Do CAP policy scenarios meet future development scenarios of rural areas?

Simulations on land use changes by typical farms and the impact on multifunctionality

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Targeting of policies has different aspects

- The aspect of objectives
  - Sustainable development
  - Cohesion
  - International trade context

- The aspect of spatial targeting
  - Exploration and support of development potentials at national/region/local scale

- The provision of appropriate incentives

- Targeting of policies: Impact assessment related to different objectives at different scales
The challenge of different scales

EU Policy framework
- CAP 2003 reform
- post 2013 scenarios

National/federal programmes
- Pillar 1 SFP
- Pillar 2, RD schemes

Regional determinants
- Designated areas
- Cross-compliance

Single farm decisions
- Farm profile
- Site characteristics

NUTS1-2 (national, federal)

NUTS3 (region, landscape)

Farms
The challenge of different scales

Implementation strategy of policy measures
- EU wide (pillar 1, decoupling)
- voluntary (pillar 2, e.g. AEP)

Regional implementation background of policy measures
- development objectives
- development potentials

Demand
Support
Offer
Supply
Policy response

EU-27
NUTS1-2 (national, federal)
NUTS3 (region, landscape)
Farms
Scenarios in the MEA-Scope project

**Purpose**
Impact assessment of the Common Agricultural Policies (CAP) towards multifunctionality at micro level for different regions in Europe

**Methodology**
- Surveys (EU policy makers, regional stakeholders, international experts)
- Micro-economic/ environmental modelling (ABM, LP)

**Procedure** for scenario definition
Participatory definition of
- drivers of CAP policies
- future policy trends
- demands (region specific)
- rural development trends
Scenario development in 3 steps

- Enquiry of EC end-users about major future policy objectives and future policy trends
- Workshop of regional experts on scenario descriptions
- Translation into a quadrant model

Outcome: 2 level approach

- Policy scenarios
- Future development scenarios of rural areas
2 axes of trends driven by policies

4 policy scenarios

Liberalisation + AEP
no decoupling maint./increased AEP

Decoupling + AEP
(idealised Single Farm Payment/Single Area Payment)

S3
Decoupling + ceilings ceilings AEP

S2
Liberalisation + AEP
no decoupling

S1
Liberalisation
no decoupling
no AEP

REF
t General territorial/individual
t trends

t intensification
t extensification

Agenda 2000
2 axes of trends driven by policies
1 space related to general CAP 2003 reform impacts
3 development spaces in addition to general decoupling impacts

- Farms develop networking activities, take up particular regional potentials or niches in production or integrate agriculture and neighboured sectors.
- Farms develop towards world market orientation.
- Farms adapt management strategies towards better conformity with environmental demands.

Diagram:
- Rural viability
- Environment
- Competitiveness
- CAP 2003 reform Pillar I Impacts
- Agenda 2000
- Intensification
- Extensification
- General
- Territorial/individual
The challenge of different scales

Policy scenarios
- variation of key input data for modelling
- lead to different changes in single farm behaviour

Development scenarios

Target groups
- selected from all farms of the regions
- development target specific analysis of modelling results

EU-27
NUTS3 (region, landscape)
Farms
Procedure: target groups of development

Methodology:

1. Selection of farms, representing the target group of the 3 development scenarios, according to the criteria
   - protection status of site \(\rightarrow\) Natura 2000
   - geomorphologic conditions \(\rightarrow\) soil quality class
   - socioeconomic conditions \(\rightarrow\) selected NUTS5 regions

2. Setting of rules and thresholds

3. Group specific analysis of simulation results on policy induced changes of farm structure and management decisions on selected indicators
### Procedure: target groups of development

<table>
<thead>
<tr>
<th>Scenario Competitiveness</th>
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<tbody>
<tr>
<td><strong>“Arable farms”</strong></td>
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<tr>
<td>- 100% of the farm UAA in soil quality class 38</td>
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<tr>
<td>- Only farms remaining in production in the liberalisation scenario on the medium term</td>
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<tr>
<td><strong>“Intensive grassland farms”</strong></td>
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<td>- &gt;40% of the farm UAA on intensive grassland</td>
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<td>- No extensive grassland</td>
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<td>- &gt;80% of the farm UAA in Natura 2000</td>
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<td>- Localisation in a specific administrative unit (NUTS5 region)</td>
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<tr>
<td>- Selection of two neighboured municipalities with different “rural viability” performance</td>
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<tr>
<td>- All farms with areas within the administrative borders</td>
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Example: IA on policy scenario

