

WP4

Review of Methodological Developments for the Evaluation of Micro Level Effects

PROJECT AND WORKSHOP INTRODUCTION

INEA Team**A. Povellato****G. Forino; M.V. Lasorella; D. Longhitano**

Istituto Nazionale di Economia Agraria

4 July 2013, INEA, ROME

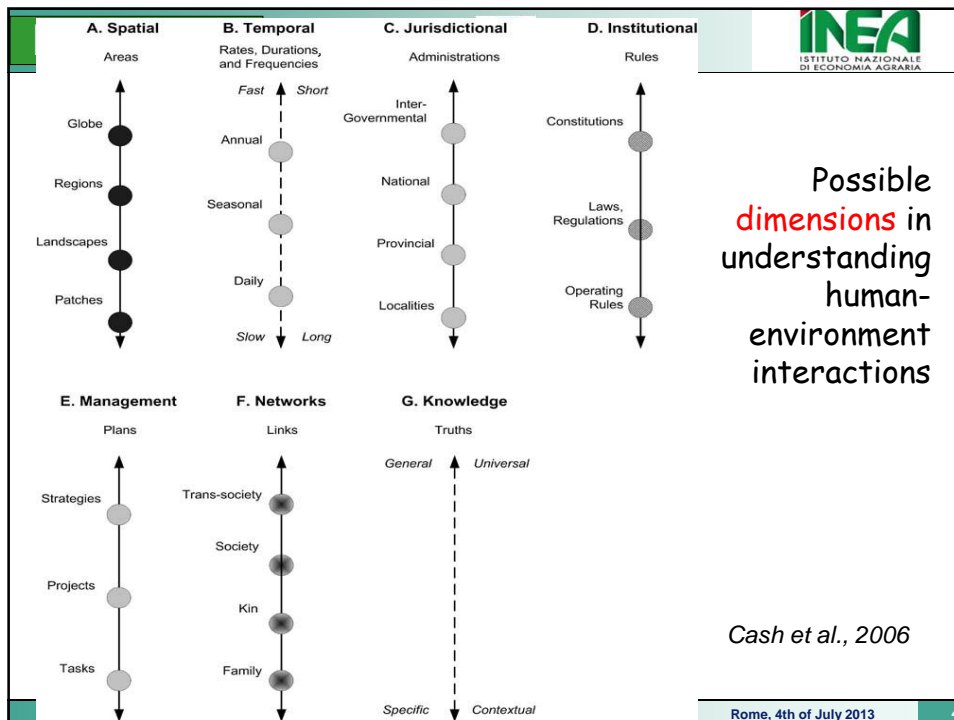
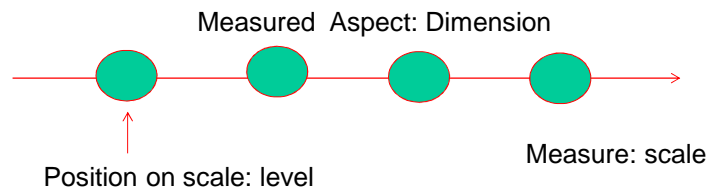


Outline of the presentation

- Micro and Macro scale/level → focus on micro scale/levels
- Review of new methodological developments for the evaluation of micro level effects
- First evidences from the review
- Challenges and future developments

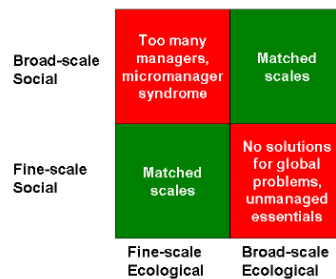
Definition of 'scale' and 'level'...

- The lack of clear definitions frequently leads to the use of 'scale' and 'level' in an interchangeable way.
- Definition by *Gibson et al. (2000)*:
 - the term '**scale**' refers to *spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon*;
 - '**level**' refers to *locations along a scale as the units of analysis that are located at different positions*.



