



European  
Commission

# ANCs criteria, aggregation procedures and soil data base issues

## Workshop on Areas facing natural or other specific constraints

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EC DG JRC

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**Joint Research Centre**

the European Commission's  
in-house science service

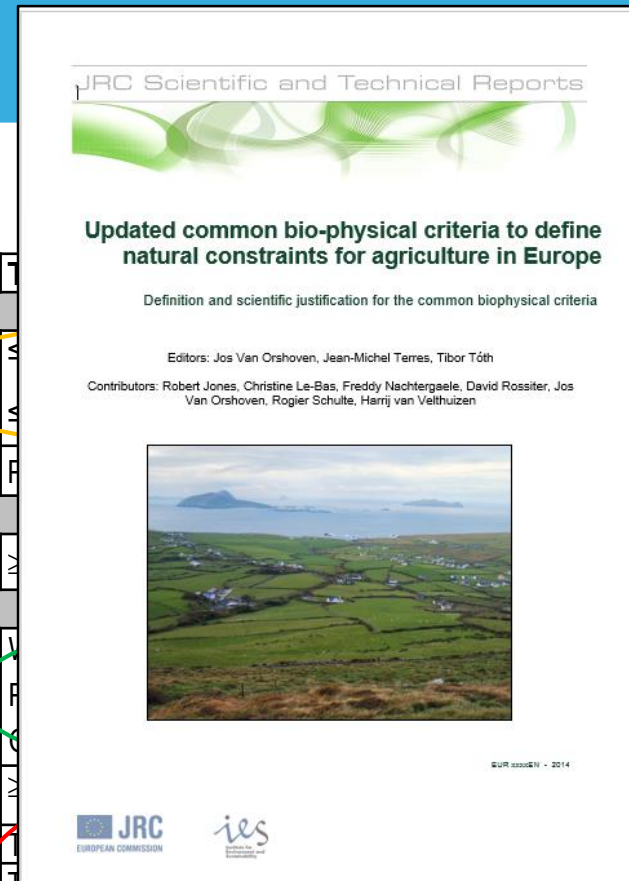
# Content

- Biophysical criteria
- Spatial aggregation
- Combining criteria
- Procedure



# Criteria Factsheets - Art 32.3

CRITERION	DEFINITION	
<b>CLIMATE</b>		
Low Temperature	Length of Growing Period (number of days) (LGP <sub>15</sub> ) OR Thermal-time sum (degree-days) for Growing Period	
Dryness	Ratio of the annual precipitation (P) to annual (PET)	
<b>CLIMATE AND SOIL</b>		
Excess Soil Moisture	Number of days at or above Field capacity	
<b>SOIL</b>		
Limited Soil Drainage	Areas which are water logged for significant duration of the year <b>same feature</b>	
Unfavourable Texture and Stoniness*	Relative abundance of clay, silt, sand, organic matter (weight %) and coarse material (volumetric %) fractions <b>different features</b>	Topsoil is heavy clay ( $\geq 60\%$ clay) OR Organic soil (organic matter $\geq 30\%$ ) OR Topsoil contains 30% clay vertic properties
Shallow Rooting Depth	Depth (cm) from soil surface to coherent hard rock / hard pan	$\leq 30\text{cm}$
Poor Chemical Properties	Presence of salts, exchangeable sodium, excessive acidity	Salinity: $\geq 4$ (dS/m) OR Sodicity: $\geq 6$ (ESP) OR Soil Acidity: $\text{pH} \leq 5$ (in water)
<b>TERRAIN</b>		
Steep Slope	Change of elevation with respect to planimetric distance (%).	$\geq 15\%$



