

Spatial Analysis of Rural Development – Providing a Tool for Better Policy Targeting

Introduction to the FP 7 Project SPARD



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Outline



- Project information
- Background
- Objectives
- Operational Approach
- Methods
- Challenges
- Developing the SPARD strategy
- Discussion CAP towards 2020





SEVENTH FRAMEWORK PROGRAMME

FOOD, AGRICULTURE AND FISHERIES, AND BIOTECHNOLOGY Activity 2.1 Sustainable production and management of biological resources from land, forest and aquatic environment

Area 2.1.4 Socio-economic research and support to policies

Call KBBE-2009-1-4-02: Spatial analysis of rural development measures for effective targeting of rural development policies

Acronym:	SPARD
Title:	Spatial Analysis of Rural Development Measures
Type:	Collaborative Project, FP7
Duration:	04/2010 - 03/2013
Budget:	1.9 M€

Project information/2



9 partners from 8 countries			
Beneficiary number	Beneficiary name	Beneficiary short name	Country
1	Leibniz-Centre for Agricultural Landscape Research	ZALF	Germany
2	Stichting Dienst Landbowkundig Onderzoek	LEI	The Netherlands
3	Alma Mater Studiorum Università di Bologna	UNIBO	Italy
4	Austrian Institute of Technology GmbH	AIT	Austria
5	VU University Amsterdam	VUA	The Netherlands
6	Institute Nationale de la Recherche Agronomique	INRA	France
7	University of Edinburgh	UEDIN	United Kingdom
8	University of Ljubljana	UL	Slovenia
9	Institute of Prospective Technological Studies	IPTS	EU

Background / 1



Rural Development Programmes 2007-2013 CAP towards 2020, Future of Pillar 2 for 2014-2017

Framework conditions

- Budgetary limitations
- Needs for justification
- Low correlations between expenditures and impacts
- Multiple use of monitoring data
- Technical progress (IACS Integrated Administration and Control System, LPIS Land Parcel Information System)
- Territorial Cohesion, more cooperation between DGs

Objective of the call: Providing tools for better policy targeting Matching with Evaluation framowork CMEE

Matching with Evaluation framework CMEF

Background /2 RDP Axis and Measures



Axis 1 Competitiveness	Axis 2 Environment	Axis 3 Rural viability	Horizontal axis LEADER
 (111) Vocational training and information actions (112) Setting up of young farmers (113) Early retirement (114) Use of advisory services (115) Setting up of management, relief and advisory services (121) Modernisation of agricultural holdings (122) Improvement of the economic value of forests (123) Adding value to agricultural and forestry products (124) Cooperation for development of new products (125) Infrastructure related to the development and adaptation (126) Restoring agricultural production potential (131) Meeting standards based on Community legislation (132) Participation of farmers in food quality schemes (133) Information and promotion activities (141) Semi-subsistence farming (142) Producer groups 	 (211) Natural handicap payments to farmers in mountain areas (212) Payments to farmers in areas with handicaps, other than mountain areas (213) Natura 2000 payments and payments. linked to Directive 2000/60/EC (214) Agri-environment payments (215) Animal welfare payments (216) Non-productive investments (211) First afforestation of agricultural land (222) First establishment of agroforestry systems (223) First afforestation of non-agricultural land (224) Natura 2000 payments (225) Forest-environment payments (226) Restoring forestry potential and introducing prevention (227) Non-productive investments 	 (311) Diversification into non- agricultural activities (312) Support for business creation and development (313) Encouragement of tourism activities (321) Basic services for the economy and rural population (321) Village renewal and development (322) Village renewal and development (323) Conservation and upgrading of the rural heritage (331) Training and information (341) Skills acquisition, animation. 	(411) Implementing local development strategies. Competitiveness (412) Implementing local development strategies. Environment/la nd (413) Implementing local development strategies. Quality of life (421) Implementing cooperation projects (431) Running the local action group, acquiring skills and





Objectives /1



The overall objectives of SPARD

(1) to provide a framework for organising the collection and the use of regional key baseline data and evaluation results of RDP measures

- in a systematic, clear and concise way
- structured around the CMEF indicators
- and other statistical and economic information related to RD in the EU

(2) to explain the causal relationships

- between regional characteristics and needs
- RDP implementation and success in their spatial dimension
- by developing and applying a spatial econometric modelling approach

(3) to build a tool that will help policymakers, both at EU and MS/ regional level, to design better targeted RDPs



