



**19-20 November 2014
Dresden - Germany**



Ecological Characterization of EFA elements

**Vincenzo Angileri,
MARS (Monitoring Agricultural Resources) Unit
DG Joint Research Centre**



*Evidence-based scientific and technical support
Cooperation with policy Directorates-General
Sharing its know-how with the Member States*



www.jrc.ec.europa.eu



Why an ecological characterization of the EFA elements?

To provide elements to support/evaluate **MS elements definitions**
(-> implementation and control)

To **support farmers** in maximising the environmental performance
of the holding (-> management tools -> FAS)

To **evaluate** how the policy fulfils its goals (-> monitoring and
evaluation of the CAP)



Importance of an ecological characterization

EFA scope: to safeguard and improve biodiversity on farm

(recitals 44 and 45 of the Reg. 1307/2013)

EFA consists of:

areas directly affecting biodiversity
(e.g. landscape features, land laying fallow etc.)

areas indirectly affecting biodiversity
through a reduced use of inputs
(e.g. catch crops, winter green cover)

EFA should also **improve the general environmental performance** of the holdings (soil quality, water quality, landscape preservation, climate change mitigation and adaptation)

Main ecosystem services related to EFA elements

	pest control	pollination	wildlife protection	soil conservation, structure and fertility	water quality	carbon sequestration	aesthetic value of the landscape	cultural identity
land lying fallow		X	X	X				
terraces		X	X	X			X	X
hedges	X	X	X			X	X	X
isolated trees						X	X	X
trees in line			X			X	X	X
field margins	X	X	X					
ponds			X				X	
buffer strips		X	X	X	X			
agro-forestry		X	X	X		X	X	X
catch crops					X	X		

ecosystem services: benefits people obtain from ecosystems

(e.g. hedges host pest predators, trees are carbon sink)



EFA ecological relevance depends on:

Element in itself (shape, size, species composition etc.)

Management practices (permanent/annual, mineral fertilisers, plant protection products etc.)

Holding: habitat types -> share of cultivated crops, land use intensity, habitat indicators

Landscape context (whole plot nature value, landscape homogeneity/heterogeneity, connectivity)



Oppermann lists the characteristics (parameters) to be recorded for categories of arable land, pasture, buffer strips, landscape features (pilot study “Development of a method for a European field survey of nature value in agricultural landscapes”)

LANDUSE INTENSITY
NATURE VALUE
SIZE OF THE ELEMENT
ECOLOGICAL SENSITIVITY
HABITAT TYPE

Joint
Research
Centre

Protocol for the field survey

Annex to the PILOT STUDY

“Development of a method for a European field survey of nature value in agricultural landscapes”

for the Joint Research Centre (JRC)

August 2014



Charged by:
Joint Research Centre (JRC) of the European Commission
Institute for Environment and Sustainability
Monitoring Agricultural Resources Unit – H04
TP 266 – Via Fermi 2749, I – 21027 ISPRA (VA), Italy
- Dr. Maria Luisa Paracchini, Neil Hubbard



Carried out by:
Institute for Agroecology and Biodiversity (IFAB)
Böcklinstr. 27, D-68163 Mannheim
- Dr. Rainer Oppermann, Richard Bleil, Anja Eirich, Julian Lüdemann
E-mail: mail@ifab-mannheim.de



LANDUSE INTENSITY

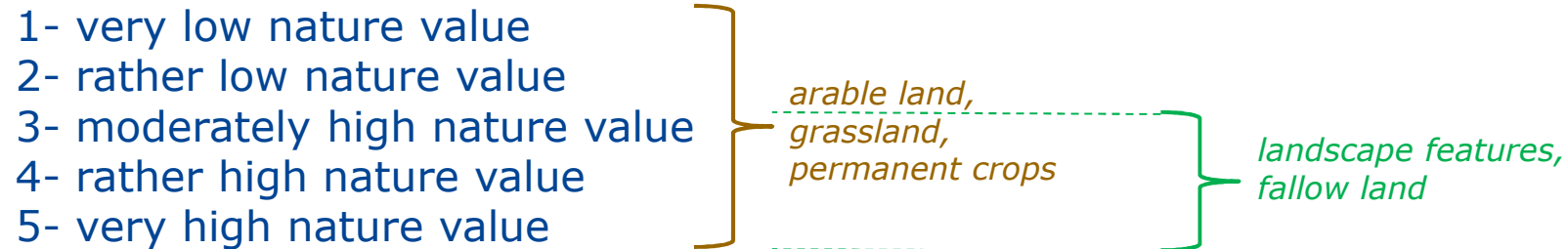
- it is primarily characterized by the structure of the vegetation
- 5 categories from very extensive to very intensive,
- defined for: arable land, grassland and buffer strips



