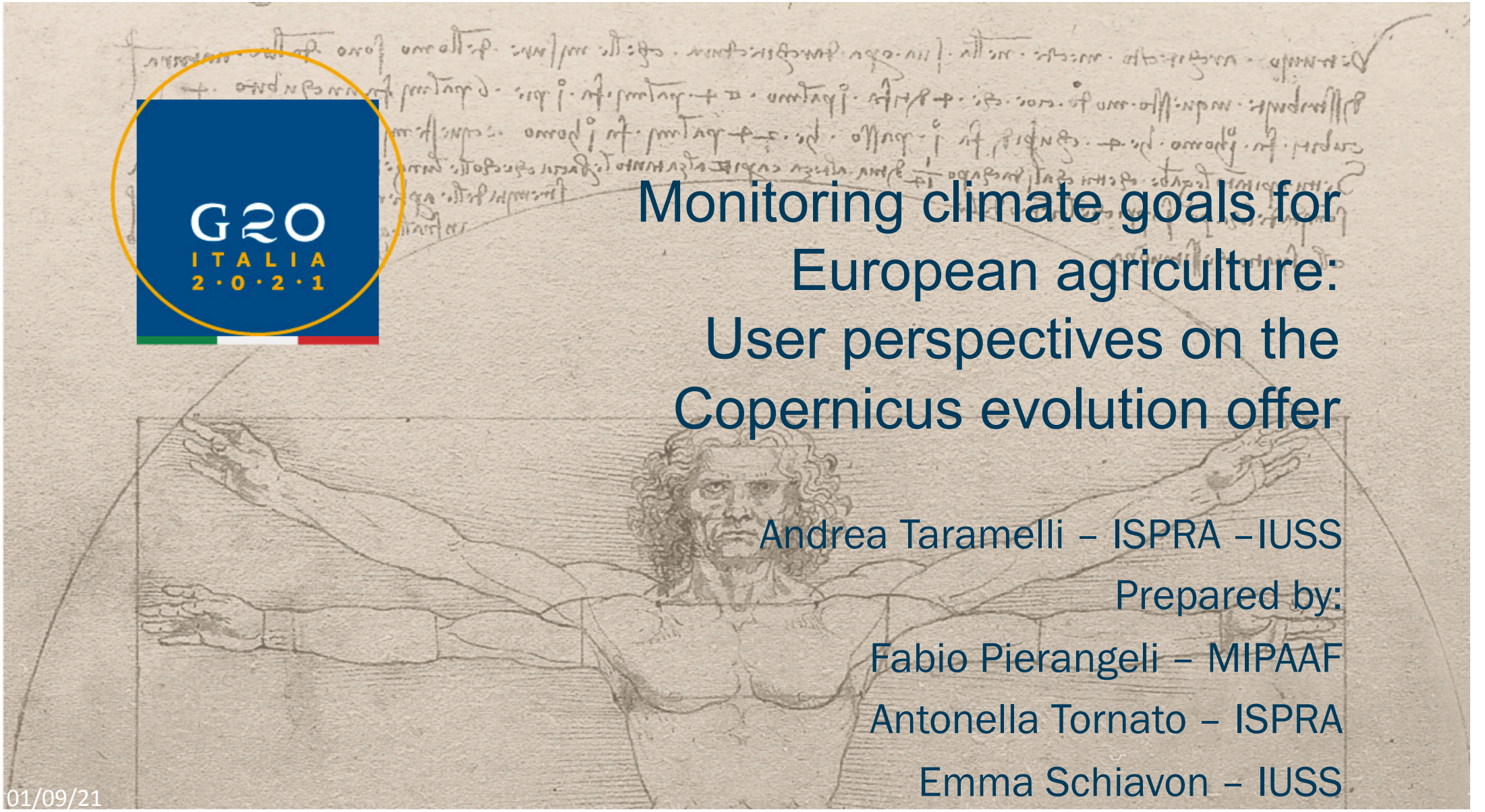


Monitoring climate goals for European agriculture: User perspectives on the Copernicus evolution offer

Andrea Taramelli – ISPRA –IUSS

Prepared by:

Fabio Pierangeli – MIPAAF

Antonella Tornato – ISPRA

Emma Schiavon – IUSS

CAP Monitoring

Stat-of-the-Art

Progress in the implementation of agricultural policies must be guaranteed by monitoring:

- ✓ Continuous
- ✓ Reliable
- ✓ Systematic

Despite the level of maturity reached, the achievement of **environmental and climatic performances** must be reconciled with **simplified procedures** of administration and control

