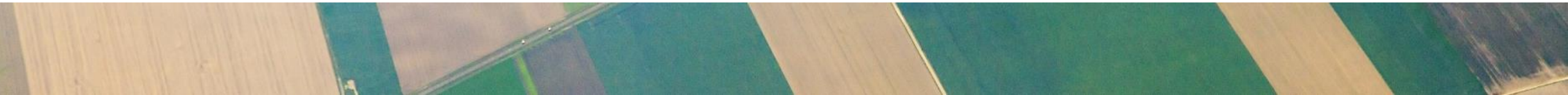
Innovation Agenda Workshop

September 6th 2023, Brussels

Agenda

Time	Content	Speakers
9:30 – 9:40	Welcome & Presentation of MEF4CAP project, aim of this workshop	Marcel van Asseldonk
9:40 –10:10	Presentation of ME4CAP's roadmap & introduction to the Innovation Agenda	Tomaso Ceccarelli and Rob Lokers
10:10 –11:25	Reflections of the following panel members/stakeholders: Managing authorities; Farmers' organisations; Paying agencies; Environmental organisations/NGOs; European Commission.	David Sanchez, FEGA- National Ministry of Agriculture, Spain Maria Skovager Østergaard, Copa Cogeca Mark Middendorp, RVO, The Netherlands Adrien De Pierrepont, Oréade-Brèche Samir El-Taghadouini, DG AGRI
11:25 –11:30	Short break	
11:30 –12:30	Interactive session/discussion to identify and solidify elements of the roadmap and required innovations	Rob Lokers and Tomaso Ceccarelli
12:30 – 13:30	Lunch	



Consortium

Background

Agricultural statistics

Advisory services

ICT

Earth observation

Farm economics

Monitoring

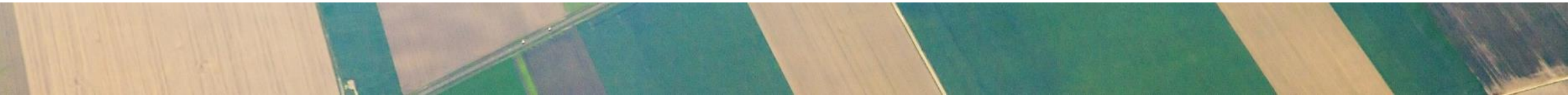
Policy evaluation

Farm cooperatives

Citizen organisations

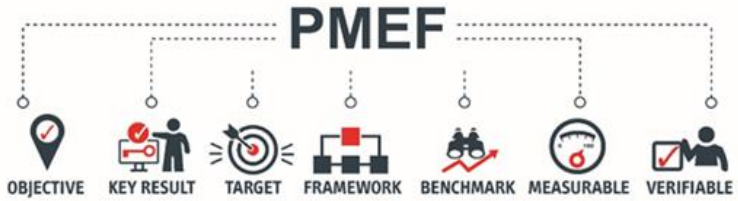
Direction of the new CAP

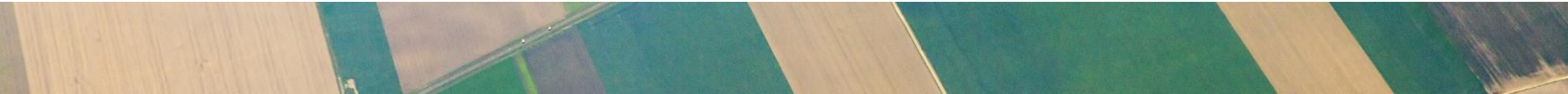
- CAP direction influenced by **emerging sustainability agenda**
  - Global, EU, national policy drivers & various stakeholder perspectives
  - EU Farm to Fork, EU Biodiversity Strategy, UN SDGs & Paris Climate Agreement
- **Transformative change required** – changing societal expectations
  - Civil society seeking the promotion of environmental sustainability in EU policy
  - Agri-food sector seeking a slower pace for change – time to adjust
- These factors have **motivated the revision of CAP objectives**
  - **Environmental and Societal goals in particular**



Implications for monitoring & evaluation

- Shift from **compliance to performance**
  - Compliance with actions or regulations (original approach)
  - Performance, or achievement of specific objectives (new delivery model)
- MS CAP **Strategic Plans -** greater autonomy at MS level
  - **But commonality with overarching EU indicator set**
- Existing indicators - considerable, but…
  - Not always fit for purpose – in need of update (also granularity)
- **Additional environmental and social data a particular priority**
  - GHGs, biodiversity, water, organics, pesticides, fertiliser usage etc.
  - Quality of life, gender issues and animal welfare etc.
- **Economic data** – some gaps remain
  - e.g. little information on use of risk management tools



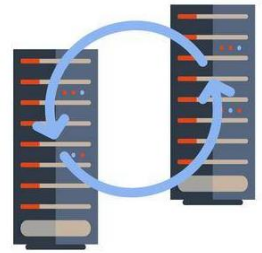


Impacts for administrators & data providers

- **Costs and benefits**
  - For administrators and data providers (farmers)
  - Obstacles, but also opportunities.
  - These will differ across Member States.
- **Increased opportunity** to produce relevant indicators
  - Multiple sources of agricultural data
- **Evolving technology**
  - For data collection, processing, management, analysis
- Potential for **improved integration** of data sources
  - e.g. IACS, FADN/FSDN, FMIS, LPIS, farm machinery/sensors.