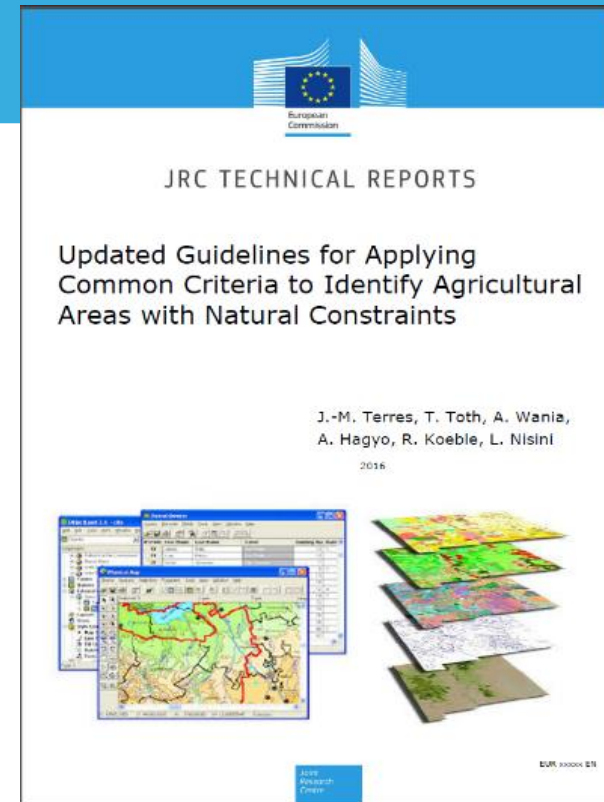
EUR 13328EN - 2014

# Updated guidelines document

To guide MS on ANC delineation process for best use of their capacities and **data characteristics**

Used as reference to ensure consistent assessment

- no single answer fits all, not a detailed description on steps / procedures
- not legally binding
- but recommendations - **to be adapted by MS**
- draws on feedback from experts, meetings with MS and JRC *'in-house'* experience
- *'living document'*: takes into account situations encountered in MS, technically discussed with Commission's services



## Data requirements: Climate

- Time series of **daily** meteorological data over 30 recent years

WMO reference climatic period: 1 January 1961 – 31 December 1990

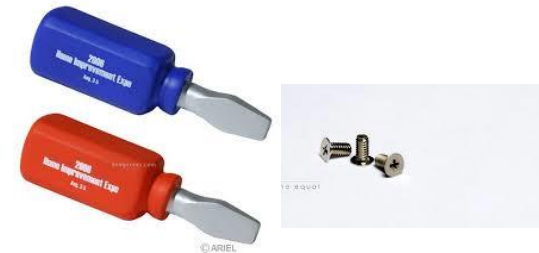
or update • 1 January 1971 – 31 December 2000  
• 1 January 1981 – 31 December 2010

- Use the same time period for all climate criteria
- Climate criteria: probabilistic way to account for inter-annual variability  
threshold is passed > **20% of years**

## Data requirements: Soil data

- Drainage
- Stoniness
- Texture
- Organic matter content and thickness
- Vertic properties
- Rooting depth (cm)
- Salinity
- Sodicity
- Acidity (pH)

- Less harmonized
- Soil map scale: possibly 1:25.000 – 1:50.000 -compatible with admin unit size
- Preferably direct soil information rather than soil classification
- Soil mapping unit: possible correction with share of soil types
- If the semantic resolution is not appropriate (different classes)
  - Use the classes that fulfil the threshold or
  - Reclassification with verification
- Topsoil: definition (ISO 11074, Jones et al., 2008)