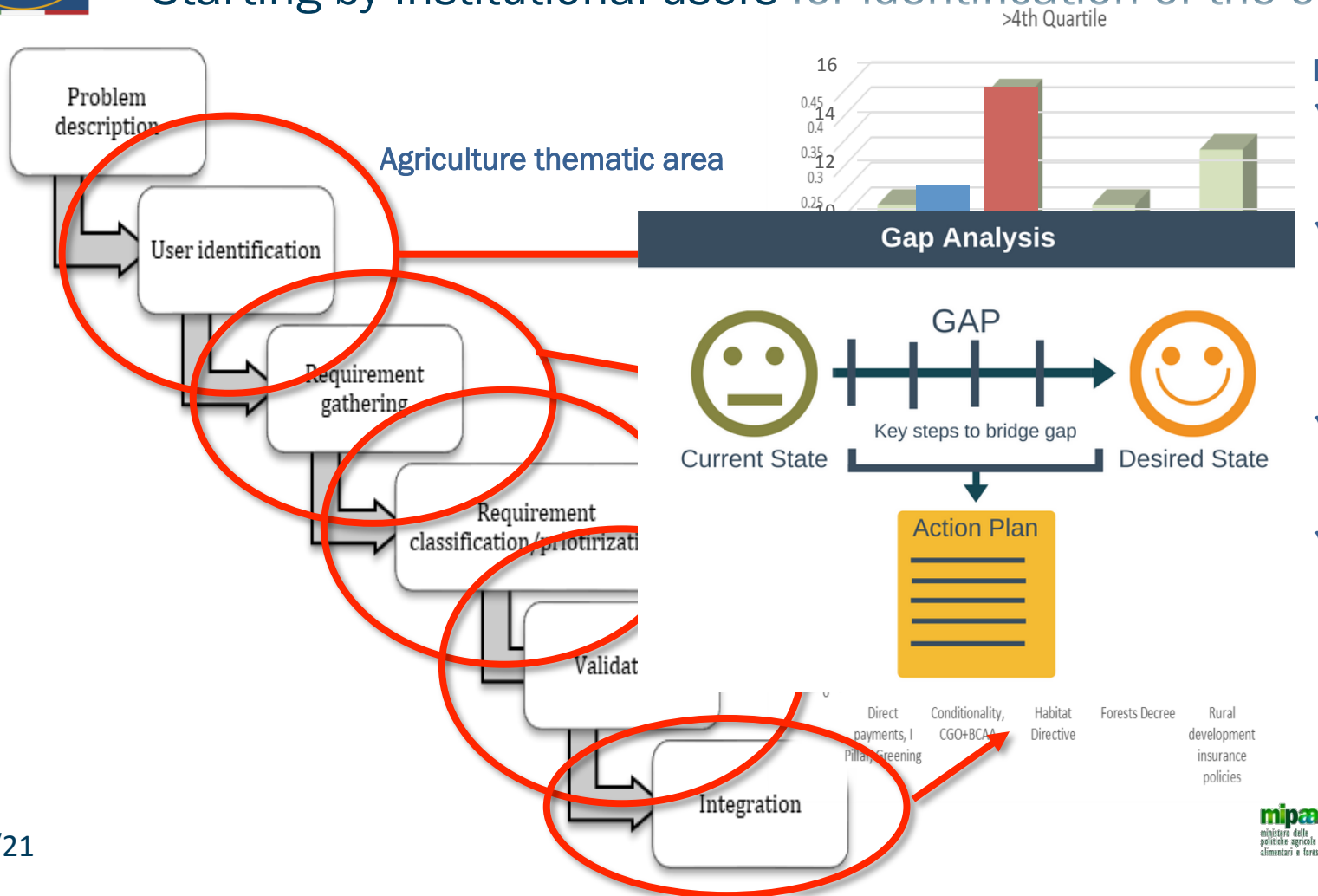
Integrated Administration and Control System (IACS)

- Land Parcel Identification System
- GeoSpatial Aid Application GSAA
- On spot checks

Regulation (EU) 746/2018

Users-centered approach

Starting by Institutional users for identification of the operational products



Long and short term actions :

- ✓ Development of value-added services that also use Copernicus
- ✓ Technological improvement starting to the user needs baseline, greater profitability in terms of costs, time, and resources
- ✓ Improvement of the return on Region's investments in terms of Copernicus offer
- ✓ Development design that extends the effects and the benefits to the Regional production system consistent with the National Space Economy objectives

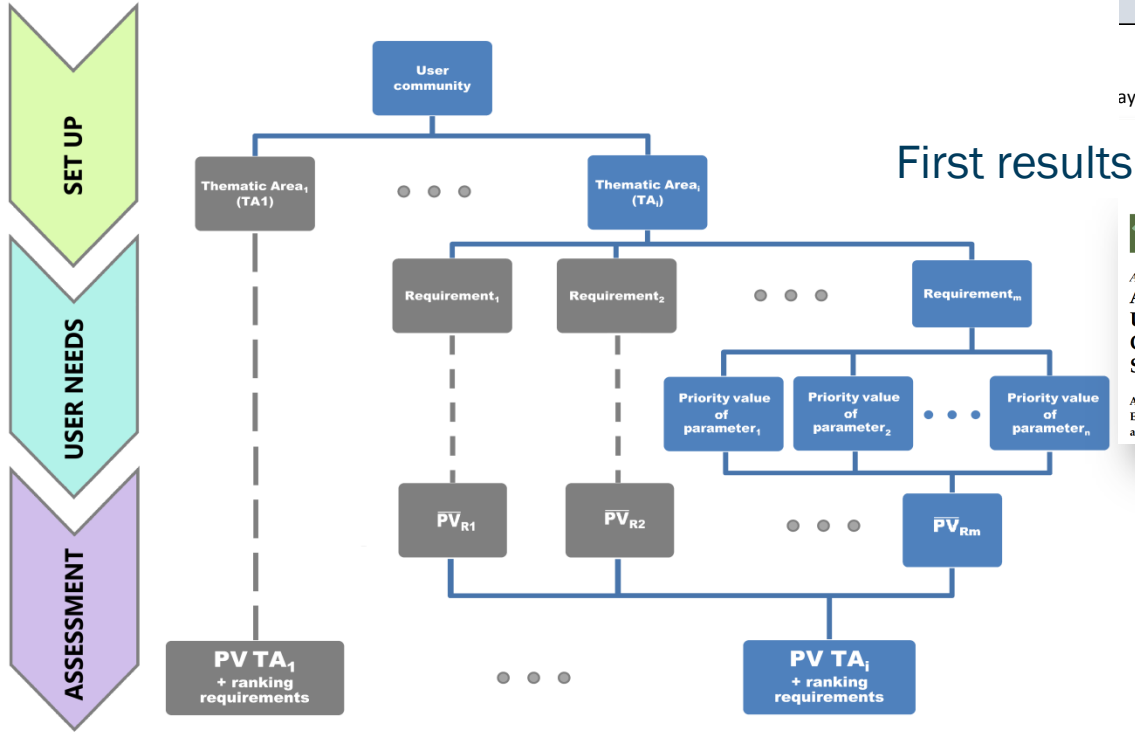
National User Communities engagement

Interaction Methodology (processing)

