CRORURIS 2030: The Concept behind Scenario-based Approach to Croatian Rural Futures

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The main anticipated result of the CRORURIS study

• A set of alternative future scenarios for Croatian rural areas
  – within the European context
  – to encourage informed and evidence-based public debate on rural futures.
Contents

• Rural Croatia – a very short introduction
  – Recognizing the need for typology-based scenario development

• Theoretical background
  – Place-based approach and scenario development

• Methodological overview of CRORURIS 2030

• Expected outcomes
P ≈ 4.28 million
A ≈ 56 000 sq km
D ≈ 78 inh./sq km
Zagreb ≈ 690 000 inh.
ADRIATIC – LITTORAL CROATIA
LIKA - MOUNTAINOUS CROATIA
PLITVICE LAKES – MOUNTAINOUS CROATIA
SLAVONIA – EASTERN (PANONIAN) CROATIA
SLAVONIA – EASTERN (PANONIAN) CROATIA
Administrative regions:
21 counties

Geographical regions:
5 regions
Rural Croatia

• Around 90% of the total area, 46% of the population

• **Small settlement size** and very **dispersed** structure
  – 36.6% of all settlements have less than 100 inhabitants

• **Unfavourable** demographic, economic and social characteristics of the Croatian countryside at the beginning of 21st century
  – Between 1961 and 2001, the population of more than 80% of all rural settlements was reduced, with half of them shrinking by at least 50%
  – 23.3% of people older than 60
  – Natural change rate -3.8‰
  – 54.2% of people with no or only elementary education
  – 70.2% settlements have no services (expect possibly small village shop)
  – Share of agricultural population -11% (5.5% in total population)
Demographic change 1961-2001 (rural and periurban areas)

Mountainous Croatia 94.6%
Eastern Croatia 81.7%
South Croatian Littoral 79.1%
North Croatian Littoral 75.4%
Central Croatia 82.3%
TOTAL 81.8%

Index

0 - 50
50 - 100
100 - 150
150 - 250
250 - 500
500 -

Typology of rural and urbanized settlements in Croatia

Types of rural and urbanized settlements

A - Dynamic, structurally stronger settlements
B - Accessible, commuting dependent settlements
C - Market oriented agricultural settlements
D - Economically diversified, mainly tourist settlements
E - Extensive agriculture and weaker demographic structure
F - Rural periphery
G - Other rural settlements
Black - Ghost settlements
Pink - Urban
Place-based approach in rural development

• Rural is **not a single, homogeneous entity**. It takes many forms and the challenges that different areas face require intelligent, regionally targeted delivery responses.

  — (Brunori and Rossi, 2006; Halfacree, 2006; Cloke, 2006; OECD, 2006; Rienks, 2008; SCENAR 2020; Woods, 2005)
Place-based approach in rural development

• Rural areas do not exist in vacuum:
  – they should be viewed in their local and regional contexts, including the relationship between rural and urban areas.

• This also means bridging the gap:
  – between rural and regional development policies, as well as spatial land use and economic development plans and strategies (OECD, 2006).
Settlement Hierarchy

- Capital
- Macroregional C.
- Stronger Regional C.
- Weaker Regional C.
- Subregional C. (stronger, weaker)
- Area C.
- Local C.
Place-based approach in rural development

- If we accept that the diversity and dynamics of rural areas are some of the key elements in their planning and development, then an important question is whether and how they are recognized and converted into action.

- How do we transfer conceptual model into a workable, applicative instrument?
Place-based approach in rural development

• Lowe and Ward (2009) offered a possible solution in their quest to overcome shortcomings of recent future studies:
  – They suggested developing conceptual framework into typology of rural areas based on multivariate analysis.
  – Creating scenarios for each type of rural area, based on the influence of key change drivers in specific rural context.
The objectives of the CRORURIS scenario study

• to develop a conceptual framework
  – for understanding recent changes in rural Croatia by identifying current processes, main drivers of change and local responses;

• to develop methodological framework
  – for identifying predominant trends and key uncertainties, differentiating them geographically and projecting them forward using statistical modeling and Delphi method;

• to construct alternative future scenarios
  – and relate them to the context of rural Europe;

• to encourage and support discussion
  – about future of rural areas in academic, decision-making and public discourse.
Examples of well-known and influential scenarios at the global scale

- Intergovernmental Panel on Climate Change – IPCC scenarios
- UNEP’s Global Environmental Outlook scenarios
- OECD Environmental Outlook.
- ESPON spatial scenarios exploring trends and key mechanisms in relation to alternative territorial futures
Scenario studies specifically targeting rural areas in Europe

- EURURALIS project (1.0, 2.0, and 3.0)
  - aims at developing a discussion-oriented tool to support policy makers and stakeholders in discussions about the future of rural areas in the European Union
  - the elaboration of the general storylines,
  - specification of driving forces such as demographic and economic trends, world trade regulations, consumer preferences, and various policies.
  - Scenarios were developed using a 2 x 2 matrix consisting of four world views or development paradigms.
  - Scenarios were quantified with a chain of models on different scales (EURURALIS, Methodology; Westhoek et al., 2006).
Two sets of ‘drivers’ — assumed to influence the evolution of agriculture up to 2020.

- **Exogenous drivers** — not expected to change substantially due to EU policy decisions
  - population growth, macro-economic growth, consumer preferences, agro-technology, environmental conditions, and world markets

- **Endogenous, or policy-related drivers**,  
  - EU agricultural policy, enlargement decisions and implementation, World Trade Organisation (WTO) and selected EU bilateral agreements, renewable energy policy, and environmental policy.

