



KELETI FACULTY  
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# What kind of new solutions do we need to increase efficiency of land usage? – case studies from Poland and Hungary (Who wins?)

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# Headlines, introduction

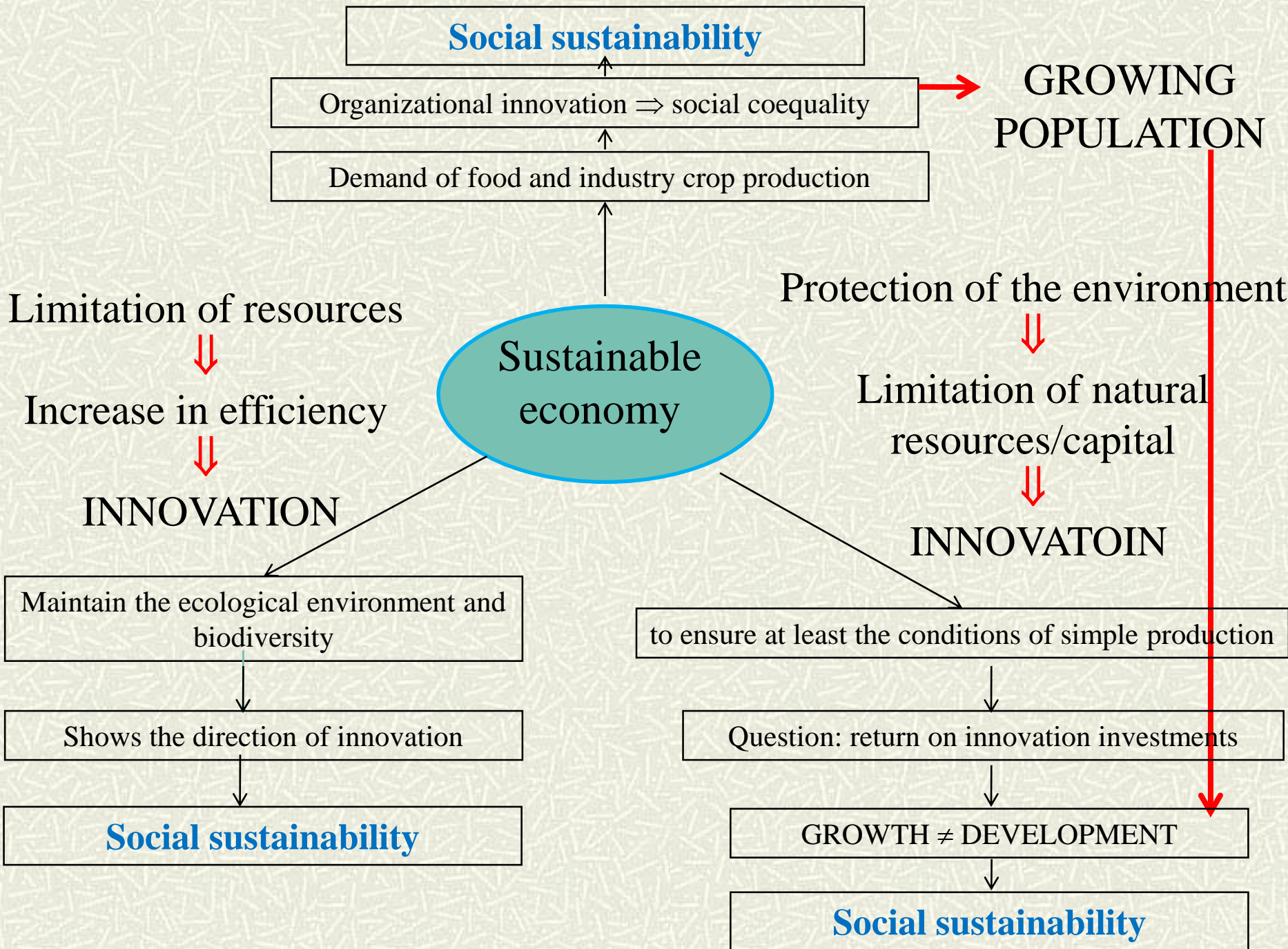
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- ❖ sustainable economy and innovation
- ❖ aspects of sustainability ⇒ ‚8R‘
- ❖ **safe food production** and establishing the **food security** ⇒  
are tasks in which all actors in the food chain are active participant and they can only meet the varied and often more stringent requirements with ongoing renewal
- ❖ land as limited resource
- ❖ how to use the land in efficient way? – individual

# Headlines, introduction

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- ❖ innovation (precision farming) ⇔ tradition (ecosystem with animal husbandry)
- ❖ new technologies? – **more knowledge** (land – soil – crops, etc.)
- ❖ role of farmers, habitants – do we really adopt better solutions?
  - **attitudes to changes, novelty**
  - **attitudes to share sg, to cooperation**
- ❖ development in agriculture resulted different **polarized land structure with different competitiveness** (in PL and HU)
- ❖ case studies
- ❖ conclusions: the question is who wins?