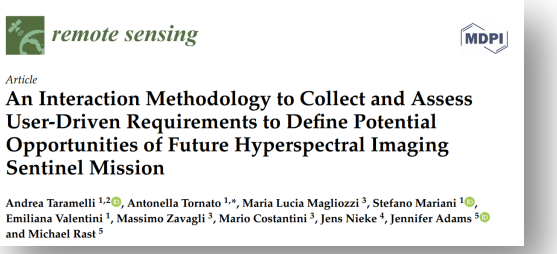
Operational requirements

Technical requirements

Thematic Area	International/Regional/ national law	Requirement	Parameter	Spectral interval	Spatial resolution	Temporal frequency	Importance value
Agriculture/Food security	Habitats Di (92/43/EEC) a Directive (2009					ays	5



First results have been published in 2020


remote sensing

MDPI

Article

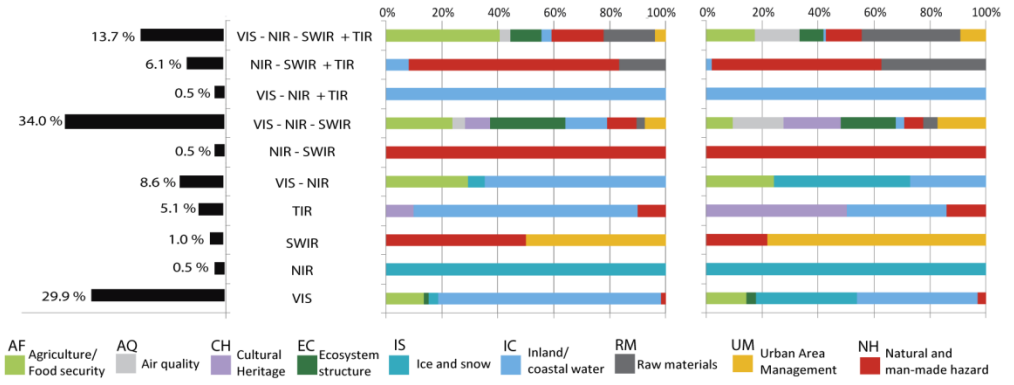
An Interaction Methodology to Collect and Assess User-Driven Requirements to Define Potential Opportunities of Future Hyperspectral Imaging Sentinel Mission

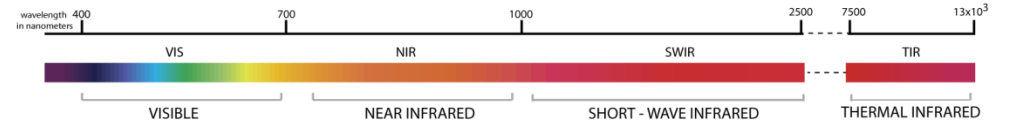
Andrea Taramelli [1,2], Antonella Tornato [1,*], Maria Lucia Magliozzi [3], Stefano Mariani [1], Emiliana Valentini [1], Massimo Zavagli [3], Mario Costantini [3], Jens Nieke [4], Jennifer Adams [5] and Michael Rast [5]

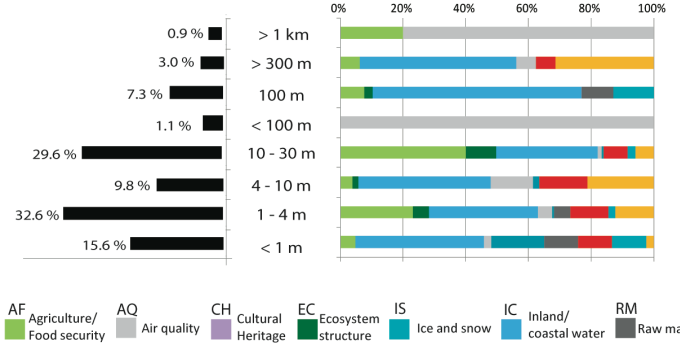
HTTPS://WWW.MDPI.COM/2072-4292/12/8/1286

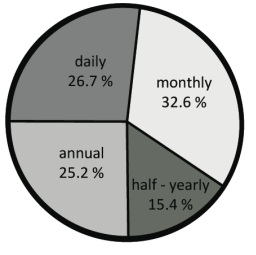
National User Communities engagement

First Results

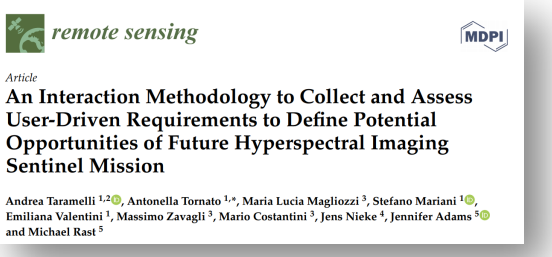








Applications (for each spectral range) under different thematic areas



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Frequency distribution of spatial and temporal resolutions.
The circular chart summarizes the preferences on temporal resolution under different thematic areas

National Agricultural Working Group

(part of the NUF Copernicus)

Ministry of Agricultural, Food and Forestry Policies (Mipaaf)

AGEA Paying Agency

ISMEA services for agricultural & food market

CREA Council for Agricultural Research and Economics

Regions & RD Management Authorites

ARPEA*

FaST

* self-application

Risk management

Agrometeore (Rete Rurale Nazionale)