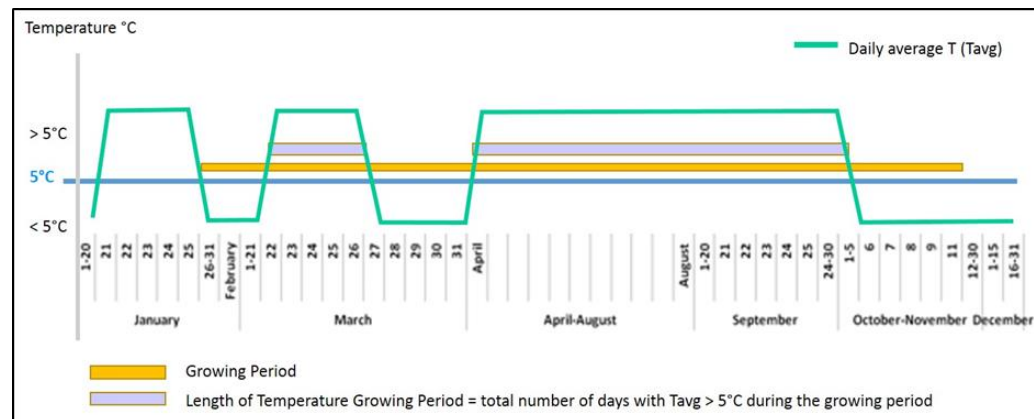


## Derivation of each criterion

### Low temperature

How to calculate

- daily average temperature
  - duration of the growing period
  - Length of the temperature growing period (LGP<sub>5</sub>, days)
- } Thermal-time sum, TS<sub>5</sub> (°Cd) or



- Interpolation method

## Derivation of each criterion

### Limited soil drainage

1 definition – 3 thresholds

- Wetness duration (depth, number of months); **or**
- poorly drained/very poorly drained (ground water table); **or**
- Gleyic colour pattern within 40cm from the surface;

- 3 thresholds not all to be assessed

Use the one that corresponds best to available soil data

- Soil types can be used (e.g. Gleysols)
  - if direct relationship between the taxonomic class and actual drainage conditions, or
  - if confirmed by soil profile datasets








# Agricultural area

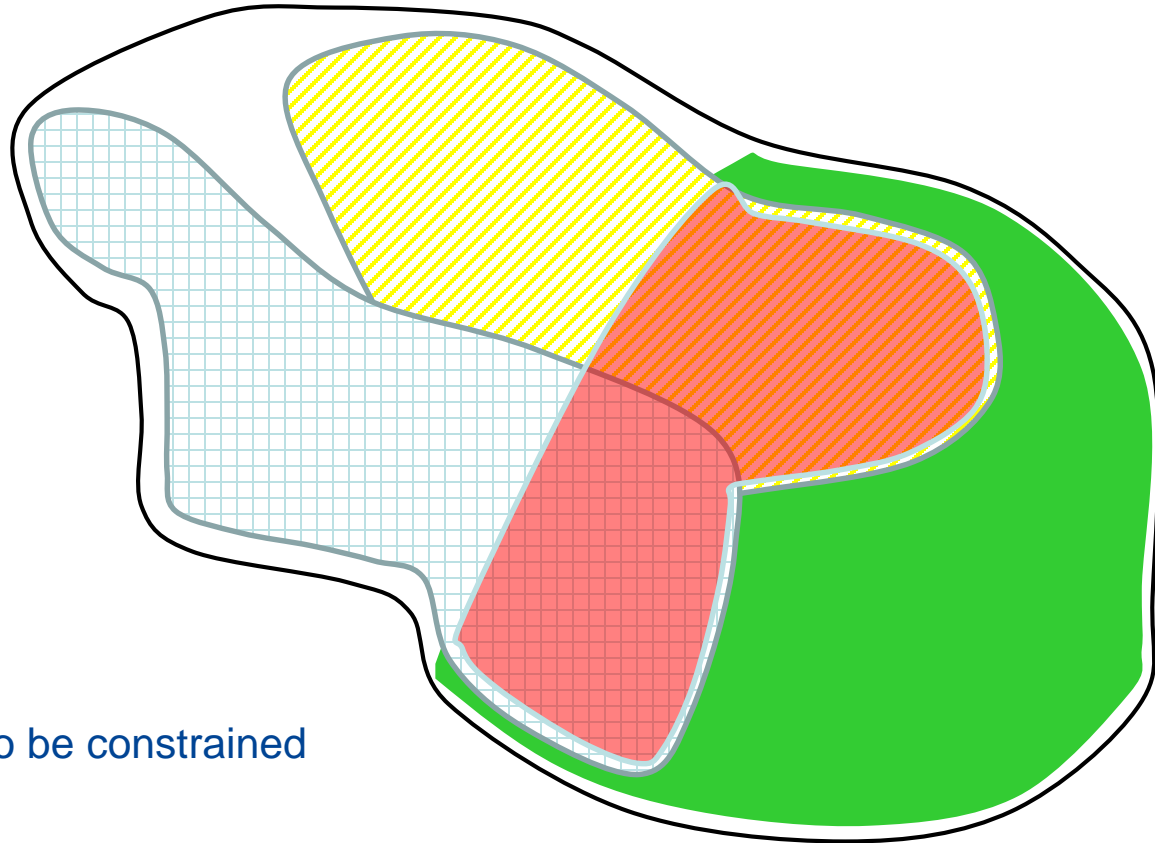
EU reg. 1305/2013 Art 2: definition of agricultural area

