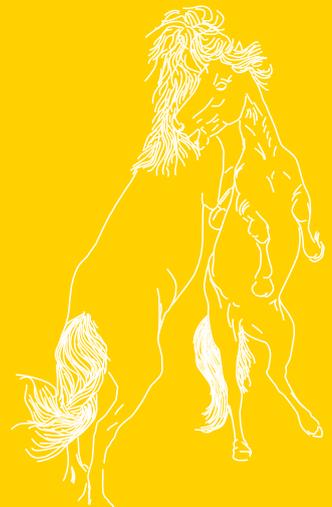


# Indicadores de Sostenibilidad y Gestión del Desarrollo Rural

Marta Cardín Pedrosa y Carlos J. Álvarez



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## Indicadores de Sostenibilidade y Gestión del Desarrollo Rural

**Marta Cardín Pedrosa y Carlos J. Álvarez**

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DIPUTACIÓN PROVINCIAL DE LUGO  
**I N L U D E S**



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Agraria e Desenvolvemento Rural

El Grupo de Investigación, 1716 Proyectos y Planificación del Departamento de Ingeniería Agroforestal de la Universidad de Santiago de Compostela, gracias a la colaboración del Instituto de Biodiversidad Agraria y Desarrollo Rural (IBADER), llevó a cabo en el mes de septiembre de 2008 el curso de verano titulado “Indicadores de sostenibilidad y gestión del desarrollo rural”.

Hoy en día los sistemas de indicadores son la manera más operativa y flexible de estudiar situaciones complejas, como son la sostenibilidad de las actividades y el grado de desarrollo de determinadas áreas geográficas.

En la actualidad, cuando se piensa en el futuro, se toma como referencia una nueva lógica, la lógica de la sostenibilidad del desarrollo, que pretende atender simultáneamente a la mejora de las tres dimensiones del desarrollo para lograr una mejora de la calidad de vida tanto de las generaciones actuales como de las futuras. Lo cual reviste una singular importancia cuando nos enfrentamos con el desarrollo del medio rural donde existen grandes problemas a solucionar como el despoblamiento, la degradación del territorio, la pérdida de biodiversidad, o los impactos de los modelos de producción. Problemas a los que nos tenemos que enfrentar a través de políticas que tengan en cuenta a la vez las implicaciones sociales, económicas y ecológicas.

Pero para que la sostenibilidad del desarrollo sea un concepto operativo y se pueda concretar en decisiones políticas y prácticas socioeconómicas bien orientadas, son precisos informes basados fundamentalmente en indicadores de sostenibilidad capaces de informarnos sobre si nos estamos moviendo hacia el objetivo deseado y en qué condiciones. Es necesario disponer de información objetiva, fiable, relevante para la toma informada de decisiones a todos los niveles.

El curso buscaba una aproximación a los conceptos de sostenibilidad y a la utilización de indicadores para su gestión desde multitud de ópticas diferenciadas, y con planteamientos prácticos basados en casos reales y líneas de investigación. Se incluyen experiencias de otros países y de organismos internacionales.

Este número de la serie técnica de la revista del IBADER, Recursos Rurales, contiene las diferentes ponencias presentadas en el curso. Es necesario advertir al lector que fruto de la heterogeneidad de las ópticas de los participantes contienen conferencias con un amplio abanico de criterios, desde documentos y trabajos científicos, a enumeración de resultados o actividades, así como exposición de propuestas. Lo cual lo convierte en un documento adecuado para reflexionar sobre el futuro del uso de indicadores de sostenibilidad en el medio rural.

Consideramos que la publicación de estos trabajos resultará de especial interés para todos los agentes del medio rural, entendiendo como tales a todas las personas físicas o jurídicas relacionadas directa o indirectamente con el desarrollo rural, agricultores y silvicultores, asociaciones de los mismos, empresas, cooperativas, transformadoras, la Administración Pública, y por supuesto los Centros de Investigación.

Agradecer a todos los participantes en el curso, su apoyo interés y entusiasmo, señalando especialmente a aquellos ponentes que aceptaron y cumplieron el compromiso de trasladar sus conferencias a este documento.

**Marta Cardín Pedrosa y Carlos J. Álvarez**

**Directores del Curso, septiembre de 2008**



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# Typology Approach in the Assessment of Rural Policies Impact

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**Abstract** This paper refers to the recent efforts of the JRC/IPTS on impact assessment of rural policies in the EU, particularly using rural typology and quantitative assessment tools for it based on the project of Common Feature of Diverse European Rural Areas: Review of Approaches to Rural Typology (March-September 2007). The paper is structured in three parts as follows. The first one starts with a short overview of rural definition. It will be as a preliminary exercise an overview of rural-urban delimitations and classifications of "rurality". The definitions/delimitations which have been operationally linked to rural development policies will be particularly paid attention. The second part of the paper concentrates on description and review of spatial and performance typologies aimed at providing full comparative descriptions of rural typologies. The third part concentrates on summarizing the results of the project and drawing recommendations for further research will concentrate on rural policy impact analysing.