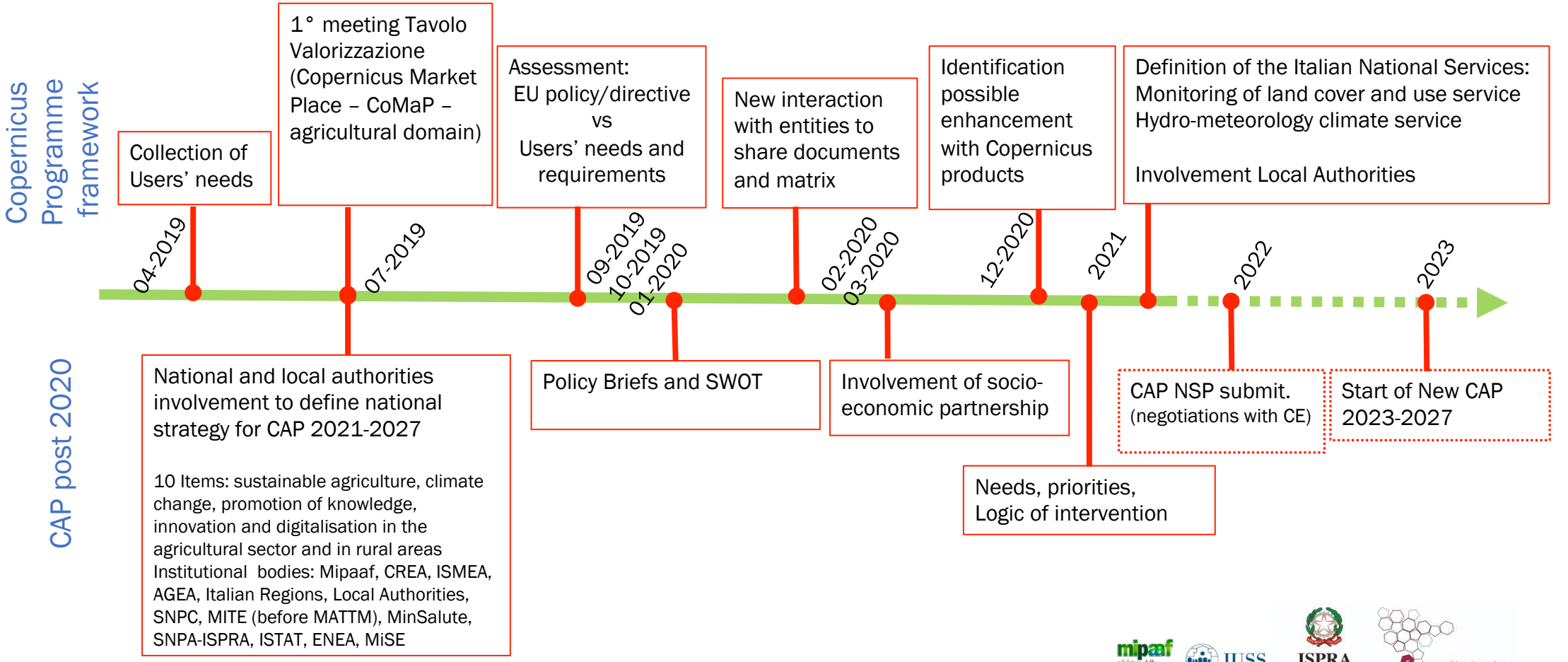
FPCUP

SIAN (digitalisation data and re-engineering process)

