

RSA Annual Conference 2015
Piacenza, Italy, 24th – 27th May

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

Aleksandar Lukić

University of Zagreb
Faculty of Science
Department of Geography

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**

Central Europe

Central Europe

South Eastern Europe
(The Balkans)

Mediterranean

$P \approx 4.28$ million
 $A \approx 56\,000$ sq km
 $D \approx 78$ inh./ sq km
Zagreb $\approx 690\,000$ inh.





ADRIATIC – LITTORAL CROATIA



ADRIATIC – LITTORAL CROATIA



ADRIATIC – LITTORAL CROATIA



LIKA - MOUNTAINOUS CROATIA

PLITVICE LAKES – MOUNTAINOUS CROATIA





SLAVONIA – EASTERN (PANONIAN) CROATIA



SLAVONIA – EASTERN (PANONIAN) CROATIA

0 100 km



**North Croatian Littoral
(Istria and Kvarner)**

Mountainous Croatia

Central Croatia

Eastern Croatia

**South Croatian
Littoral (Dalmatia)**

Counties

- I County of Zagreb
- II County of Krapina-Zagorje
- III County of Sisak-Moslavina
- IV County of Karlovac
- V County of Varaždin
- VI County of Koprivnica-Križevci
- VII County of Bjelovar-Bilogora
- VIII County of Primorje-Gorski kotar
- IX County of Lika-Senj
- X County of Virovitica-Podravina
- XI County of Požega-Slavonia
- XII County of Sl. Brod-Posavina
- XIII County of Zadar
- XIV County of Osijek-Baranja
- XV County of Šibenik-Knin
- XVI County of Vukovar-Srijem
- XVII County of Split-Dalmatia
- XVIII County of Istria
- XIX County of Dubrovnik-Neretva
- XX County of Međimurje
- XXI City of Zagreb

