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ESPON 2013 Open Seminar  
3-4 June 2009, Prague, Czech Republic

**TIPTAP**  
**Territorial Impact Package**  
**for Transport and Agricultural Policies**

**First results on Territorial Impact Assessment**

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EUROPEAN UNION

Part-financed by the European Regional Development Fund

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## The Team

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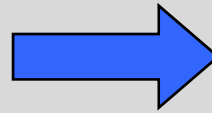
Andreu Ulied, Efrain Larrea

# 1. The model: from TEQUILA to TIPTAP

## TEQUILA

**T**erritorial  
**E**fficiency  
**QU**ality  
**I**dentify  
**L**ayered  
**A**ssessment  
 Model

(Camagni, 2006; ESPON 2006)



## TIPTAP

**T**erritorial  
**I**mpact  
**P**ackage for  
**T**ransport and  
**A**gricultural  
**P**olicies

(ESPON 2013)

## 2. What is TEQUILA?

1. A Multicriteria Model for Territorial Impact Assessment of EU policies
2. Territorial impact = impact on territorial cohesion
3. The 3 main components of territorial cohesion:

### ***Territorial Efficiency:***

resource-efficiency with respect to energy, land and natural resources; competitiveness and attractiveness; internal and external accessibility

### ***Territorial Quality:***

the quality of the living and working environment; comparable living standards across territories; fair access to services of general interest and to knowledge

### ***Territorial Identity:***

“social capital”; landscape and cultural heritage; creativity; productive “vocations” and “uniqueness” of each territory

### 3. The working of the TEQUILA Model

4. The 3 components of the T.C. concept (and their sub-components) become the *criteria* in the *Assessment Model*
5. The *weights* of the 3 criteria (and sub-criteria) are *flexible*: now they are assessed by a panel of experts
6. Territorialization of impacts is necessary, as:
  - Policy intensity is different in  $\neq$  regions
  - Single impacts are perceived differently in  $\neq$  regions (utility function)
  - Vulnerability to single (negative) impacts is different in  $\neq$  regions
  - Receptivity to single (positive) impacts is different in  $\neq$  regions

### 3. The working of the TEQUILA Model

7. The general impact of EU policies on each criterion is defined using *ad hoc studies*: on **CAP**, on **Transport policies**
8. Each study defines the **impact sub-criteria** inside each main criterion (TE, TQ, TI).

These sub-criteria are used:

- to measure Single-dimensional impacts
- to compute Summative Impacts (on TE, TQ, TI and overall impact)

9. For each sub-criterion, **impact indicators** are defined and computed.

## 4. The Territorial Assessment Model: TIM

$$\mathbf{TIM}_r = \sum_c \theta_c \cdot \mathbf{PIM}_{r,c} \cdot \mathbf{S}_{r,c}$$

TIM = *territorial impact*

c = criterion of the multi-criteria method

r = region

$\theta_c$  = weight of the c criterion

PIM = *potential impact* of policy

$S_{r,c}$  = *sensitivity* of region r to criterion c

$$\mathbf{S}_{r,c} = \mathbf{D}_{r,c} \cdot \mathbf{V}_{r,c}$$

$D_{r,c}$  = *desirability* of criterion c for region r (territorial "*utility function*")

$V_{r,c}$  = *vulnerability* of region c to impact  $PIM_c$  (*receptivity* for positive impacts): a vector of regional characteristics

## 4. The Territorial Assessment Model: TIM

10. The single PIMs are computed:

- either through an econometric / simulation model (for Transport Policies)
- or through impact indicators and experts judgements (for CAP)

11. In this last case:

$$\mathbf{PIM}_{r,c} = \mathbf{PI}_r \cdot \mathbf{PIM}_c \cdot \mathbf{IN}_r$$

where PI = policy intensity and IN are regional indicators



## 4. The Territorial Assessment Model: TIM

12. Desirability of each impact criterion for each region (e.g. growth, or env. quality) and vulnerability of each region to each impact criterion are assessed through expert judgements
13. Observed ranges of indicators are scaled / normalized into a sub-interval of the 0-1 range according to an expert judgement procedure (value function)  
Established, advanced methodologies: pairwise comparison, Analytical Hierarchical Process, .....
14. Three expert meetings were organised:
  - in Amsterdam (march), in order to test the methodology
  - in Barcelona (may), in order to test transport policy impacts
  - in Newcastle (may), in order to test CAP policy impacts

## 5. The way travelled

For the two policies inspected:

- Policy definition and policy scenarios
- Impact sub-criteria
- Logical chain, from policy to impacts
- Construction of impact indicators and PIMs
- Definition with experts of:
  - \* weights for criteria and sub-criteria
  - \* value functions for impact normalisation
  - \* desirability and vulnerability coefficients
- Mapping of PIMs

Still the way to go:

- TIMs for Single Dimensional Impacts and Summative Impacts
- New hypotheses on weights: questionnaire and European Value Survey

## 6. Territorial Impact of CAP

Pillar 1: supports food production through Single Farm Payments

Pillar 2: supports rural development - over four axes

Policy trend is to move funding away from direct payments under Pillar 1 into Pillar 2 (e.g. through "modulation")

An "extreme" policy scenario:

- A 20% reduction in the Single Farm Payment (SFP) to eligible farms in EU-15
- A quarter of this (i.e. 5% of SFP) redistributed to Pillar 2 under modulation
- Modulated funds distributed according to current national strategies.
- Scenario for EU-12: a 20% reduction in direct payments but all transferred to Pillar 2 (*not yet implemented*)