Farmers, producers organisations, stakeholders

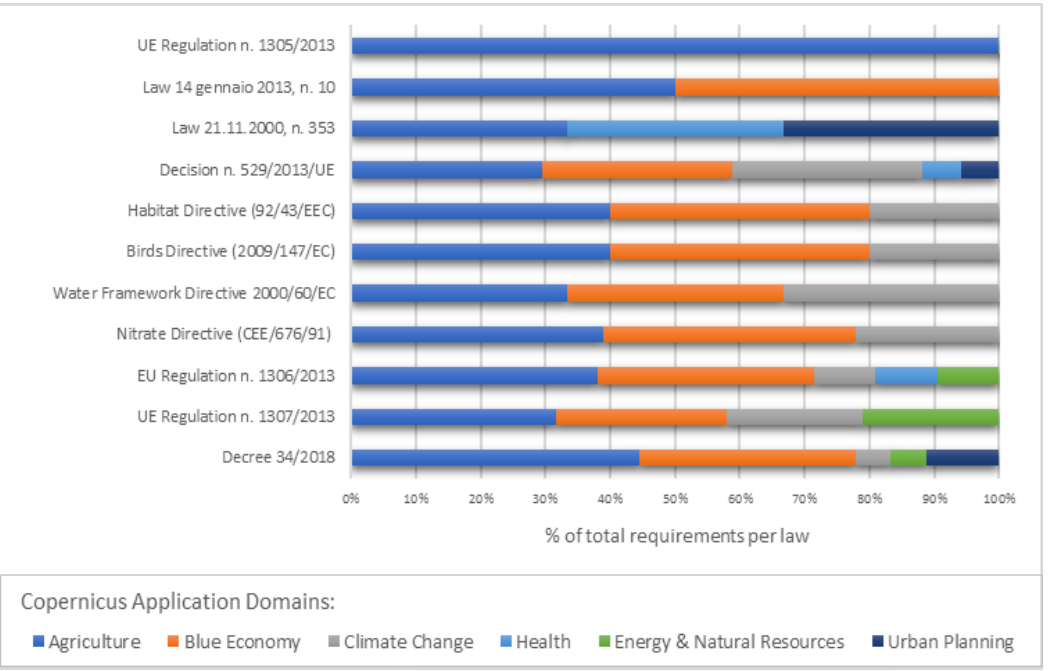
National Agricultural Working Group

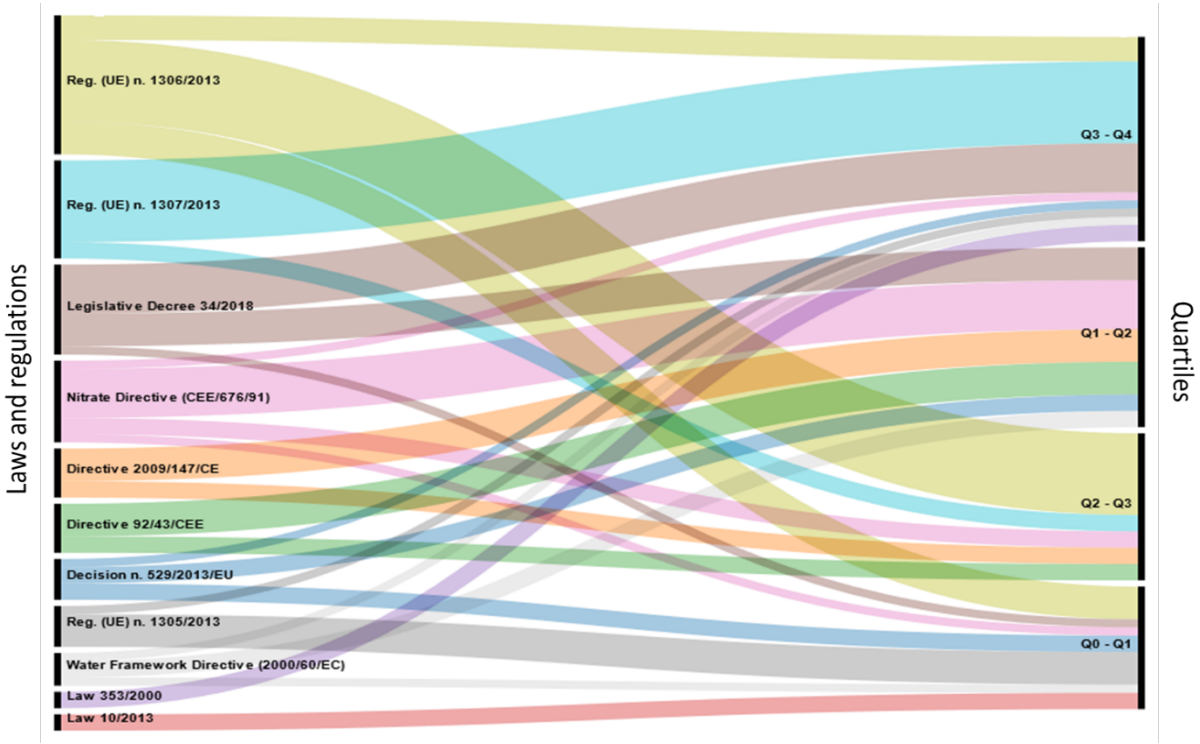
Users' needs collection/prioritization/coordination



National Agricultural Working Group

Relevance of each law and policy identified by users' requirements

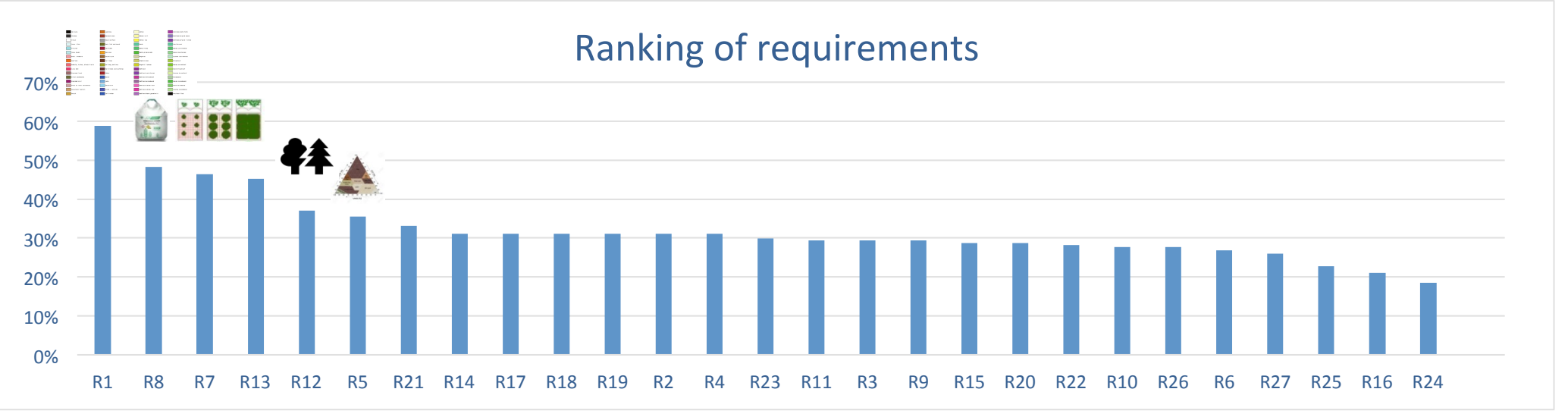




https://doi.org/10.1016/j.jenvman.2021.113121

National Agricultural Working Group

Results from Users' Community engagement

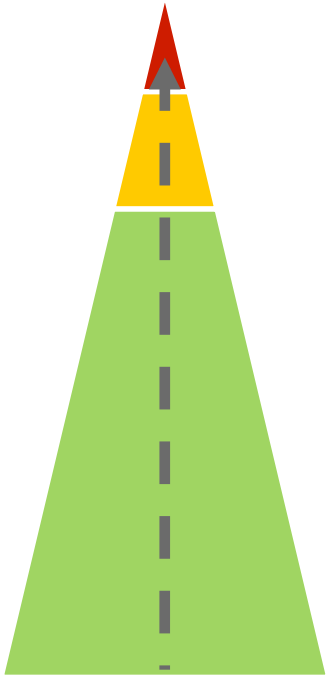


- Land Use and Land Cover (60%).
- Most of the requirements have an average importance value around 30%, equally relevant even if the users have different needs in terms of applications.
- The analytical component (pathogens, chemical compounds and gasses) are less required from users (around 20%), measure of analytical component requires high precision and accuracy level to comply specific thresholds indicated in the EU regulation.