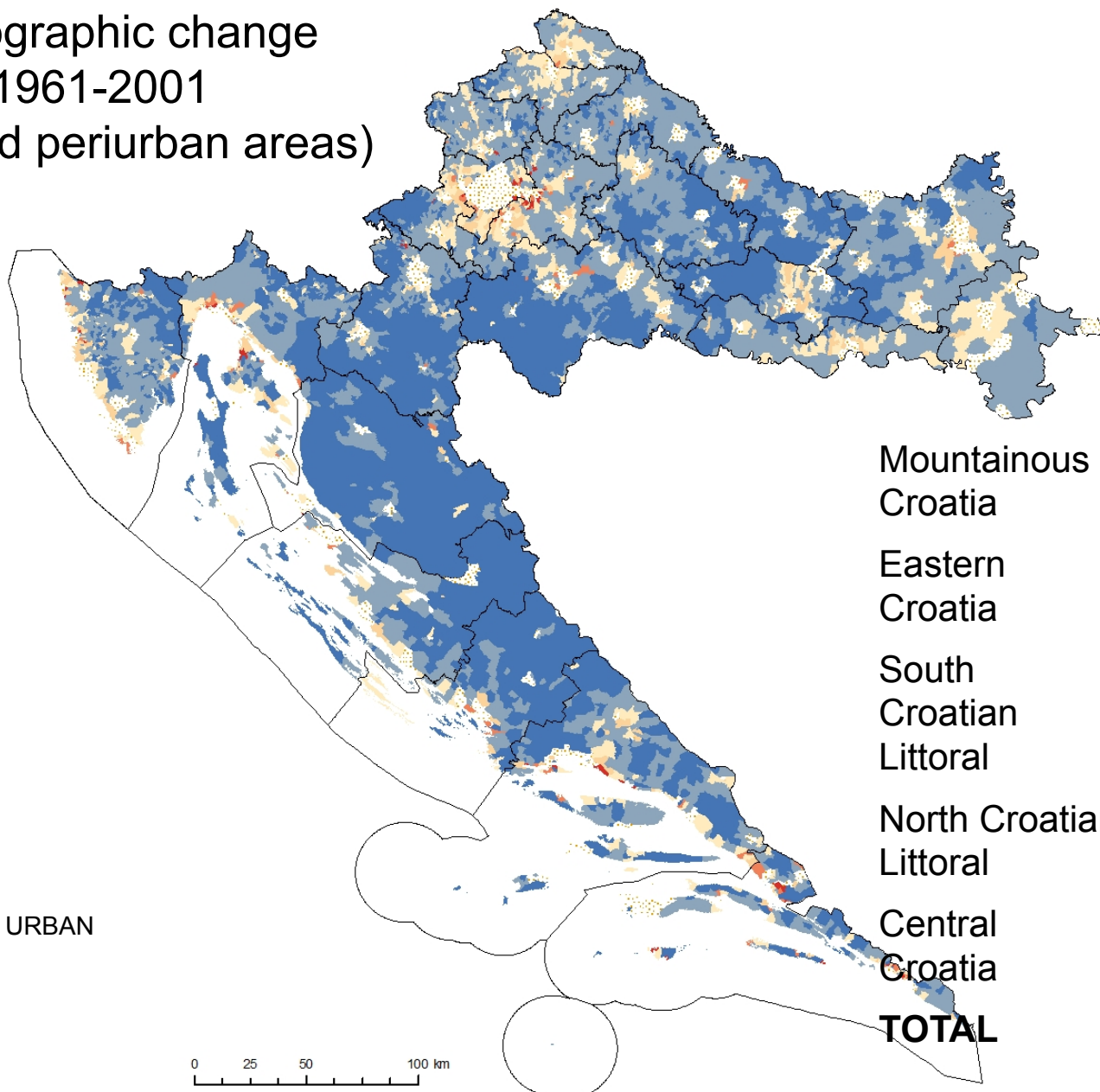
Administrative
regions:
21 counties

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 (except possibly small village shop)
 - Share of agricultural population -11 % (5,5% in total population)

Demographic change 1961-2001 (rural and periurban areas)



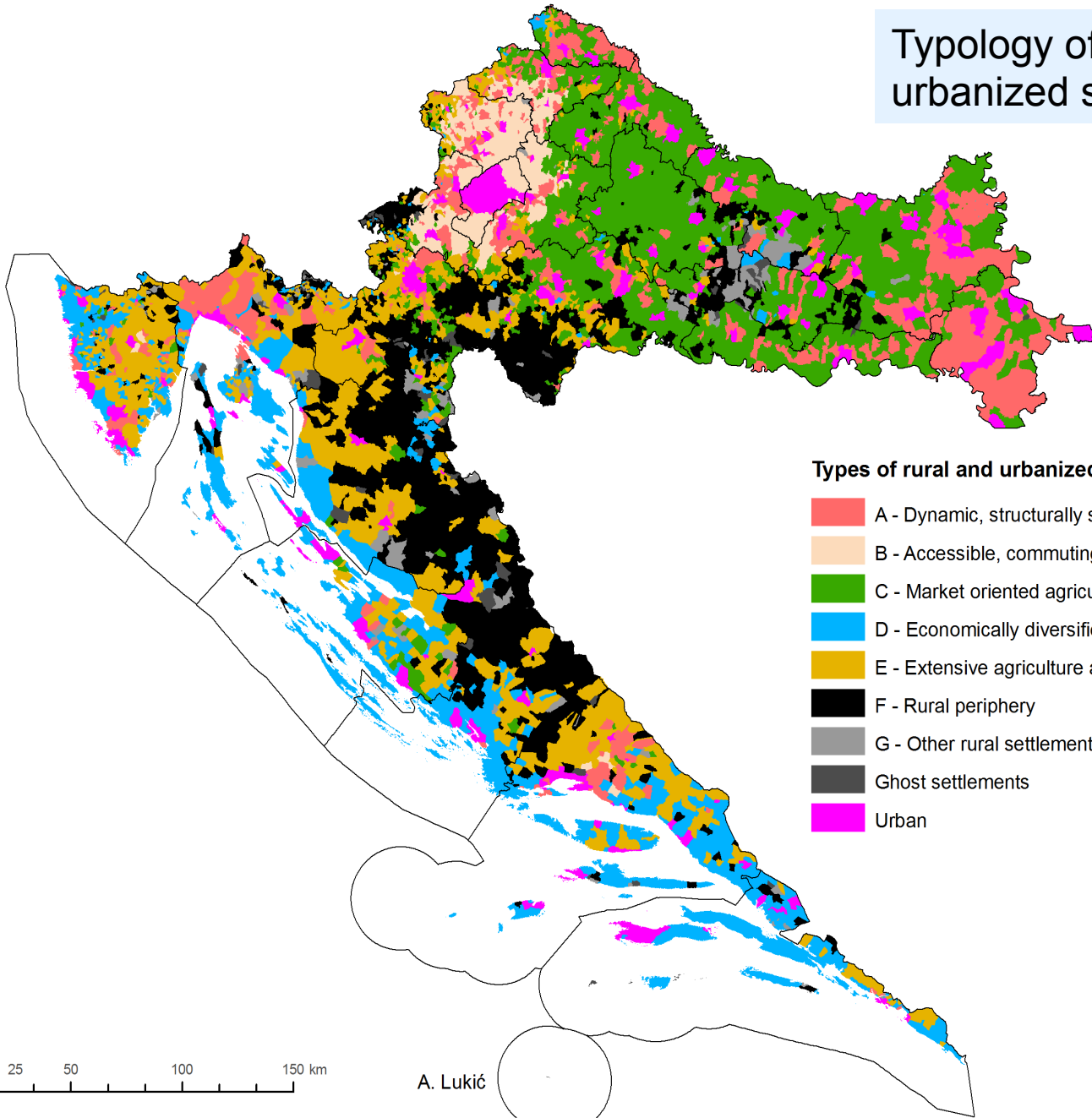
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Depopulation
(settlements)