Plot with high intensity grassland

NATURE VALUE

- depends on diversity of plant species, presence of rare species etc.
- estimation according to a five grade scale (from very low to very high)



ECOLOGICAL SENSITIVITY

- potential impact the element can suffer from (e.g. water erosion, water pollution, flooding drift of plant protection products, drift of fertilisers)

HABITAT TYPE

A habitat is an area with relatively homogeneous environmental conditions, occupied by plants and animals that are adapted to those conditions.

On farmland, the term 'habitat' is sometimes associated with 'semi-natural habitats' or elements of the 'ecological infrastructure'.

(BioBio project)



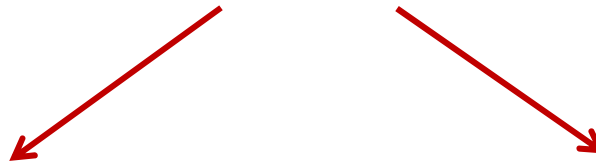
Semi-natural permanent grassland



Ecological characterisation of EFA elements

Hedges

Species richness (BioBio)



Hedges

*lines of woody tree and scrub vegetation
over 30 cm but under 5 m in height
evidence of positive management,
whether coppicing, laying, cutting or
pruning*

<5 woody species per 30 m

Species Rich Hedges

*lines of woody tree and scrub vegetation
over 30 cm but under 5 m in height
evidence of positive management,
whether coppicing, laying, cutting or
pruning*

>5 woody species per 30 m



Ecological characterisation of EFA elements

Hedges

Nature value

Hedges / Isolated field coppices/ Wood areas alongside watercourses

Criteria for survey:

- Shrubby or woody areas without forest character (microclimate, ground vegetation)
- Width 3 to 30 m; Bushes and shrub cover at least 50 %.
- Only hedges and bushes in the agricultural landscape and alongside field lanes, narrow roads and small/medium sized water elements
- No elements alongside bigger roads, railroads and large rivers/lakes

3. *simply structured / species-poor elements* (e.g. "simple" hazelnut hedge with hardly any other species);

4. *heterogeneously structured and/ or species-rich elements (several woody species).*
Differentiated height structure, with margin alongside the element;

5. *very heterogeneously structured and species-rich elements (many woody species).*
Differentiated height structure, with margin alongside the element.

Ecological characterisation of EFA elements

<i>EFA element</i>	<i>characteristic/ definitions</i>	<i>nature value</i>
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown, at least 8 m high; 5- native or non-native trees, height > 15 m, average tree-trunk diameter at 1,30 m \geq 80 cm
field margins	herbaceous: grass+ herbaceous broadleaved plants; grass: grass>70% of the cover	3- mainly grass-dominated or strongly interspersed with neophytes (recently introduced) or nitrophytes; 4- < 25 % neophytes/nitrophytes; 5- <5 % neophytes/nitrophytes
fallow land		3- homogenous structure, very few species (e.g. huge <i>Urtica dioica</i> stand); 4- partly heterogeneous structure, some (more) species; 5- heterogeneous structure, many species
buffer strips	structure and density of the stand	number of mulched/mown (from irregularly to 3 per year)
short rotation coppices		size and shape of plantation and rotation times; vertical structure; development phases: open area, shrub-like stands, tree-like forms

Ecological characterisation of EFA elements

<i>EFA element</i>	<i>characteristic/ definitions</i>	<i>nature value</i>
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown , at least 8 m high; 5- native or non-native trees, height > 15 m , average tree-trunk diameter at 1,30 m \geq 80 cm
field margins	herbaceous: grass+ herbaceous broadleaved plants; grass: grass>70% of the cover	3- mainly grass-dominated or strongly interspersed with neophytes (recently introduced) or nitrophytes; 4- < 25 % neophytes/nitrophytes; 5- <5 % neophytes/nitrophytes
fallow land		3- homogenous structure, very few species (e.g. huge <i>Urtica dioica</i> stand); 4- partly heterogeneous structure, some (more) species; 5- heterogeneous structure, many species
buffer strips	structure and density of the stand	number of mulched/mown (from irregularly to 3 per year)
short rotation coppices		size and shape of plantation and rotation times; vertical structure; development phases: open area, shrub-like stands, tree-like forms