- **Three policy scenarios** were proposed:
  - a ‘Reference’ scenario, a ‘Conservative CAP’ scenario, and a ‘Liberalisation’ scenario
Alternative futures for rural England – a social geographic perspective (Lowe and Ward, 2009)

• Identifying predominant contemporary trends affecting rural areas and projected them forward by means of formal modeling.

• A set of three 20-year scenarios for the English countryside

• Started by constructing a rural typology
  – four dimensions: demography, economy, interactions between residential location and wider economy/society, and signs of rural symbolism.
CRORURIS overview

Phase 1: Recognizing key drivers of change
- Rural demographic patterns
- Economic and agricultural market transformations and trends
- Environmental and land-use change.

Phase 2: Recognizing rural diversity
- Typological approach – cluster analysis
- Judgment on degree of influence of change drivers to type of rural area
- Modelling and DELPHI

Phase 3: Constructing alternative future scenarios
- Simulations of the model
- Developing scenario storylines
- Elaboration in the Croatian and EU context
- Comparison with conceptual framework and similar studies
Phase 1: Recognizing key drivers of change

- **Rural demographic patterns:**
  - multiyear time series related to data on:
    - fertility, mortality, natural growth, reproduction,
    - migrations, demographic structures,
    - family and households,
    - on correlation between components of change and population structure, as well as on interdependence of demographic and socioeconomic processes.
Phase 1: Recognizing key drivers of change

- Economic and agricultural market transformations and trends
  - changes in legal, institutional and economic framework,
  - and their consequences for rural development and agriculture
    - the main statistical indicators includes: share of agriculture in Gross Value Added, share of agricultural population, share of agriculture in total national employment, total utilized agricultural area by categories, farm structure (size, number of parcels, etc.).
Phase 1: Recognizing key drivers of change

- **Environmental and land-use change**
  - influenced by demographic, cultural and economic factors, physical characteristics of the environment itself, and their complex interactions.
  - spectral analysis of the Landsat and SPOT imagery for 1991 and 2011 using ArcGIS and TNTmips software,
  - the distribution of major land use and land cover categories will be achieved.
Phase 1: Recognizing key drivers of change

- The recognized key drivers of change will be tested and verified in local context
  - 6 case studies on local level in order to explore local responses toward recognized main drivers of change
  - The case study research area will reflect diversity of Croatian and different types of rural areas recognized in previous research (Lukić, 2012).
- Finally, conceptual framework will be created:
  - Based on influence of drivers of change in local context
Phase 2: Recognizing rural diversity

• Typological approach – new rural typology
• Projecting forward: three different modeling approaches based on established quantitative techniques will be used:
  – Projecting demographic trends for rural areas differentiated by types.
    • Analytic or cohort component method.
    • Several combinations of assumptions on future changes in fertility, mortality and migration by age and sex.
  – Projecting environmental and land-use change trajectories based on spectral analysis of the Landsat imagery and different models of regression.
  – Predicting trends in agriculture by conducting impact analysis on agricultural and rural activities
Methodological framework

OVERVIEW

KEY VARIABLES

- topographic characteristics
- size, distribution, and population structure,
- demographic dynamics
- employment and commuting
- socio-economic struc.
- importance and structure of agriculture
- land use;
- functions and shape of housing
- household equipment,
- settlement centrality
- accessibility to settlements of higher centrality.

1. Differentiation of urban and non-urban settlements
   Result: 6620 non-urban settlements, 2,043,714 in., (46.1%) settlements

2. Selection of key variables
   Initially: 140+ variables
   Result: 59 selected variables

3. Statistical and cartographic (GIS) analysis
   Result: Thematic maps and descriptive statistics of selected key variables

4. Identification of key factors
   Methods: Multivariate analysis (PCA and factor analysis)
   Result: 8 main factors, calculating and mapping factor scores

5. Constructing typology
   Method: Cluster analysis
   Result: 6+1 types of rural and urbanized settlements

6. Statistical analysis of recognized types of settlement
   Result: Thematic maps and descriptive statistical analysis
Phase 2: Recognizing rural diversity

• The final result of Phase 2:
  – is a model simulating rural dynamics in Croatia, developed using judgment on the degree of impact each change-driver will have on the different area types.

• The appropriateness of the newly developed model will be evaluated:
  – using multivariate regression and Structural Equation Modeling.
Phase 3: alternative future scenarios of rural Croatia

- The statistical techniques will be used to perform large series of simulations of the model with each dimension taking on a different value as a function of the probabilities attached to it.

- The resultant quantitative output with the highest probability score from the simulation exercise will be considered as the most likely scenario for 2030.
Phase 3: alternative future scenarios of rural Croatia

- The results of model simulation will serve as an input to develop scenario storylines.

- Developed alternative scenarios will be:
  - elaborated in the Croatian context and
  - EU context by comparing them with conceptual frameworks and similar scenario-based studies.
Expected outcomes

• To encourage and support discussion about future of rural areas in academic, decision-making and public discourse

  – Creating web based GIS discussion tool “Rural Change in Croatia”
  – Preparing and publishing “The Atlas of Rural Change in Croatia”
  – Organizing workshop “What is the future of Rural Areas in Croatia?”
  – Preparing policy recommendations
LOOSING THE PLACE IN POLITICAL DISCOURSES OF “RURAL” - “NON-URBAN”

PLACE

- Rural development
- Regional planning and development
- Environmental protection
- Spatial planning and development
- Agriculture
- Tourism
- Transport systems
Thank you for your attention!

CRORURIS 2030
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