Data utilisation

- Strong case for the **benefits of data sharing**
  - Make better use of existing data
  - Reduce collection cost and burden
  - Richer data analysis possible



- But **obstacles to data integration**
  - Issues around interoperability, trust, sensitivity and potential legal impediments

- Policy has/should influence decision making at the farm level
  - Indicators should reveal farm specific differences
- **Farmer buy-in is crucial** - uptake of sustainable practices
  - Data must be used in a way that returns benefits to farmers too
  - Role for farm advisory in the demonstration of such benefits, but heterogeneous in MSs

MEF4CAP objective

Wide **range of needs** and **increasing amount of data** in agri-food sector

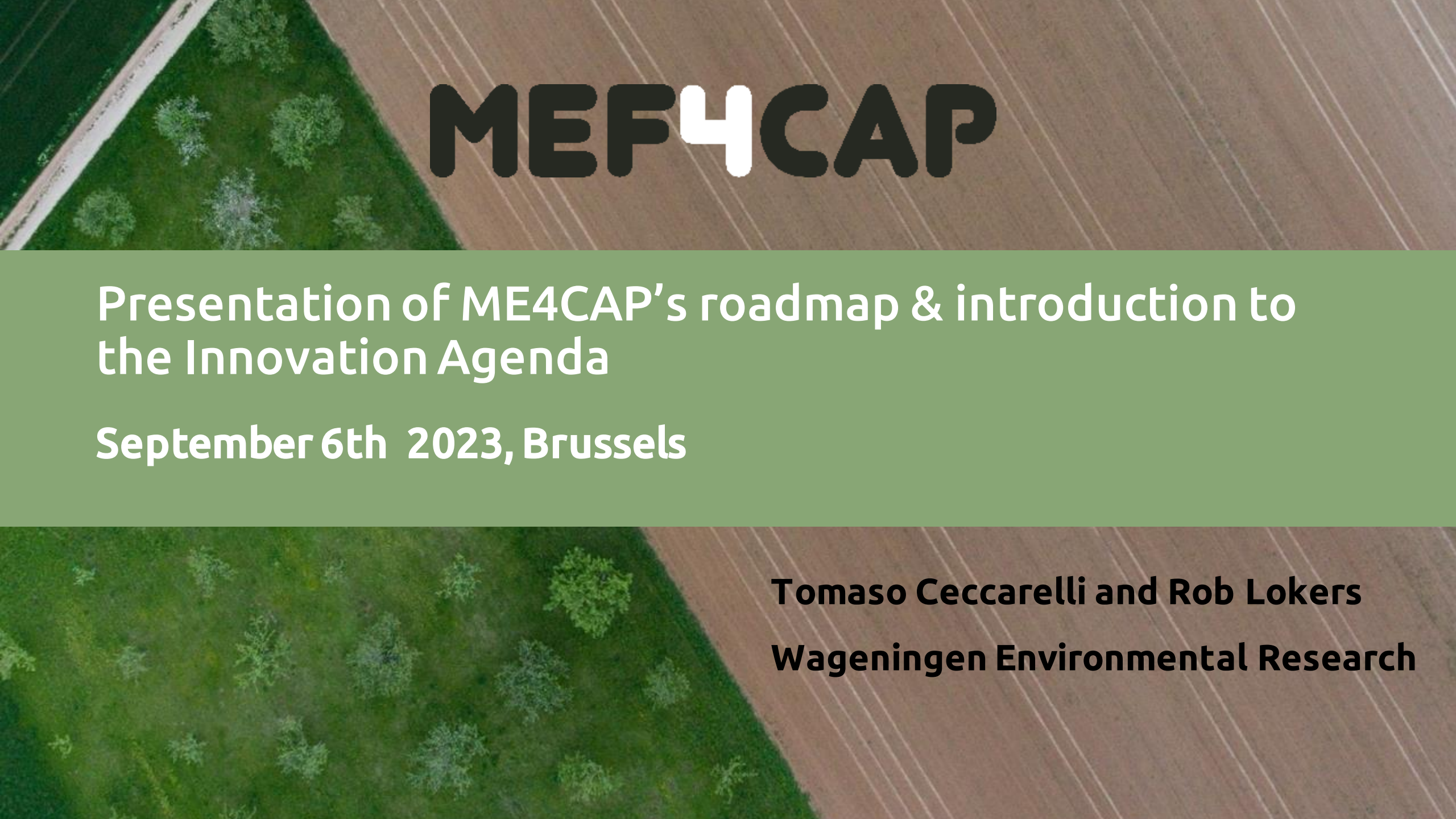
MEF4CAP will deliver a roadmap for future monitoring and evaluation

- where the needs of different stakeholders are identified
- and the potential of different technologies is (fully) exploited
- while minimizing the associated cost and administrative burden

Objectives Innovation Agenda Workshop

- Follow-up of MEF4CAP reflection workshop
- Present and discuss the elements of MEF4CAP's
  - **Innovation Agenda**
  - also based on its **Roadmap**

- Interactive approach
  - Reflections of a **panel**
  - Interactive session with **all participants**