**Key words** Rural policy, rural development, rural definition, rural typology, policy impact assessment

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## Introduction and background

The Agriculture and Life Sciences in the Economy (AgriLife) unit of JRC/IPTS has broadened its research scope toward the support to the rural development policy, reflecting the following changes in the Common Agricultural Policy (CAP):

- the 2003 fundamental reform of the first pillar of the CAP (EC 1782/2003),
- unifying rural development measures under the umbrella of European Agricultural Fund for Rural Development,
- their strengthening in the Rural Development Regulation for the period 2007-2013 (RDR, EC 1698/2005).

There are three principal objectives (**axes**) of rural development policy stated in the RDR, EC 1698/2005 and the Community Strategic Guidelines for Rural Development (2006/144/EC) for the same programming period:

- I.- to increase the competitiveness of the farm and forestry sector through support for restructuring, modernisation and quality production (*Axis 1*),
- II.- to enhance the environment and the countryside through support for land management (*Axis 2*) and
- III.- to improve the quality of life in rural areas and to encourage diversification of economic activities (*Axis 3*).

Widening the scope from very focussed on agriculture toward a more general rural development policy (particularly in the *Axis 3*) has induced demand for an adequate apparatus for the assessment of rural needs and efficiency and effectiveness of respective measures. In 2006, DG AGRI published a list of indicators and methodological guidelines for the monitoring and evaluation of the Rural Development Programme for 2007-13 (European Commission 2006). However, more systematic policy oriented research work is needed.

Sustainability in Agriculture and Rural Development (SUSTAG) action of the AgriLife unit set up its research agenda for the support of the European Rural Development

policy in the area of socio-economic analyses of functioning of rural areas and the policy impact assessment in 2006 and has been revised annually.

This research agenda recognises that spatial perspective of the assessment of rural development and policies is essential. The particular concerns are to provide characterisation (strengths and weaknesses, functioning, long-term trends, economic integration) of rural areas with the effort to define a “typology” of rural areas. In parallel, the research agenda on rural development policy assessment assumes to review, select, further develop and apply modelling tools with a regional break down (as NUTS3) for evaluating the functioning of the rural economies and the impact of rural development policies in different types of rural areas.

IPTS has already carried out a number of activities to support and contribute those aforementioned particular concerns through initiating a scientific platform/network to EU-wide and conducted research projects. Recently two projects in this area have been carried out by IPTS:

1.- Common Feature of Diverse European Rural Areas: Review of Approaches to Rural Typology (March-September 2007)

2.- Building a Typology of European Rural Areas for the Spatial Impact Assessment of Policies (TERA-SIAP) (ongoing since January 2008).

The paper compiles the results of the reports and the expert workshops held in the course of the projects. The paper is structured in three parts as follows. The first one starts with a short overview of rural definition. It will be as a preliminary exercise an overview of rural-urban delimitations and classifications of “rurality”. The definitions/delimitations which have been operationally linked to rural development policies will be particularly paid attention. The second part of the paper concentrates on description and review of spatial and performance typologies aimed at providing full comparative descriptions of rural typologies. The third part concentrates on summarizing the results of the project and drawing recommendations for further research will concentrate on rural policy impact analysing.

## Methodology

The main methodology of the paper is based on literature review to cover the project objectives as follows: to provide an overview of existing approaches and results concerning characterisation and typologies of rural areas for territorial/spatial impact assessment of policies; to show pros and cons of approaches to rural typologies in respect to territorial socio-economic modelling – i.e. the quantitative assessment of the impact of rural development policies by using spatially differentiated economic models; to draw recommendation for an approach to be selected in further research.

A necessary preliminary step to fulfil the objectives described above was, of course, to identify rural and urban areas in an objective and consistent way. Therefore,

although this was not a primary objective, a brief review of recent analysis and discussions relating to the delimitation of rural Europe were provided. This part was built upon the work of ESPON 1.1.2 (Beng C and Schmidt-Thomé K (2004) Urban-rural relations in Europe European Spatial Planning Observation Network (Espo Project 1.1.2.)), and the SERA (Copus, A, Hall, C, Barnes, A, Dalton, G, Cook, P, Weingarten, P, Baum, S, Stangte, H, Lindner, C, Hill A, Eiden, G, McQuaid, R, Grieg, M, Johansson, M (2006) Study on Employment in Rural Areas (SERA), Final deliverable, unpublished report prepared for the EC DG Agri, Brussels), RUREMPLO (Esposti, R, F.E. Godeschalk, T. Kuhmonen, J.H. Post, F, Sotte and I.J, Terluin (1999) Employment Growth in Rural Regions of the EU; A quantitative analysis for the period 1980-1995; The Hague, LEI-DLO.) and SCENAR2020 (ECNC et al(2006), SCENAR 2020-Scenaria study on agriculture and the rural world Fifth Interim deliverable of contract No. 30 – CE -0040087/00-08 carried out for the EC, DG Agri, DG Economic Analysis and Evaluation) reports, and the other available material from recent EU projects, and providing an assessment of the utility of different rural delimitations as a basis for construction of typologies.

