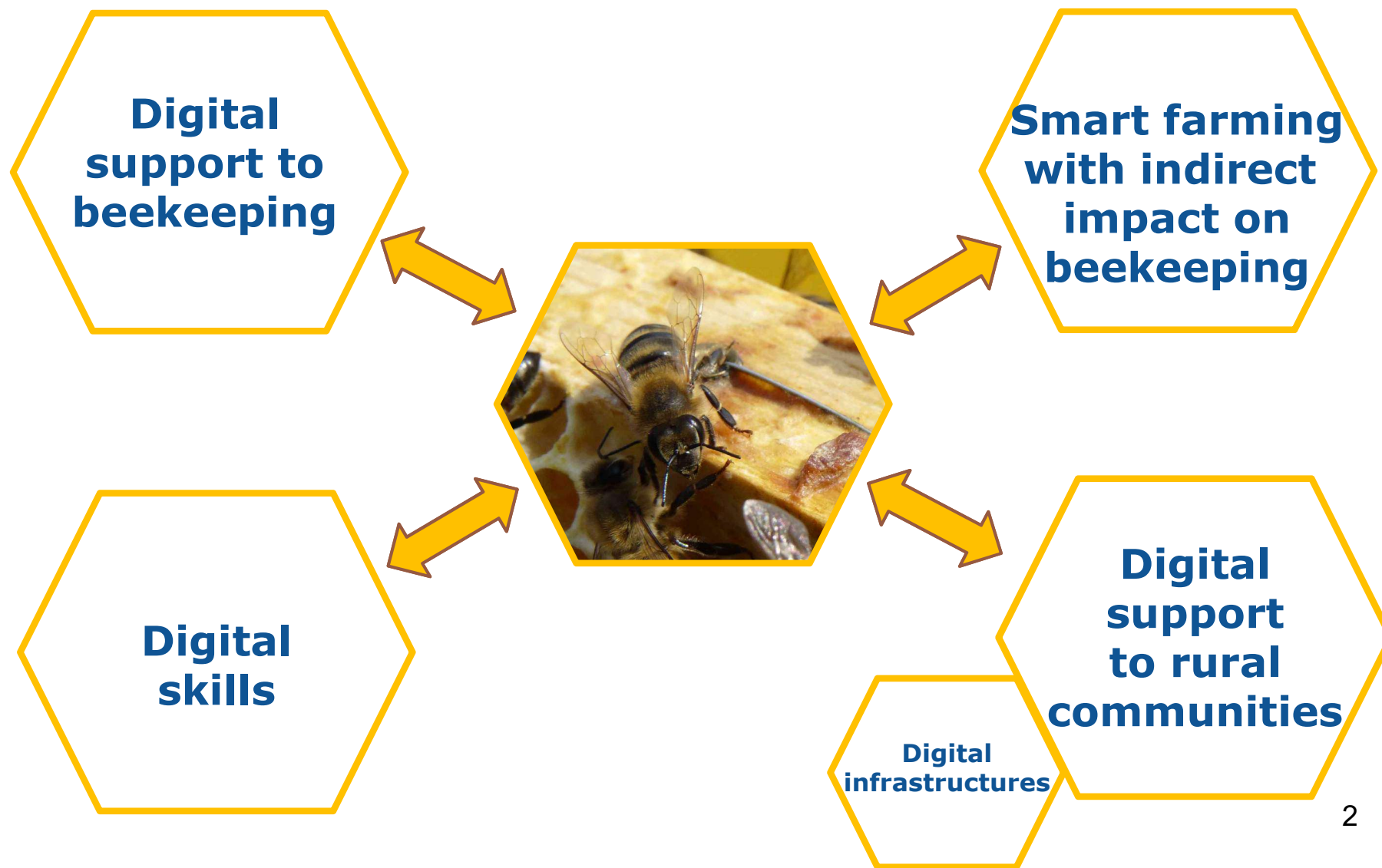# Digital strategy for agriculture with focus on the beekeeping sector

Brussels, 6 November 2019

Valeria Mariano
Research Programme Officer
DG Agriculture and Rural Development
Unit B2 Research and Innovation

Digital support to beekeeping

Smart farming with indirect impact on beekeeping

Digital skills

Digital support to rural communities

Digital infrastructures

EuroCPS – Encore Lab

Sustainable agriculture powered by smart technologies

The Spanish SME Encore Lab, with the help of the Digital Innovation Hub CEA Leti, developed a low cost device that monitors the crops directly on the field through sensors. Information on different parameters can be accessed it by the farmer on the cloud.