Ecological characterisation of EFA elements

EFA element	characteristic/ definitions	nature value
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown, at least 8 m high; 5- native or non-native trees, height > 15 m, average tree-trunk diameter at 1,30 m \geq 80 cm
field margins	herbaceous: grass+ herbaceous broadleaved plants; grass: grass>70% of the cover	3- mainly grass-dominated or strongly interspersed with neophytes (recently introduced) or nitrophytes; 4- < 25 % neophytes/nitrophytes; 5- <5 % neophytes/nitrophytes






Ecological characterisation of EFA elements

<i>EFA element</i>	<i>characteristic/ definitions</i>	<i>nature value</i>
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown, at least 8 m high; 5- native or non-native trees, height > 15 m, average tree-trunk diameter at 1,30 m ≥ 80 cm
field margins	herbaceous: grass+ herbaceous broadleaved plants; grass: grass>70% of the cover	3- mainly grass-dominated or strongly interspersed with neophytes (recently introduced) or nitrophytes; 4- < 25 % neophytes/nitrophytes; 5- <5 % neophytes/nitrophytes
fallow land		3- homogenous structure , very few species (e.g. huge Urtica dioica stand); 4- partly heterogeneous structure, some (more) species; 5- heterogeneous structure, many species
buffer strips	structure and density of the stand	number of mulched/mown (from irregularly to 3 per year)
short rotation coppices		size and shape of plantation and rotation times; vertical structure; development phases: open area, shrub-like stands, tree-like forms

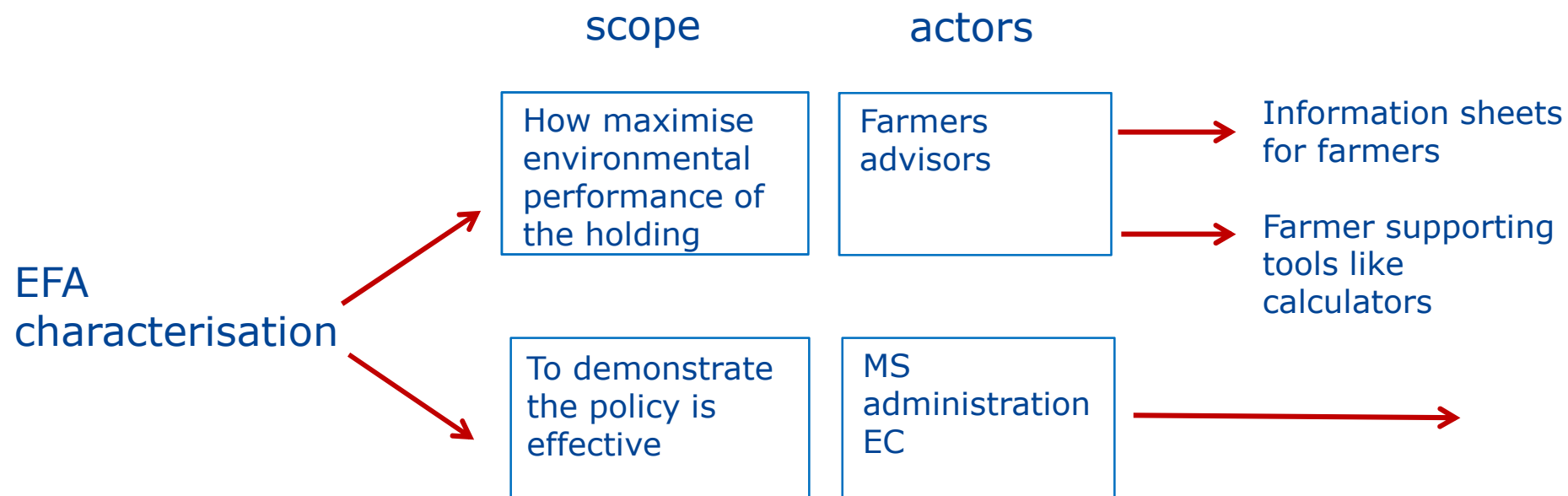
Ecological characterisation of EFA elements

