

# Developing an economy based on knowledge and innovation: CAP's contribution to a smart growth

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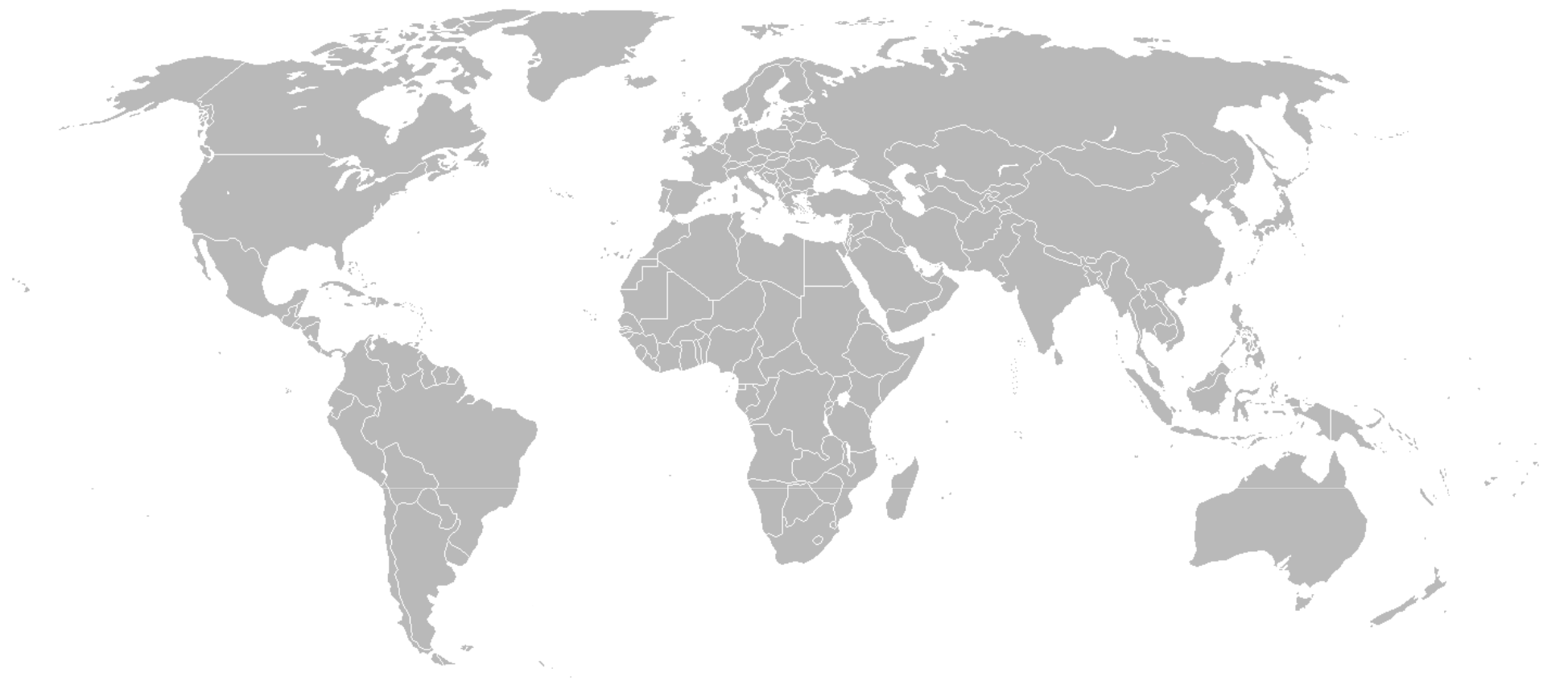