## 6. Territorial Impact of CAP

<b>Distribution of CAP spending</b>	2009 budget (preliminary) (Million euros)
Total	55.920
Pillar 1: Decoupled direct aid	32.530
Pillar 1: Other direct aid	5.990
Pillar 1: Market support	3.460
Pillar 2: Rural development, <i>of which agri-env and LFAs</i>	13.400 <i>9.830</i>

## 6. Territorial Impact of CAP

### Comparison to present situation:

- From 2007 to 2012 there is a compulsory annual reduction in a farm's SFP of 5% of any amount received over € 5.000.
- All of this is then transferred to Pillar 2 and at least 80% of their modulated funds are returned to individual member states and then allocated by them as they see fit.

### Rationale of the Scenario (EU-15):

- An extreme policy scenario can provide wider variation in territorial impacts for the model to predict.
- Reduction in spending under Pillar 1 is a policy priority.
- Financial climate may support some reduction of the budget for CAP in a time of financial constraint.
- This scenario achieves a budget reduction but maintains modulation at current level.

## 6. Territorial Impact of CAP

### Data problems:

- Most relevant data on agricultural indicators exists only at either national or NUTS2 level
- Existing models - e.g. CAPRI, Seamless, POMMARD - may be useful but cannot at present fulfill our needs.
- Policy intensity in each region is not defined ex-ante, and main decisions concerning modulation are up to national authorities.

### Policy intensity in regions:

- The impacts of the policy scenario will be felt most strongly in those territories where SFP makes up the highest proportions of agricultural incomes and where agricultural incomes make up a higher proportion of GDP.
- Regional breakdown of Policy expenditure (P1 and P2) according to Espon estimates (2003) for 1999.

## 7. Territorial Impact of CAP: logical chain

1. Reduction in farm incomes for farms receiving over € 5.000 per year
2. Farmer either accepts this or reallocates resources to regain lost income
3. Ability to regain lost income is determined by a variety of factors:
  - Farmer may be able to enrol land into an agri-environment scheme (AES) and obtain payments under Pillar 2.
  - Costs could be reduced by lower labour inputs or through economies of scale (e.g. enlarging farm, specialisation)
  - Farmers could diversify into tourism or other on-farm economic activities.

## 7. Territorial Impact of CAP: logical chain

### Economic and environmental consequences

1. Increase in unemployment
2. Amalgamation of smaller farms into larger more, viable units
3. Some marginal farms may cease production - this could lead to landscape change and in some cases (e.g. terraced cultivation) soil erosion could occur
4. More land in AESs should improve environmental and landscape quality.

### Social consequences

5. If unemployment levels are high already, additional unemployment could encourage outmigration and lead to a decline in rural services
6. Farmers may diversify into regional products as a marketing strategy
7. Loss of social benefits if traditional agricultural landscape are lost

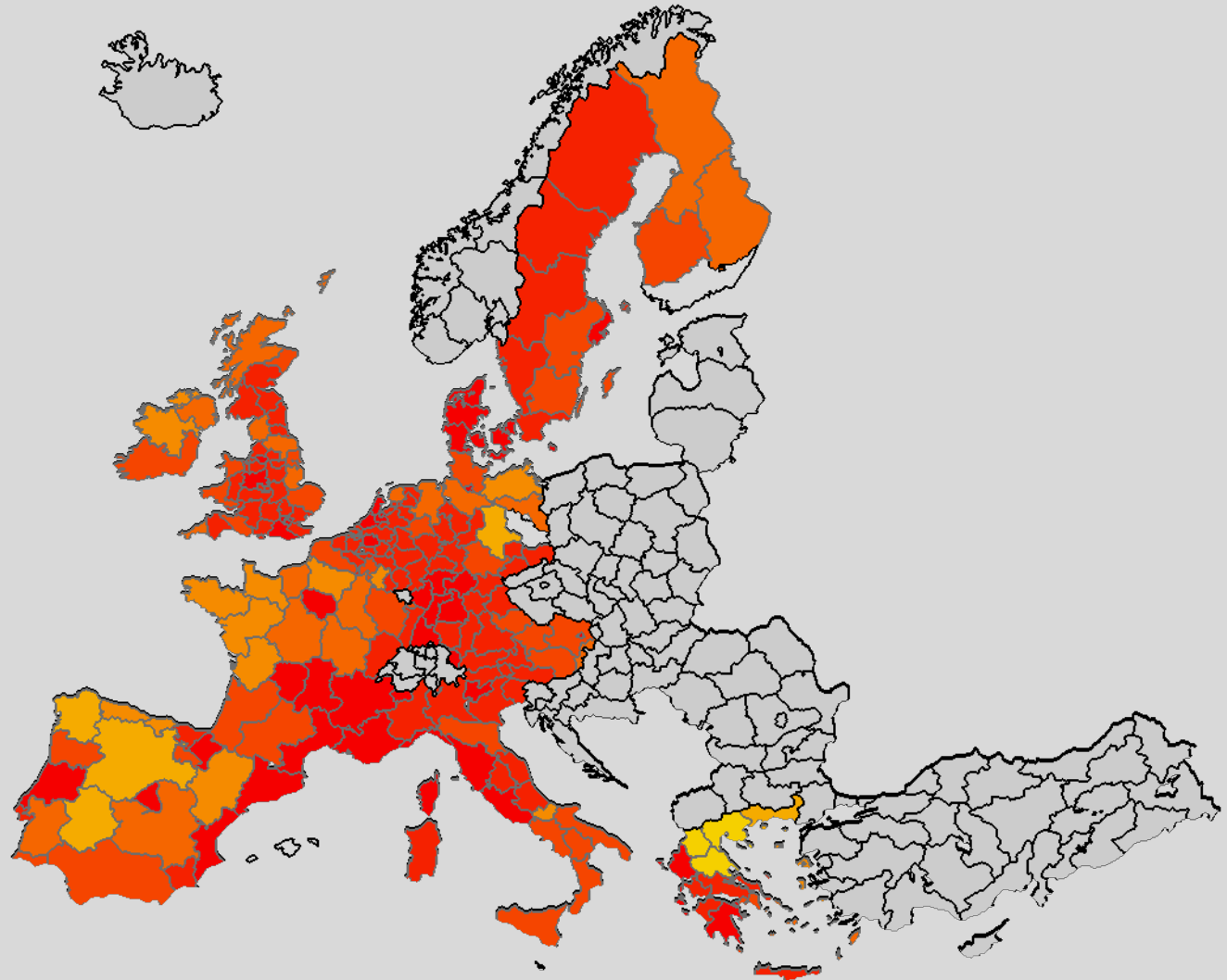
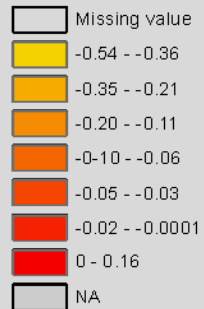