→ Maximum Eligible Area defined at reference parcel level, as in Art. 5(2)(b) of R640/2014)

# Aggregation procedure: diagnostic administrative unit

## Art 32.3

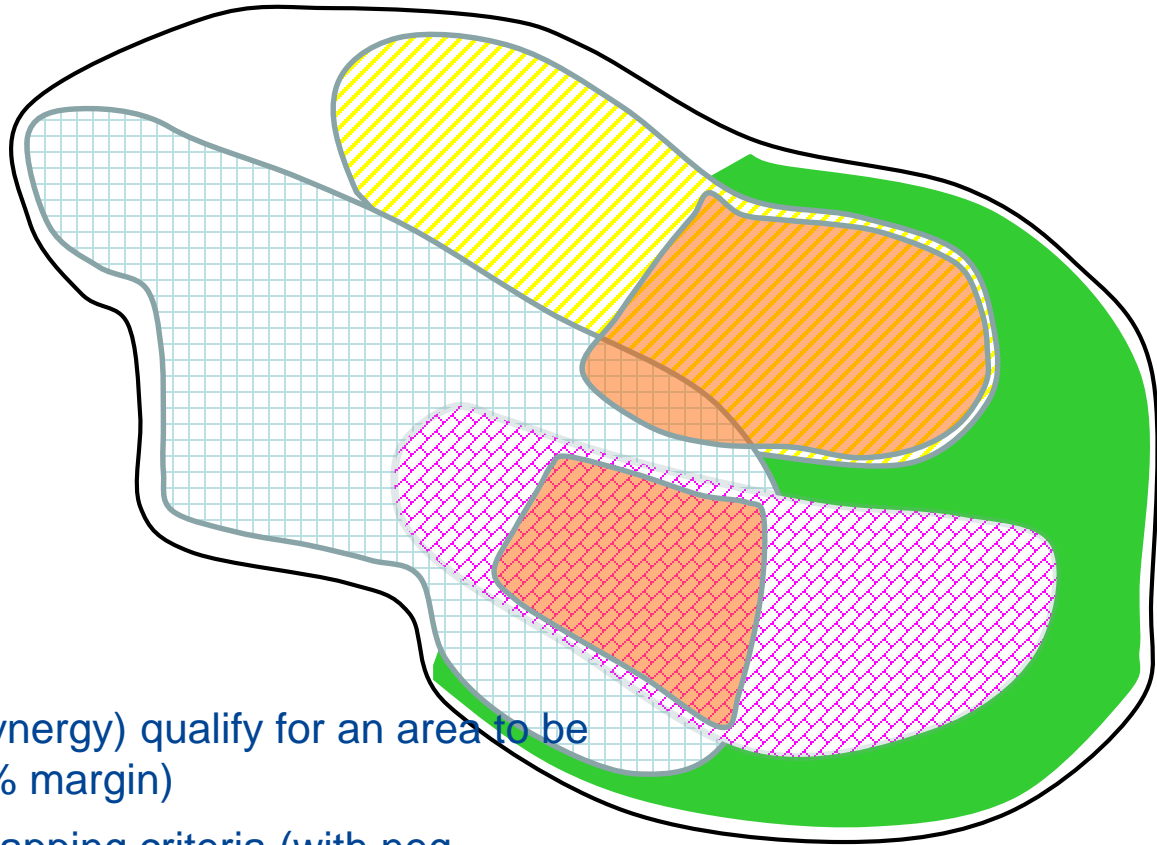
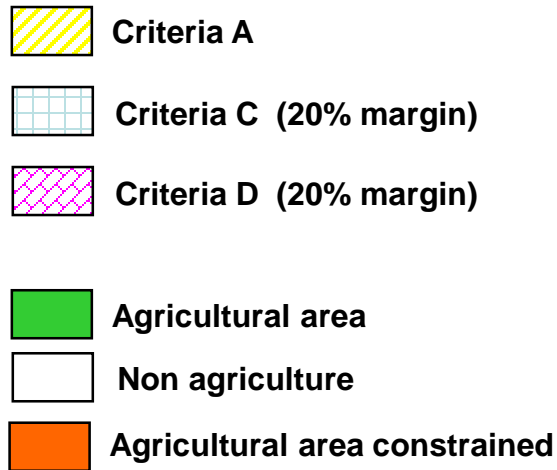
-  Criteria A
-  Criteria B
-  Agricultural area
-  Non agriculture
-  Agricultural area constrained