Presentation of ME4CAP's roadmap & introduction to the Innovation Agenda

September 6th 2023, Brussels

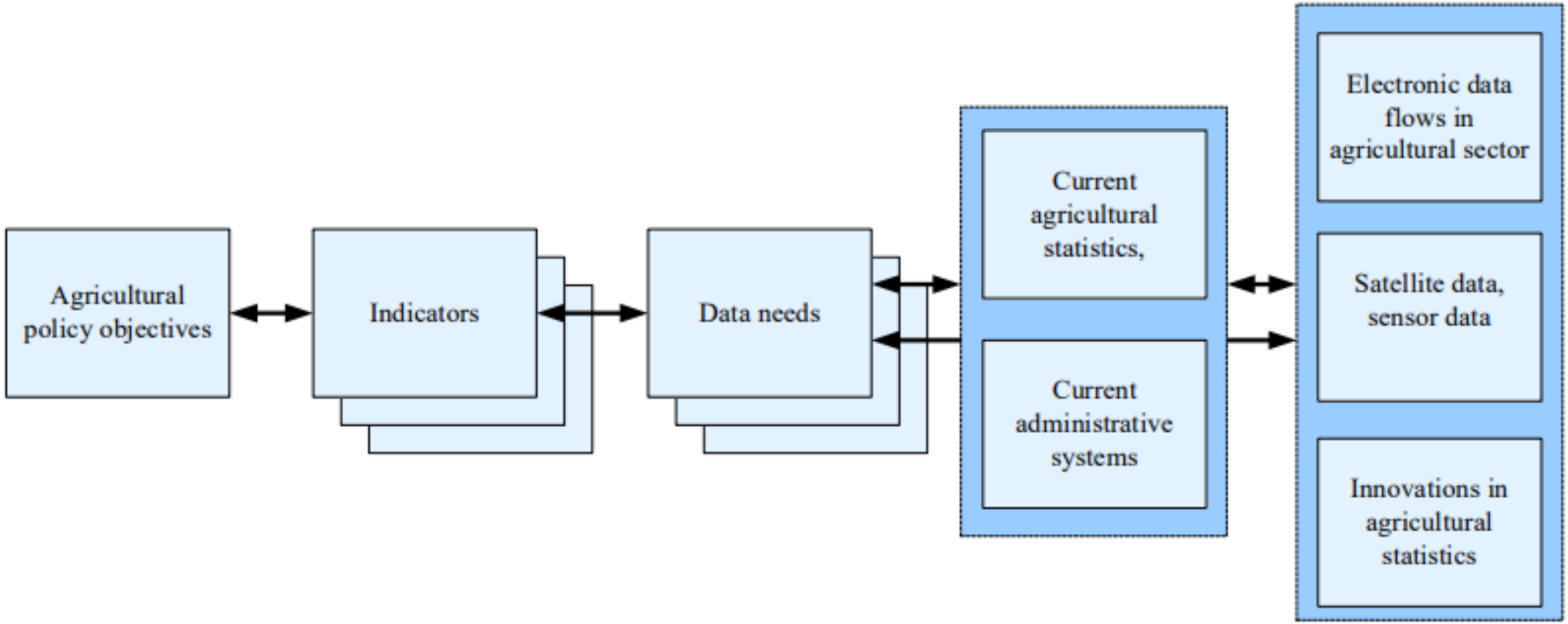
Tomaso Ceccarelli and Rob Lokers

Wageningen Environmental Research

Contents

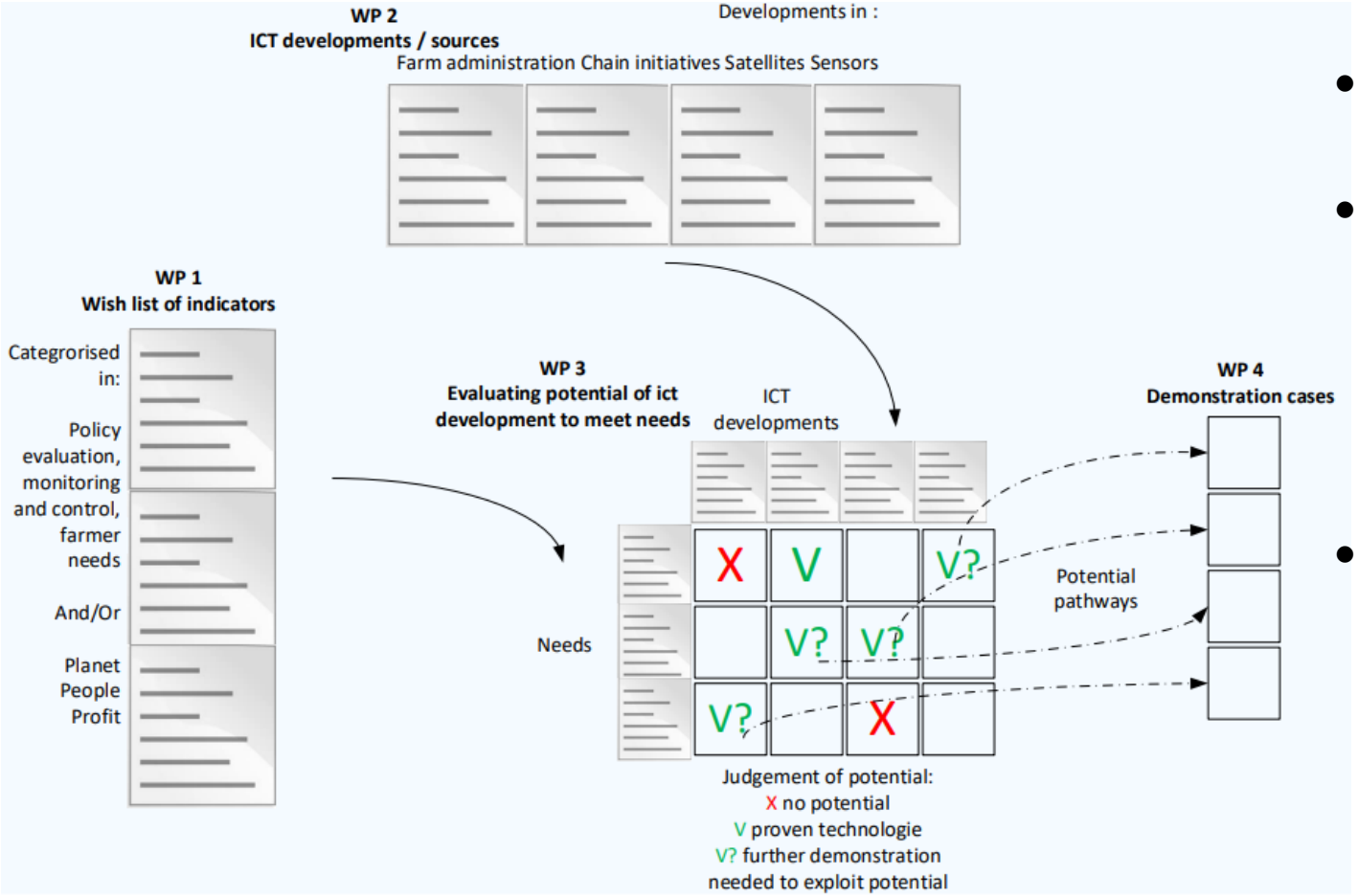
- Reminder of the MEF4CAP general framework and pathways
- Proposed roadmap for future M&E of agricultural policies
- Trajectories within the proposed EU Roadmap
- The Demo Cases as a test bed for the Roadmap
- Link to the Innovation Agenda: innovation challenges and potential actions for policies

Project overall framework



Pathways

Crossing **indicators wish list** and **data delivering technologies**



- **No potential**: No technology has been identified
- **Some potential**: don't directly achieve the metric of the indicator, but could deliver suitable information when additional processes are applied.
- **Potential**: the technologies involved in the pathway provides data for the indicator requirements,

A roadmap for future M&E of agricultural policies

Roadmap:

the place where the needs of different stakeholders are met and the full potential of different approaches are assessed and exploited, minimizing costs and administrative burdens and maximizing the value of the data collected

a representation (narrative, visual) that ties together a strategy ("why"), the actions needed to achieve the intended goals ("what"), the modalities (“how “) and a timeline for completion and monitoring ("when").