# Contradiction of sustainability

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1. Economic growth  $\neq$  Sustainability
2. Sustainability  $\neq$  Consumption
3. Developed countries  $\neq$  Developing Countries

**SOCIAL SUSTAINABILTY?**



**Do we produce enough food?**

# "sustainable development"

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- # includes the current and long-run sustainable production
- # wide expanded interpretation of sustainability

new paradigm: the 'degrowth'



- # the theory of ,degrowth' within the history of humanity was a recurring thought
- # it is a movement towards the sustainable future, combining ecological economics, anti-consumerist and somehow anti-capitalist thoughts  
(roots of the movement go back to the antecedents the report of Club of Rome in 1971 titled "Limits to Growth" report; i.e.: Meadows Report)
- # Latouche (2011) summarized the conditions which must be characterize the non-growth autonomous society  $\Rightarrow$  8-R

# ,8R' (1)

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- ▣ **REVALUE – REEVALUATION** (going back to social values like honesty, sharing knowledge, respect of honored work, straightness, responsibility, respect of nature and human values)
- ▣ **RECONCEPTUALISER – CONCEPTUAL CHANGE** (new meaning of economy, limitation, property: is commodity the nature?)
- ▣ **RESTRUCTURER – RESTRUCTURING** (production tools, social connections to the new values)
- ▣ **REDISTRIBUER – REDISTRIBUTION** (redistribution of natural resources, extending the global access at social and individual level between generations in order to reduce the „over-consumption”)



# ,8R' (2)

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- # **RELOCALISER – DELOCALIZATION** (focusing on local production – local consumption, reducing material flow, based on global information flow)
- # **RÉDUIRE – REDUCTION** (stop the prodigality, wastefulness, reduction of human health risk, increasing prevention)
- # **RÉUTILISER – REUSE** (longer life time of goods, emphasizing the multiple use)
- # **RECYCLER – RECYCLING** (waste management, reducing the need for – mainly limited – natural resource)

Latouche, Serge (2003) Decrecimiento y post-desarrollo El viejo topo, p.62

(Latouche, Serge (2009) Farewell to growth. Cambridge: Polity Press.

Latouche [2011] A nemnövekedés diszkrét bája. Szombathely. Savaria University Press. 138.p

# Land as limited resource

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- # must be renewed and used more efficiently
- # land as the space of
  - economic activity
  - life
- # radical decrease in arable land, soil quality  $\Leftrightarrow$  usage of „new” technologies
  - innovation: PA
  - going back to ancient cultivation methods preserving biodiversity (crop rotation, biological plant protection, antagonists, etc.):
    - herb plantation, co-operating with other farmers for purchasing, selling
    - mixed farm, using organic materials producing milk delivered to food industry



# Herb plantation in Poland (1)

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- # fragmented land is key problem of Małopolska (Galicja)
- # Poland ranks third place in the production of herbs in Europe, going to western markets ~ 80 % of herb raw materials
- # ~ 20 % of herb raw materials are derived from natural, the rest from plantations
- # people having small area can invest in the herbs production, the herbs recipients usually are companies specializing in pharmaceutical products, food production or cosmetics
- # 0,5 - 2,0 euro/ kg of dried popular herbal plants



# Herb plantation in Poland (2)

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- niche species include, among others: hierochloa (zubrovka), medical verbena, cornflower bluebottle, nettle
- the list of herbs is substantial, herbs, which are in demand: chamomile, nettle, thyme, soaps, marshmallow, lemon balm, yarrow, calendula, or sage
- average revenue per grower of crops 1 ha of herbs ranges from 1.5-2.3 thousand euro; expenditures are 75-80% of the revenue; median income is about 300-565 euros / 1 ha planted herb
- farmer's opinion: „ it is better to have 5 acres of ginseng than 10 hectares of the wheat”