# The next generation European Knowledge Infrastructure

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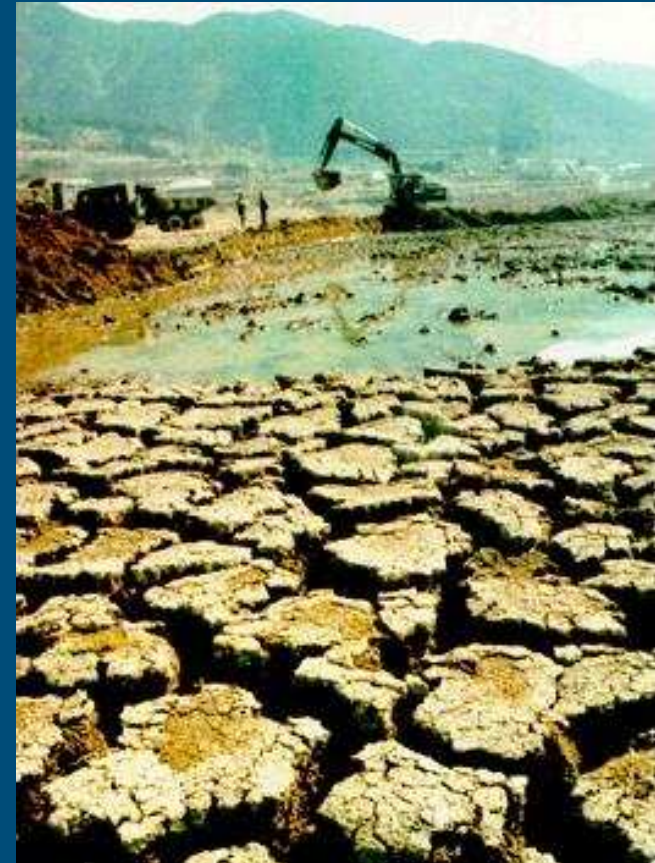
1. A World in Change
2. The Next Generation Knowledge Concept
3. The example of Wageningen UR
4. Addressing the Issues: Examples
5. New arrangements