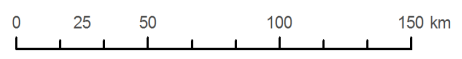
Mountainous Croatia	94,6 %
Eastern Croatia	81,7 %
South Croatian Littoral	79,1 %
North Croatian Littoral	75,4 %
Central Croatia	82,3 %
TOTAL	81,8 %

Typology of rural and urbanized settlements in Croatia



Types of rural and urbanized settlements

- A - Dynamic, structurally stronger s.
- B - Accessible, commuting dependent s.
- C - Market oriented agricultural s.
- D - Economically diversified, mainly tourist s.
- E - Extensive agriculture and weaker demographic structure
- F - Rural periphery
- G - Other rural settlements
- Ghost settlements
- Urban



A. Lukić

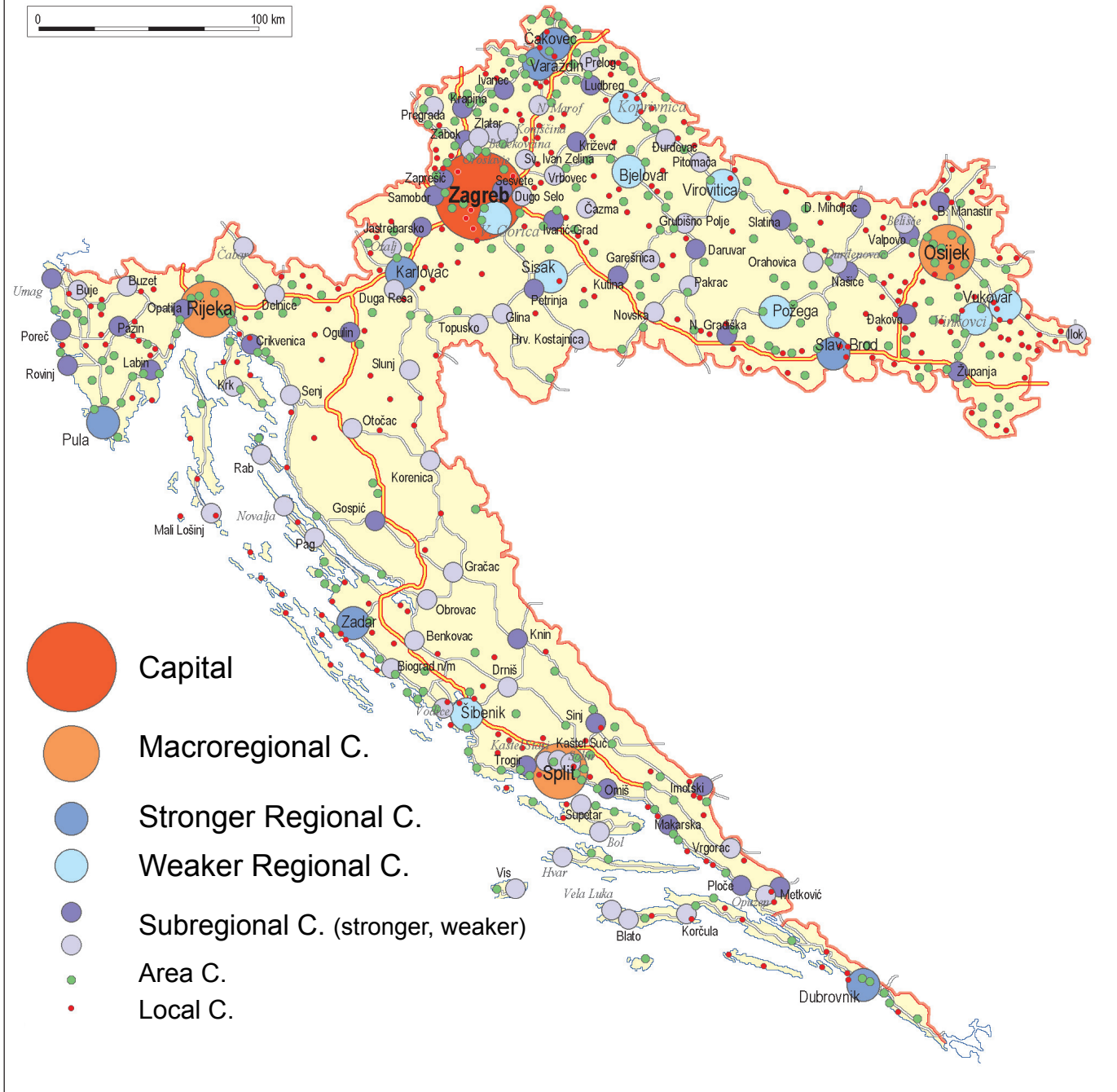
Place-based approach in rural development