## 8. CAP Impact Indicators

Criterion	Variable	Sub-criter.	Type	Definition	Measurement
TE Efficiency	PIM_E1	Economic growth	Benefit	Modulation/Total GDP; Modulation = [(regional increase in P2) – (regional cut in P1)]	% change in GDP
	PIM_E2	Unemployment	Cost	(Unemployment rate) * (Share of agricultural employment)*(PIM_E1 normalised)	% change in unempl. rate
	PIM_E3	Tourism Diversificat.	Benefit	(Number of beds in rural areas/Km2 in agriculture) * (PIM_E2 normalised)	new tourism beds per Km2
TQ Quality	PIM_Q1	Environment. quality	Benefit	((Total agricultural area entered into agri-environm. schemes under Pillar2 of Cap) / Total agricultural area)*100	% of agricultural areas into agri-environmt. schemes
	PIM_Q2	Community viability	Cost	(((Share of areas occupied by farms <10 ha) +(share of population aged >65)+(share of employment in agriculture))*(PIM_E1 normalised))/3	social deprivation
	PIM_Q3	Emissions	Cost	Variation in livestock emissions (Tons CH4 per year)	emissions
	PIM_Q4	Risk of soil erosion	Cost	Areas at risk of soil erosion (ton/ha/year)*(5% of areas of farms <10ha/total agricultural areas)*100	% of abandoned areas + erosion probability
TI Identity	PIM_I1	Landscape diversity	Cost	(5% of areas of farms <10ha / total agricultural areas)*100	% of abandoned /incorpor. agricultural areas
	PIM_I2	Community identity	Cost	[(0,1*(Share of people aged >15 and <65) + (share of employment in agriculture) + (unempl. rate))*(PIM_E1 normalised)]*100/3	outmigration probabil. (%)
	PIM_I3	Heritage products	Benefit	[(Employment in agriculture/ Gross Fixed Capital Formation in agriculture)*(PIM_E1 normalised)] / Max value	product diversification and innovation probabil.

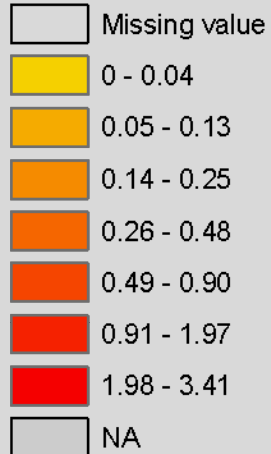
## 9. Impact on Economic Growth (benefit)-TE