Scale Mismatches

- Scale mismatches among environmental variation and social organization occurring in case of inefficiencies, disruption and loss of functions of the social-ecological system
- Mismatch between the scale of management and the scale(s) of the ecological processes being managed → complexity in resource governance



Cumming et al., 2006

Review of new methodological developments for the evaluation of micro level effects

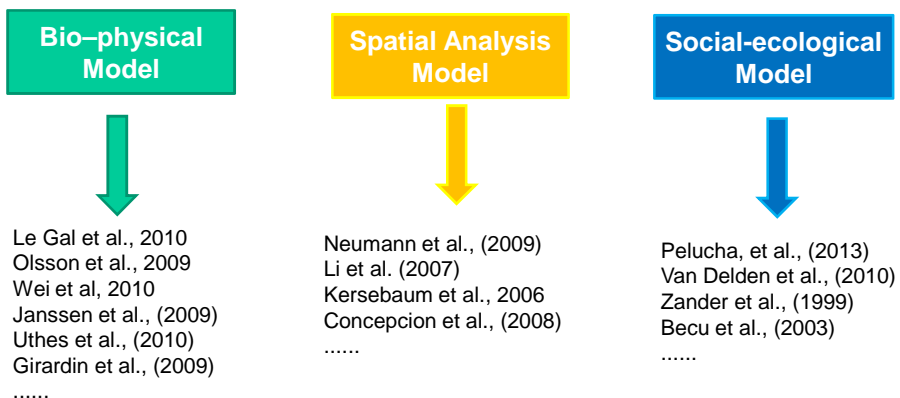
ANNEX 1 – Draft table of the Review of New Methodological developments for the evaluation of micro level effects

Authors	Geographic	Theme/Sector	Objective	Approach
Figge et al., (2004)	Europe	Value-oriented Impact Assessment	Burden-oriented view: (a) hampered by a series of methodological shortcomings which hinders its widespread use in practice; (b) is analytically incomplete. The paper proposes a value-oriented approach to impact assessment. For this purpose an economic analysis of the optimal use of environmental and social resources is conducted from both a burden-oriented and a value-oriented standpoint.	Eco-efficiency describes the relation between an economic activity and the related environmental impacts. The concept of eco-efficiency can be applied both on a corporate and a macro-economic level. Corporate eco-efficiency is given by the following equation: $Corporate\ eco-efficiency = \frac{Value\ Created}{Environmental\ Impact\ Added}$
Hengsdijk and van Iltersum (2002)	Europe	Formalizing agro-ecological engineering for future-oriented land use studies	The approach for engineering cropping systems at the land unit level consists of three steps: (i) goal-driven design of cropping systems, (ii) quantification of biophysical production targets and (iii) definition of the optimal mix of inputs required to realize production targets.	The approach consists of three steps: (i) goal-driven design of systems, (ii) quantification of biophysical production targets and (iii) definition of the optimal mix of inputs to realize production targets.

Criteria for the classification of the literature

- Presence of field-farm surveys and crop and animal growth models
→ **Bio-physical Model**
- Presence of spatially explicit variables (geo-statistics, spatial analysis, spatial econometric regressions)
→ **Spatial Analysis Model**
- Presence of linkages between ecological processes and resource management
→ **Social-ecological Model**

Three approaches for the evaluation of micro level effects



First results from the Bio-physical Models review

- Site specific evidences
- Time lag makes difficult to have effective evaluations
- Focus on Agrienvironment Measures (far less LFA, no evaluation for other measures)
- Public goods considered:
 - biodiversity (wildlife more than HNV)
 - nitrogen balance (water quality)
- The problems of scales and levels have not widely discussed

First results from the Spatial Analysis Models review

- Difficulties to find sufficient information for dynamic (temporal) analysis
- Difficulties to represent spatial heterogeneity of ecological structures
- Public goods considered:
 - landscape and climate change
 - nitrogen balance (water quality)
 - soil erosion risk and soil quality (vulnerability maps)
 - HNV and different habitats (hedgerows, LFA, dry grassland)

First results from the Social-Ecological Models review

- Public goods considered:
 - set of indicators
 - landscape and climate change
- Conflicting goals between social and ecological systems towards sustainability.

Future developments

- How to define "micro" scale/level in evaluative methodologies?
- How much are suitable these review "criteria" (bio-physical, spatial analysis and socio-ecological) to address the challenge of scale in evaluative methodologies?
- How to assess a complete "framework" for the Micro scale evaluation?