<i>EFA element</i>	<i>characteristic/ definitions</i>	<i>nature value</i>
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown, at least 8 m high; 5- native or non-native trees, height > 15 m, average tree-trunk diameter at 1,30 m \geq 80 cm
field margins	herbaceous: grass+ herbaceous broadleaved plants; grass: grass>70% of the cover	3- mainly grass-dominated or strongly interspersed with neophytes (recently introduced) or nitrophytes; 4- < 25 % neophytes/nitrophytes; 5- <5 % neophytes/nitrophytes
fallow land		3- homogenous structure, very few species (e.g. huge <i>Urtica dioica</i> stand); 4- partly heterogeneous structure, some (more) species; 5- heterogeneous structure, many species
buffer strips	structure and density of the stand	number of mulched/mown (from irregularly to 3 per year)
short rotation coppices		size and shape of plantation and rotation times; vertical structure; development phases: open area, shrub-like stands, tree-like forms

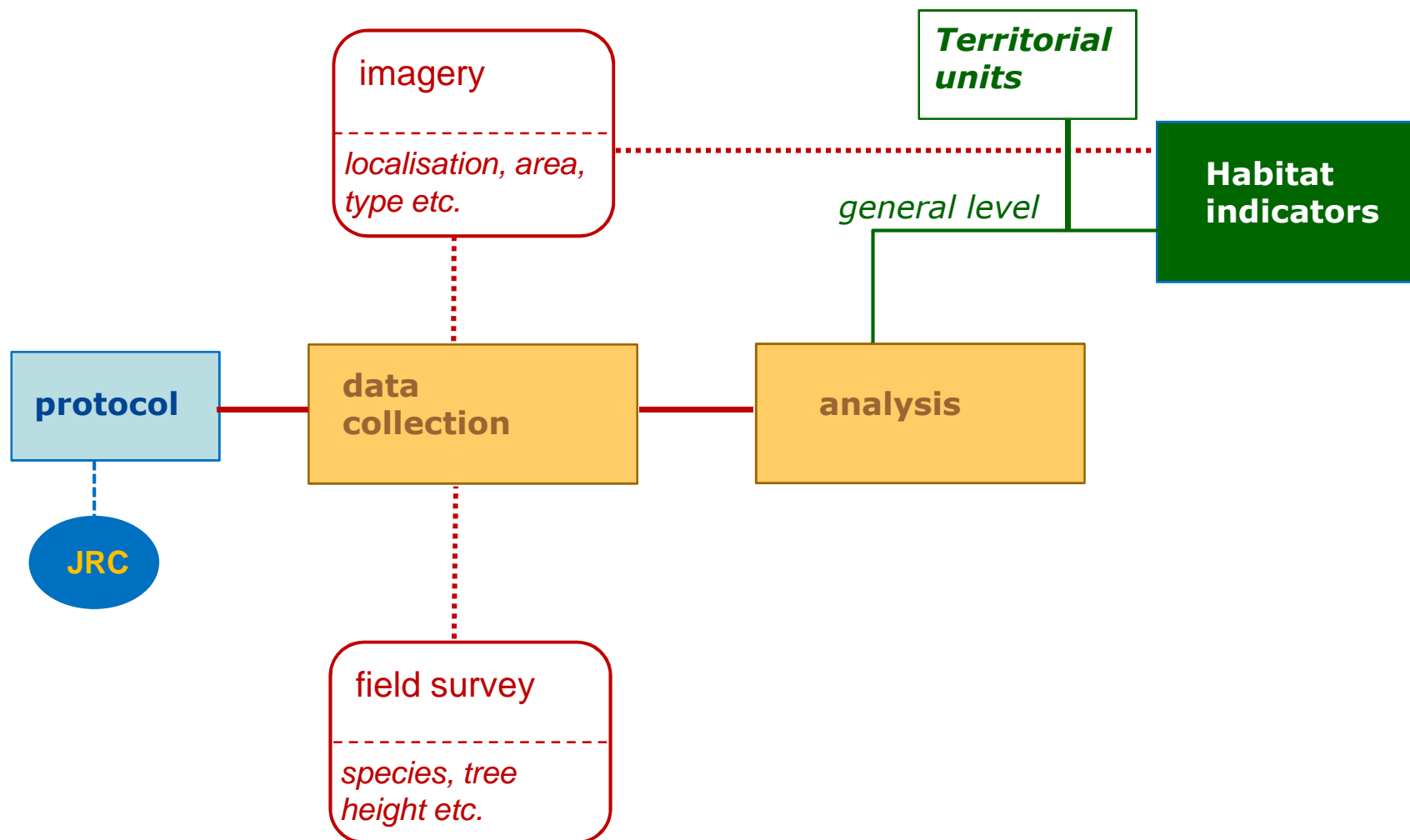
Ecological characterisation of EFA elements