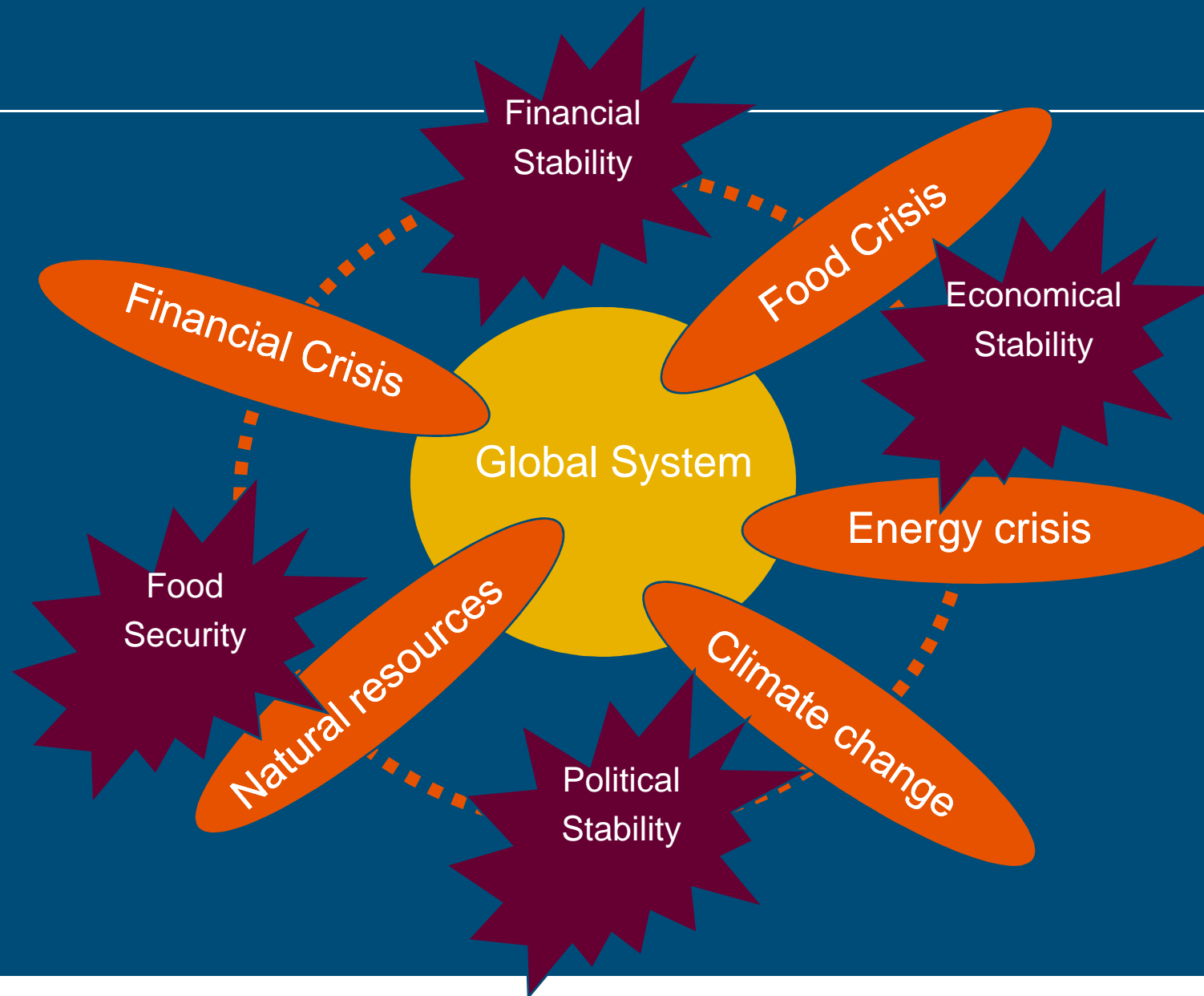
*...A world in Change...*

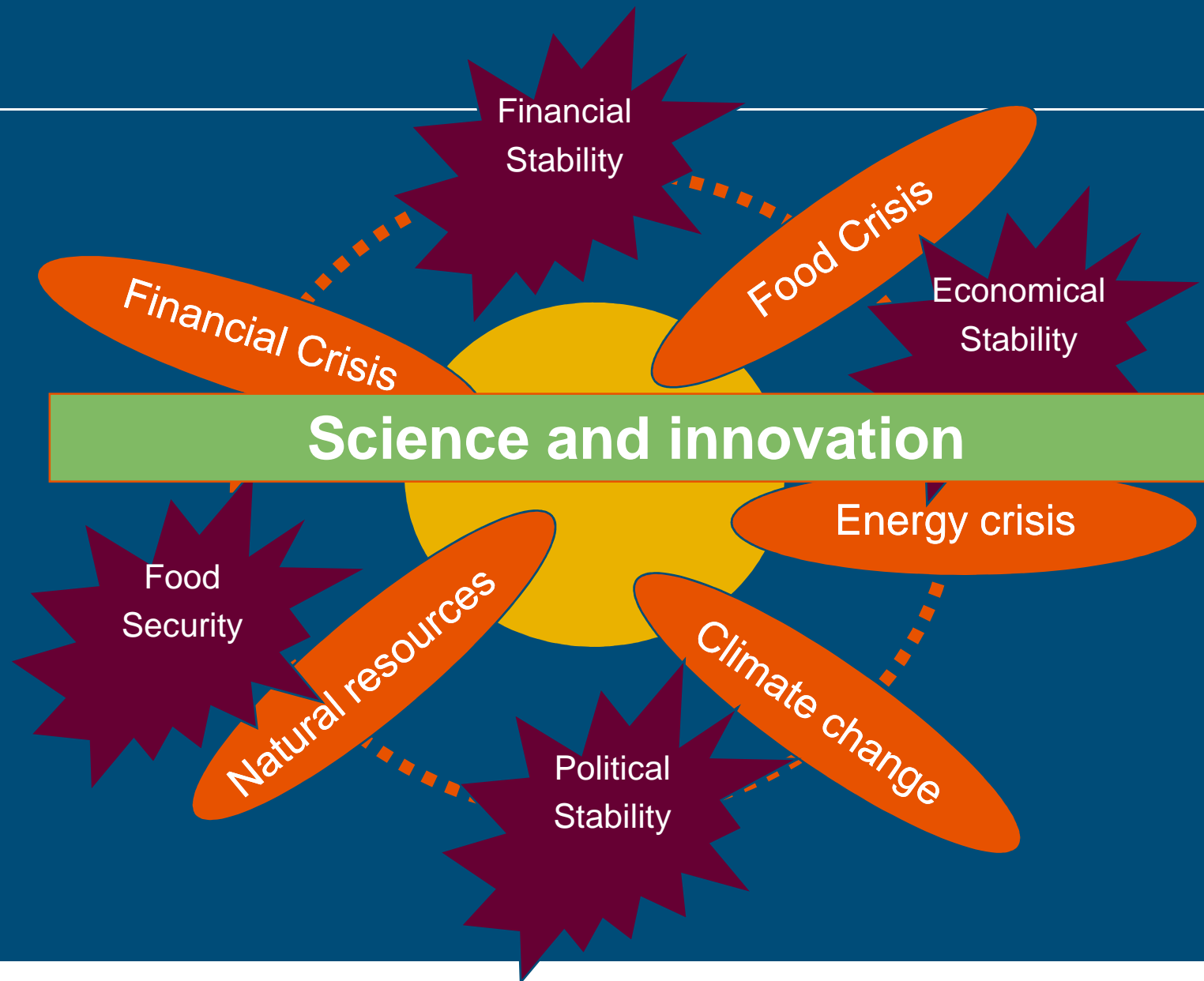
# Global issues: Complex