Key Scientific Challenges

- Developing a spatial economtric model to analyse RDP effectiveness in a spatial dimension
- Dealing with different levels of aggregation
 - Instruments: RD Programmes, axis, schemes, measures
 - Indicators (thematical (dis-)aggregation, proxies)
 - Spatial scales: NUTS0 NUTS2 and NUTS3 spatially explicit
- Relationship of needs and target areas and target groups
- Selection criteria for measures to be analysed
- Integration of participatory methods into tool devlopment

Operational Approach /1





Operational Approach / 2









Operational Approach /3



Tasks and interative flows





Spatial econometric modelling

Scale

• EU-27, NUTS2

Improvements using spatial analysis

- Data integration: Spatial analysis provides basis for integration at different spatial scales
- Explanatory spatial data analysis (ESDA): ESDA techniques describe and visualize spatial distributions (clusters, hot spots)
- Spatial data analysis: Spatial econometrics to incorporate spatial patterns

Which questions have to be answered in SPARD by spatial econometrics

- Relation: result indicator -> impact indicator/ Δ baseline indicator
- Distribution of impact indicators/ Δ baseline indicators
- Estimation of spillovers

Methods/ 2



Possible types of spillovers desired impact - other factors (correct region and - autonomous development measure) measure spillovers impact on own region but Money spent other measure similar region impact on other region in the same measure spatial spillovers other region impact on other region in another measure not desirable: region does not need this impact outside EU not desirable: unfocused support not desirable and

money spent inefficiently

Source: SPARD D3.1 Uthes et al. 2010

SPARD End-user meeting, Brussels, 06.12.2010

unmeasured

Methods/ 3







Mixed approach in case study research

- Survey on RDP design and target definition practices: Face to face interviews with regional authorities along common guidelines
- Analysis of implementation history (beneficiary structures, spatial implementation patterns)
- Econometric model validation
- Additional modelling approaches (e.g. Linear programming), focus on Agrienvironmental measures



SPARD Decision Support System and graphical user interface

- Data retrieval from data base
- Data processing: Scaling, aggregation
- Data result presentation (e.g. numbers, bar charts)
- Data-add ons: User interaction functions such as
 - table compilation
 - export data formats (e.g. Excel)
- >> tool is not generating but illustrating results !





Challenges / 1



Complexity of	the CMEF	
	Baseline (objective)	per axis, related to objectives
	Baseline (context)	per axis, related to state
CMEF indicators	Input	per measure
	Output	per measure
	Result	per measure
	Impact	per programme

Challenges / 2



Example: impact analysis per axis

A different level of analysis





6 measures in Brandenburg contribute to the Impact Indicator "Labour productivity"

Code	Measure	InputIndicators	OutputIndicators	ResultIndicators	
111	Vocational training and information actions	14.0 Mio. EUR	•17.500 persons •52.500 days (= 420.000 hours)	Number of participants that successfully ended a training activity: 17.500 persons	
121	Modernisation agricultural hold Eval (dire	ImpactIndicator Evaluation report: "All measures of axis 1 contribute either directly (direct impacts at the farm level) or indirectly (knowledge and			
123	Adding value to agricultural and forestry produc Equ 2 50	Information, cooperation etc.) to the impact indicator "labour productivity". Estimated Change in Gross Value Added per Full Time Equivalent (GVA / FTE) (Euros per Full Time Equivalent): 2 500 EUP			
124	Cooperation fo development of new products		supported: 20	 Introducing new products and/or techniques: 20 Increase in Gross value added in supported holdings: 1.1 Mio. EUR 	
125	Infrastructure related to the development and adaptation	182.3 Mio. EUR	•Number of operations supported: 1095 •Total volume of investment: 210 Mio. EUR	Increase in Gross value added in supported holdings: 12.4 Mio. EUR	
126	Restoring agricultural production potential	112 Mio. EUR	 Supported area of damaged agricultural land: 259.000 ha 87,69 km dykes Total volume of investment: 112 Mio. EUR 	Increase in Gross value added in supported holdings: Not specified	



Data availability (CMEF)

- data is available at different administrative levels
- baseline indicators: NUTS 2, NUTS 3 (too incomplete)
- input (expenditures): country
- targets for output, result, impact indicators: RDP
- data refers to different years
- some indicators are missing

We should aim at RDP level or NUTS 2 level

Challenges / 5 Linking indicators and scales



 Different indicators come at different NUTS levels and different times NUTS scale • with different quality/ degree of completion NUTS NUTS NUTS NUTS NUTS 0 2 3 5 4 available Baseline (objective) with quality gaps available Baseline (context) with time /spatial gaps available for Input full period **CMEF** indicators Output to come yearly to come yearly Result to come Impact after midterm



