

International Climate Change Workshop in Budapest

Society, economy and climate change:
lessons from the Long-term socio-economic
forecasting for Hungary project

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Background of the paper

EEA Grants - Adaptation to Climate Change Programme

- National Adaptation Geo-information System
- <http://nagis.hu/>



NAGIS

- **Long-term socio-economic forecasting for Hungary (EEA C12-11)**



LONG-TERM SOCIO-ECONOMIC FORECASTING FOR HUNGARY

Beneficiary: Centre for Economic and Regional Studies, Hungarian Academy of Sciences

Socio-economic indicators until 2050

- demographic forecasting (LAU 1)
- land-use change (LAU 2)
- economic macro-model and downscaling (NUTS 3)
- survey on attitudes towards and knowledge about climate change (NUTS 3)

Outline of the paper

‘concomitant need for interdisciplinary efforts to make sense of the resulting impacts [of climate change] much more evident’ (Popke 2016)

- *epistemology*: What do we know about climate change? How is knowledge on climate change acquired?
- *ontology*: What is climate change? What are the interrelations of climate change, society and economy?
- *methodology*: How do we establish new ‘scientific’ knowledge on the interrelations of climate change, society and economy?

1. Epistemology

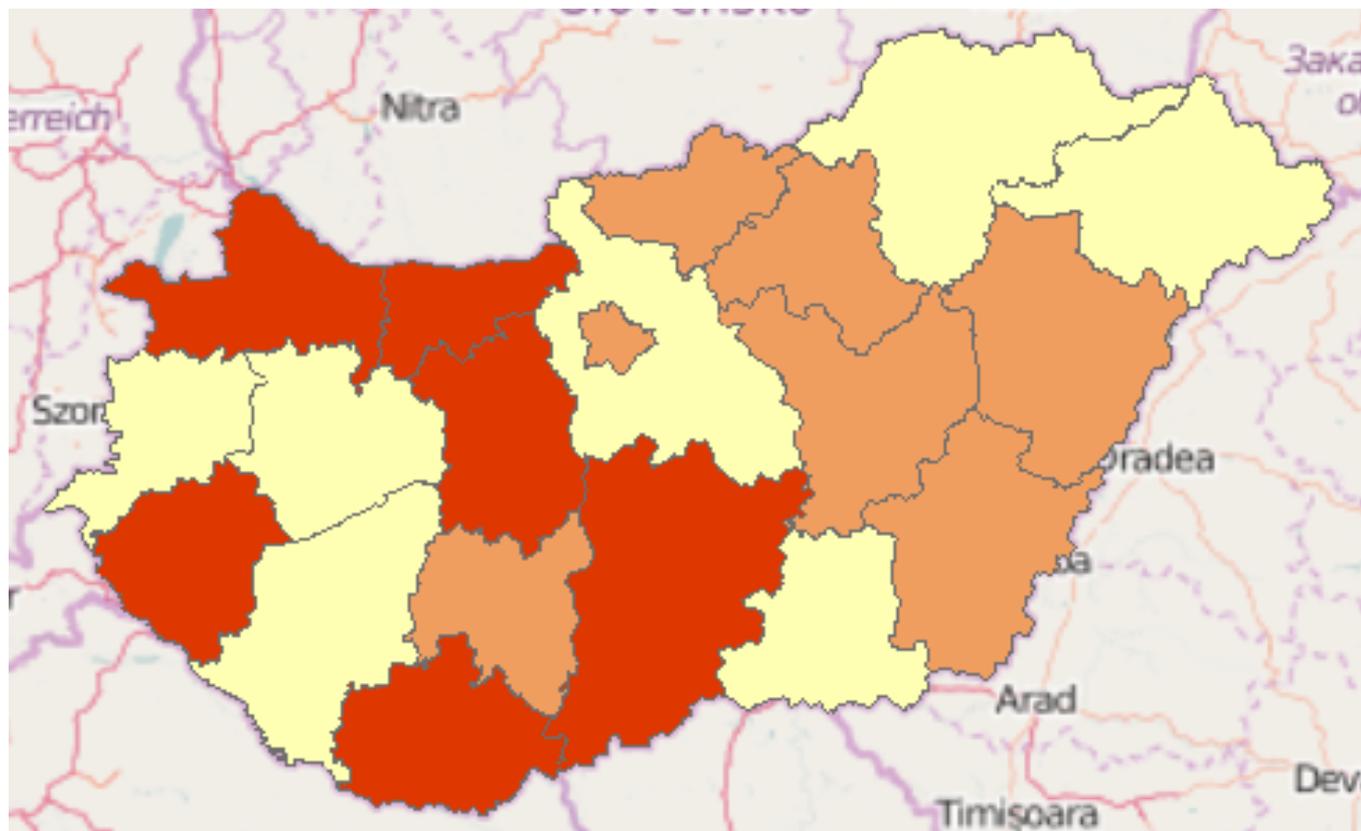
What do we know about climate change?