While the answers to the **“why”** (the very M&E of EU agricultural policy) and the **"when"** (the post-2027 CAP) are known, the ways and the specific actions to get there (the **“what”** and **“how**”) are only partially known and are one of the questions MEF4CAP is expected to contribute to

As a foundation for the Roadmap, MEF4CAP has:

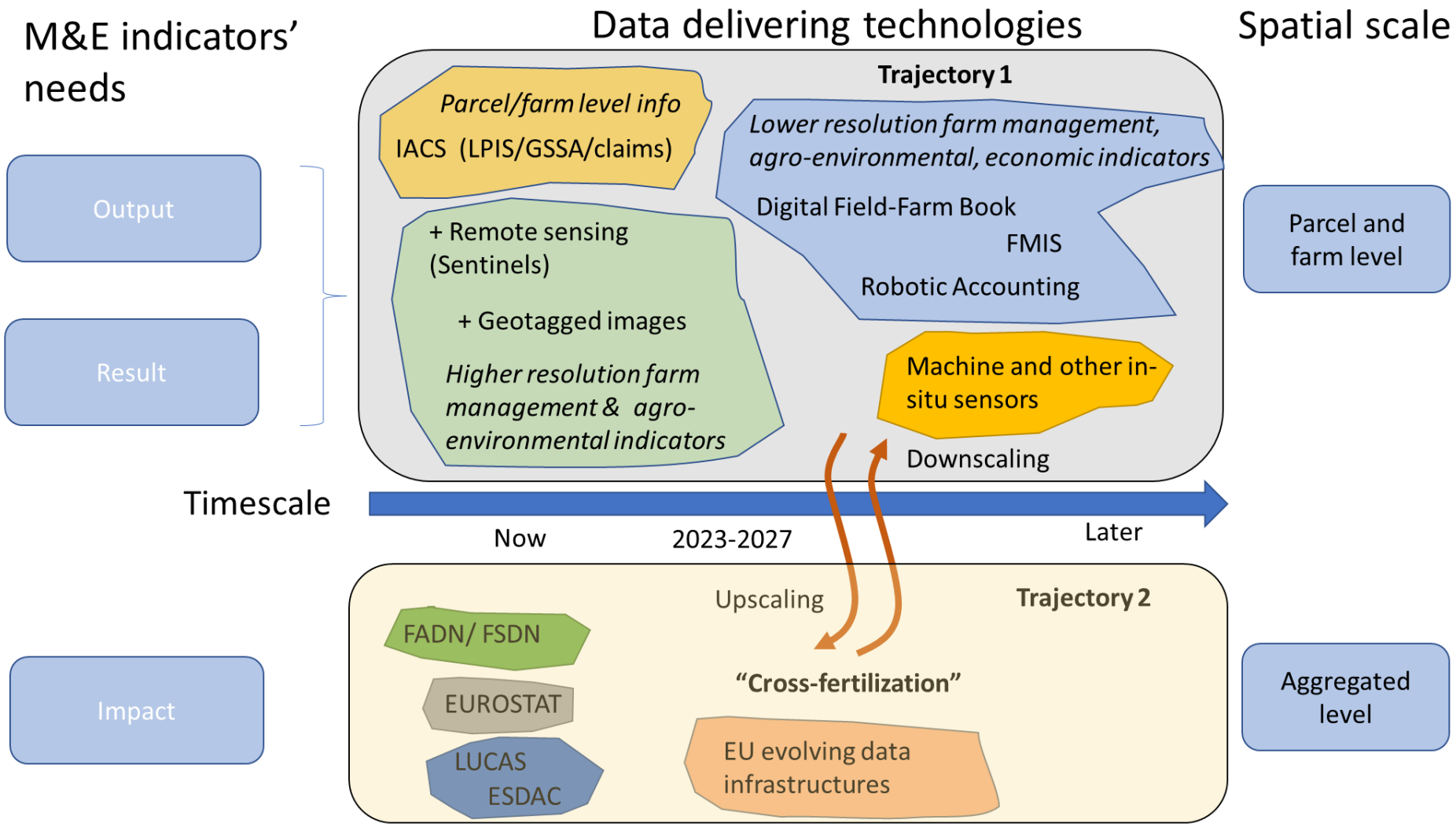
- **Analysed policy M&E objectives**, deriving **priority indicators**
- Assessed **existing** and **new data delivering technologies** potentially supporting data needs of these indicators
- Defined **innovative *pathways*** matching priority indicators and technologies
- Tested and evaluated promising technologies with stakeholders through **Demonstration Cases (DC),** applying different technologies to several farming landscapes and Member States