<i>EFA element</i>	<i>characteristic/ definitions</i>	<i>nature value</i>
line of trees	native/non-native; height: > 5m; shrubs under trees < 50% cover; gap between trees < 50m	3- native trees without a distinct crown, at least 5 m high, non native only if characteristics (older trees with a height>10m); 4- native trees with a distinct crown, at least 8 m high; 5- native or non-native trees, height > 15 m, average tree-trunk diameter at 1,30 m ≥ 80 cm
		
short rotation coppices		size and shape of plantation and rotation times; vertical structure; development phases: open area, shrub-like stands, tree-like forms

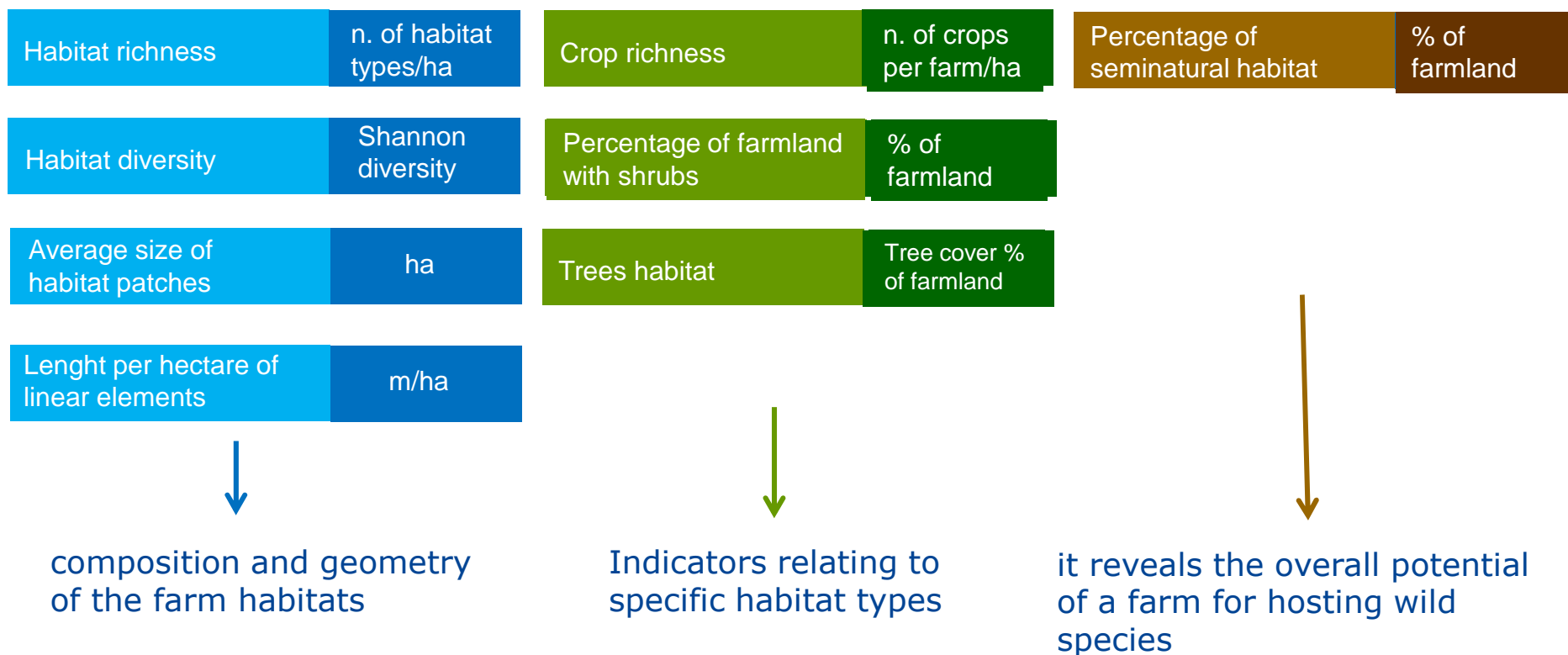
Outcomes



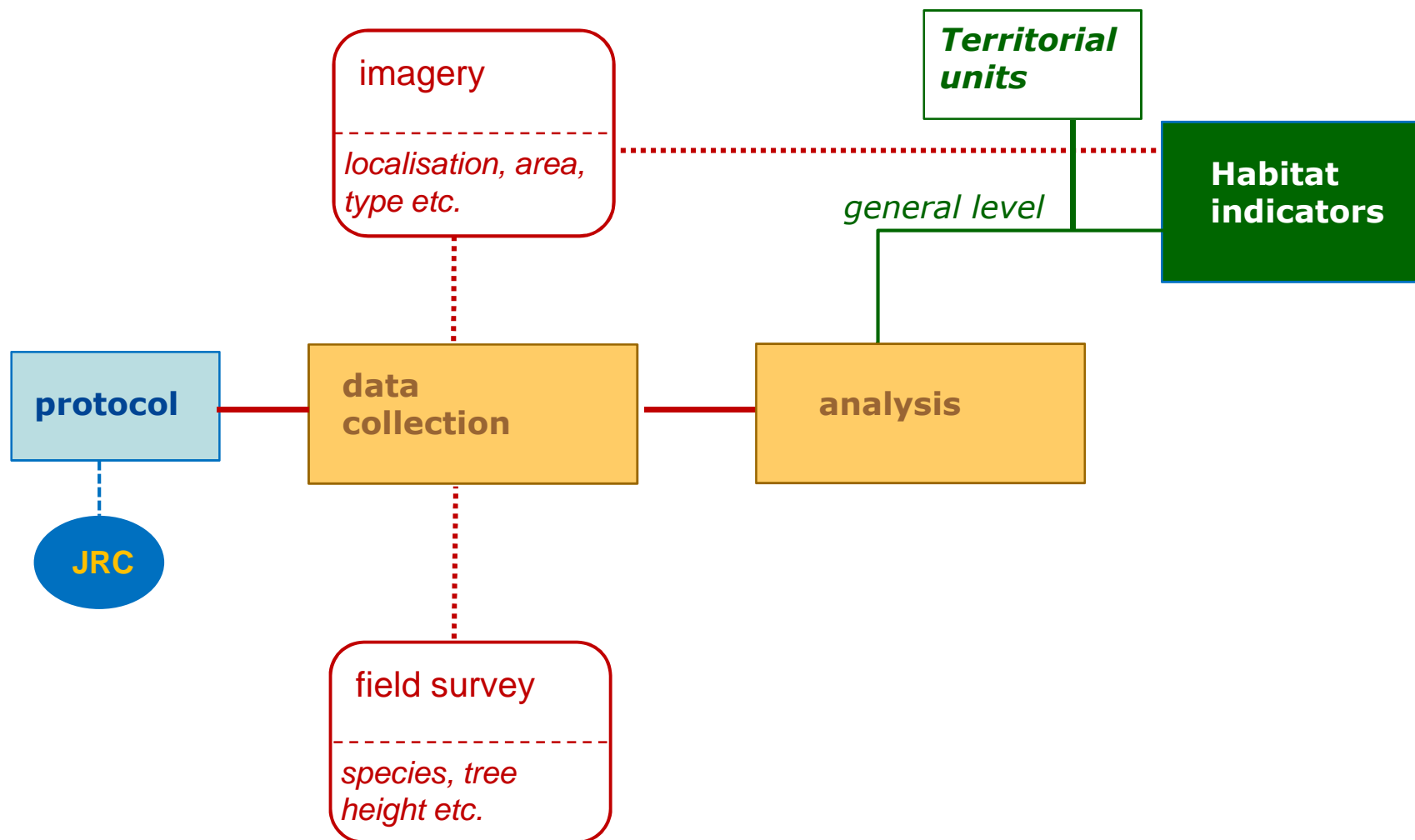
Assessment