Situatedness of knowledge about climate change and its effects

- Knowledge reflects different aspects of social realities from which it stems
- Local or 'lay' knowledge has the same importance than 'scientific' knowledge, because human action is influenced by this 'non-scientific' knowledge
- How can NAGIS incorporate these differences?
- survey on attitudes towards climate change (autumn 2015): representative of gender (2), age groups (3), settlement categories (4), and on NUTS 3 level (20); sample size: 3000 respondents
- *Since my childhood the weather changed...*
 - ...to a high extent: 57%; ...to a medium extent: 32%*

1. Epistemology

What do we know about climate change?



Importance of climate change compared to other social issues

-  Climate change is more important than the national average
-  Climate change is as important as the national average
-  Climate change is less important than the national average

1. Epistemology

What do we know about climate change?

The way forward

- further analysis of 'lay' knowledge about climate change according to different groups of the society, e.g.
 - Do people in more (environmentally, socially) vulnerable places have more differentiated knowledge on the effects of climate change?
 - What individual or collective adaptation strategies were initiated by different vulnerable groups in different places (such as farmers)?
- representation of different knowledges in NAGIS – detailed understanding of the (geographical and social) situatedness of climate change as a complex socio-environmental issue – adaptation policies

2. Ontology

What is climate change?

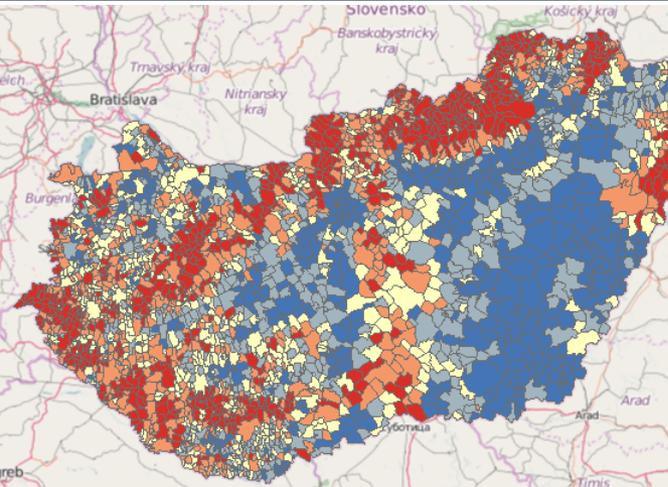
- climate change is both physical and social phenomenon, climate does not exist outside society and vice versa
 - GIS systems must take this into account
- there is no priority of climate over society – climate variables are not external to social phenomena
 - e.g. the same drought (measured by physical parameters) have a completely different meaning and relevance for a farmer and for ordinary people living in inner cities
- environmental injustices in connection to climate change – the poorest pay the price



Is physical science really the basis?