Key outcomes

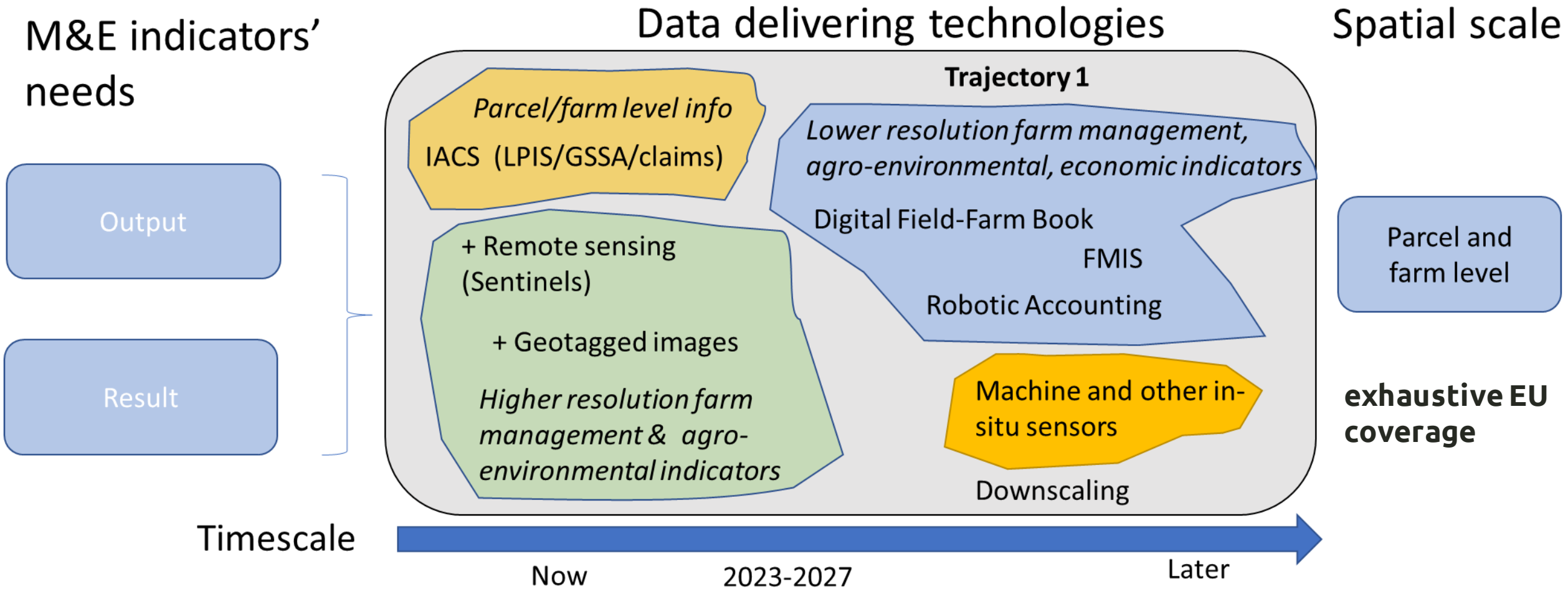
- Evolving/broadening policy needs lead to **new demands for M&E**: specific **gap on agri-environmental indicators, data and capacity**
- **Value** of an **indicator framework with a high level of spatial details**, that can be scaled up to provide aggregate level information of policy impacts
- There are **promising technologies** that can deliver such data: **no one-fits-all approach** but a **synergetic/complementary use of available technologies and relevant data streams**
- New M&E data streams go hand in hand with: 1) **improving data interoperability**, facilitating data sharing technologies protecting privacy and secrecy and **creating trust with data holders, especially farmers,** through improved data sovereignty, and 2) **reducing burden** through smart automation

Trajectories within the roadmap

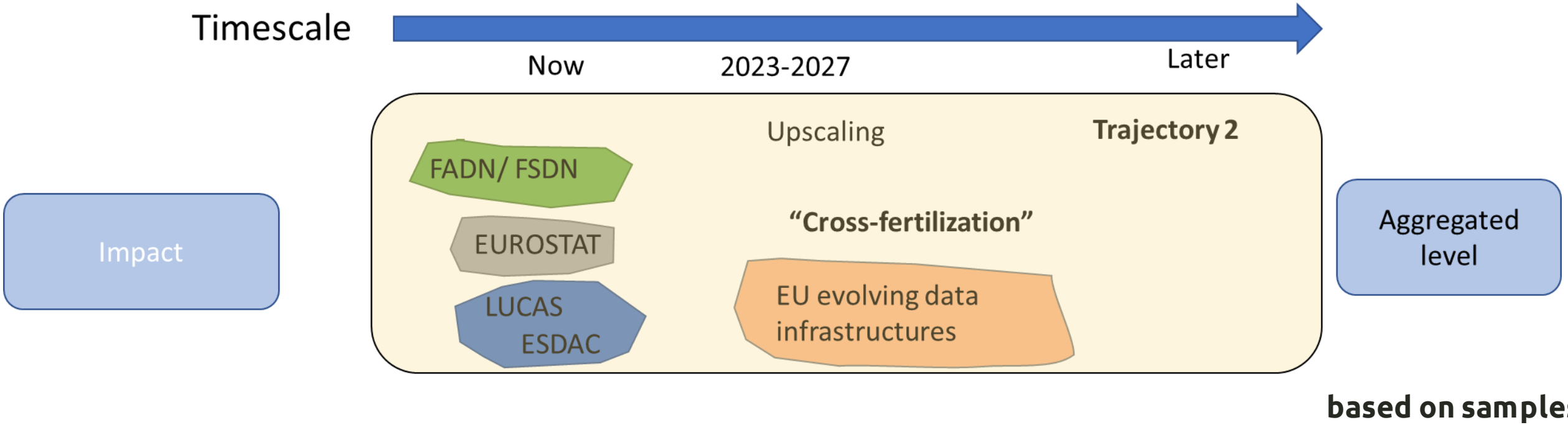
We define an innovation trajectory as a **"plausible course of action" in the future EU CAP monitoring roadmap**



