

ENVIEVAL

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**DEVELOPMENT AND APPLICATION OF NEW METHODOLOGICAL FRAMEWORKS FOR
THE EVALUATION OF ENVIRONMENTAL IMPACTS OF RURAL DEVELOPMENT
PROGRAMMES IN THE EU**

Macro Level Methodological Review

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Objectives and Challenges

- Objectives
 - Review the application of macro level methodologies in RDP evaluation reports
 - Review the methodological developments that address existing challenges in macro level evaluations
- Challenges
 - Evidence of true causality
 - Disentangle the effect of single measure and programme impact from other factors
 - Closing gap between indicator measurement and policy decision

Evaluation Reports: Summary

- Results patchy for public goods
 - Well covered biodiversity and water quality
 - Poorly covered climate, soil, landscape and animal welfare
- Qualitative methods
 - Focus on beneficiaries
 - Evaluator's expert assessments
- Quantitative methods
 - Output and Results indicators
- Small number of advanced methods
 - Farmland bird index
 - Differentiation between HNV areas

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Issue of scale – macro level

Landscape Ecology: evidence collected from real-world landscapes recognising nested hierarchy in complex ecosystems

Spatial Economics: data collected through national statistics aggregated to level of administrative units (Vermaat et al., 2005)

Programme level impact

- Agriculture/Farm specific change
- Uptake of RDP measures
- Measuring units: administrative boundaries (NUTS)
- Economic/business impact

Wider societal impact

- Delivering public goods (biodiversity, water, landscape, climate change)
- Measuring units depending on natural processes (habitats, land cover, soil or catchments)
- Ecological/Environmental impact

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Methodologies

Causality

■ Statistical approaches

- Generalised Linear Models
- Pearson Correlation and Shannon-Weaver Index
- Scaling

■ Hierarchical approaches

- Sampling strategies
- Landscape metrics
- Nested analysis

Complexity

■ Spatial analytical approaches

- Spatial statistics
- Landscape metrics
- Spatial econometrics

■ Multi-criteria approaches

- Multi-Criteria Analysis
- Life Cycle Analysis
- Ecological footprints

■ Integrated approaches

- Mixed case approaches
- Multifunctional hotspots

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Strengths & Weaknesses: Statistical approaches

Methodology	Strengths	Weaknesses
GLM	Widely used	Lack of spatial sensitivity
Pearson Correlation	Relatively simple to communicate	Lack of spatial autocorrelation
Shannon-Weaver index	Spatially explicit	Sensitive to dataset classification
Scaling	Supports data / analytical integration	Uncertainty/error

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Strengths & Weaknesses: Hierarchical approaches



Methodology	Strengths	Weaknesses
Hierarchical sampling	Evidence of causality (between and across scales); cost effective evidence	EU heterogeneity of monitoring and implementation
Landscape metrics	Ability to measure environmental/ecological change	Scale mismatch with the measurement of agricultural change / RDP implementation
Nested hierarchical analysis	Assessment acknowledges scale dependent processes and causalities for impact assessment	Data rich

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Strengths & Weaknesses: Spatial analytical approaches



Methodology	Strengths	Weaknesses
Spatial analysis	Assess RDP area in wider landscape context (spatial correlation and connectivity /relationship)	Different spatial units for analysis
Landscape metrics	Assess RDP area in wider landscape context (spatial correlation and connectivity /relationship)	Different spatial units for analysis
Spatial econometrics	Incorporate spatial correlation and multiple factors into the economic assessment	large or complex data requirements

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Strengths & Weaknesses: Multi-criteria approaches



Methodology	Strengths	Weaknesses
Multi criteria analysis	Ability to consider multiple alternatives based on criteria and weights	Dependent on the formulation of the criteria, comparison is relative
Life cycle analysis	Holistic approach to a process (beginning to end; cradle to grave)	Non spatial
Ecological Footprints	Spatial LCA; Translate farm-based decision into demand of area to supply material and energy	Same as MCA; Unable to distinguish between qualities of difference

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Strengths & Weaknesses: Integrated approaches



Methodology	Strengths	Weaknesses
Mixed case approach	Qualitative assessments valuable; insights to process	
Multi-functional hotspots and landscape zoning	Quantifying the spatial context of agricultural land	
Whole landscape metric assessment	Show added value of RDP measures to public goods	Data resolution and scale mismatch limited/absence of true causality
Coupled socio-ecosystem models	Links social and natural processes	Data demanding; definition of system boundaries

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Candidate methodologies

- Increasing evidence base
 - Hierarchical approaches
 - Spatial analysis and landscape metrics
- Assessment
 - Multi-criteria analysis – ecological footprint
 - Spatial econometrics
 - Multi-functional hotspots/zoning

Next steps

- Align micro- and macro-level reviews
- Summarise review findings by level, scale, and RDP measures
- Recommend inputs to methodological framework

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