- One criterion can qualify an area to be constrained
- Overlap to be counted only once
- Minimum 60% of agricultural area of administrative unit must be constrained to qualify for ANC
- Agricultural area to consider
- Spatial analysis necessary (with GIS)

# Aggregation procedure: diagnostic administrative unit

## Art 32.4



- Overlaying criteria (with negative synergy) qualify for an area to be constrained (both thresholds at 20% margin)
- Criterion (at threshold level) + overlapping criteria (with neg. synergy) (thresholds at 20% margin): possible to reach the 60% of agricultural area of the administrative unit --- ANC specific
- Spatial analysis necessary (with GIS)

## Required documentation in the ANC report

- Meteorological datasets, characteristics, calculation, also interpolation method + validation
- Soil datasets characteristics, soil classification system, applied methodology to derive the soil criteria, validation when necessary
- Terrain dataset characteristics, applied methodology
- Description of the aggregation method
- Intermediate and final results:
  - ❖ maps and tables by criterion
  - ❖ map and table of the aggregated result

# Updated guidelines

## Information, documentation

Previous (LFA) delimitation [EC 1698(2005)]

	Art. 18	Art. 19	Art. 20	Not LFA
Agricultural area (ha)				

ANC with bio-physical criteria  
(before Fine-tuning)

	Art. 19 Agricultural area (ha)	Not Art. 19 (outside Art 18) Agricultural area (ha)	Total Agricultural area (ha)
ANC Art 32.3			
Not ANC Art 32.3			
Total			

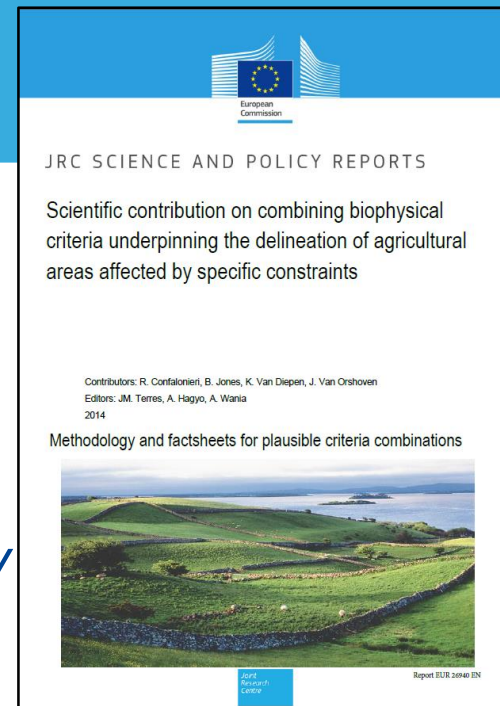
ANC designation EU 1305/2013, Art.32  
(after Fine-tuning)