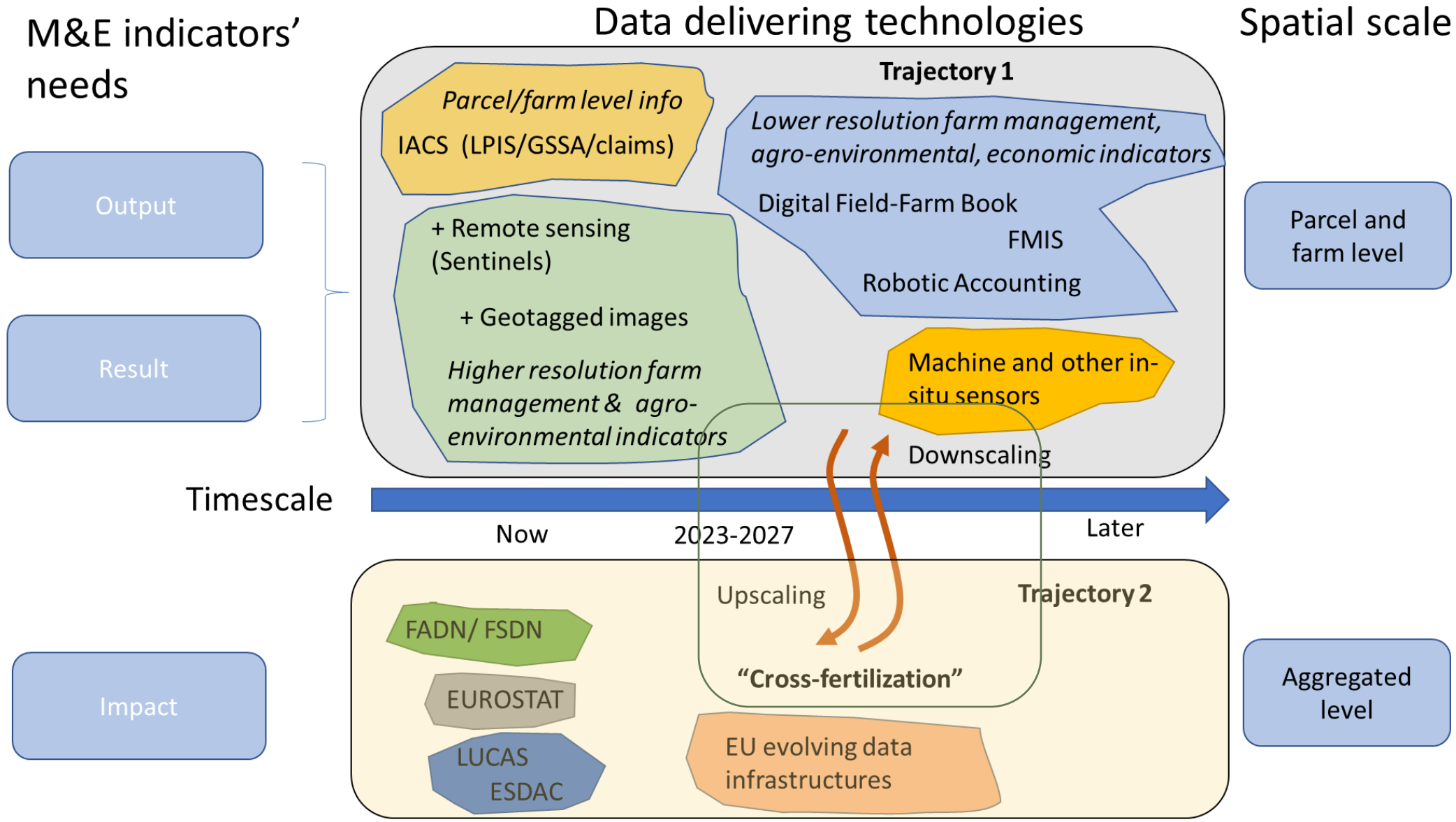
Trajectory 1



Trajectory 2



Cross-fertilizations…



The Demo Cases as a test bed for the Roadmap

- **DC 1, the Netherlands, robotic accounting and sensor data for sustainability indicators with low administrative burden**

- **DC 1, Poland,** Integrating and digitalizing administrative data in FADN to support efficient and sustainable fertilization

- **DC 1, Ireland,** Modernising farm data collection and exploring new ways of visualising farm data

- **DC 2, Spain,** Use of digital information flows in the agri-food sector

DC 2, Greece, Integrating open-source satellite data with farm level data (Advisors and Farmers' perspectives)

DC 4, Spain, Integrating open-source satellite data with farm level data

The Demo Cases in a nutshell

- **DC 1, the Netherlands,** investigated the use of robotic accounting and sensor data to derive farm level agro-environmental indicators, lowering at the same time the administrative burden for farmers.

- **DC 1, Poland,** looked at how to digitalize and integrate CAP with FADN data to support efficient and sustainable fertilization practices.

- **DC 1, Ireland,** worked on modernising farm data collection, specifically for the dairy sector and exploring new ways of visualising them, and developing digital data flows for the Farm Accountancy Data Network (FADN).

The Demo Cases in a nutshell

- **DC 2, Greece,** developed a "data aggregation platform" integrating open-source satellite data with farm level data (a digital registry for recording agricultural activities) to provide advice to farmers and clusters of farmers and evidence of the applied agricultural practices and their impact.

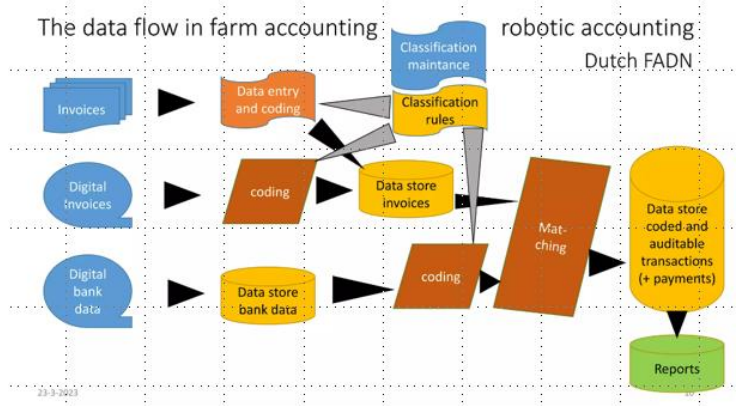
- **DC 2, Spain,** contributed to the development of the "digital farm book", a tool that allows farmers to keep record of input use and management practices. Its use will be made compulsory in the context of the Agrarian Holding Information System (SIEX). The DC has also investigated aspects related to drivers and barriers for adoption by farmers, their organisations and advisors.