Impact

- 35% reduction in use of pesticides
- 50% reduction in water consumption
- This technology has been successfully integrated in Cesens, Encore Lab's flagship product. They expect to increase sales in 10,000 units within five years, boosting revenues and doubling its staff to 20 people.

https://ec.europa.eu/digital-single-market/en/news/sustainable-agriculture-powered-smart-technologies

Digital support to rural communities

Market place for pollination

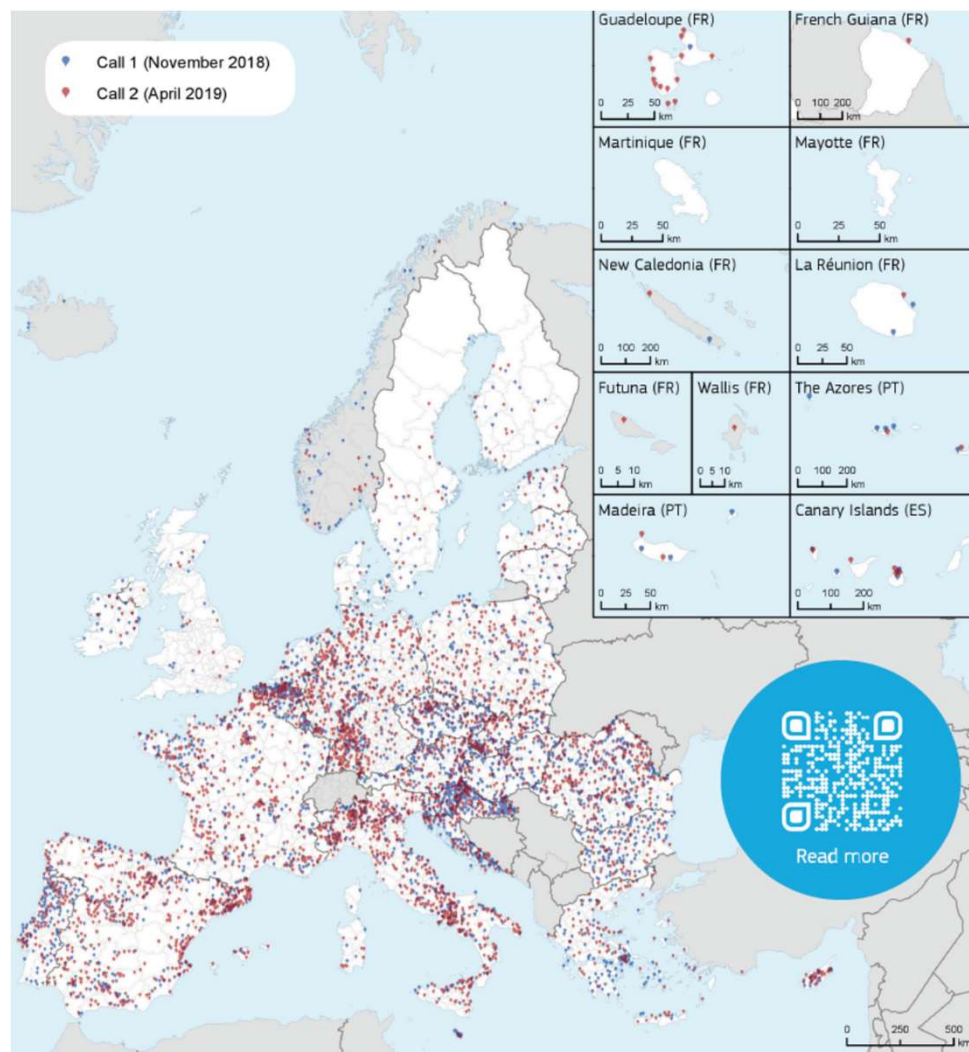**Sharing of best practices**

Short supply chains, locally sourced
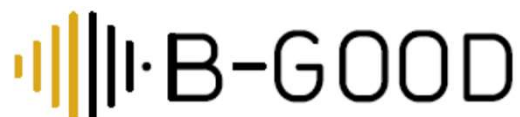
Organise Beekeepers community