Downstream services

SIAN (digitalisation data and re-engineering process)

Confidential data



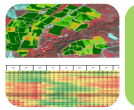
Open data

Sistema informativo territoriale integrato

Government process

Productivity

Local Layers

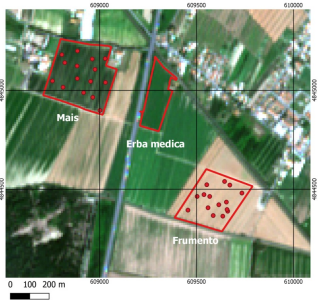


Satellite monitoring

National data of soil

Local orthophoto

Crop classification and phenology monitoring



Data for the farm (aid applications, checks, payments). High-level confidentiality (anonymized/synthesized).

Farm information file, Crop plan, etc.. Information high value (spatial and economic). Medium-level confidentiality.

Graphical layers (i.e. Natura 2000, administrative information, etc.). No confidentiality.

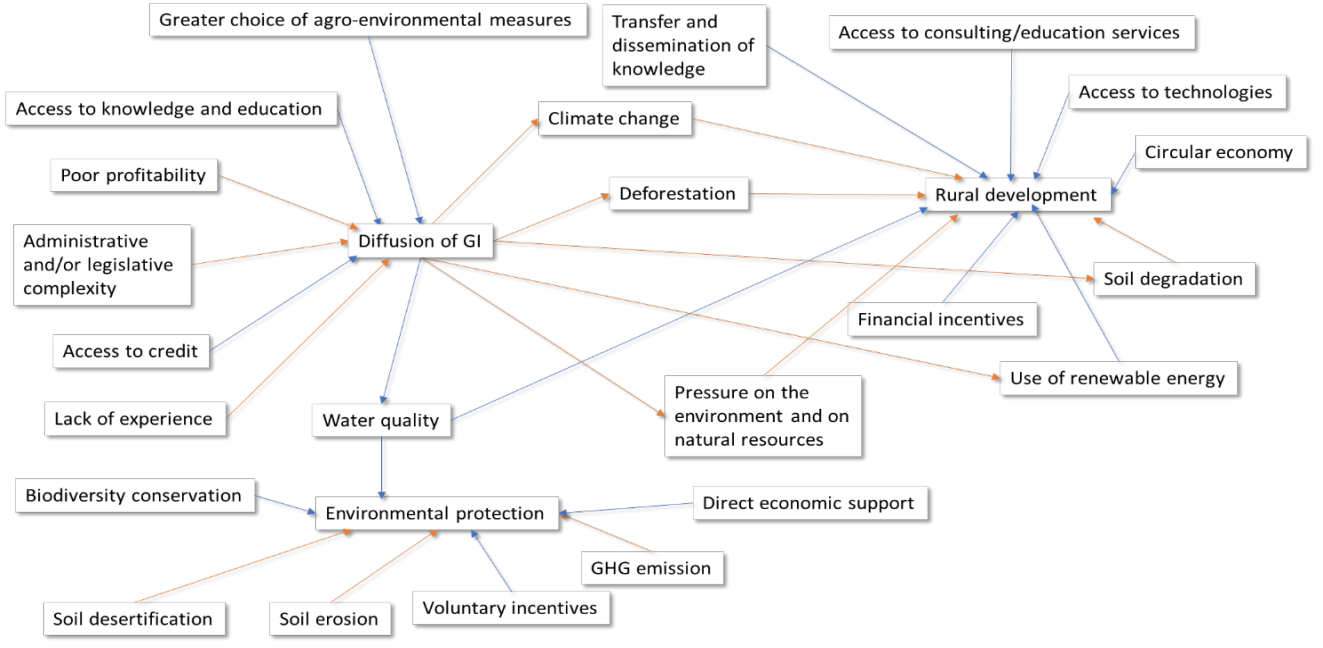
National/regional maps by Copernicus (vegetation index, like NDVI, NSAVI, etc.).

LC/LU, settlement structures, etc.. High-level resolution.

Three-year acquisition with aircraft on the national territory.
Open for public administrations (commercial exploitation by licensing).

Green Infrastructures

How and Why implement development and diffusion in the agricultural sector?



Solutions like GI can restore and maintain key regulative ecosystem services capable of mitigating disaster risk and contributing to climate change adaptation.

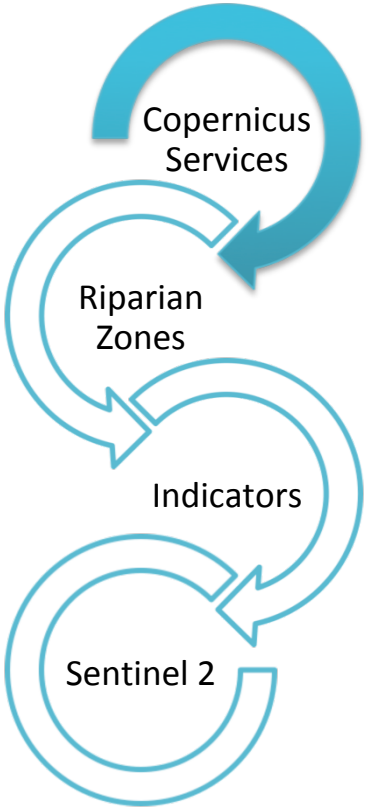
Modelling Stakeholder Perceptions to Assess Green Infrastructures Potential in Agriculture through Fuzzy Logic: A Tool for Participatory Governance.