### Economic growth

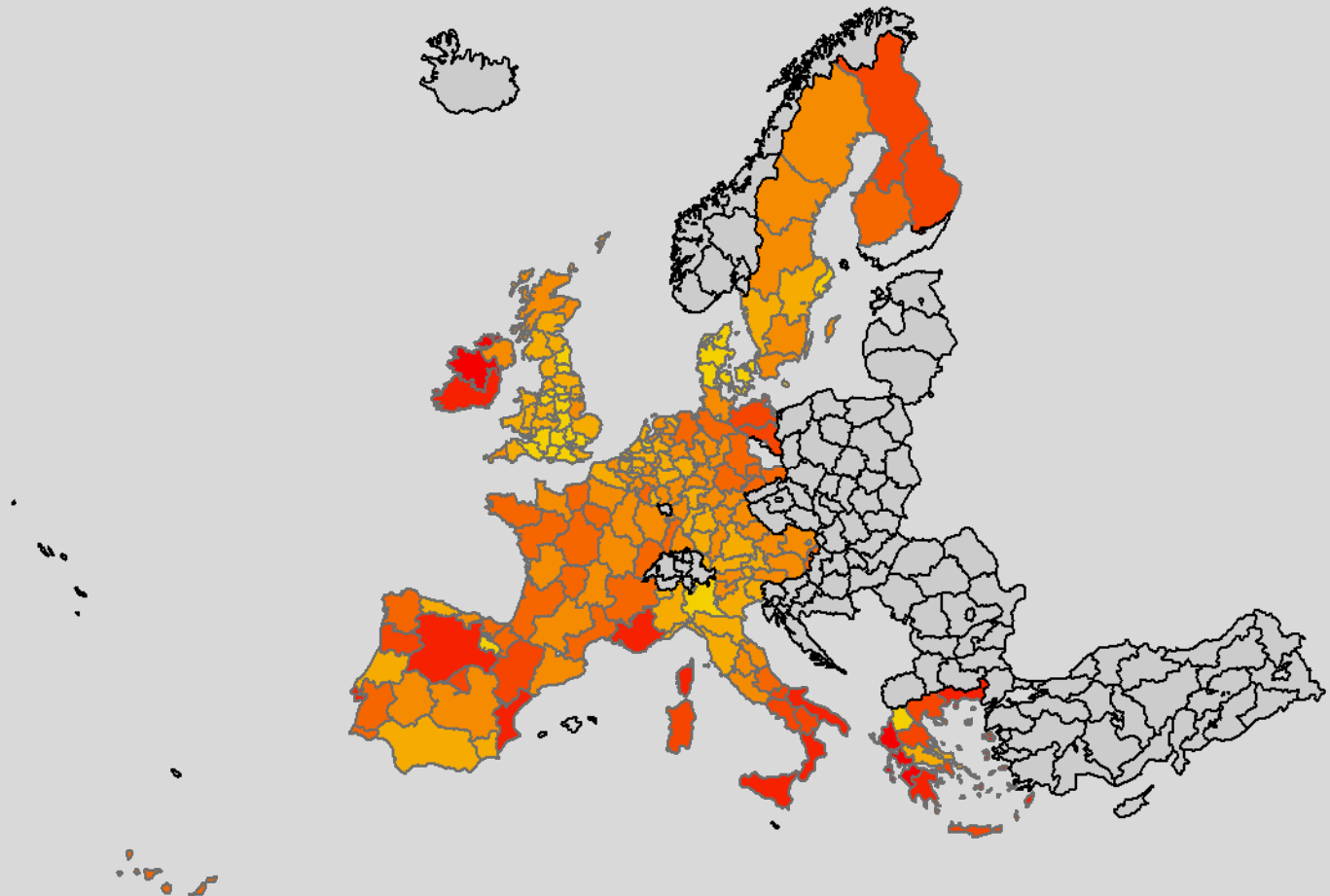


## 9. Impact on Unemployment (cost) - TE

### Unemployment

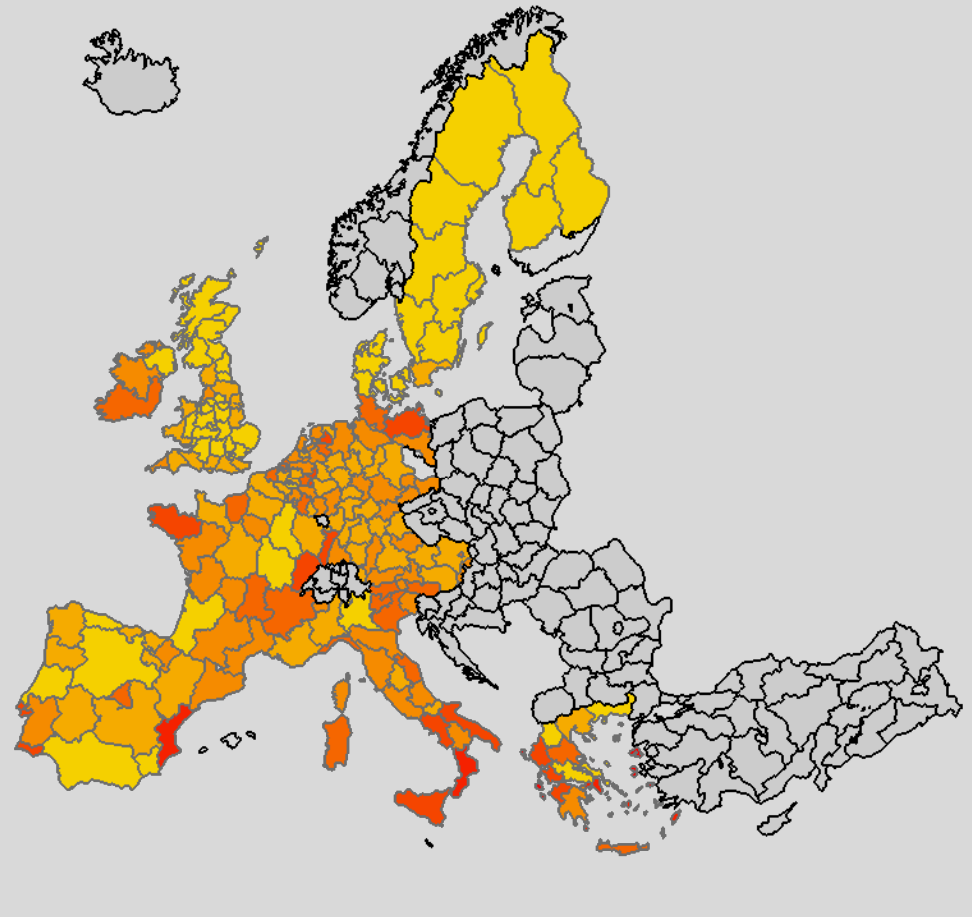
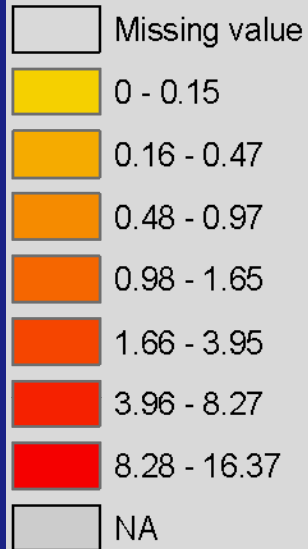