European Commission

- Fixed broadband infrastructures (e.g. EAFRD/ERDF)
- Mobile broadband infrastructures

Wifi4EU: successful municipalities
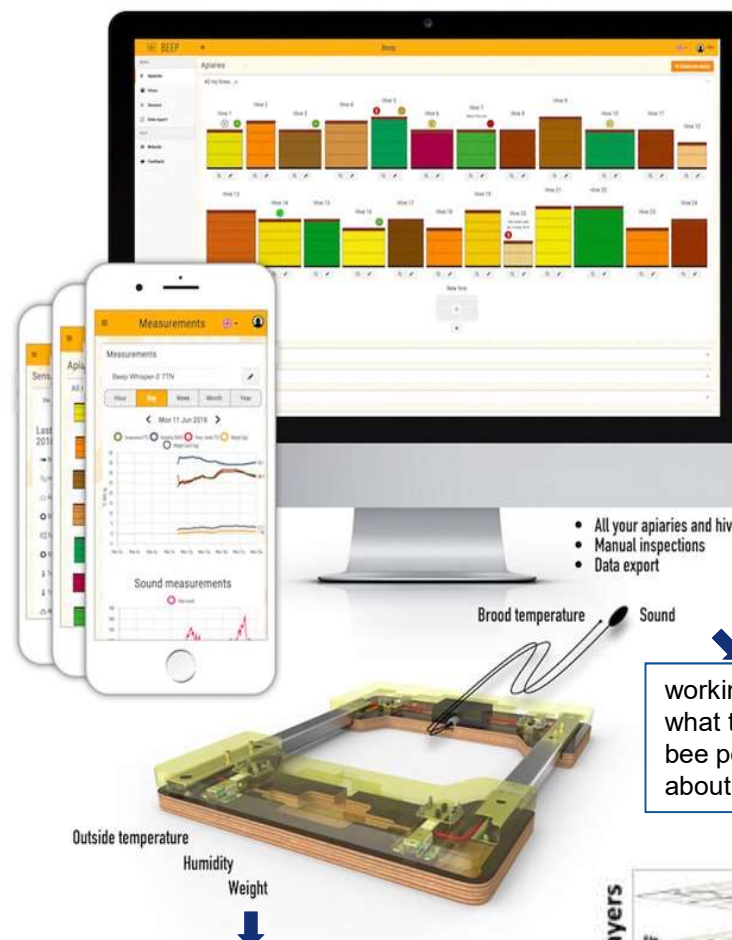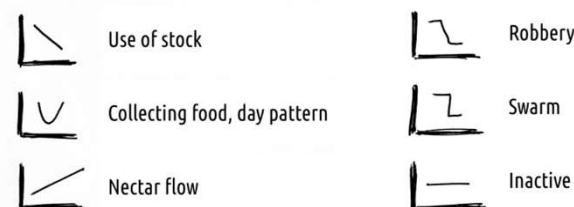
European Commission

·ıllİ·B-GOOD

Aim of the project
to develop a EU-wide bee health and management data platform, in close cooperation with the EU Bee Partnership, which will enable sharing of knowledge between scientists, beekeepers and other stakeholders.

B-GOOD's platform will utilise and further expand the open source BEEP system comprised of a monitoring device and the already functional user-friendly application for digital beekeeping logbooks.

Ultimate goal
to supply beekeepers with a decision-making tool that will provide comprehensive analysis and advice based on the flow of data from the beehives and their environment, including landscape composition and resource availability, agricultural practices and climate.

- All your apiaries and hives
- Manual inspections
- Data export

Brood temperature   Sound

working to learn what the sound of a bee population says about their status.