	ANC 'mountain' Art32.1.a)	ANC 'other than mountain' Art32.1.b)	ANC 'Specific' Art32.1.c)
Agricultural area (ha)			

# Art 32.4: Combining criteria

## Methodological document

- Explore options within the legal framework to *sensibly* combine biophysical criteria
- Provide guidance and recommendations
- Propose credible sub-severe thresholds for combinations (within the margin of 20% of the initial value) which could still trigger a limitation to agricultural activity
- Provide factsheets for plausible combination
- Reference for consistent assessment



# Art 32.4: Combining criteria

## Sub-severe threshold with agronomic relevance for criteria combination (1)

CRITERION	DEFINITION	THRESHOLD Regulation EU(1305)2013 – Annex III	Margin $\leq$ 20% of threshold value (value suggested by JRC expert group)
<b>CLIMATE</b>			
Low Temperature	LGP TS	$\leq$ 180 days $\leq$ 1500 °C-days	$\leq$ 195 days $\leq$ 1575 °C-days <del>(216 days)</del>
Dryness	P / PET	$\leq$ 0.5	$\leq$ 0.6
<b>CLIMATE AND SOIL</b>			
Excess Soil Moisture	FCD	$\geq$ 230 days	$\geq$ 210 days
<b>SOIL</b>			
Limited Soil Drainage		Wet 80cm > 6 months, Poorly or very poorly drained Gleyic colour pattern	No change No change No change

not exactly 20% margin

# Art 32.4: Combining criteria

## Sub-severe threshold for criteria combination (2)

Unfavourable Texture and Stoniness		<p>≥ 15% topsoil is coarse material, Sand, loamy sand in half of 1m Texture heavy clay (≥ 60% clay) Organic matter ≥ 30%, at least 40cm Clay and vertic properties</p>	<p>≥ 10% of topsoil volume is coarse Sand, loamy sand in 40% of 1m Texture ≥ 50% clay Organic matter ≥ 30%, at least 30cm No change</p>
Shallow Rooting Depth	Depth (cm)	Rooting depth ≤ 30cm	Rooting depth ≤ 35cm
Poor Chemical Properties		Salinity ≥ 4 dS/m	Salinity ≥ 3.2 dS/m
		Sodicity ≥ 6 ESP	Sodicity ≥ 4.8 ESP
		pH (H <sub>2</sub> O) ≤ 5	Topsoil pH (H <sub>2</sub> O) ≤ 5.5
<b>TERRAIN</b>			
Steep Slope		Slope ≥ 15%	Slope ≥ 12%