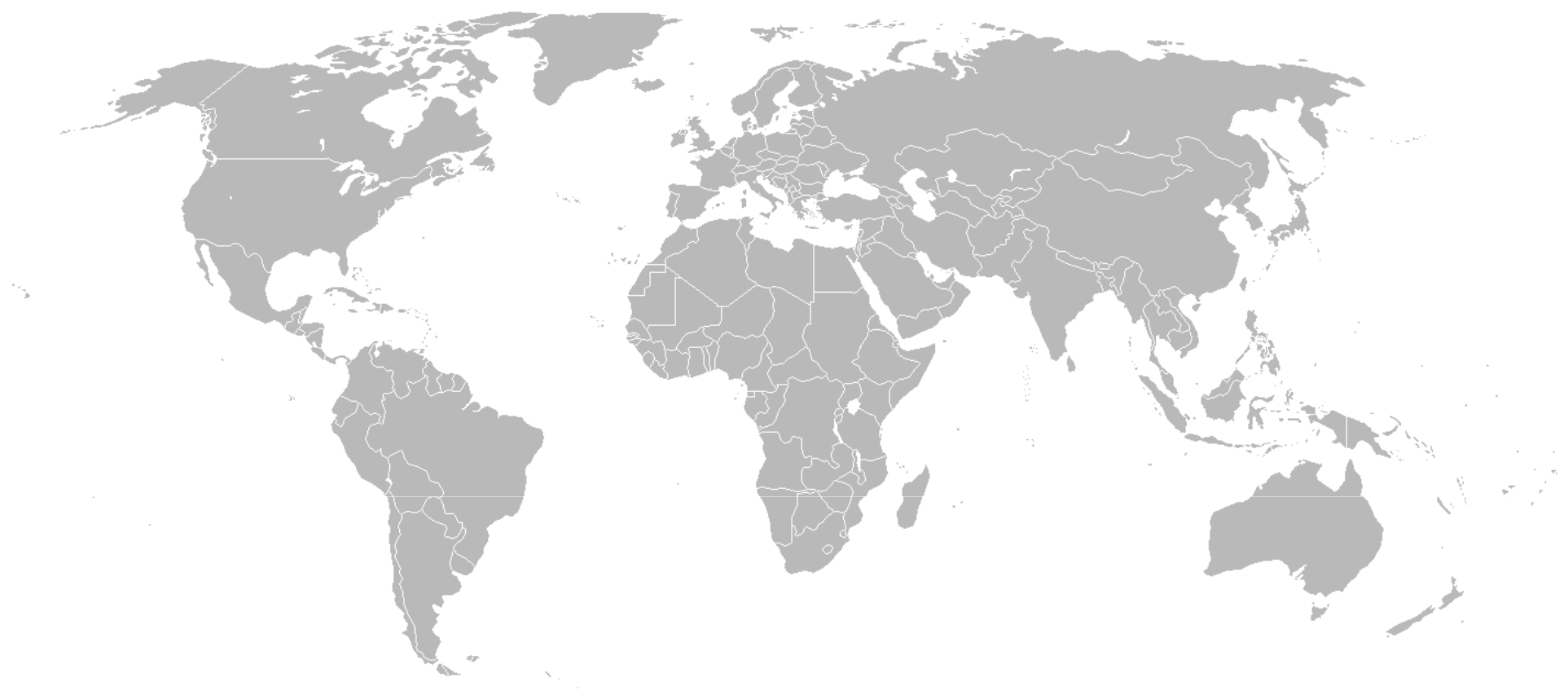
- Poverty and hunger
- Food safety & quality
- Health
- Climate
- Energy
- Natural Resources