The review of rural typology based upon “institutional, social, economic and environmental conditions and performance of rural areas” were done using standard “fiches” to ensure comprehensive and comparable information on each typology, including geographical coverage and scale, breadth of “theme” (eg social/economic/environmental, single or multiple economic sector, etc), degree of quantification, policy context and background etc. The fiches paid particular attention to assessing the potential utility of the typologies for territorial impact analysis and to any link with territorial modelling.

## Definition of rural areas

There is no single common internationally accepted definition, despite the analysis of rural areas in many countries for decades. For statistical reporting, whatever the methodology adopted, the determining factor is the availability of statistics for the selected regional units. It implies that methodology must be able to define the “rural” character of the NUTS regions as most socio-economic data are usually only available at this level (EC 2006).

Before focussing on national approaches of rural, in which rural is defined in terms of a homogenous area as being distinct from urban areas, OECD rural definition methodology will be explained as the EC has consistently used it (e.g. Strategic Guidelines for RDP 2017-2013) (EC 2006):

*OECD methodology to define rural areas (EC 2006):*

The OECD methodology is based on population density with a two-step approach (OECD 1994):

1.- Local units (e.g. municipalities) are identified as rural if their population density is below 150 inhabitants per square kilometre.

2.- Regions (e.g. NUTS 3 or NUTS 2), are classified in one of the 3 categories:

- Predominantly Rural region (PR) : if more than 50% of the population of the region is living in rural communes (with less than 150 inhabitants / km<sup>2</sup>)

- Intermediate Region (IR) : if 15% to 50% of the population of the region is living in rural local units

- Predominantly Urban region (PU): if less than 15% of the population of the region is living in rural local units.

Changes introduced in the second step of the methodology (OECD 2005):

- if there is an urban centre > 200.000 inhabitants (in EU) representing no less than 25% of the regional population in a "predominantly rural" region, it is re-classified as "intermediate"

- if there is an urban centre > 500.000 inhabitants (in EU) representing no less than 25% of the regional population in an "intermediate" region, it is re-classified as "predominantly urban".

An "urban centre" in Europe is defined as a local unit LAU2 (e.g. municipality) with a population density above 150 inhabitants per km<sup>2</sup> and total population above 200.000 inhabitants.

Characterisation of the rural character at regional level, where most of the statistics are available, allows drawing easily a picture of the different types of areas at national level. As for the first step, the method requires information on population and areas at local level, the characterisation can only be made with a long periodicity (in general every 10 years when a population census is made).

The OECD methodology is the most widely and universally used approach. However, the results of this methodology are sometimes considered as imperfectly reflecting the rural character of areas, particularly in densely populated regions. The methodology is therefore sometimes adapted or replaced by another approach.

When analysing the different national approaches to defining "rural" it is appropriate to distinguish the following three aspects (OECD 1994):

1.- The size of the territorial units and the level of geographic hierarchy;

2.- The criteria used to characterize the units at the respective levels;

3.- The quantitative thresholds used to define the boundary between rural and other areas (OECD, 1996).

According to the OECD (1994), broadly two levels of territorial hierarchy can be distinguished within the national approaches to defining rural. If countries try to identify homogenous rural areas as being distinct from urban areas, often small geographical units at municipality level are used. If, on the other hand, functional relations are emphasized, countries tend to use rather larger geographical units at regional level. Such approaches often result in a multiplicity of rural typologies, either designed by statistics agencies or by scientists (Hoggart et al., 1995).

In Table 1, an overview of national definitions of rural is presented. It is important to note that the degree to which such definitions are woven into legislation or administrative procedures varies considerably between Member States. Furthermore some Member States have developed more than one definition, and use different designations in different policy contexts. Since the situation is constantly evolving, Table 1 should be considered as a representative overview, rather than an exhaustive list.

Most European countries use municipalities/communes as the territorial "building block" for delimitations of rural areas. A few use city or settlement boundaries or other "morphological units" - such as built up areas (ESPON 2003). Population size (of settlements within municipalities, or of the municipality as a whole) and population density, are the most commonly used differentiating characteristics, although the threshold values vary considerably. A few countries also incorporate the sectoral structure of employment (especially the importance of agriculture), or commuting patterns.

The ESPON (2003) report noted an important difference between approaches in the EU15, and those of the New Member States (NMS): "In general the delimitation approaches in accession and candidate countries differ from other countries of the ESPON space and form a more unified group of approaches on its own. Only a few of them apply a conceptual delimitation approach, which reflects the long tradition in command economy. However, a delimitation of urban and rural population by government decision can also be based on conceptual work." One example of this hybrid situation is Romania, where rural areas have been delimited by a law, but the latter was based upon an analysis of settlement size and the sectoral structure of employment.

## Definition and review of rural typologies

Rural typologies usually go beyond the simple rural-urban dichotomy as reflected in the national definitions of rural in the previous section and often apply an urban-rural gradient in specifying different spatial types. While rural definitions are simple dichotomous classifications which attempt to identify a boundary between areas which are urban, and areas which are rural, "rural typologies" are quantitative/operational classification of rural areas. Another difference between a definition of rural area and a rural typology is whereas a definition of 'rural area' is usually binary (rural versus urban), a rural typology is often characterized by more than two categories.