Outside temperature
Humidity
Weight

Use of stock

Collecting food, day pattern

Nectar flow

Robbery

Swarm

Inactive

GIS Data Layers

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On-going Horizon 2020 projects:
Societal Challenge 2
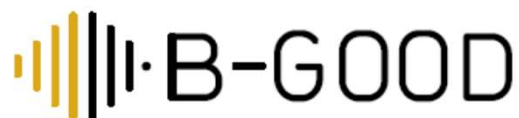
B-GOOD - **Giving Beekeeping Guidance by cOmputatiOnal assisted Decision making -** *€8 million*

https://cordis.europa.eu/project/rcn/222525/factsheet/en

PoshBee - **Pan-european assessment, monitoring, and mitigation Of Stressors on the Health of BEEs (Jun2018-May2023)** –*€9 million*

https://cordis.europa.eu/project/rcn/215953/factsheet/en
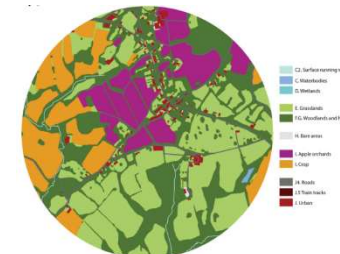
BPRACTICES - **(ERA-NET SUSAN) New indicators and on-farm practices to improve honeybee health in the Aethina Tumida ERA in Europe -** *€ 0,7 million*

Other on-going Horizon 2020 projects

- **Hiveopolis –** Futuristic beehives for a smart metropolis (2019-2024)- **https://cordis.europa.eu/project/rcn/218714/factsheet/en – ES/FET - € 7mio**
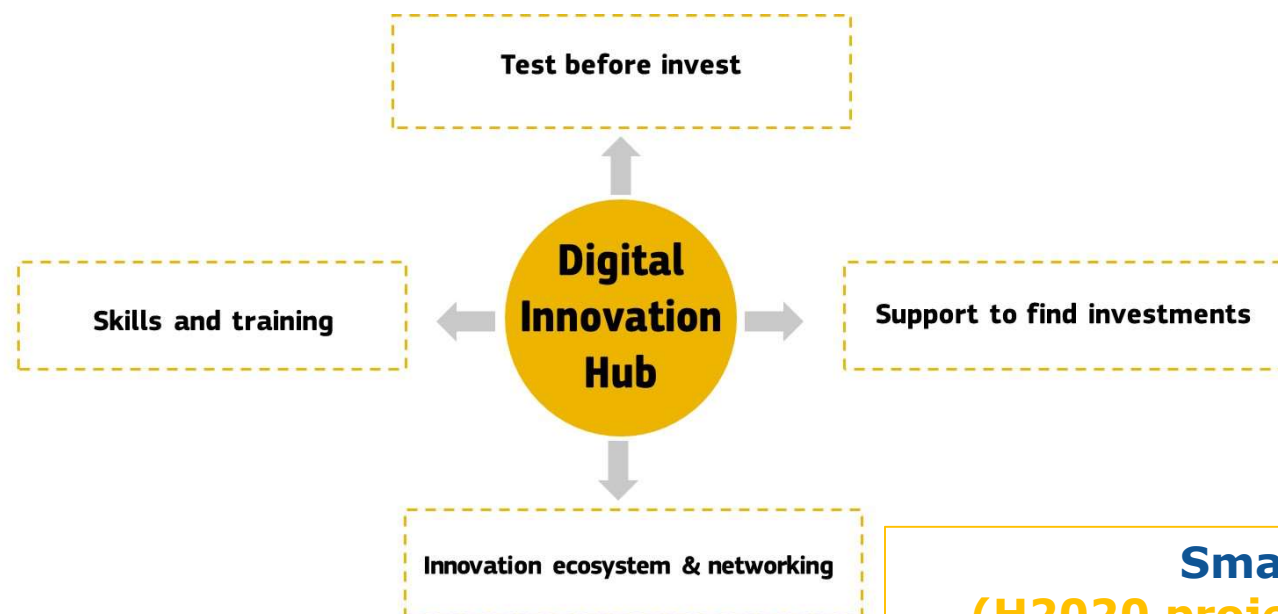
- **SAMS -** International Partnership on Innovation in Smart Apiculture Management Services – (Jan2018-Dec2020) - **https://cordis.europa.eu/project/rcn/216627_en.html - Ind Leadership/ICT - €2mio**