Planned:

A EU-27 at RD Programming level:

CMEF data 2007, 2008, 2009 and following years

B Case study level

IACS/LPIS data per beneficiary and spatially explicit for specific measures and schemes

Available/ given access to:

A EU-27 at RD Programming level

- baseline indicators of the CMEF (until 2006-2009) ((DG Agri, Inma Garcia)
- Input and Output data bases and target values per Programm and measure (unit G3)
- Sufficient consistency only from 2008/2009 on

B Case study level

- CATS database contains financial information broken down by:
 * financial year yyyy (16/10/yyyy-1 to 15/10/yyyy)
 - * beneficiary
 - * budget code (measure)
 - * nuts 3 region
- Access possible to: total amounts and total number of beneficiaries per NUTS 3, per financial year, per budget code (measure) (unit J1)
- No official access to IACS











The principal methodological task in SPARD is to estimate the statistical relation between a dependent variable and one or more explanatory variables in a spatial context. The selection of dependent and explanatory variables for the spatial econometric analyses in SPARD will be based on causal relationships according to economic theory. The degree of influence of the explanatory variables on the selected dependent variables will be depicted from the regression coefficients.

To be explored II: Relation between expenditure (input) and change in baseline indicators

One of the tasks is to define the spatial units to be used in SPARD, influenced by following factors:

-the functionality of each RD measure (according to results from the literature and available theories and knowledge, see section 2.6)

-the data availability (CMEF, other data sources)

Baseline indicators are incomplete (only 34 out of 59 available) and refer to different years. The data coverage (referring only to the 34 indicators) is good at the NUTS2 level and poor at the NUTS3 level. Changes in indicators are reported (with gaps) but they are often not comparable as they refer to different periods.

Intermediate conclusion for the analysis: NUTS2 is the preferred scale for the analysis. The use of the calculated changes in baseline indicators requires further analysis. Expenditure will have to be provided at NUTS2 level (currently only at country-level available)





36 out of 79 indicators are available for all 271 NUTS2 regions.

9 out of 79 indicators are available for all 1303 NUTS3 regions.

27 out of 79 indicators are not available at all.



Stepwise procedure

RD measures to begin the analysis with:

-121 farm modernization

-214 agri-environment payments

-311 diversification into non-agricultural activities

To continue in a **second step**, three other measures are selected:

-112 setting up of young farmers

-211+212 natural handicap payments to farmers (mountains and others)

-322 Village renewal and development

The third step will be the analysis of "families" of measures, followed finally by the rest.

The temporal scale will be defined for each measure (or axis) individually.

Criteria:

-time lag between measure implementation and impact (based on past experience) -data availability



Developing the SPARD strategy / 7







Case study research

- the strategic dilemma of target setting: low ambitions high success
- the practice of target setting: knowledge about target groups and target areas
- \bullet relationship between impact indicators and Δ baseline indicators

Common questionnaire for interviews with officials involved in RDP development:

- Basic information about local implementation
- Drivers of location built in the policy design
- Opinion/expectation about factors affecting location/participation
- Details of information collected about implementation
- Judgement about the ability of this information to approximate the impact of the measure

Analytical dilemma:

spatially explicit beneficiary data at hand but not officially free for use



- Selection of additional baseline (context/ objective) indicators or proxies?
- More regionalized approaches: new requirements for target setting
- Implications for definition of target groups, target areas
- The future of budget distribution
- Implications for user demands on tools
- SPARDS contribution to ex-post and ex-ante policy advice



Policy expectations and research strategy

o clarify end-user expectations o support towards CAP 2020 o focus of the SPARD research strategy

Data situation (what is to be expected when)

How to ensure good end-user interaction/ fast result dissemination?

Graphical user interface



- product orientation (tool, model, maps)
- knowledge generation (relationships, targets)
- methodological progress (spatial econometrics, scaling issues)

Our Mission

.....support for better targeting of RD policies.....

visit our website







Spatial Analysis of Rural Development Measures Providing a tool for better policy targeting Stronger accountability requirements and EU budget constraints will increase the pressure towards policies targeted on specific objectives such as the provision of public benefits (environmental, rural, social). For the EU's rural development programmes 2007-2013 Member States are requested to collect indicators on characteristics, needs, expenditures and results. Additionally, managing authorities in some Member States have created GIS-based databases with a huge amount of data related to area-based

www.spard.eu