# Diary farm – from 1998 (PL)

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- # Starting with 4 ha and 16 dairy cows in the old barn  $\Rightarrow$  continuous development
- # 2007: construction of a new cowshed; work and putting feed is mechanized; individual feeding (like precision); milking stall for 10 cows
- # 2016: 100 dairy cows and about 50 young pieces
- # Mechanization, tractors: Class 160 KM, Case 95 KM, MTZ 82 KM and others
- # 21 ha own land, and 60 ha leased



# Safe food and food security – the role of PF

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- ✦ traceability guarantees the food safety from farm to fork
- ✦ materials and products flow must be linked with the professional information' flow along the entire chain ⇒ providing
  - localization of a potential problem
  - the individual responsibility
  - creating a preventive safety at the same time
- ✦ the precision agriculture can give a good base to fit the data gathering, recognizing, and provisions



**adoption of new technologies, results of innovation is a compulsory movement for farmers (to be viable, to be competitive)**





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- # documentation of precision technology creates the follow-up, food safety, which is also expected of the agricultural and food products for customers delivering
  - # maintenance of food security would be inconceivable without modern varieties and factors of production, including labor-efficient, productive enhancing technological solutions
    - ⇒ **reducing the yield uncertainty** (decision variables; predetermined variables; variables of yield uncertainty)
    - ⇒ **environmental friendly use of inputs** (by management zones)
    - ⇒ **economic viability**



social sustainability

# Renewal of exploiting opportunities of cooperation – medium-scale potato plant (Hungary)

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- # 1500 hectares of rented land
- # irrigation settled plant, dairy farm, main activity is the potato industry with advanced packaging
- # integrated pest management (IPM) technology based on forecasting against the potato blight, with knowledge centers (Potato Research Centre of Pannon University, the Budapest Central Food Research Institute and Corvinus University)
- # organizing over 200 farms (row materials and post-harvest activity and selling)





# Why innovation in the context of bioeconomy for?

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- the **Knowledge and Bio-based Economy** is an economy in which food, feed, chemicals, materials, transport fuels, electricity and heat are produced economically and sustainably from renewable resources using innovations
- today: production, and utilization of **biological resources and innovations** in order to provide sustainable goods and services in all economic sector

# Conclusions (1)

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- # food production – land use – effective land use
- # **how to increase efficiency?** – must be based on resources, facilities (limited resources)
- # to find the **appropriate solution(s)**
  - can be based on **up-to-date technology**, results of implemented innovations
  - **traditional farming**, taking into consideration of local needs
  - **co-operation** among farmers to meet the requirements of **globalization**

# Conclusions (2)

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- Innovation and Cooperation  $\Rightarrow$  ways for food security
- Open innovation (OI) – let business partners and consumers in innovation process
- **OI model in food economy**
  - many different entities are involved
  - coordination is needed due to many, heterogenous participants
  - innovation can be carried out by value chain (not in an individual organization)
- **OI in local economies** – new paradigm of „de-growth”

# Conclusions (3)

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- sustainable development requires  $\Rightarrow$  all actors have to adapt to the changing environment
- the **renewable capacity**, **openness**, thinking along the product chain and **cooperation**  $\Rightarrow$  may result stability, can contribute to the suitable production that fit the requirements food safety
- at all levels of the food chain is important
  - **proper knowledge**, attitude, managerial skills
  - **existence of attitudes** that **support the rapid spread** of new applications, and strategic partnership



**Coopetition**

# Conclusions (4)

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**site-specific plant** production is a tool to meet the expectations of “degrowth” theory in agriculture

⇒ allows the efficient use of natural resources

**R**estructuring factors of production ⇒ **efficient land use**

⇒ each farming strategy in which the farmers’ cooperation is the base of an efficient machinery use

**R**estructuring of social relationships

⇒ each technology that reduces the human-health risk

**R**eduction



shows into the direction of ‘degrowth’

# Conclusions (5)

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- ⇒ **sustainability** – based on the three pillars – means that the use of nowadays resources that allows to satisfy the present need at a limited level and will serve for the futures generations
- ⇒ **sustainability** does not contradict ‘degrowth’



the connection between the ‘**degrowth**’ **concept** and the use of **new, innovative technologies** in plant production is the ensured food production with less environment burden, less waste, somehow the strengthening of local production – local consumption

feed the word – use the resources in an effective way –  
preserve environment – decrease consumption – increase  
local economy and activity – social sustainability



**Thank you for attention!**