- **IoBee -** Beehive health IoT application to fight Honey Bee Colony Mortality (2017-2020) – **http://cordis.europa.eu/project/rcn/210011_en.html - FTIPilot - €1,43mio**

- **WarmHive -** SMART thermotherapy solution for varroa mite treatment (Jan-Jun2019) - **https://cordis.europa.eu/project/rcn/220042/factsheet/en - LEIT/SME - €0,05mio**

- **BeeHome -** Automated beekeeping platform powered by AI that increases honey production by 50%, reduces labour use by 90%, and reduces colony loss by 80% (Jan-Apr2019)- **https://cordis.europa.eu/project/rcn/220635/factsheet/en - LEIT/SME - €0,05mio**

- **FOG -** Frequency protector generator for honeybees (Jan-Jun 2019) **https://cordis.europa.eu/project/rcn/220056/factsheet/en - LEIT/SME - €0,05mio**

European Commission

Transfer of R&I to beekeepers: the role of **Digital Innovation Hubs**

Test before invest

Skills and training

Digital Innovation Hub

Support to find investments

Innovation ecosystem & networking

SmartAgriHubs
(H2020 project -DG AGRI €20m)
- **Flagship Innovation Experiments & open calls**
- **140 DIHs, objective of adding 260**
- **DIH in LV FIE: Bee Monitoring and Behaviour Prediction**

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CAP /Rural development
(regional/national level)

Farmers

NGOs

Advisors

Agri-business

Operational Group

Researchers

EIP network(s)

Funding for:

OG preparation

OG projects

Innovation support services

HORIZON 2020
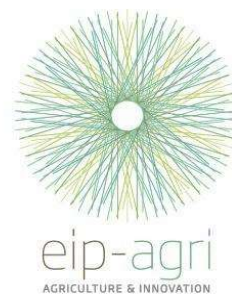
(European projects)

- **Research projects**
  (knowledge base)

- **Multi-actor projects and thematic networks**
  (interactive innovation)

OPERATIONAL GROUP

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OG projects on Beekeeping
Non-exhaustive list (September 2019)

● **Beekeeping / pollinators and farming practices**

Association of fruit production and beekeeping (FR-Martinique); Bee-friendly farming (NL); Forage management and pollinators (UK)

● **Nomadic beekeeping and monitoring**

Transhumance practices (FR); Remote beehive monitoring (IT)

● **Bee health**

Vespa velutina threats (ES); Varroa-resistant breeding (DE); Varroa detection (SE)