Rural typologies are also different from "characterisations" which are only conceptual/qualitative description of different kinds of rural regions.

Typologies demand large volumes of empirical data, statistical methodologies such as multivariate statistical analysis, like models. They may distinguish between regions in terms of the degree of "rurality", or in terms of a range of socio-economic characteristics, which may be collectively viewed as indicative of "performance".

MS	Territorial unit	Criteria	Threshold	Source
AT	Communes (Gemeinden)	Settlement size	>2,000 inhabitants	Espon (2003)
BE	Communes	Commuting and sectoral structure of employment	20% employed in agriculture	Espon (2003)
BG	Municipalities	Population density, settlement size	< 150 inh./km <sup>2</sup> < 30,000 inhabitants. in largest town	OECD (2005)
CY	Not specified	Population size	All areas outside urban agglomerations of Nicosia and the district towns covered by the Local Town Plans as defined by the Department of Town Planning	ESPON (2003)
CZ	Municipalities	Number of permanent residents	< 2000 inhabitants	OECD (2005)
DE	"Regions"	Population density and settlement size	Population density >150 inhabitants per square kilometre or >100 if region includes an urban centre of 100,000	OECD (2005)
DK	Address	Settlement size	< 200 inhabitants	OECD (2005)
ES	Nuts 5 regions	Population size	< 2000 inhabitants.	Saez (2001); Viladomiu (2006)
ES	Municipalities	Population size	< 2500 inhabitants	OECD (2005)
FI	Municipalities (NUTS 5)	Various	n.a.	OECD (2005)
FR	Municipalities (NUTS 5)	Number of jobs; Commuting pattern	Settlements with less than <2000 i inhabitants	OECD (2005)
GR	Municipalities and communes (NUTS 5)	Population size	< 2000 inhabitants	National Statistic Services of Greece
HU	Settlement (NUTS 4)	Population size; Population density	< 10,000 inhabitants < 120 inh./km <sup>2</sup>	OECD (2005)
IE	District Electoral Division (DED) n/a, (Communes or Local Systems of Work [SSL]?)	Population size	Outside clusters >1500 inhabitants.	OECD (2005)
IT		Population density	<100 inhabitants./km <sup>2</sup>	OECD (2005)
LT	Postcode areas	Population size; Characteristics of towns	Small towns (<3000 inhabitants); Villages, i.e. other residential areas having no characteristic features of towns	OECD (2005)
LU	Communes	Population size	< 2000 inhabitants in admin. centre of the commune	ESPON (2003)
LV	Parishes and rural areas	Total land area excluding urban areas	Not relevant	OECD (2005)
MT	Not specified	Settlement size	Areas outside towns >1500 inhabitants. and outside district centres	ESPON (2003)
NL	Sub-districts within municipalities (parts of)	Density of addresses	<500 addresses per square kilometre	ESPON (2003)
PL	municipalities	Population density	<150 inhabitants ./km <sup>2</sup>	Ministry of Agriculture and Rural Dev.. (2006)
PT	Communes	Population density	< 100 inhabitants ./km <sup>2</sup>	Ferrao and Lopes (2003)
RO	Village/ municipalities	Settlement size, agric. employment	Not specified	OECD (2005), ESPON (2003)
SE	Geog. coord. /address	Settlement size	<1,000 inhabitants <200 inhabitants.	OECD (2005) Espon 2003
SK	Municipalities	Population, density	<5000 permanent inhabitants; <100 inh./km <sup>2</sup>	OECD (2005)
UK – Eng. + Wales	Settlements	Settlement size	Outside Census Urban Areas >10,000 inhabitants	RERC (2004)
UK - Scotland	Settlements (2001 Census output areas)	Settlement size	<3000 inhabitants (i.e. accessible rural areas and remote rural areas; see fiche)	Office of the Chief Statistician (2004)

**Table 1.-** Overview of definitions of rural used in the EU Member States (MS)

It is perhaps important to note that the distinction between “rurality typologies” and typologies which distinguish rural areas in terms of socio-economic characteristics or “performance” is not always very easy to sustain. This is because many rural typologies are in this sense hybrids, they classify regions both in terms of rurality, and in terms of socio-economic characteristics. The OECD Leading-Lagging typology (OECD 1996) is a good example. Some rural typologies also incorporate a basic distinction between accessible and peripheral areas. This is in practice not very different to a classification on the basis of rurality.

Typologies, like models can be broad or narrow in their coverage, for instance incorporated “narrow” typologies relating to both demographic change and economic activity (SERA report), whilst the “tripartition” of rural Finland involves a broad range of socio-economic indicators (Malinen P, Kytola L, Keranen R, 2006). Another example of a narrow typology of that devised for ESPON project 2.1.3, which incorporated more than 20 indicators, and generated a range of types of farming region through cluster analysis (Arkleton Centre et al, 2004).