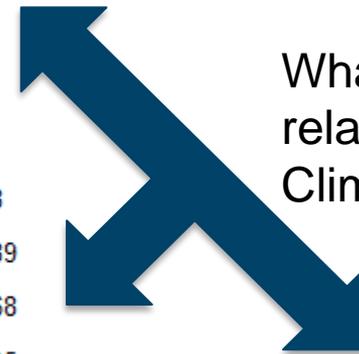
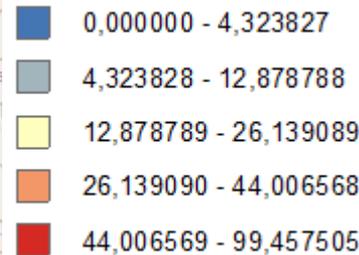
2. Ontology

What is climate change?



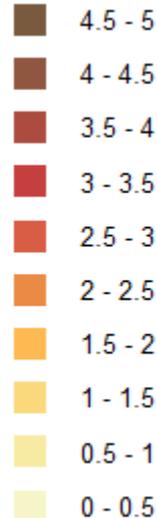
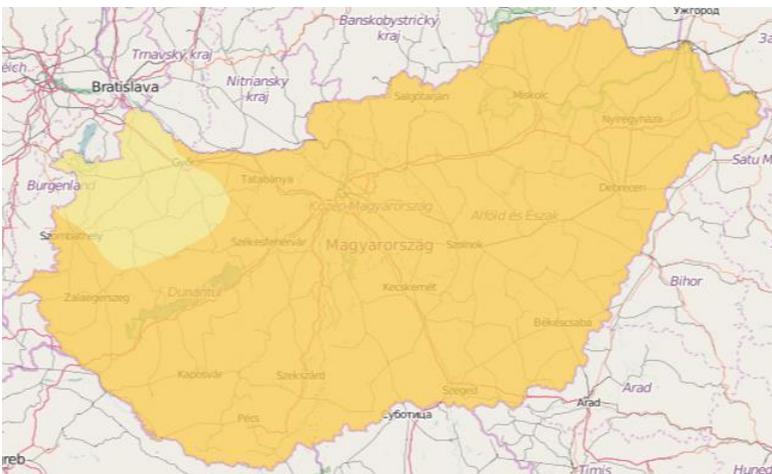
Share of forests in land use (2006, %)

Farkas, Lennert 2015

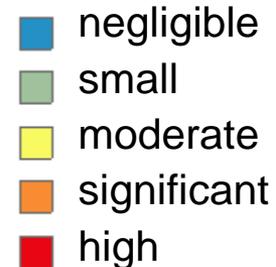
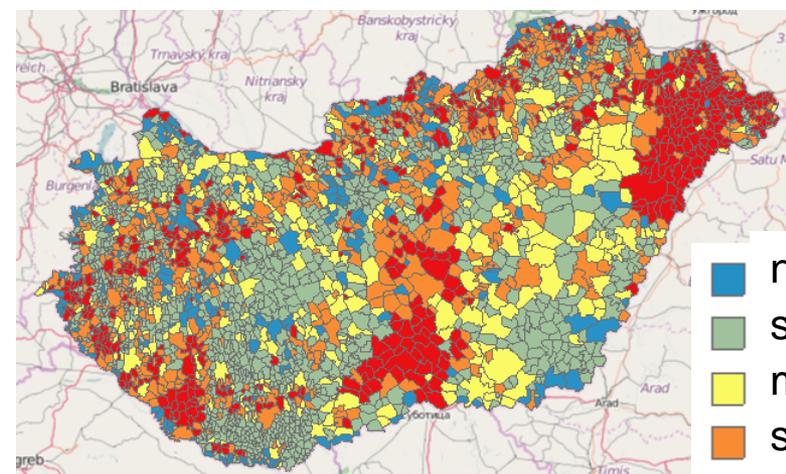


What is the correct relation of the three?
Climate explaining land use?