Emma Schiavon[1*], Andrea Taramelli[1,2], Antonella Tornato[2]

Article in press 'Environmental Development'

Green Infrastructures

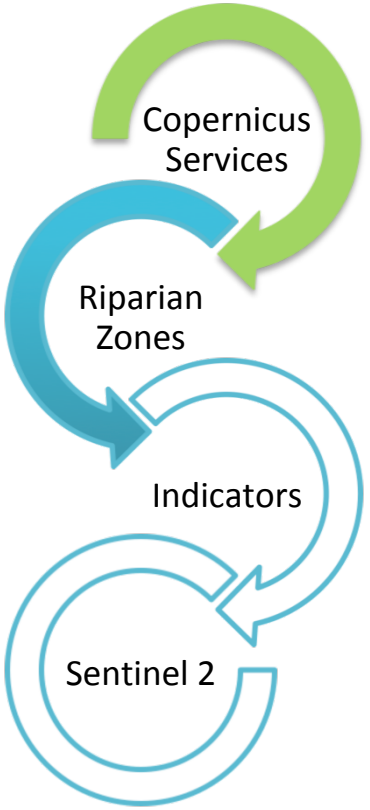
Downstreaming Services – GI in Po basin

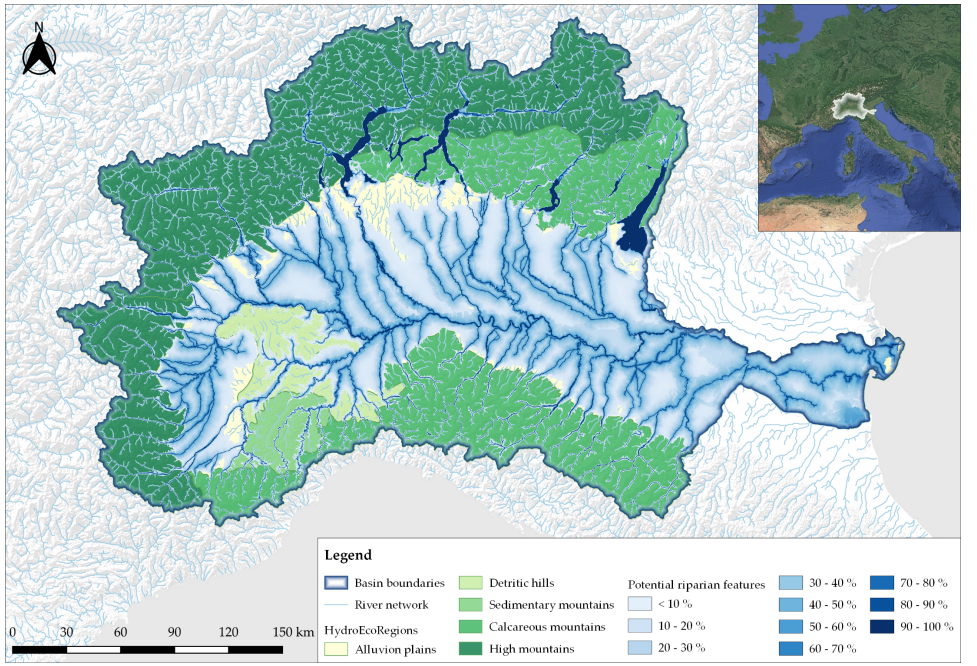


Green Infrastructures

Data Analysis – GI in Po basin

Why riparian zones (RZ)?



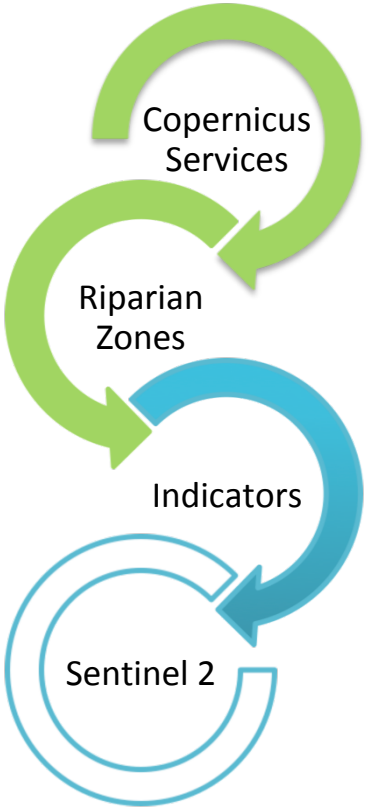


- Natural Water Retention Measures with distinctive hydrology, soil and biotic conditions.
- Multi-functional transitional areas between land and freshwater ecosystems that aim to protect water status (quantity and quality), flood control, bank stabilization, maintain aquatic life and riparian wildlife, helping to implement EU Directives.