#### *A Review of Typologies of Rurality*

It appears that there are numerous spatial typologies of rural designed and used in the EU Member States. A non-exhaustive overview of these typologies is given in Table 2. The typologies of rural in the EU Member States seem to employ different territorial units, varying from municipalities to a level below NUTS 1. In a number of typologies, country specific administrative units are used, such as the French “pays”, German “Raumordnungsregionen”, UK “Census Output Areas” or “postcode areas”. The typologies may serve different purposes, like monitoring developments in rural areas, to support rural and regional policies, to facilitate spatial planning, and to differentiate areas according to different degrees of urbanization and rurality. The differentiating characteristics also vary in the national typologies; often two or more variables are used. Methods are highly varying, from simple deductive methods based on setting threshold values for types to multistage methods and principal components analysis. The number of distinguished types is at minimum three, but often more types are distinguished, up to nine. Usually, both various rural types and various urban types are used.

Such spatial typologies of rural tend to be based on either population (size and/or density) or accessibility. The OECD designed a rural typology based on population density in its regions. The OECD typology distinguishes three groups of regions: predominantly rural regions, intermediate rural regions and predominantly urban regions. This rural typology is also used- with some modifications- by EUROSTAT. Accessibility is often expressed in terms of travel time from a region to a central place. The OECD accessibility typology distinguished four types of regions: remote regions, peripheral regions, adjacent-suburban regions

and central regions (see fiche). Some kind of relationship between both spatial typologies could be perceived: usually, central regions tend to coincide with densely populated (urban) regions and remote regions tend to coincide with sparsely populated (rural) regions.

In the scope of the European Spatial Planning Observation Network (ESPON) a number of rural-urban spatial typologies has been designed for the EU. Usually, these ESPON typologies are derived from a set of indicators, like centres with a minimum population size, population density, degree of urban influence and the degree of human intervention related to land use.

In order to assess the actual or potential “coverage” of the rural typologies described in Table 2, four groups have been defined:

- 1.- Typologies already implemented at the EU level.
- 2.- Typologies which can easily be expanded to the EU level.
- 3.- Typologies which would be rather difficult to expand to EU level (for example, due to the fact that data collection or data processing is very time consuming).
- 4.- Typologies which would be impossible to expand at EU level (for example, due to the fact that the regional unit does not exist at EU level, or due to lack of data at EU level).

Details of those classified in Groups (a) and (b) are provided in Table 3. It is assumed that typologies in groups (a) and (b) are the ones that could potentially be linked to models in the context of TIA, - provided that their regional unit and purpose are compatible with those of the models.

The review of the typologies was done thorough fiches suggests that the potential for full EU coverage mainly relates to typologies that already exist at international level: they cover either the EU or the OECD (which does not cover all current EU Member States). Only one national typology (the German district classification) was found to have potential for expansion to the EU level. All other national typologies are classified in groups (c) and (d).

Most (11) of the national typologies were put in group (d) as they are implemented in terms of specific national territorial units, for which there is no EU-wide equivalent. Such typologies include the German Spatial Structure typology (GIS based units), the new Definition of Rural Places in England/Wales (grids of 1 ha), the Scottish Executive Urban Rural classification (2001 Census output areas), the Belgian City Districts (city centre), the Dutch “Degree of Urbanization” (postcode areas), and the French typology of Pays (local development areas).

	Typology name	Date	MS	Geographical Units(NUTS equivalent)	Methodology
1	Spatial structure according to access to central spaces and population density	2005	DE	Raster	GIS-based accessibility zoning
2	District classification based on functional areas and population density	2005	DE	NUTS 3 (modified)	Disaggregative: Settlement size and population density
3	Territorial classification based on functional areas and population density	2005	DE	97 planning regions (Raumordnungsregionen)	Unclear
4	<sup>?</sup> Austrian spatial development concept	2001	AT	Not known	Unclear
5	Austrian national strategic reference framework 2007-2013	2007	AT	Not known	Unclear
6	Rural and urban area classification	2004	UK	Census output area and ward (sub-NUTS 5)	Rule-based methodology using population density at various scales
7	Scottish executive urban-rural classification 2005-2006	2006	UK	Census output areas (NUTS 5)	Rules relating to settlement size and GIS-based accessibility zoning
8	Typology of the level of urbanisation	?	BE	Municipalities (NUTS 5)	Not specified
9	City districts	?	BE	?	Not specified
10	Typology of rural centric approach	?	BE	Municipalities (NUTS 5)	Weighted average of 6 socio-economic variables
11	Degree of urbanisation of postcode areas	?	NL	Postcode areas	Density of addresses per square km
12	Finnish rural area typology	2007?	FI	Municipalities (NUTS 5)	Not specified
13	National typology of Finnish rural areas	2007	FI	Municipalities	Principal Component Analysis
14	Typology of pays	2006	FR	Local development areas (pays)	Cluster analysis
13	Urban areas zoning scheme and rural employment areas	?	FR	NUTS 5	Deductive method for distinguishing types
16	Rural typology of local territories	2003	FR	Local territories (bassins de vie)	Cluster analysis
17	New rural area typology	2005	ES	NUTS 4	Deductive method for distinguishing types
18	Rural typology (OECD + Land Cover Criterion + Peripherality)	2007	BE, FR, PO	LAU2	Deductive method for distinguishing types
19	OECD rural typology	1994	OECD	Territorial level 3 (NUTS 2/3)	Two stage procedure based on population density
20	Eurostat rural typology	1997,2004	EU	NUTS 2/3	Two stage procedure based on population density
21	Typology based on the degree of urbanisation	1997	EU12	Municipalities (NUTS 5)	Grouping of municipalities according to population density thresholds
22	Typology of accessibility en European regions	2001	?	Territorial level 3 (NUTS 2/3)	GIS based accessibility zones
23	Settlement structure of the EU territory	2001,2003	EU25	NUTS 2/3	Rule-based procedure-settlement size and population density
24	ESPON 1.1.2 Urban-rural typology	2004	EU25	NUTS 3	GIS based classification