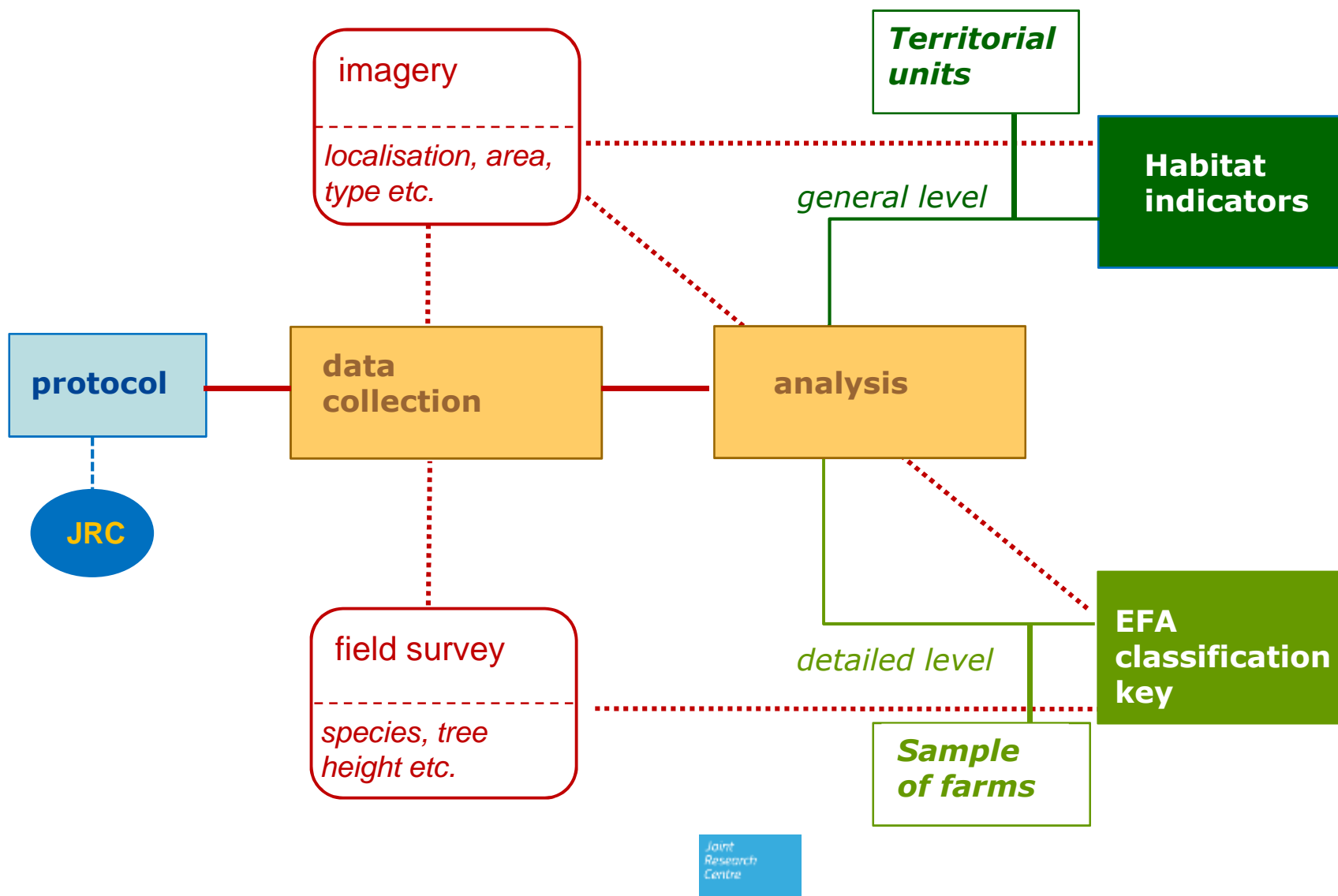
Example of a habitat indicators set (BioBio project)



Assessment



Assessment



How to create a map for biodiversity at farm level

BioBio has adopted a standard habitat mapping procedure for the European scale. The method is based on an appropriate generic system of habitat definitions. This may be improved with data collected in field survey