% change in unemployment



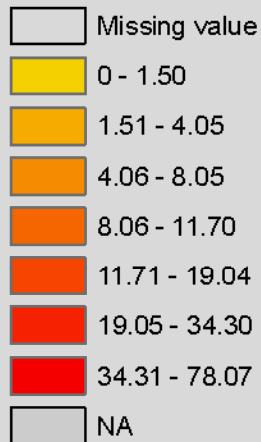
# 9. Impact on Tourism Diversification (benefit) - TE

## Tourism diversification

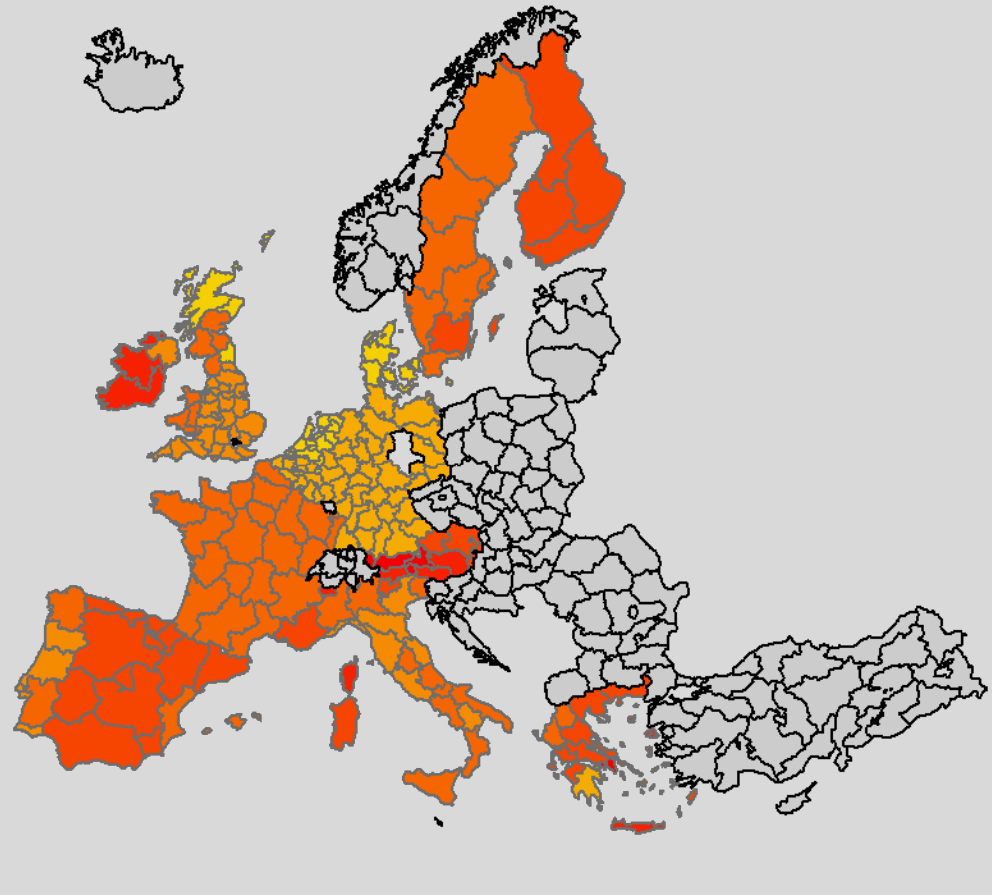


## 9. Impact on Environmental Quality (benefit) - TQ

### Environmental quality

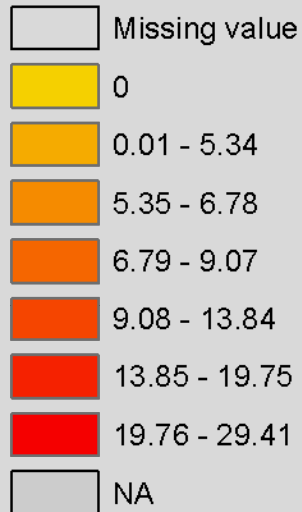