**Table 2.-** Spatial typologies of rurality

The Belgian typology of the level of urbanisation, the Finnish national typology of rural areas and the French urban areas zoning scheme have also been put in group

(d), as some of the indicators for the differentiating characteristics of these three typologies are rather country specific, and not available at EU level.

Coverage	Name of typology	Purpose	Regional level	Ext.
EU27	Eurostat rural typology	To describe the different situations which exist in the Union's rural areas	NUTS3	a
EU	Settlement structure of the EU territory	To use as a base for analysis of thematic indicators in EU regions	NUTS3	a
EU	Urban-rural typology, based on population density, ranking of functional urban areas and land cover	To analyse the increasing interdependence between urban and rural areas	NUTS3	a
OECD	OECD rural typology	to establish a framework for making international comparisons of rural conditions and trends which form the background for the design, implementation and impact of rural policies in OECD Member countries.	Territorial level 3 (about a mix of NUTS2 and NUTS3 regions)	b
OECD	A typology of accessibility in European regions	To analyse the geographic location according to metropolitan areas	Territorial level 3 (about a mix of NUTS2 and NUTS3 regions)	b
EU15	Typology based on the degree of urbanization	to describe the different situations which exist in the Union's rural areas	Groups of municipalities	b
Germany (2)	District classification based on functional areas and population density	to monitor spatial developments	NUTS3	b

**Key to codes in last column (extension to EU level)**

a = already available at EU level;

b = can easily be expanded to EU level.

**Table 3.-** Typologies of rurality which have actual, or potential, EU-wide implementation

Only two typologies have been classified in group (c): the “new rural area typology” and the “rural typology” (OECD + Land Cover Criterion + Peripherality). Although the regional units used in these typologies exist at EU level, it is rather difficult and time consuming to collect and process EU-wide data for some of the differentiating characteristics in these typologies.

It is perhaps worth stressing the fact that the typologies excluded from Table 3 are nevertheless considered valuable sources of innovative methodological ideas, some of which may be implemented at an EU level.

*A Review of Performance Typologies*

The difference between the performance typologies and the other spatial typologies could be expressed in the following terms: spatial typologies tend to reflect the existing spatial structure of rural-urban relations, whereas performance typologies refer to problems and dynamics related to rural and urban areas (ESPON, 2003).

The review of the typologies was carried out on the basis of a series of summary “fiches”, describing the key features of the typologies in a standard and comparable way. A total of 25 separate typologies have been identified. Some brief summary details are provided in Table 4.

Of the 25 typologies, 2 cover the entire EU27, and 6 cover the EU12. Of these 4 are implemented at the NUTS 3 level, 1 at NUTS 2 and three use combinations of NUTS 2 and 3. One covers the OECD countries at NUTS 2/3. The 15 member state typologies cover the following countries: BG, DE (2), DK, ES (3), FI, FR, GR (3), IE, IT, NL, PL (2), PT, UK (3). 12 of these national typologies cover a single country, 3 cover more than one country. Again NUTS 3 is the most

common areal unit for the national typologies, though 5 are at the more detailed NUTS V (LAU 2) level. One of the typologies, being conceptual only, is intended to be European in scope, but does not relate to any specific areal unit.

Spatial classification methods fall into two broad “families”; the *disaggregative*, where the population is viewed as a single large group at the outset, to be progressively split into groups according to pre-selected discriminatory criteria, and the *aggregative*, where the process begins with a population of individuals and groups are formed by putting similar individuals together.

Disaggregative approaches are less commonly used, perhaps because few, if any, “off the shelf” statistical procedures are available. They are essentially deductive, and are favoured where the researcher or policy maker has a clear idea what the relevant categories are, and wishes to show how regions fit into them.

Aggregative methodologies often begin with the use of Factor Analysis to reduce a large number of variables to a few key dimensions, followed by Cluster Analysis, to group the cases (regions) according to their pattern of scores on these dimensions. This approach may be viewed as “inductive”, since the clusters are determined by mathematical procedures, and the operator has no direct control over the character of the types which emerge. However neural network classification procedures are both aggregative and “inductive”, since the operator specifies the types on the basis of expert knowledge, and then “trains” the software to identify other similar areas. To the best of our knowledge this approach has only once been used to create a rural typology (Blunden et al 1998).