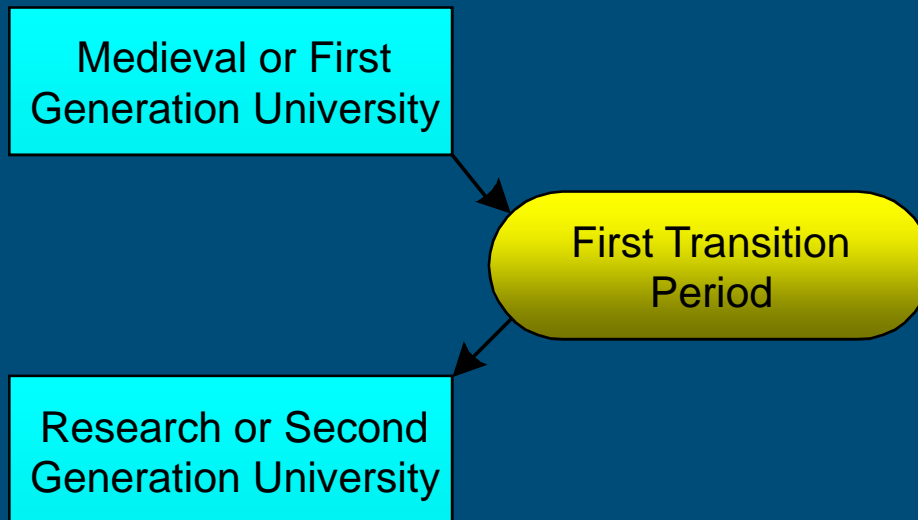




*...The Next Generation European  
Knowledge Infrastructure...*



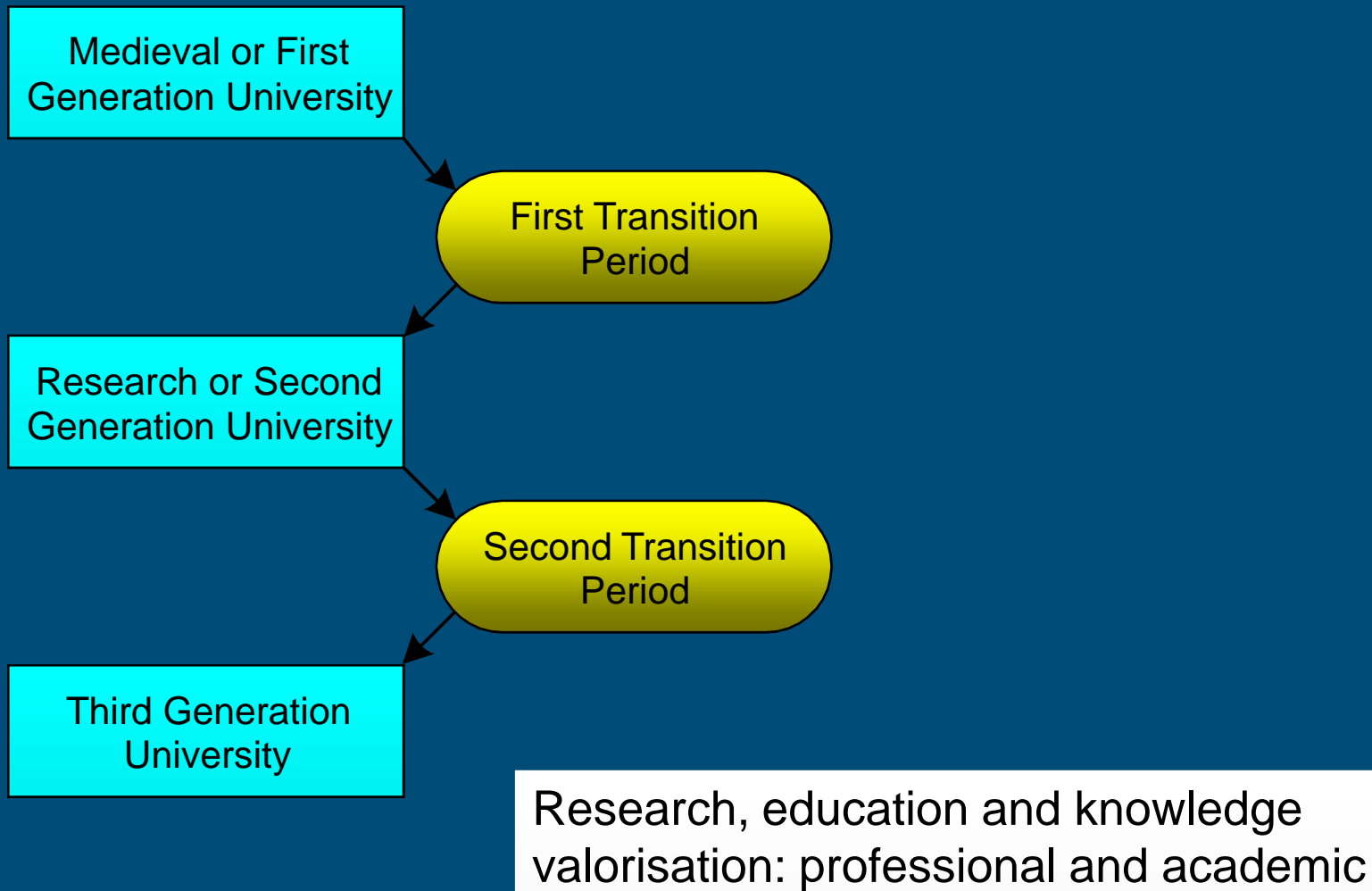
# Trends in universities

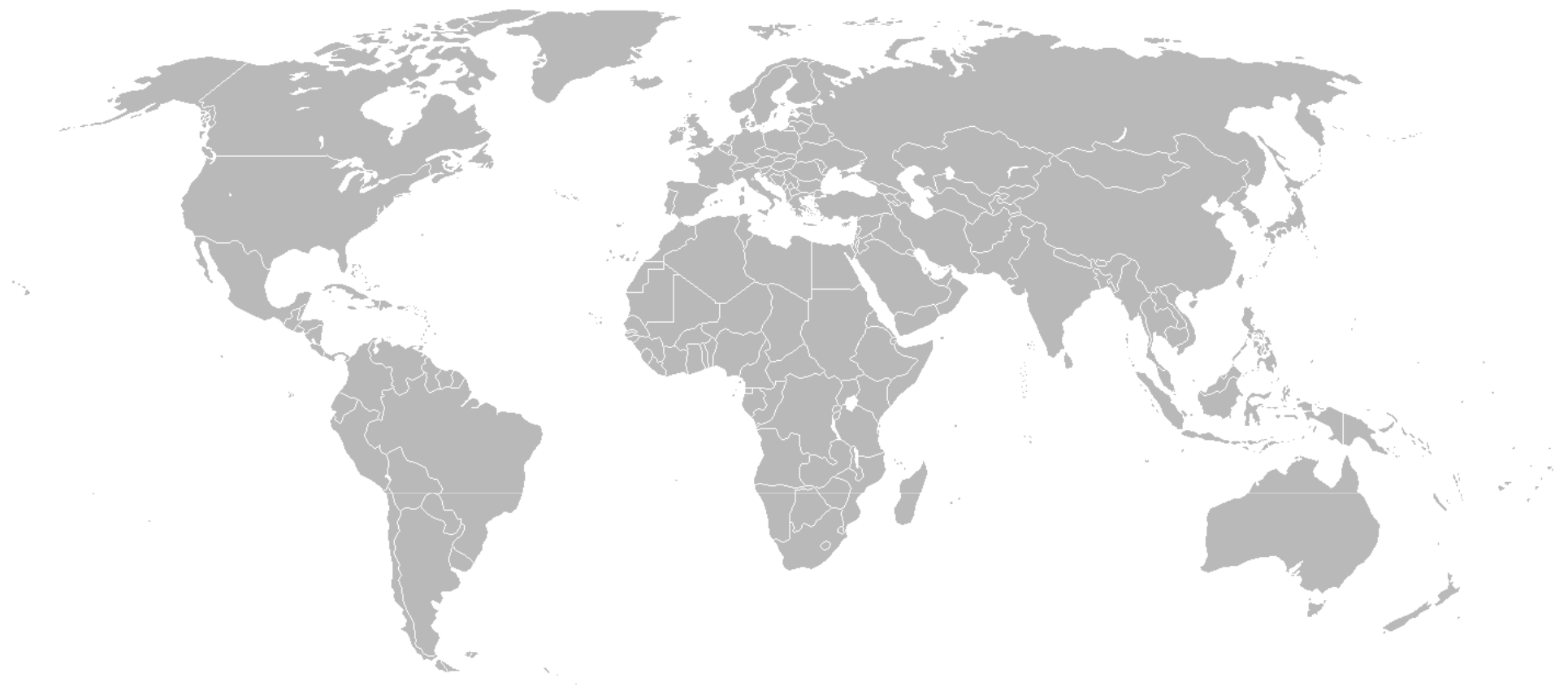