- **DC 4, Spain,** tested modalities for integrating open-source satellite data, LPIS and farm level data acquired through GPS trackers/collars sensors, for sustainable sheep herd management also in view of specific eco-schemes

Three examples: DC 1, Netherlands

Main scope

- investigating the use of robotic accounting and sensor data to derive farm level agro-environmental indicators, lowering at the same time the administrative burden for farmers.



Main drivers

- Farmers want less **administrative burdens**
- Many farmers are **interested in their emissions** (if not yet sanctioned because of them)
- Farmers want **control over their data**
- Accountants want digital invoices in a tight labour market
- Software companies might be interested in new features
- **Food companies and banks are interested** in the farm data for several reasons.

Main barriers

The full socio-economic environment of the farm (Up- and downstream industries, software companies, accountants etc.) **has to adopt the technology of digitized invoices in a certain time frame**. Farmers need an **external demand** (organic certification, CAP eco-schemes, private eco-labelling schemes, CSRD-scope 3 demands from retail) for reporting environmental performance.

DC 1, Netherlands

Possible actions

•**use of sensor data on emissions:** regional sensor networks to gain knowledge on the interpretation of the data and relating this to actions of the farmers (or other emitters).

•**for digitizing invoices and rolling out robotic accounting:** collective ones to create **a shared vision / mission of sector data management.** With **leadership by e.g., a sector organization, a farmers' organization, or the government**.

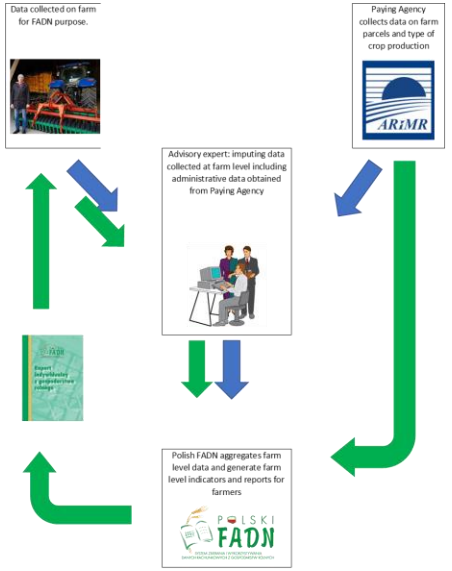
Scalability

•**Applicable in principle** to all commercial farms in the EU that undertake digital invoicing, **except Very small farms** (e.g. with sales less than € 25,000.-) that sometimes have no bank account or smart phone and, perhaps, less attracted by this solution and **Large agro-companies** that use enterprise resource planning (ERP) already

DC 1, Poland

Main scope

- **DC 1, Poland,** looked at how to digitize and integrate CAP with FADN data to support efficient and sustainable fertilization practices.



Main drivers

•**Participating farmers,** regardless of the scale and type, are interested in improving economic results. New indicators would help them to **optimise the use of mineral fertilisers,** given the availability of more precise (plot level) data. This would lead to systematic monitoring of fertiliser use and optimisation of costs. It would also help in the long term to justify a broad application of catch crops for reducing nutrient leaching.

Main barriers

•**Farmers ability to correctly interpret** new indicator values. Adjustment of doses needs **experts' assistance**
•**Trust related:** values may suggest overuse of fertiliser and result in farmer **unwillingness to provide data** in the future
•Collection of more accurate data on fertiliser application at plot level is a significant **extra burden for farmer.**

DC 1, Poland

Possible actions

•**Demonstration of the future economic benefits of improved fertiliser management with the support of new indicators** is likely to encourage farmers to undertake the additional effort required. Advisors that assist farmers with FADN accountancy could help explain to farmers what the potential benefits of new indicators are. Similarly, they could help in the interpretation of the new indicators' values.

•**Advisors** that participated in the national workshop **expressed the need for training to support farmers with new indicators interpretation.** Further adoption of the advanced technologies for the direct transfer of digital data to FADN is also a challenge for advisors.

Scalability

•On the one hand, the majority of small farmers are rather disinterested in undertaking heavy investments while the problem of succession exists for their farms. On the other hand, in some large farms advanced technologies supporting fertilisation management (e.g. machinery equipped with technologies automatically recording and transferring data on fertiliser application at plot level for farm management purposes) are already in use. **Deepening of the divide ?**

DC 2, Spain

Main scope

- contribute to the development of the "digital farm book", to keep record of input use and management practices. Made compulsory in the context of the Agrarian Holding Information System (SIEX). The DC has also investigated drivers and barriers for adoption by farmers, their organisations and advisors.

Main drivers

•main one is the need to **comply with administrative regulations**
•moreover, helpful to **improve data analysis to support decision making** (in the mid to long term),
•**benchmarking of farms** for improvement,
•**tailored farm advice**
•improvement of **farm management performance** and thus, economics (mid to long term).
•**attracting young people** to the sector.

Main barriers

•**administrative burdens**
•**lack of training**
•**farmers'age**
•lack of awareness of digital technologies
•Limited **internet connection** in rural areas
•farmer's **understanding that data will be used for control rather than policy improvements**.

DC 2, Spain

Possible actions

•Technical advisory services and government to provide **training courses with case studies** to familiarize farmers with information capture and handling of technological tools

•Administrative burden could be lessened **through the support of the cooperatives' advisory services,** which would help farmers with the management of the digital farm book.

•**limited internet connection** in rural areas, more investment in infrastructure is needed, which could be covered mainly by the government and private initiatives

•**communication strategies** to express benefits farmers can obtain from data sharing. From the cooperatives side, agreement established where it is specified that the farmers are owners of the data and can unsubscribe to the system at any time, thus protecting their privacy.

Scalability

•Spain: **first EU country to require its farmers to implement a digital farm book**. This is also expected to happen in most EU Member States in the years to come. Its experience could be very useful for the adoption of similar regulations for other member states. The DC attempted to develop a basic yet complete tool which is **in principle adapted to any farmer/farm type** (but see digital skills).