In Table 4 (column “Family”) disaggregative methodologies are labelled as (a) and aggregative as (b). Of the 23 empirical typologies only 6 were in the disaggregative family, and 16 were in the aggregative family.

#### - Policy Links

Of the 25 typologies considered in Table 3, more than half (14) were constructed for academic reasons only, and whilst some of the documents associated with these include remarks about potential links to policy implications, these links are generally fairly vague or implicit. These are highlighted with a single asterisk (\*).

In a further 9 cases the typology was sponsored by a government department or an EU Commission Directorate, and the document contains a more or less explicit link to specific policies. These are highlighted with two asterisks (\*\*)

Finally, just two typologies (Efstradoglou 1998, and Aubert 2006) were developed specifically as part of policy development, the former being associated with the Structural Fund Programmes in Greece, and the latter with the 2007-13 RDP in France.

- Assessment of Typologies of “Performance” in the context of TIA

Assessment of the 25 typologies of rural performance was carried out through simple matrices in which each row featured one of the typologies, and each column contained a simple score according to one of the following criteria: the appropriateness of regional definition, actual or potential EU-wide coverage, and the incorporation of key socio-economic themes. These are termed Typology Assessment Matrices, or “TAMs” (Although the results of the TAMs will be discussed below, the matrices will not be presented in this paper due to spatial limits of this document). Clearly these scores are informed judgements, and can never be entirely objective. However it is felt that the TAMs provide a systematic and consistent framework for such judgements, and a quick and visual means of comparison.

The TAM for regional definition criteria provides standardised information on the NUTS level at which each performance typology is implemented, or potentially could be implemented. The simple scoring procedure is common to most of the subsequent TAMs. Here a score of 1 indicates that the typology is implemented at the NUTS level to which the column refers. 0.5 indicates that it could (potentially) be

	Typology name	Date	Coverage	Geographical Units (NUTS equivalent)	Family	Policy Link	Model Link
1	Aubert et al	2006	FR	Communes (NUTS 5)	b	***	-
2	Ballas et al	2003	EU12	NUTS 3	b	*	-
3	Banski and Stola	2002?	PL	NUTS 5	a	*	-
4	Barjak	2001	DE PL	Spatial planning regions (DE), Wojewodzfwa PL (NUTS 3?)	b	*	-
5	Buesa et al	2006	ES	NUTS 2	b	*	-
6	Bollman et al	2005	OECD	TL3 (NUTS 2/3)	a	*	-
7	Copus EU (a)	1996	EU12	NUTS 3	b	*	-
8	Copus EU (b)	1996	EU12	NUTS 3	a	*	-
9	Dimara et al	1996	GR	NUTS 3	b	*	-
10	Efstatoglou	1998	GR	NUTS 5	b	***	-
11	Ferrao and Lopes	2003	PT	NUTS 5	b	*	-
12	Kawka	2007	DE PL	NUTS 3	b	*	-
13	Milan Polytechnic	1999	EU12	NUTS 3	a	*	-
14	National spatial strategy	2000	IE	DED (NUTS 5)	b	**	-
15	Nordregio et al	2007	EU27	NUTS 2	b	**	-
16	Ocana-Riola and Sanchez-Cantalejo	2005	ES	NUTS 5	b	*	-
17	Psaltopoulos et al	2004	GR UK FI	NUTS 3	b	*	√
18	Rural futures	2004	UK	NUTS 3	b	**	-
19	RURALWINS	2003	EU	N/A	N/A	**	-
20	SENSOR	2006	EU27	NUTS X(2/3)	b	**	-
21	Terluin et al	1995	EU12	FADN regions (NUTS 51/2/3)	a	**	-
22	Terluin et al	2005	NL	NUTS 3	a	**	-
23	Trapp et al	2003	BG	NUTS 3	b	**	-
24	TYPORA	1998	DK ES IT UK	LOC II areas	b	**	-
25	Vidal et al	2005	EU12	NUTS 2/3	b	*	-
	<b>Methodological “Families”</b>		<b>Policy Links:</b>			<b>Model Links:</b>	
	a Disaggregative		* Implicit (academic only)			- None	
	b Aggregative		** Explicit			√ Specific link to	
			*** Linked to specific policy development			modelling work	

**Table 4.-** The performance typologies: Summary of key features

implemented at this level – i.e. there are no obvious reasons why it should not. Where there are clear (methodological, conceptual or data availability) reasons for supposing that a typology could not be implemented at a NUTS level, or where there is insufficient information to make a judgement, a score of 0 is recorded.

The most common NUTS level for performance typologies (15 of the 25 typologies: 2, 4, 6, 7, 8, 9, 12, 13, 17, 18, 20, 21, 22, 23, 25) is NUTS 3. Clearly a NUTS 3 typology may usually be implemented at a more aggregate level (NUTS 1-2) without difficulty, and this explains the large number of 0.5 scores in the first two columns. Surprisingly more than one-third of the typologies are implemented at a LAU 2 (or equivalent) level. Four typologies (6, 20, 21, and 25) use a mixture of NUTS levels.