Green Infrastructures

Data Analysis – GI in Po basin

GREEN Infrastructures

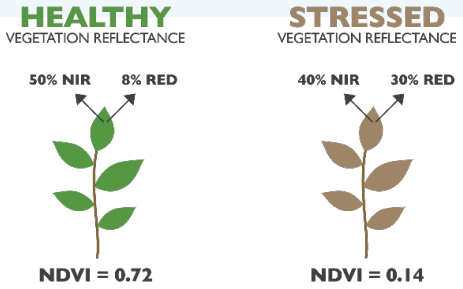


Identification of agriculture and forest GI

Potential to host riparian features

Conservation status → Water content

Vegetation health and vigorousness



$$NDVI = \frac{NIR - RED}{NIR + RED}$$

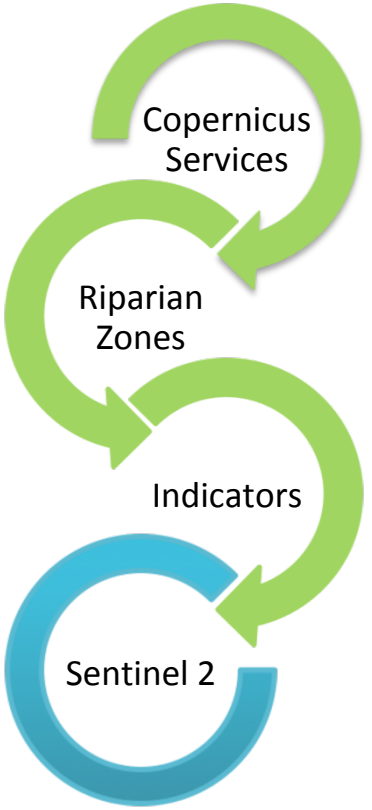

remote sensing
MDPI
Review
Monitoring Green Infrastructure for Natural Water Retention Using Copernicus Global Land Products
Andrea Taramelli [1,2], Michele Lissoni [1], Laura Piedelobo [3,*], Emma Schiavon [1], Emiliana Valentini [2], Alessandra Nguyen Xuan [2] and Diego González-Aguilera [3]

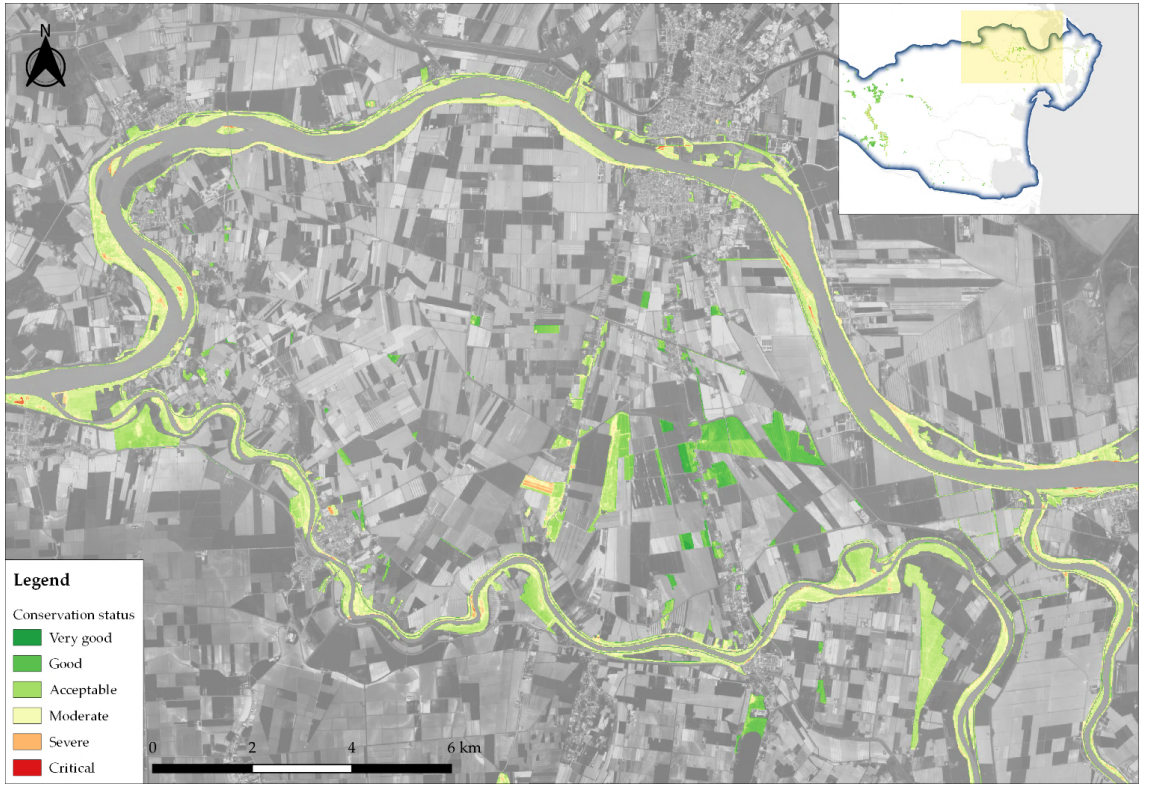
https://doi.org/10.3390/rs11131583

mipaaf ministero delle politiche agricole alimentari e forestali · IUSS · ISPRA Istituto Superiore per la Protezione e la Ricerca Ambientale · Sistema Nazionale per la Protezione dell'Ambiente

Green Infrastructures

Data Analysis – GI in Po basin





Conservation status of GI in 2018 – warning tool Downstreaming services

Perspectives

Activities ongoing

Products development for operational services implementation (Green Deal and Farm-to-Fork strategies).

User uptake:

- FPCUP: Academic High level training course on Copernicus exploitation for Common Agricultural Policy management, monitoring and reporting (4 community languages) - 24 months - Final certificate
- Copernicus Academy interaction

Missions synergies (and sensors).

Synergies between national services (S5 Hydro-weather-climate, S6 Water resource management, S2 Air quality, S7 Environmental emergencies).

Thank you for the attention

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