● **Bee products**

Honey-based alternatives to sweeteners (ES); Diversification of beekeeping activities (PT)
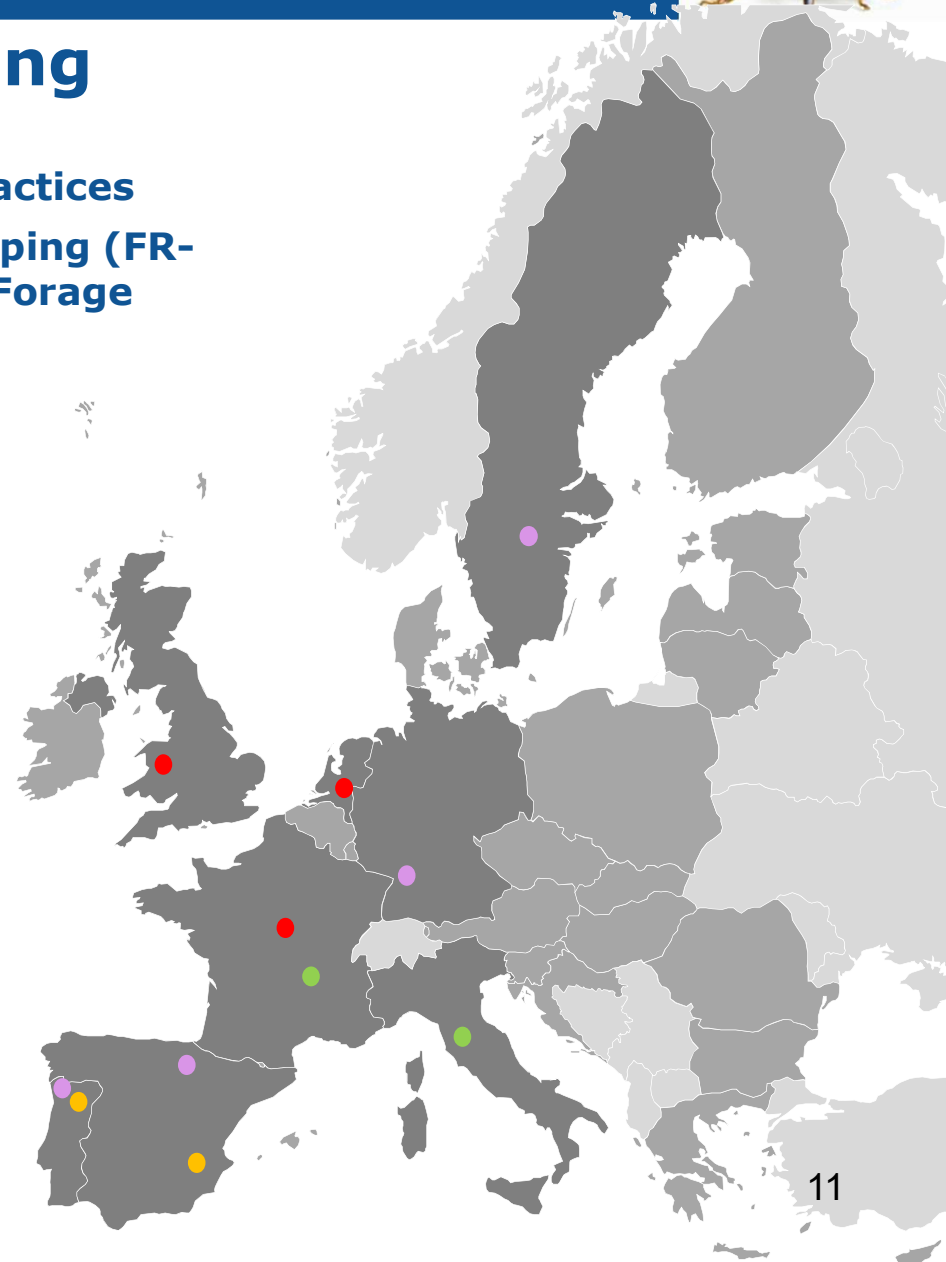
Look for more:

EIP-AGRI project database:
https://ec.europa.eu/eip/agriculture/en/my-eip-agri/operational-groups/projects

National OG databases:
https://ec.europa.eu/eip/agriculture/en/links-existing-operational-groups

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EIP Focus Group "Bee health and sustainable beekeeping"

HOW TO ENSURE THE SUSTAINABILITY OF BEEKEEPING IN THE FACE OF CHALLENGES LINKED TO PESTS AND DISEASES, INTENSIFICATION OF AGRICULTURE AND CLIMATE CHANGE?

- **Identify sustainable apicultural practices and tools** to cope with challenges posed by climate change and to better control pest and diseases, including harmful invasive species (e.G. Vespa velutina).

- **Identify sustainable agricultural practices** (at plot, farm and landscape level) **influencing beekeeping**, including non-chemical alternatives for plant pest and disease prevention and control (i.e. preventive agronomic practices such as crop rotation and use of biological control).

- **Harvest the existing knowledge** on ways to monitor the effect of environmental and climatic conditions, beekeeping practices and agricultural practices on bee health and production.

- Identify remaining research needs from practice and **propose possible directions for further research**.

- **Propose priorities for innovative actions** by suggesting ideas for operational groups or other project formats to test solutions and opportunities and ways to exchange the practical knowledge gathered beyond the focus group.

#beehealth #sustainable #beekeeping

eip-agri
AGRICULTURE & INNOVATION

funded by the European Commission

Objective: *ensure that **Europe** **drives** **the digital transformation** of society and economy, bringing **benefits to all** **citizens and businesses***

More specifically to:

- Reinforce the EU's digital capacities
    - (computing, data, cybersecurity, AI,..)

