in enabling and industrial technologies** – the funding supports ground-breaking technologies needed to boost innovation in all sectors.
- **Small and medium enterprises (SMEs)** – SMEs are very important for jobs and innovation thus have a special attention in Horizon 2020. The highly innovative SMEs can get support or can participate in consortia. This action helps SMEs to evaluate the market feasibility of their ideas and to develop these ideas further, but they can get funding for business coaching or counselling on how to identify and attract investors.
- **Access to risk finance** – it can be difficult to get money for risky new ideas, but Horizon 2020 wants to fill this gap through this action.

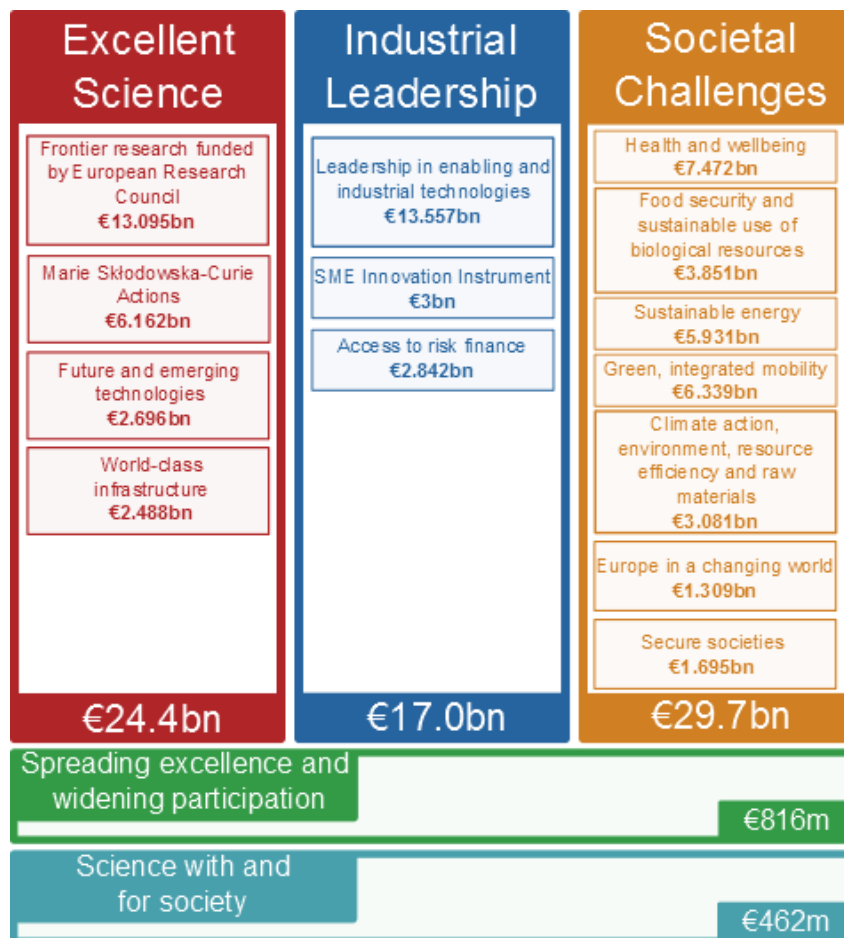
Regarding the Societal Challenges priority, the Eu has identified 7 priority challenges, focus areas (EC 2014):

- Health, demographic change and wellbeing
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
- Secure, clean and efficient energy
- Smart, green and integrated transport

- Climate action, environment, resource efficiency and raw materials
- Europe in a changing world - inclusive, innovative and reflective societies
- Secure societies - protecting freedom and security of Europe and its citizens.

The biggest part of the budget will tackle Societal Challenges, but similarly high amount is dedicated to the Excellent Science pillar while somewhat less money is devoted for Industrial leadership. Besides the 3 main pillars some money is dedicated to other actions (EC 2013). The budget breakdown can be seen in Figure 1.

Figure 1. The budget of Horizon 2020



The basics of Horizon Europe

As Horizon 2020 expires in the end of 2020 the new framework programme was already announced and was named Horizon Europe.