Annual mean temperature rise (2021-2050, RegCM)



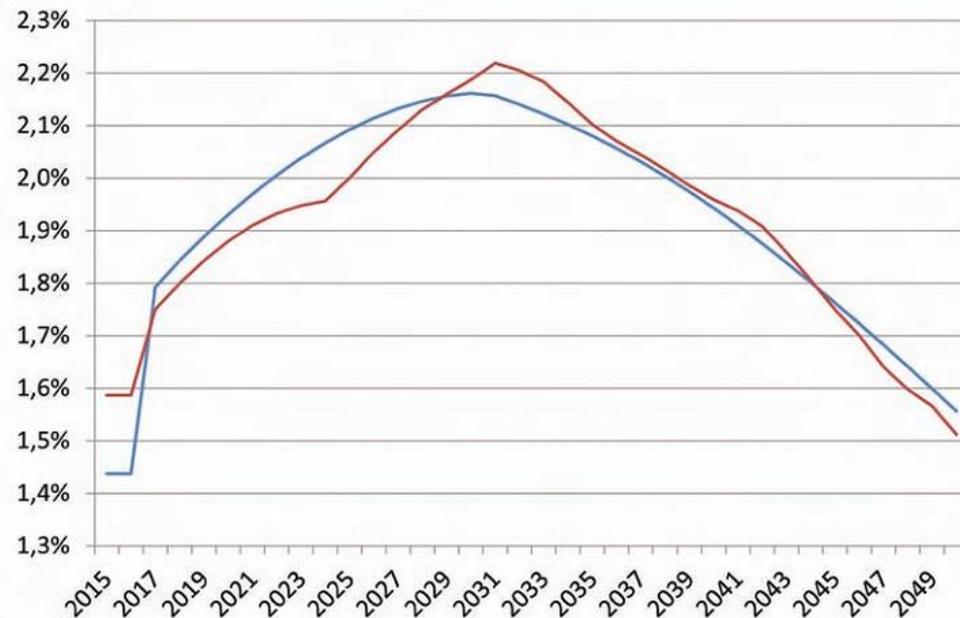
Potential change of forests (2006-2030)



2. Ontology

What is climate change?

- IPCC's RCPs contain assumptions on the society and economy (as anthropogenic forces)
- if climate projections using these RCPs are used as predictors in economic models, the causal relations might be contradictory
- OECD ENV-Growth model; scarce sources in the econometric modeling literature



GDP growth rate in Hungary

basic pathway: blue line
climate pathway: red line

Source: Sebestyén, Zsibók 2015

2. Ontology

What is climate change?

The way forward

- combination of layers in NAGIS in order to combine 'natural/physical' with the 'social' – because this is climate change
- further research on causal relations – social scientists' and civil society's call for concentrating on political-economic processes to act against climate injustice
- future research: whose interest does NAGIS represent? – who will benefit from the information? (e.g. land use, agricultural productivity – small farmers vs. large agricultural holdings) – critical GIS, 'power of maps'

Source: <http://realmedia.press>



3. Methodology

How do we establish new 'scientific' knowledge?

- one possible world-view or several world-views?
- represented in NAGIS helping decision-making? / multiple world-views confusing policy-making?
- so far: different solutions in NAGIS
 - *indicators* of sensitivity, vulnerability, adaptability and impacts
 - *one future*: economy, society (one demographic projection, main findings of three projections in background reports; omission of the climate pathway in economic variables)
 - *two futures*: climate variables: RegCM, ALADIN models
 - *potential change*: land use (categoric variables)

3. Methodology

How do we establish new 'scientific' knowledge?

The way forward

- harmonizing how we deal with the uncertainty of future projections
- several futures are methodologically legitimate
- taken-for-grantedness (self-fulfilling-prophecy): e.g. land use change at the municipal level is not *the future* of that municipality – national policy change, large local investments or local policies might lead to different future
- more effective communication between academia and policy-making

Thank you for your attention!

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Beneficiary: Centre for Economic and Regional Studies, Hungarian
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<http://nater.rkk.hu>



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