- Ensure their widest possible roll out and maximise their benefits

- Prepare for and lead the development of next generation technologies

- Build a world-leading connectivity infrastructure

- Support creators and ensure the widespread distribution of their works

European Commission

Digital Europe
Capacities & roll out

1. High Performance Computing
2. Artificial Intelligence
3. Cybersecurity
4. Advanced digital skills
5. **Digital transformation** and interoperability

Digital in Horizon Europe
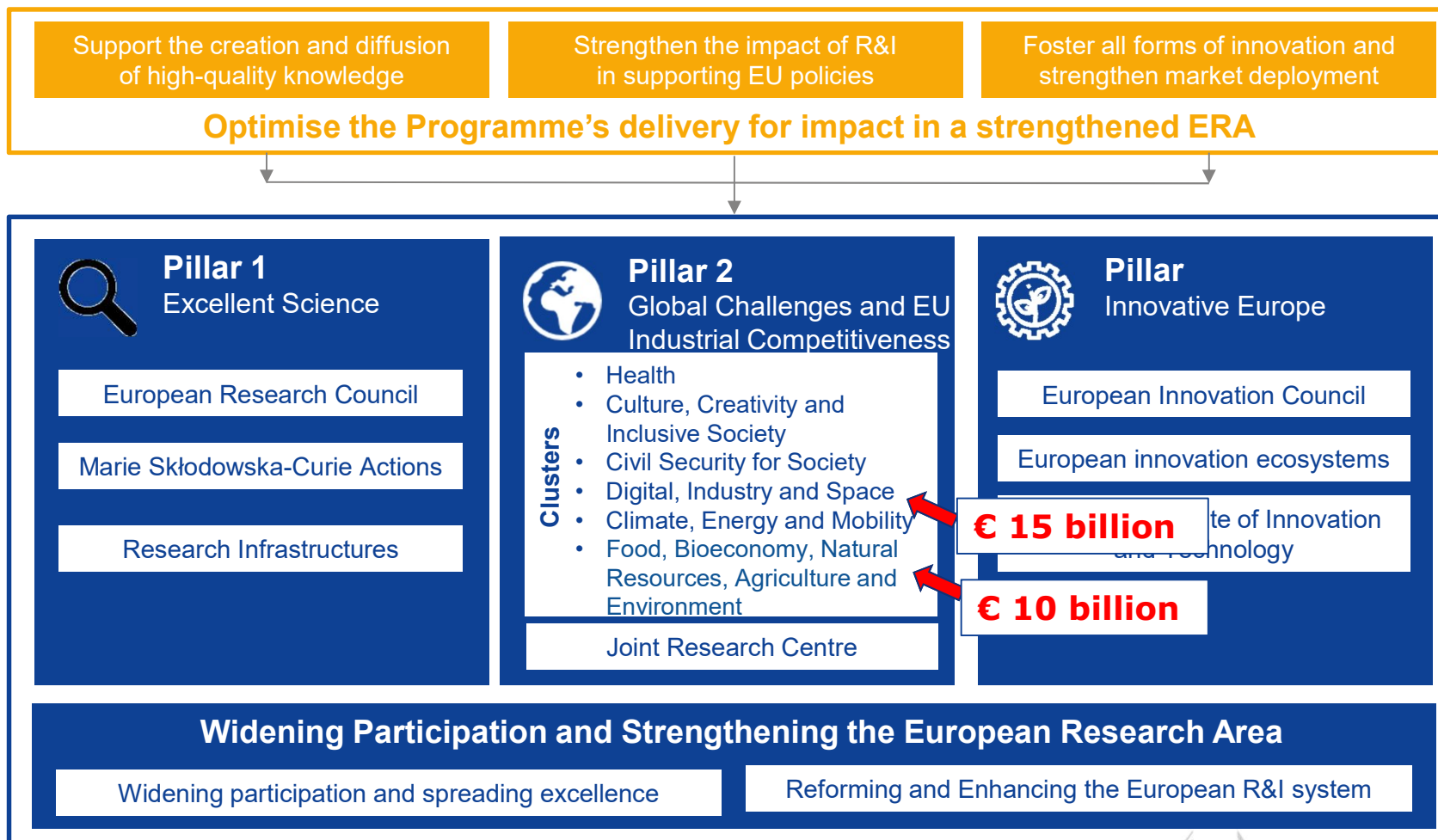### R&I

1. **Digital under "global challenges"**
   - Digital and industry cluster
   - Digital in other clusters – security, health, mobility, food, environment,..
2. Open Innovation
3. Research Infrastructure under Open Science