% of agricultural areas into  
agri-environment schemes  
of Pillar 2

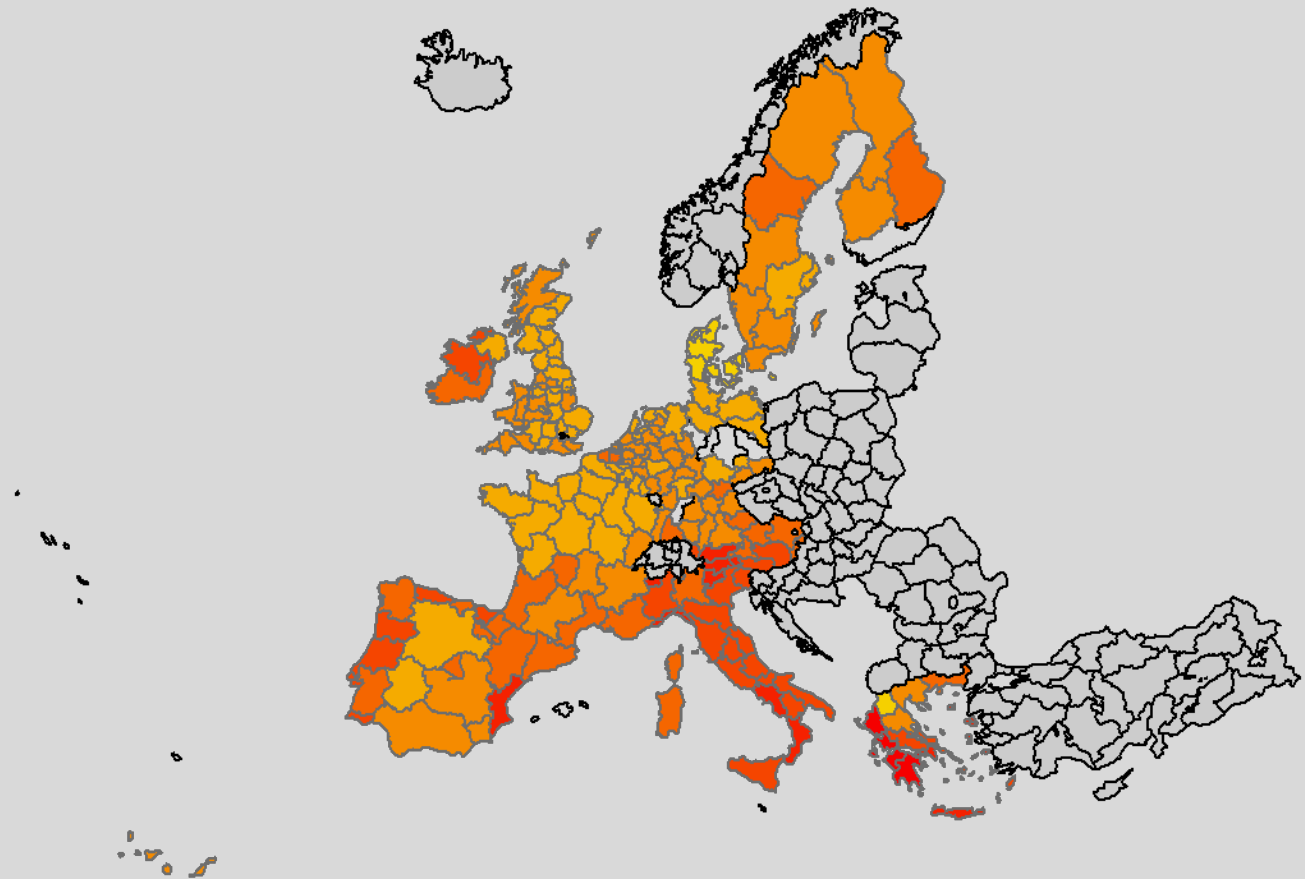


## 9. Impact on Community Viability (cost) - TQ

### Community viability

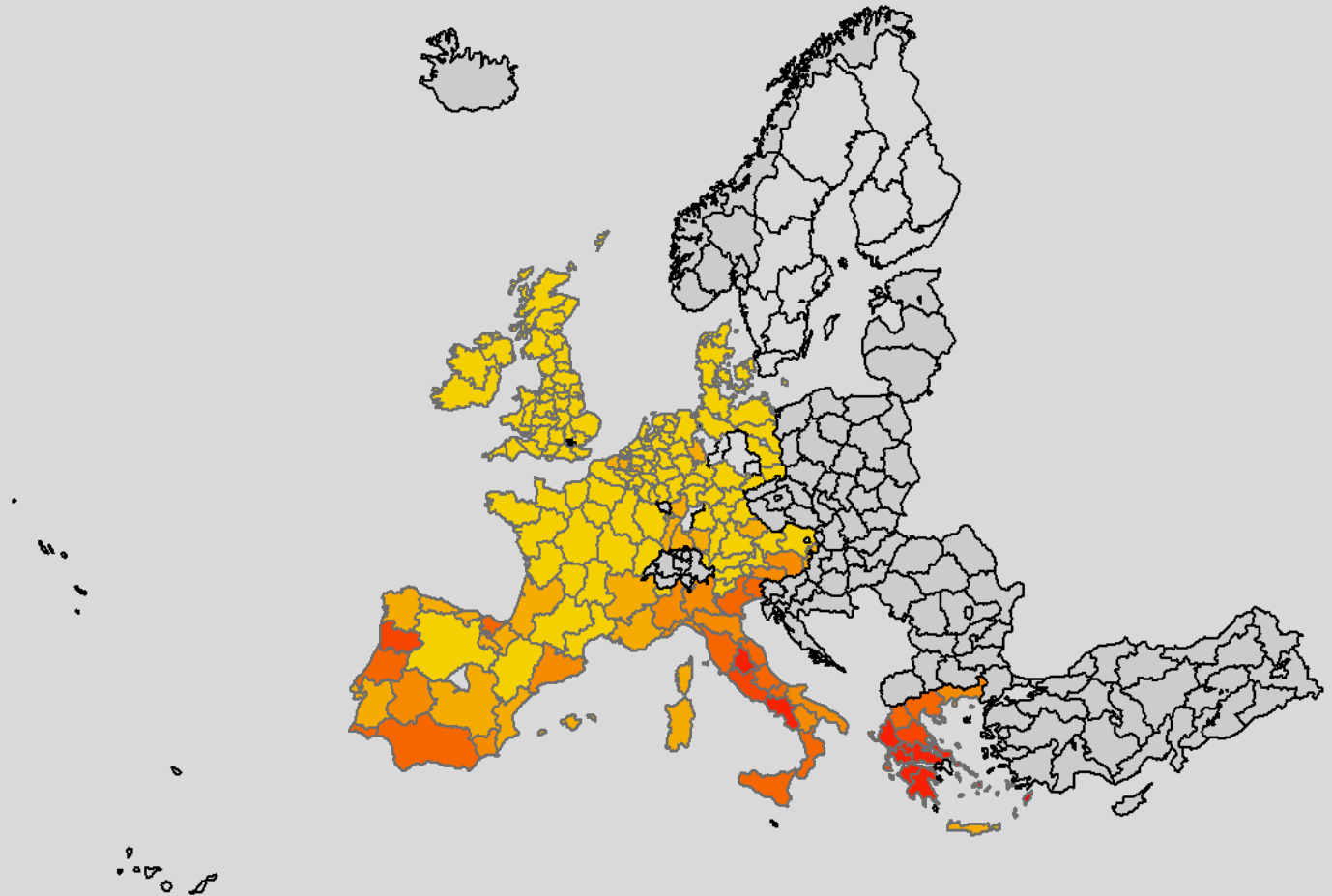
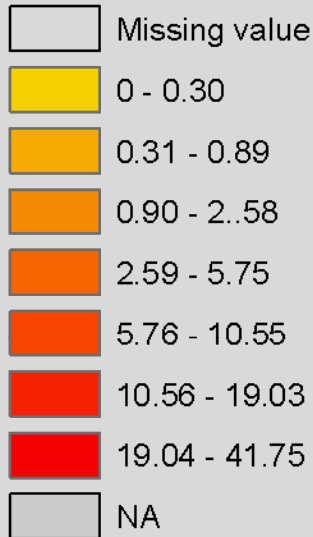


Index of social  
deprivation in  