- 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



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).

SCENAR 2020 and Scenar 2020-II

- 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.

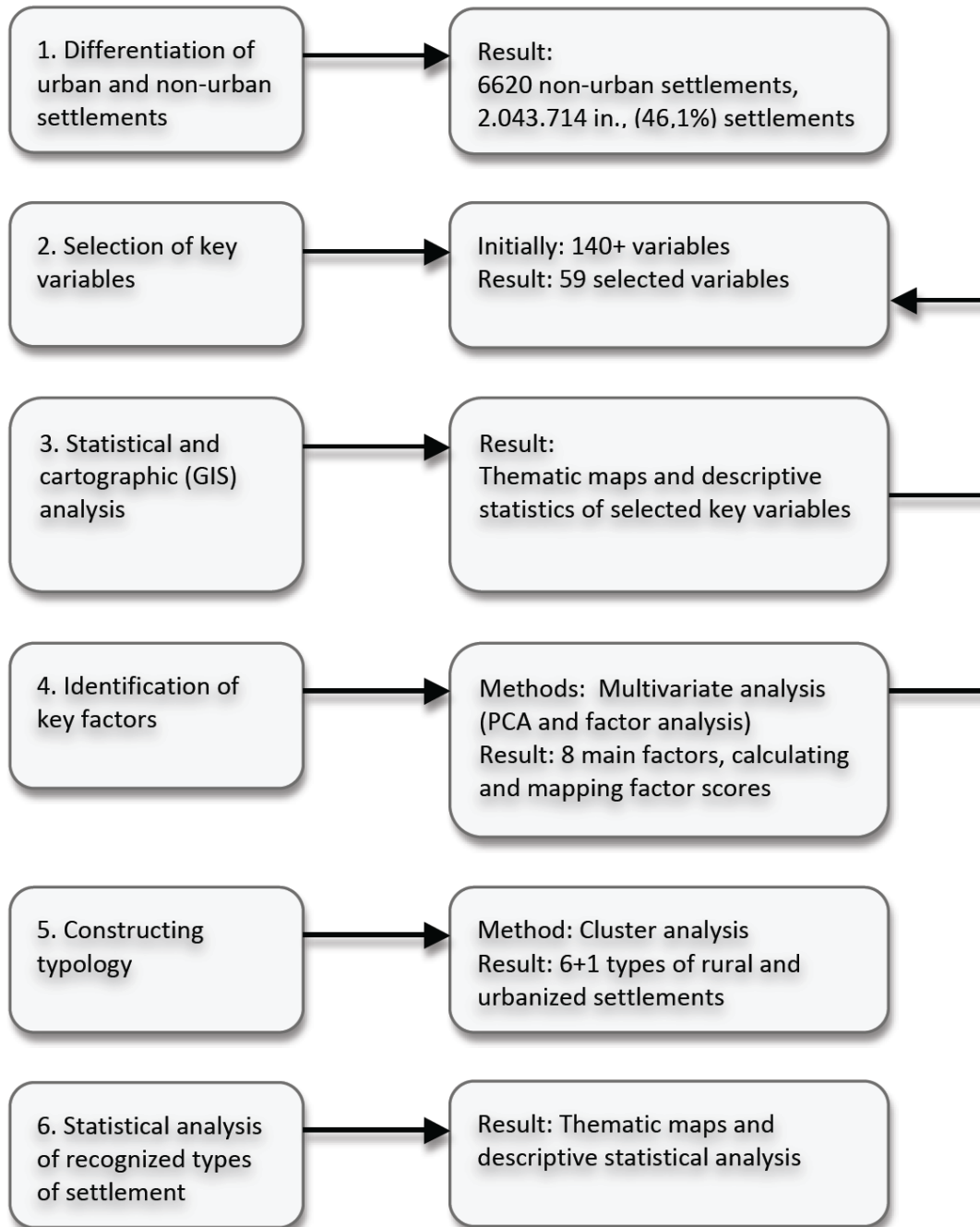
Phase 1: Recognizing key drivers of change

- 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.