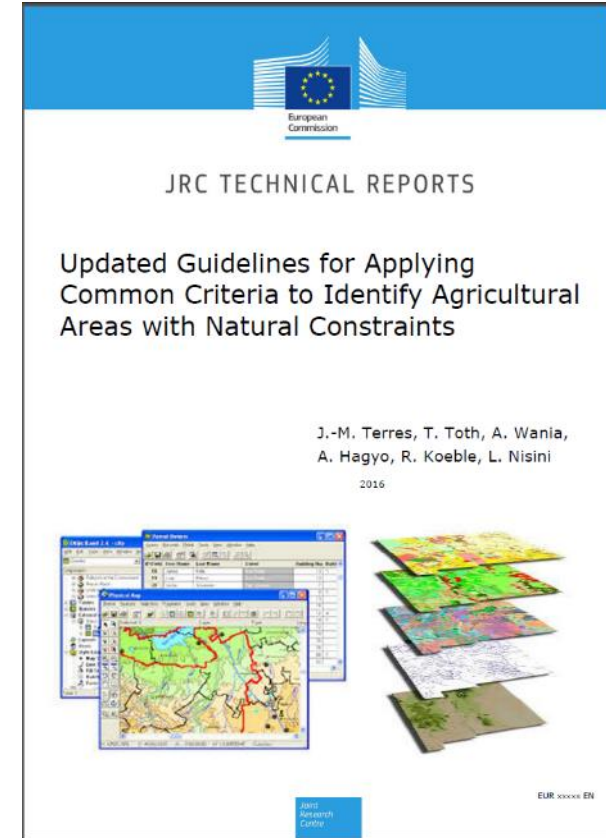
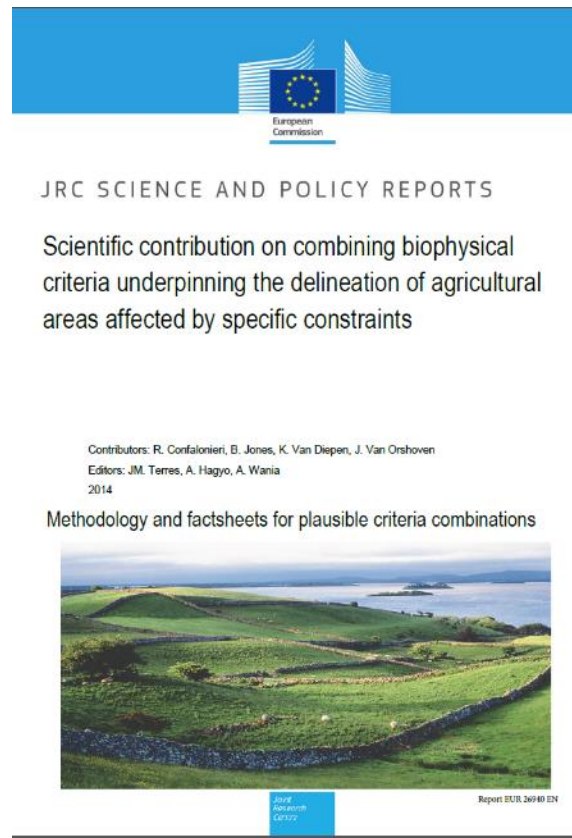
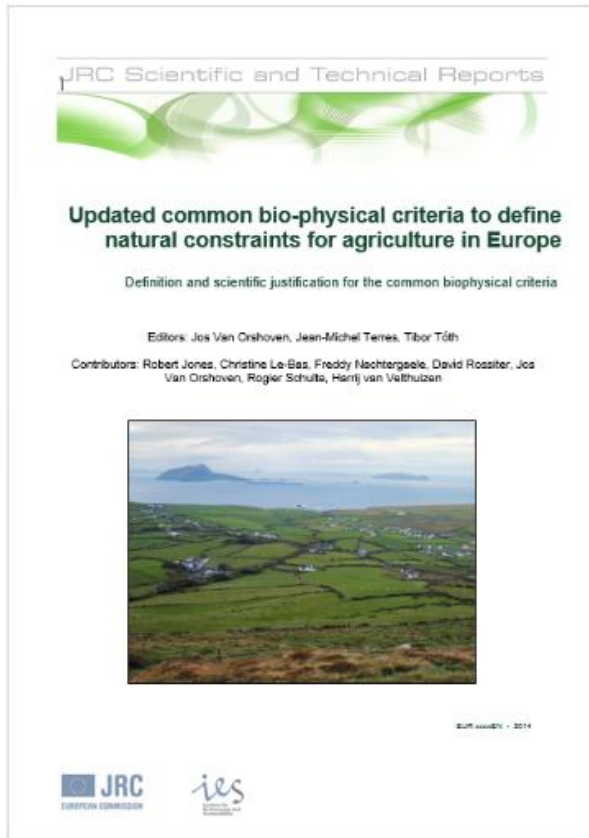
not exactly 20% margin