agriculture



## 9. Impact on Risk of Soil Erosion (cost) - TQ

### Risk of soil erosion

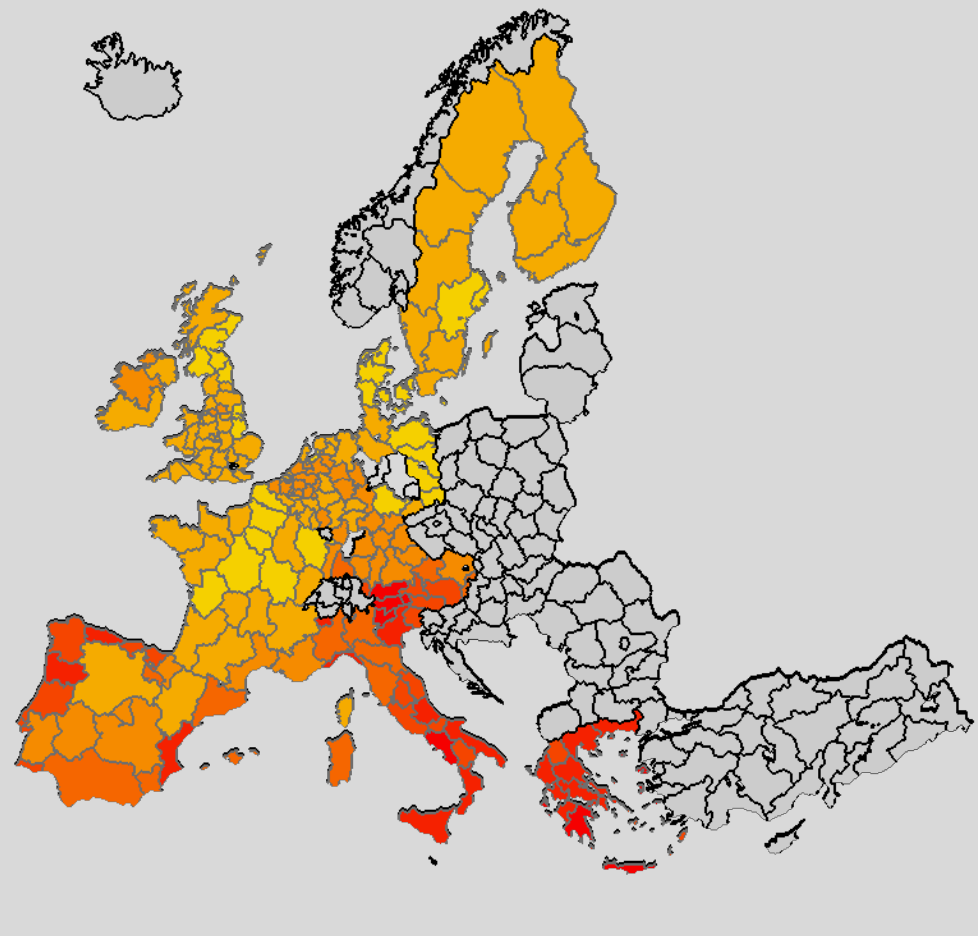


## 9. Impact on Landscape Diversity (cost) - TI

### Landscape diversity



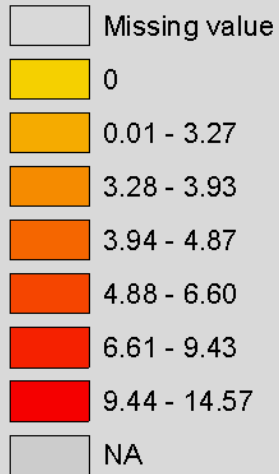
% of abandoned or  
incorporated agricultural  
areas