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.

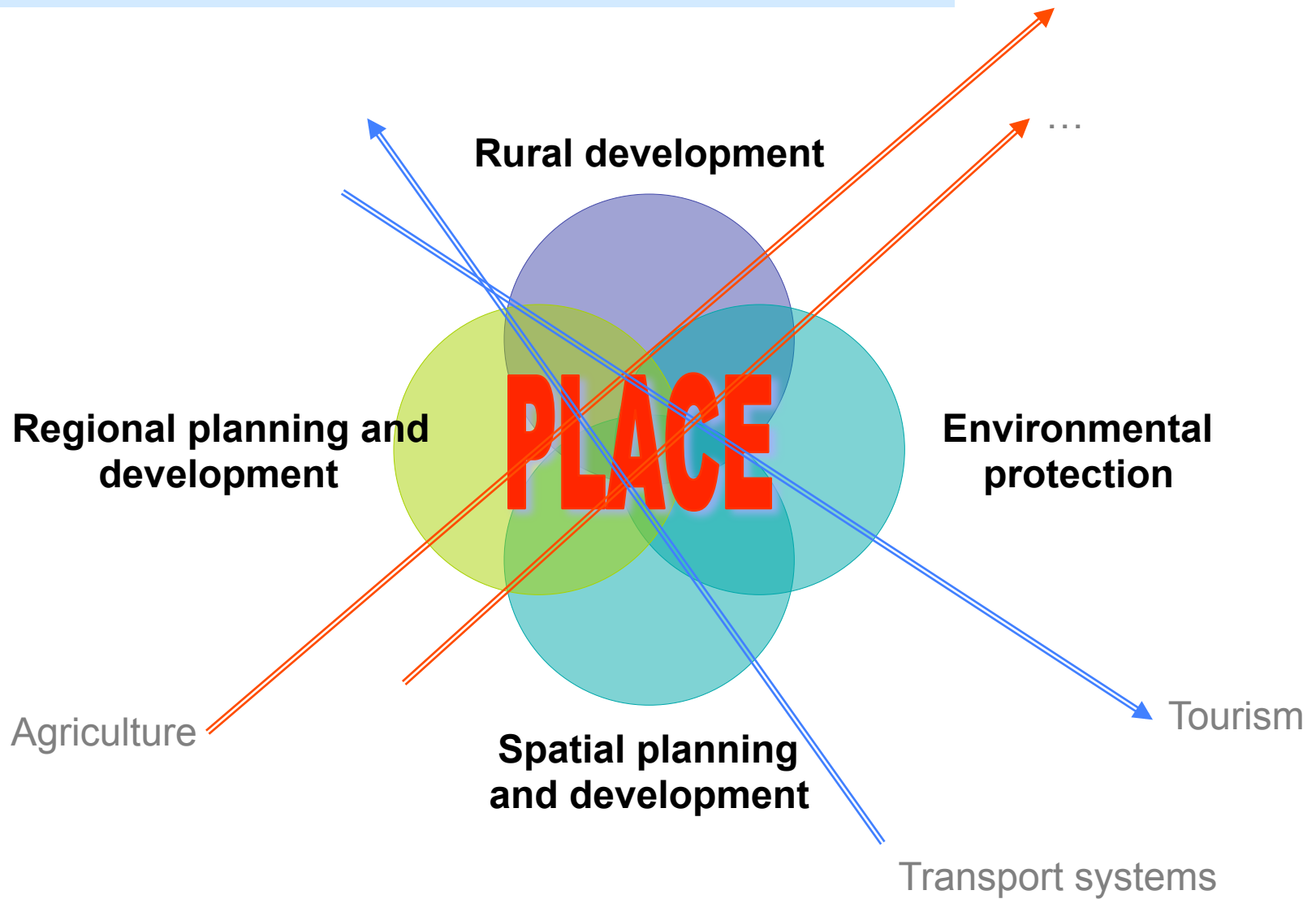
Phase 3: alternative future scenarios of rural Croatia

- 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”**



Thank you for your attention!

CRORURIS 2030
alukic@geog.pmf.hr



This work has been supported by the Croatian Science Foundation under the project number 4513. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of Croatian Science Foundation.