Horizon Europe: it is the ninth framework programme for funding research and innovation covering the time period of 2021-2027 with a budget of 100 bn euros. *“Horizon Europe is the European Union’s seven-year research and innovation programme, running from 2021 to 2027, its design will allow Horizon Europe to serve all the headline ambitions of the Political Guidelines of President-elect von der Leyen. The programme’s general objective is to deliver scientific, technological, economic and societal impact from the Union’s investments in R&I, to strengthen the scientific and technological bases of the Union, and foster its competitiveness in all Member States.”* (EC 2019 pp. 1.)

Horizon Europe has 3 main aims:

- *“Strengthen EU science and technology thanks to increased investment in highly skilled people and cutting-edge research*
- *Foster the EU’s industrial competitiveness and its innovation performance, notably supporting market-creating innovation via the European Innovation Council and the European Institute of Innovation and Technology;*
- *Deliver on the EU’s strategic priorities, such as the Paris Agreement on climate change, and tackle global challenges that affect the quality of our daily lives”* (EC 2018 pp. 1).

Similarly, to Horizon 2020, Horizon Europe also has 3 pillars (EC 2019):

- Open Science
- Global Challenges and Industrial Competitiveness
- Open Innovation.

The **Open Science** pillar will support frontier research project, the mobility of researchers and invests in world-class infrastructure. It can be broken down to 3 main actions:

- European Research Council
- Marie Skłodowska-Curie Actions
- Infrastructures (EC 2018, EC 2019).

The **Global Challenges and Industrial Competitiveness** pillar will support research on societal challenges, will strengthen technological and industrial capacities will set missions for the EU to tackle global challenges like health, climate change, clean energy, mobility or security. It has 5 clusters:

- Health
- Inclusive and Secure Society
- Digital and Industry
- Climate, Energy and mobility
- Food and natural resources (EC 2018, EC 2019).

The **Open Innovation** pillar aims at making Europe a frontrunner in innovations and SME growth. It will help to develop the innovation landscape in the EU. It can be divided into 3 main parts:

- European Innovation Council
- European innovation ecosystems
- European Institute of Innovation and Technology (EC 2018, EC 2019).

Figure 2 The pillars of Horizon Europe







Source EC (2018) pp. 3.

As for the financing of different pillars, the biggest part of the funding will be dedicated to Pillar 2: 52.7 billion euros, the second biggest amount is for Pillar 1: 25.8 billion euros and Pillar 3 will get 13.5 billion euros from the overall budget (EC 2018).

Horizon 2020 vs Horizon Europe

The 2 framework programmes have many similarities, like in their pillars and priorities but there are differences between them too. If You check Figure 3 you can also recognise that the main pillars are quite similar, although Horizon 2020's Pillar 3 will be a part of Horizon Europe's Pillar 2 and it introduces a new pillar also. But the strategic sectors, the main focus areas are quite similar too.

Figure 4 Horizon 2020 vs Horizon Europe

	HORIZON 2020	vs	HORIZON EUROPE
 PERIOD	2014 - 2020		2021 - 2027
 BUDGET	80 Billion of euros		100 Billion of euros
 PILLARS	Excellence Science Industrial leadership Societal challenges		Open Science Global challenges Open innovation
 STRATEGIC SECTORS	Health Food security Secure, clean & efficient energy Smart & green transport Climate action & environment Secure societies ICT & Space		Health Inclusive and Secure societies Digital & Industry Climate, energy & mobility Food & natural resources

Among the main differences we can mention:

- Supporting breakthrough innovation
- Creating more impact through mission-orientation and citizens' involvement
- Reducing administrative burdens – simpler rules
- Reinforcing openness
- Rationalising the funding landscape (EC 2018)
- Another important differences that Horizon Europe puts more emphasis on innovation.

Questions for self-study

- Please introduce the specific objectives (pillars I and II) or challenges (pillar III) related to the three pillars of Horizon 2020.
- Please introduce the specific objectives related to the three pillars of Horizon Europe.

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Framework Programmes definition: <http://www.jeupiste.eu/horizon-2020-and-around/historical-timeline-framework-programme> and https://en.wikipedia.org/wiki/Framework_Programmes_for_Research_and_Technological_Development

Horizon 2020 vs Horizon Europe (Figure 4): <https://www.pnoconsultants.com/grants/horizon-europe/>

The budget of Horizon 2020 (Figure 1): <https://www2.le.ac.uk/offices/researchsupport/european-funding/horizon-2020/Horizon2020structure.png/view>