Mentimeter session on the Roadmap

Panel discussion

Reflections from the panel members:

- David Sanchez, FEGA- National Ministry of Agriculture, Spain
- Maria Skovager Østergaard, Copa Cogeca
- Mark Middendorp, RVO, The Netherlands
- Adrien De Pierrepont, Oréade-Brèche
- Samir El-Taghadouini, DG AGRI

Questions to the panel

Which elements of the Roadmap reflect the future prospects well and which do not.

If not, what improvements do you suggest from the point of view of your organization ?

Towards an Innovation Agenda

- Objective: 4-6 Innovation topics
- Preparing for post 2027 M&E of agricultural policies
- Linked to current M&E and currently evolving innovations, for continuity
- Cross-MS, inclusive, taking account of MS diversity
- Taking account of data & technology strengths & weaknesses
- Broadly scoped, including wider data governance, technological & infrastructural challenges

Technologies – Strengths and weaknesses

Data delivering technologies	Spatial resolution	Technology maturity	Coverage	Temporal resolution	Reliability	Auditability	Farmer burden	Administration burden	Level of standardisation	Legal Framework	Sovereignty /privacy
IACS (LPIS, GSAA)	parcel	++	++	year	++	++	-	-	+	++	++
FADN / FSDN	farm	++	+	year	++	++	--	-	+	++	++
Remote sensing (Sentinel)	Sub parcel	++	++	week	+	+	++	+	+	++	++
Geotagged images	parcel	+	+	year	+	+	-	+	+	+	+
Machine data	sub parcel	-	--	minute	++	-	++	??	-	--	--
Field / farm sensor data	parcel/farm	diverse	--	diverse	diverse	--	++	??	-	--	--
Sampling	parcel/farm	+	--	diverse	diverse	diverse	++	??	-	--	--
Farm financial (robotic) accounting	farm	+/-	++	diverse	++	++	++	??	+	--	--
Farm/fieldbook / FMIS	parcel/farm	+/-	+/-	diverse	-	--	-	??	--	--	--
Remote sensing (UAV)	sub parcel	+	--	diverse	+	--	++	??	+/-	--	--

Challenges for the implementation of the roadmap

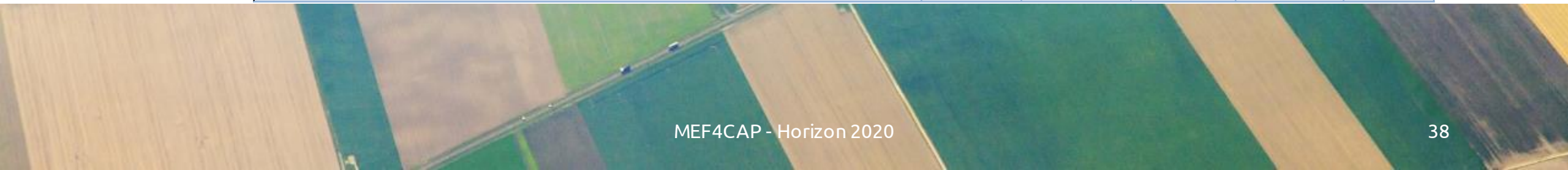
- **Development of data delivering technologies.** Not all data delivering technologies identified have the same degree of readiness (technical, social)
- **Data harmonisation.** Further improvement and linking of agriculture data models and semantics within the agriculture domain to achieve the required data interoperability was mentioned as a priority by several DCs
- **Data sharing.** Providing the required facilities to protect data privacy and secrecy, to ensure data sovereignty of data holders, particularly the farmers, and to offer data reciprocity, was indicated as a high priority by several DCs
- **Digital infrastructure.** An internet connection sufficient for the simple use of the suggested digital solutions, has yet to be implemented in many European rural areas.
- **Digital skills.** The digitalisation/automation process in support of a new M&E for EU agriculture, implies that all actors in the ecosystem, and especially farmers, are capable to share their data.

Potential Innovation Activities

Innovation Action	Example	M&E focus area	Realisation Time frame
Extending existing M&E workflows through merging of new data sources	Merging geotagged images, soil sampling etc into IACS, FSDN operations	Sustainable land use	2023-2027
Farm / field activity registrations as a basis for monitoring agri-environmental performance	Farm/field book and FMIS as leading data sources for monitoring	Nutrients & emissions, crop protection	Post 2027
Deploying novel sensor technologies to complement existing M&E strategies	Using emission sensor/ machine measurements to underpin farmer or regional agri-environmental performance	Nutrients & emissions, crop protection	Post 2027
Use of digital accounting data to monitor agri-environmental performance	Using digital accounts to estimate farm level nutrient balances and pesticide use	Agri-environmental, economic	Post 2027
Merging farm and field level data into impact models and assessments to generate and verify impact of agricultural policies	Using field activity registrations as training data for AI/ML	Agri-environmental	Post 2027
...			

Potential Innovation Activities

Innovation Action	Maturity of technologies	Relevance of data sharing	Interoperability challenges	Relevance of rural digital infrastructure	Relevance of digital skills
Extending existing M&E workflows through merging of new data sources	++	+	++	+	+
Farm / field activity registrations as a basis for monitoring agri-environmental performance	+	+++	+++	+	++
Deploying novel sensor technologies to complement existing M&E strategies	--	++	++	+++	-
Use of digital accounting data to monitor agri-environmental performance	+	+++	+	+	--
Merging farm and field level data into models and assessments to prove or verify impact of agricultural policies	++	+	+/-	+/-	--
...					



Mentimeter session on Innovation Agenda

Questions to the panel

Can you suggest some (maximum 2) actions for an Innovation Agenda?

What steps should be taken to prepare for them in the long-term, the horizon given to MEF4CAP, but also in the medium term?

Closure

- Thanks for participating in this workshop !!
- Powerpoint will be shared
- MEF4CAP closing event 7 December in Brussels
- Lunch

MEF4CAP

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101000662. The content of this publication exclusively reflects the author's view and the Research Executive Agency and the Commission are not responsible for any use that may be made of the information it contains.