Scores for the potential for each typology to be implemented across the EU, judged primarily in terms of the availability of appropriate data. Here again the most common NUTS level at which typologies are already implemented across the EU is NUTS 3. However, it should be noted that some of these (2,7,8,13) were implemented before the two recent enlargements, and therefore cover just 12 or 15 Member States.

It is noteworthy that none of the typologies is judged to have the potential to be implemented across the EU25 at LAU 2 level. Also almost half the typologies, being based upon Member State-specific indicators, are judged to have no potential for EU-wide coverage at any NUTS level. Those with the greatest potential for EU-wide coverage are generally those which have the least demanding data requirements, and clearly a trade-off is required.

A combination of the scores from the two previous TAMs to provide an overall assessment of the potential of the typologies from a geographical perspective. Since both definition and coverage are important, and a score of zero on either effectively undermines the score on the other, the minimum (rather than the mean) score is the best indicator of combined assessment.

A score of 1 on both definition and coverage achieved at NUTS 3 level by 8 typologies. Five typologies achieve a two top scores at NUTS 2, and 1 at NUTS 1. These typologies; Ballas et al EU, Bollman et al OECD, Copus EU (a), Copus EU(b), Milan Polytechnic EU, Nordregio et al EU, SENSOR EU, Terluin et al EU, Vidal et al EU.

Nine key typology themes were identified for the assessment of the typologies according to incorporation of key socio-economic themes: **education/ qualifications** of farm holders and workers; **importance of agriculture** in the regional economy; broader **sectoral structure** of rural/regional economy; regional **migration/depopulation** trends; **farm size distribution** of the region; levels of regional **farm productivity**; **propensity for farm diversification** in the region; extent of **on-farm processing, and quality production** in the region; degree of **rurality/peripherality** characterising the region.

The TAM established for key typology themes indicates that the most commonly addressed theme, the sectoral structure of the rural economy. However in most of these typologies

this is but one among several themes incorporated, and its influence will vary considerably depending upon the classification methodology adopted. Perhaps unsurprisingly the importance of agriculture (in the regional economy) is also a common theme in rural performance typologies, as is migration/demographic change, and rurality/peripherality. At the other extreme, the issues of propensity for farm diversification, and on-farm processing and quality production are not addressed by any of the typologies. Farm structures and farm productivity are covered only by a few typologies.

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## Conclusion and recommendation

Bearing in mind the main objective of IPTS/JRC efforts is to support the European Rural Development policy in the area of socio-economic analyses of functioning of rural areas and the policy impact assessment, the final step is to assess the potential usefulness of the typologies as a means of creating a simplified modelling environment. Clearly the most effective way to do this would be to carry out modelling on the types, and to assess the model outputs from each type. The more significant the differences in outputs between types, the more valid the typology as a modelling environment would seem to be.

In the scope of the project, last task has been to consider the specification and design of typologies to be used in association with socio-economic models, for territorial impact assessment of selected measures of the 2005 Rural Development Regulation. Therefore 14 measures were identified as the "Priority Measures" at the beginning of the project. Of these, the majority, (8) were from Axis 3, and 3 each were from Axes 1 and 2. All were socio-economic, rather than environmental in focus.

Since the required typologies are intended to support territorial impact assessment through socio-economic modelling, it was important to identify the kinds of models which might be associated with each measure. This was achieved by linking back to the generic policy issues which were also described during the project, and to the models associated with each of these. The key typology themes linked to each kind of modelling and this allowed each of the Priority Measures to be placed in one of three groups according to the typology requirements associated with potentially useful kinds of modelling. At this stage the three groups of measures and associated key typology themes were reviewed and other appropriate themes (which had not been identified in relation to model requirements, but which seem important in the context of the various policy objectives) were added.

Having identified three groups of measures, and associated typology themes, the next step was to consider potential indicators. This was initially carried out by reviewing the indicators specified in the Common Monitoring and Evaluation Framework. Other potentially useful indicators were then added.

The final issue to be considered in specifying typologies for territorial impact assessment relates to the classification methodology. A two stage procedure is recommended:

1.- The first stage would be common to the typologies for all three measure groups. In a typology of all EU NUTS regions it is important to distinguish urban from rural, and different degrees of rurality. The recommendation is to use an extended version of the OECD typology (which is already incorporated in the Common Monitoring and Evaluation Framework), which distinguishes between *peripheral* and *accessible* regions within the Predominantly Rural and Significantly Rural categories.

2.- The second stage would be to further sub-divide the resulting 4 rural categories according to indicators derived from the key typology themes for each measure group. In this particular context, the need for simplicity and transparency, and the ability to pre-specify the key types, suggests a multi-criteria approach. However a relatively new and untried approach, based upon Neural Network software is also well worth investigating, since it may well offer the same ability to pre-specify types, but with an enhanced ability to handle larger numbers of indicators.

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