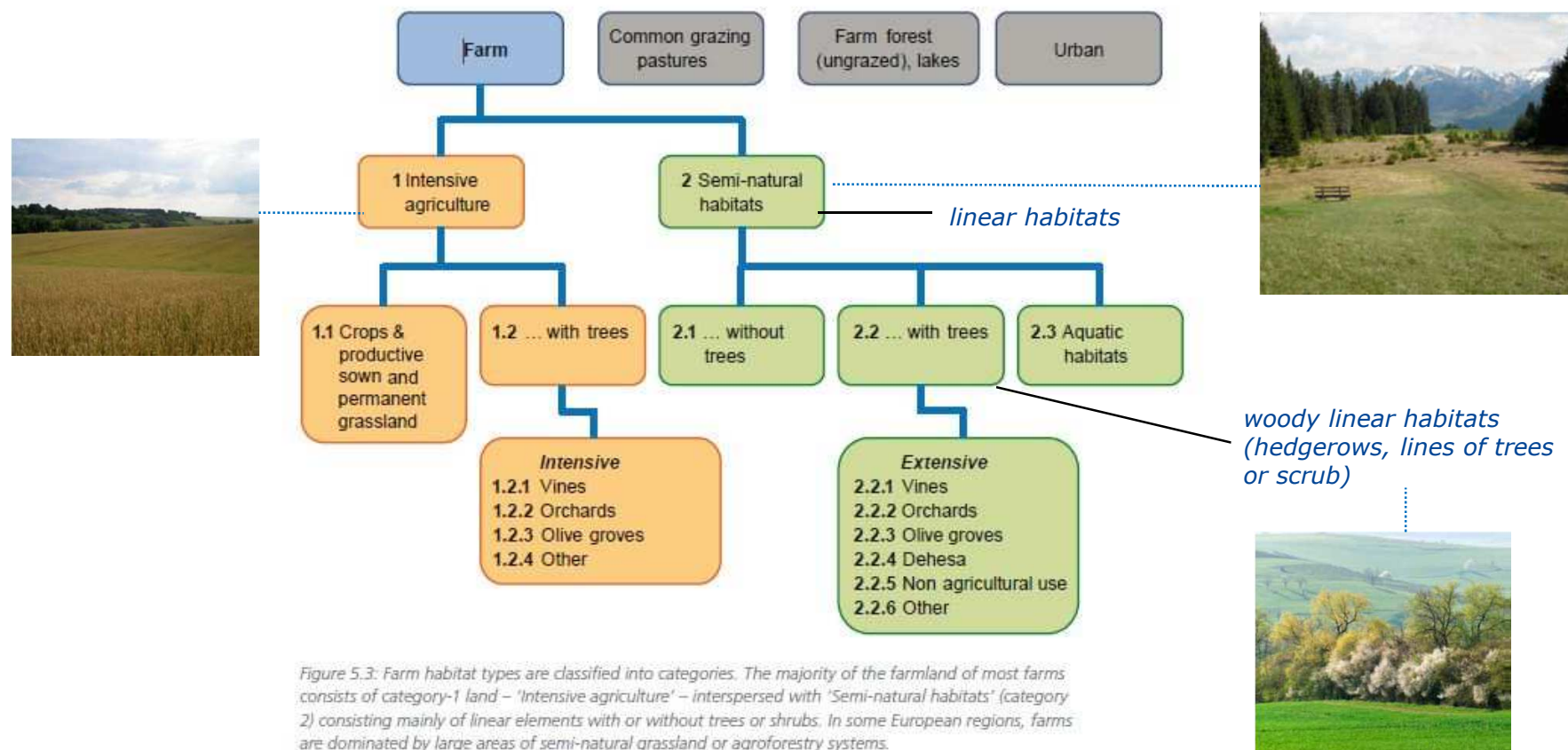


Figure 5.3: Farm habitat types are classified into categories. The majority of the farmland of most farms consists of category-1 land – 'Intensive agriculture' – interspersed with 'Semi-natural habitats' (category 2) consisting mainly of linear elements with or without trees or shrubs. In some European regions, farms are dominated by large areas of semi-natural grassland or agroforestry systems.



Conclusions

There is room for EFA to be more effective in meeting policy goals

Scientific literature and field experiences can support

Farmers should be aware of their choices (increasing awareness, supporting tools, FAS)

Policy results should be measured

Need to plan the evaluating phase from now

Thanks for your attention!
vincenzo.angileri@jrc.ec.europa.eu