- Example REF scenario: response to decoupling after 9 years
- Land abandonment as indicator for extensification
- Impact differs between regions:
  reduction of utilised agricultural area (UAA) in DE and SK,
  increase in DK and IT

Change of Utilised Agricultural Area, REF after 9 year

\[ y = 0.9029x + 21.456 \]
\[ R^2 = 0.9769 \]

\[ y = 1.1416x + 3.7568 \]
\[ R^2 = 0.9588 \]

\[ y = 0.9456x + 13.052 \]
\[ R^2 = 0.9841 \]

\[ y = 1.3034x - 1.2869 \]
\[ R^2 = 0.7884 \]

MEAScope AgriPoliS modelling results by IAMO,
data from DEART, DJF, IRPI CNR, SSCRI, ZALF
• The cropping pattern of **arable farms**, already on medium fertile soils, shifts to pure cash crop rotation
• Traditional cropping diversity is given up
• Farms do not make use of set aside options in all policy scenarios

**Example: target group „competitiveness“**

**MEAScope MODAM modelling results by ZALF, data (IT) from DEART, IRPI CNR**

**Mugello (IT): cropping pattern of „high valley“ and „low hills“arable farms, remaining in decoupling and liberalisation**

**OPR (DE): cropping pattern of farms with 100% arable land in soil class 38**

**MEA-Scope MODAM modelling results by ZALF, data (IT) from DEART, IRPI CNR**
Example: target group „environment“

Farms >40% **arable** land in soil class 25 and high NATURA 2000 share

- Traditional winter rye production and grassland use are turned into minimum care or set aside. If payments are phased out, arable production is given up.
- Environmental impact (IGA) relative to case study region average less advantageous than expected

**cropping pattern (farms>40% UAA in soil class 25)**

**Relative change of IGA to BAS00 (in %), medium term after policy change, all OPR farms**

• Traditional winter rye production and grassland use are turned into minimum care or set aside. If payments are phased out, arable production is given up.
• Environmental impact (IGA) relative to case study region average less advantageous than expected
Example: target group „rural viability“

Spatially explicit information supports identification of exemplary storylines

**AWU – Average Work Units in OPR (DE)**\[\frac{(\text{Labour Input} + \text{Family Labour})}{\text{Total UAA}}\]

MEA-Scope AgriPoliS modelling results by IAMO
Spatial modelling by DIAS (DJF), IAMO, ZALF
Example: target group „rural viability“

Comparison at municipality level:
- relative stable number of farms, increase of UAA
- family labour decreases (diversification), total labour input increases

MEAScope AgriPoliS modelling results by IAMO
Example: target group „rural viability“

- **4 farms**, 2 in each municipality, holding rd. 40% of the area
- area decline is less, cropping pattern diversity and labour input higher than average
- environmental impacts less positive than regional average
- exception: groundwater recharge potential

**change in IGA relative to OPR average**

**cropping pattern of 4 dominating farms in the 2 municipalities**
Conclusions for IA

Decreasing public funds urge to more effective utilization
Better targeting means better spatial equivalence of measures and payment schemes with high implementation in the target areas.

Targeting of policies is scale dependent (different objectives at different scales of analysis)

Added value of linking different scales in IA: provision of information on processes and reasons for changes

In our example:
- Competitive farms: unification, AEP inattractive, higher support
- farms in Natura 2000: overuse of AEP, protection objective grassland maintenance not reached
- large but diverse farms provide best multifunctionality
Conclusions for scenario approaches

Orientation of scenarios/ storylines to the focus of policy analysis: on policies, on functions, on development objectives/ potentials

Capability for addressing different scales: Downscaling is not only a problem of data and indicator aggregation/ disaggregation

Also a problem of integration different behavioural types in different framework conditions (economic, environmental, social)

Gaining more knowledge on such is a precondition to improve modelling procedures and basic rules for generalising behavioural patterns of farmers
intensification  extensification

generalisation  individualisation

Thank you for your attention

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