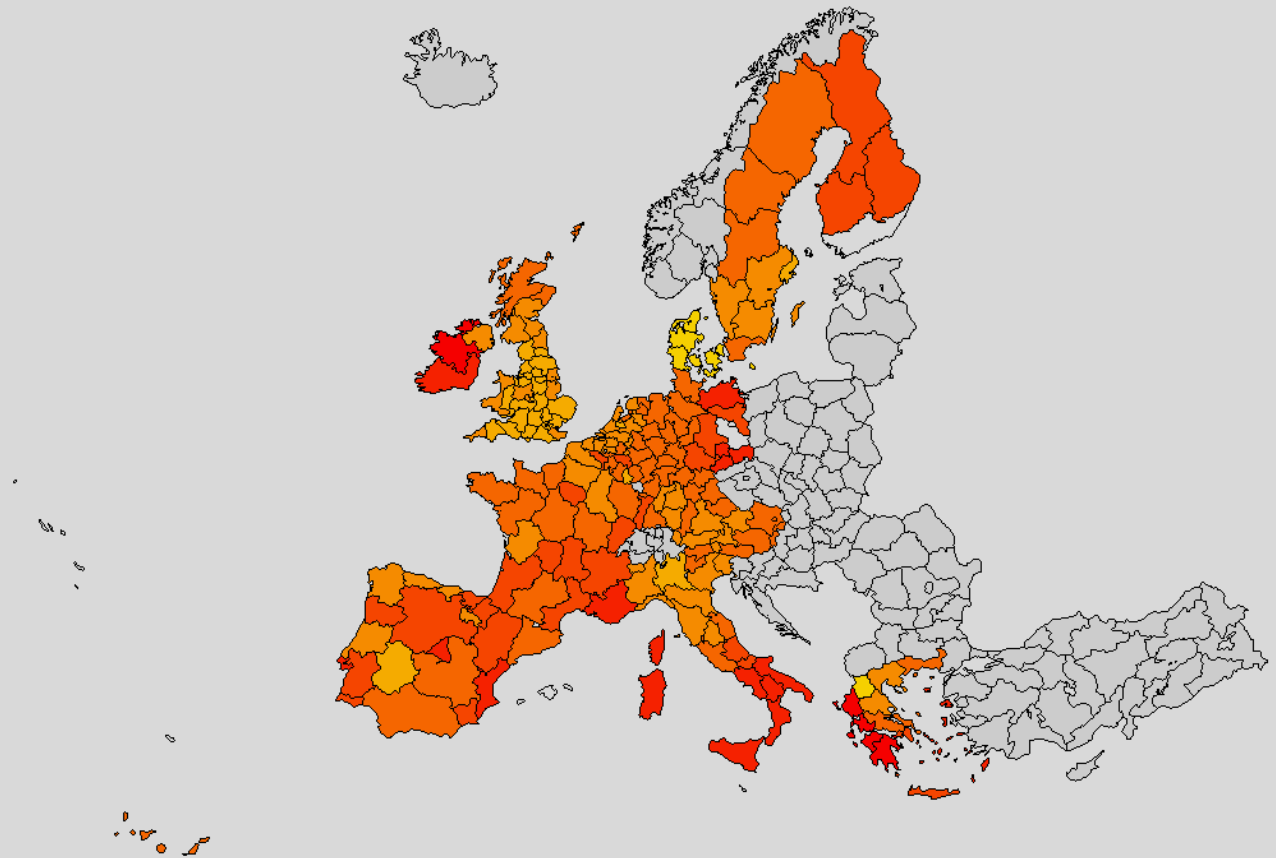


# 9. Impact on Community Identity (cost) - TI

## Community identity



Out-migration probability



## 10. IMPACT INDICATORS: RELATIVE WEIGHTS

Criterion	Weight	Variable		Weight
TE Efficiency	0,58	PIM_E1	<b>Economic growth</b>	0,21
		PIM_E2	<b>Unemployment</b>	0,34
		PIM_E3	<b>Tourism diversification</b>	0,45
TQ Quality	0,30	PIM_Q1	<b>Environmental quality</b>	0,38
		PIM_Q2	<b>Community viability</b>	0,08
		PIM_Q3	<b>Emissions</b>	0,01
		PIM_Q4	<b>Risk of soil erosion</b>	0,52
TI Identity	0,12	PIM_I1	<b>Landscape diversity</b>	0,19
		PIM_I2	<b>Community identity</b>	0,49
		PIM_I3	<b>Heritage products</b>	0,32

These are experts judgements concerning weights of impact sub-criteria, for computing Summative Impacts.

Your help is gratefully requested in order to corroborate these judgements

THANKS FOR YOUR ATTENTION!

Thanks for your attention, comments and suggestions!

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