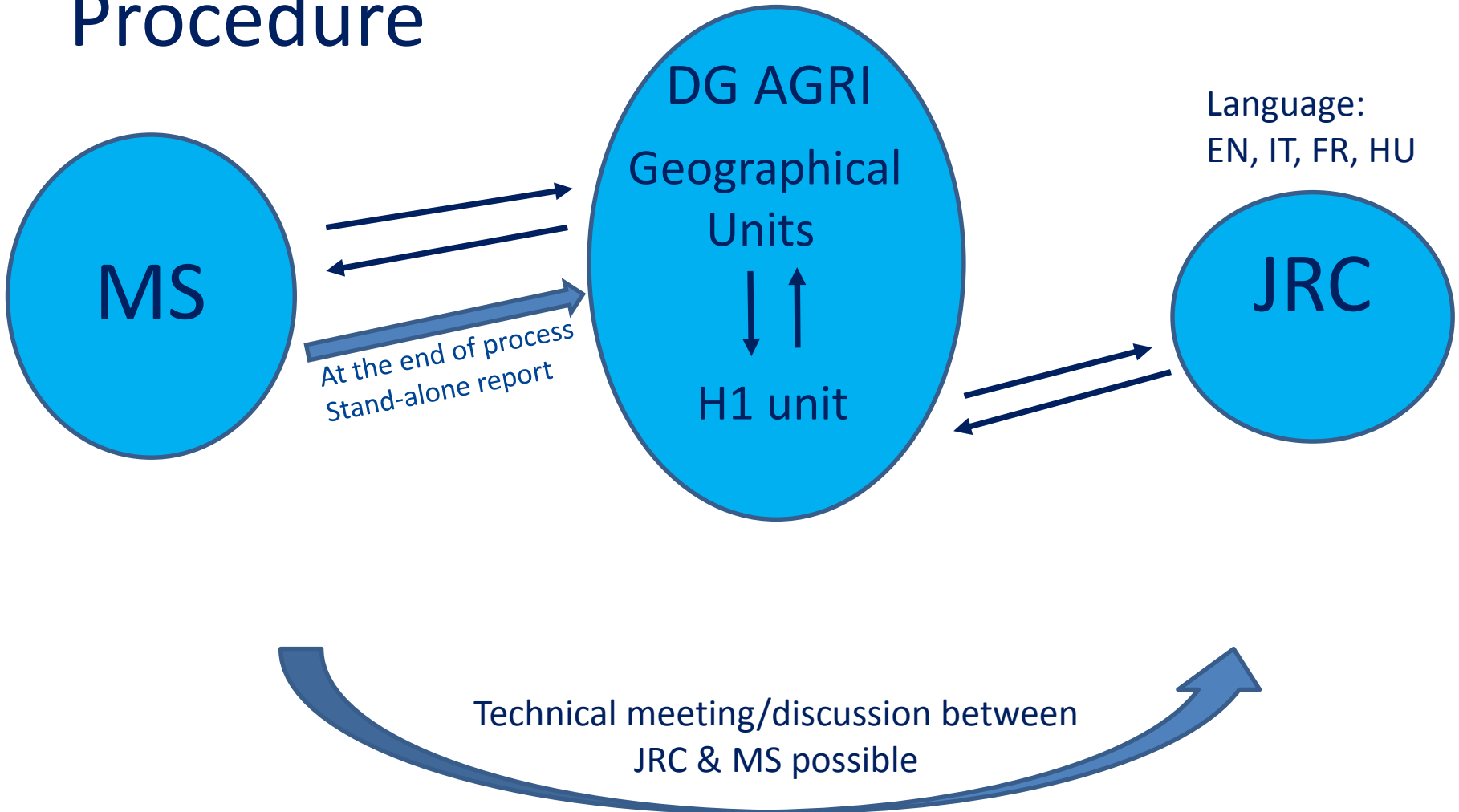
## Art 32.4: Combining criteria

- Interaction means also more uncertainties, it requires more detailed semantic and geographical data to be quantified
- Complex: 8 criteria but 14 sub-criteria → 91 pair-wise combinations
- Difficulties for some sub-severe thresholds:
  - ❖ Not present in soil databases (e.g. shallow rooting depth at 36cm !)
  - ❖ Not a constraint anymore at +20% (e.g.  $LGP \leq 216$  days)
  - ❖ Not definable (qualitative attribute) (e.g. clay with vertic properties)

# Guiding documents produced by JRC



# Procedure





**Thank you for your attention!**