Invest EU
Research, innovation & digitisation

European Agricultural Rural Development Fund - European Regional Development Fund / Cohesion Fund

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Horizon Europe: the next research and innovation framework programme 2021-2027

Specific objectives of the Programme

Support the creation and diffusion of high-quality knowledge	Strengthen the impact of R&I in supporting EU policies	Foster all forms of innovation and strengthen market deployment

Optimise the Programme's delivery for impact in a strengthened ERA

Pillar 1
Excellent Science

- European Research Council
- Marie Skłodowska-Curie Actions
- Research Infrastructures

Pillar 2
Global Challenges and EU Industrial Competitiveness

Clusters
- Health
- Culture, Creativity and Inclusive Society
- Civil Security for Society
- Digital, Industry and Space
- Climate, Energy and Mobility
- Food, Bioeconomy, Natural Resources, Agriculture and Environment

Joint Research Centre

€ 15 billion

€ 10 billion

Pillar
Innovative Europe

- European Innovation Council
- European innovation ecosystems
- ~~te of Innovation~~ ~~and Technology~~

Widening Participation and Strengthening the European Research Area

Widening participation and spreading excellence	Reforming and Enhancing the European R&I system

https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme_en

European Commission

CAP post 2020
More digitalisation and innovation

THE 9 CAP OBJECTIVES

- INCREASE COMPETITIVENESS
- REBALANCE POWER IN FOOD CHAIN
- CLIMATE CHANGE ACTION
- ENSURE FAIR INCOME
- ENVIRONMENTAL CARE
- PROTECT FOOD & HEALTH QUALITY
- PRESERVE LANDSCAPES & BIODIVERSITY
- VIBRANT RURAL AREAS
- SUPPORT GENERATIONAL RENEWAL

CAP post 2020
More digitalisation and innovation

THE 9 CAP OBJECTIVES

INCREASE COMPETITIVENESS

REBALANCE POWER IN FOOD CHAIN

ENSURE FAIR INCOME

CLIMATE CHANGE ACTION

KNOWLEDGE, INNOVATION & DIGITALISATION

ENVIRONMENTAL CARE

PROTECT FOOD & HEALTH QUALITY

PRESERVE LANDSCAPES & BIODIVERSITY

VIBRANT RURAL AREAS

SUPPORT GENERATIONAL RENEWAL

Cross-cutting objective

...modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake (Art. 5)

- **CAP post 2020:**

https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en

- **Horizon Europe (HE)**

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

- **Declaration ''A smart and sustainable digital future for European agriculture and rural areas''**

https://ec.europa.eu/digital-single-market/en/news/eu-member-states-join-forces-digitalisation-european-agriculture-and-rural-areas

- **Digitising European Industry (DEI)**

https://ec.europa.eu/digital-single-market/en/pillars-digitising-european-industry-initiative

- **Digital Europe Programme (DEP)**

https://ec.europa.eu/digital-single-market/en/news/commission-welcomes-agreement-digital-europe-programme-2021-2027

- **New cohesion policy**

https://ec.europa.eu/regional_policy/en/2021_2027/

- **Digital Innovation Hubs**

https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs

- **Catalogue of Digital Innovation Hubs**

http://s3platform.jrc.ec.europa.eu/digital-innovation-hubs-tool

Thank you for your attention!

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European Commission

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Unit B2 Research and Innovation unit

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More about agricultural research and innovation:

http://ec.europa.eu/agriculture/research-innovation/index_en.htm

www.eip-agri.eu

Special thanks to Yves Paindaveine –DG CNECT for providing input for the presentation