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# Trends in universities





*...Developments in Wageningen UR...  
Research and Education*

# Wageningen: before

The living environment

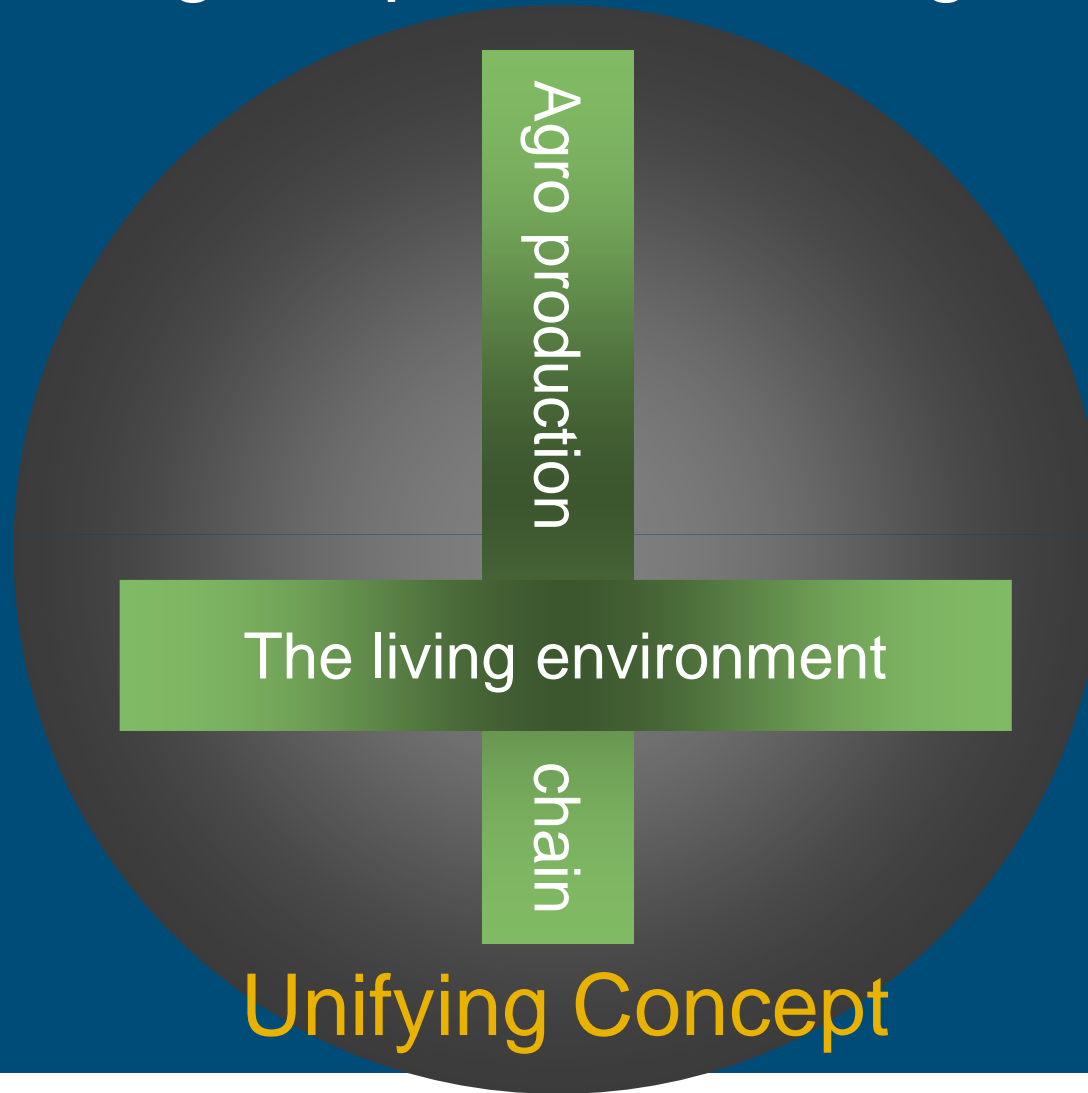
Agro production chain



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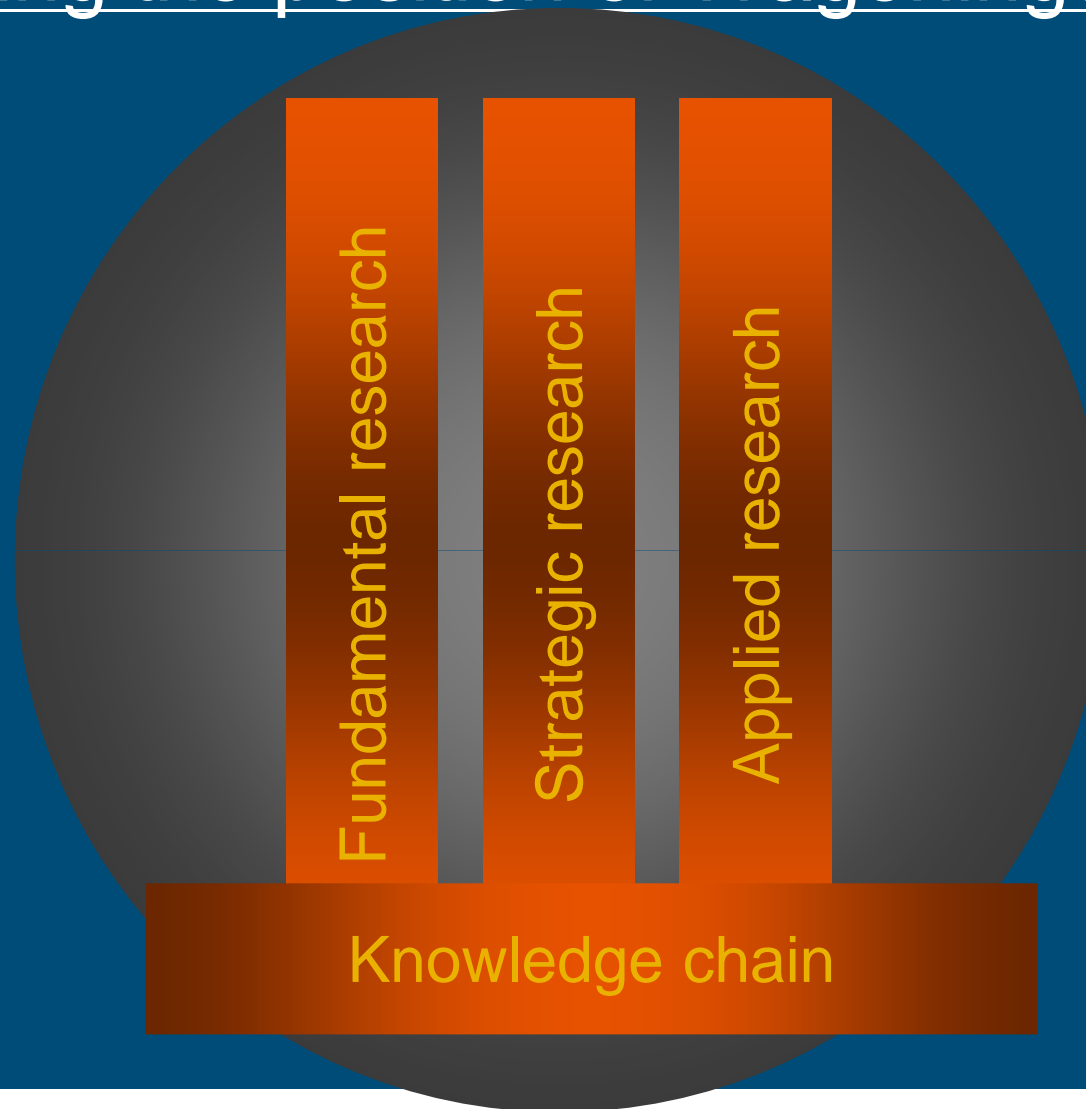
# Rethinking the position of Wageningen



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# Rethinking the position of Wageningen



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*...To explore the potential of nature,  
to improve the quality of life...*

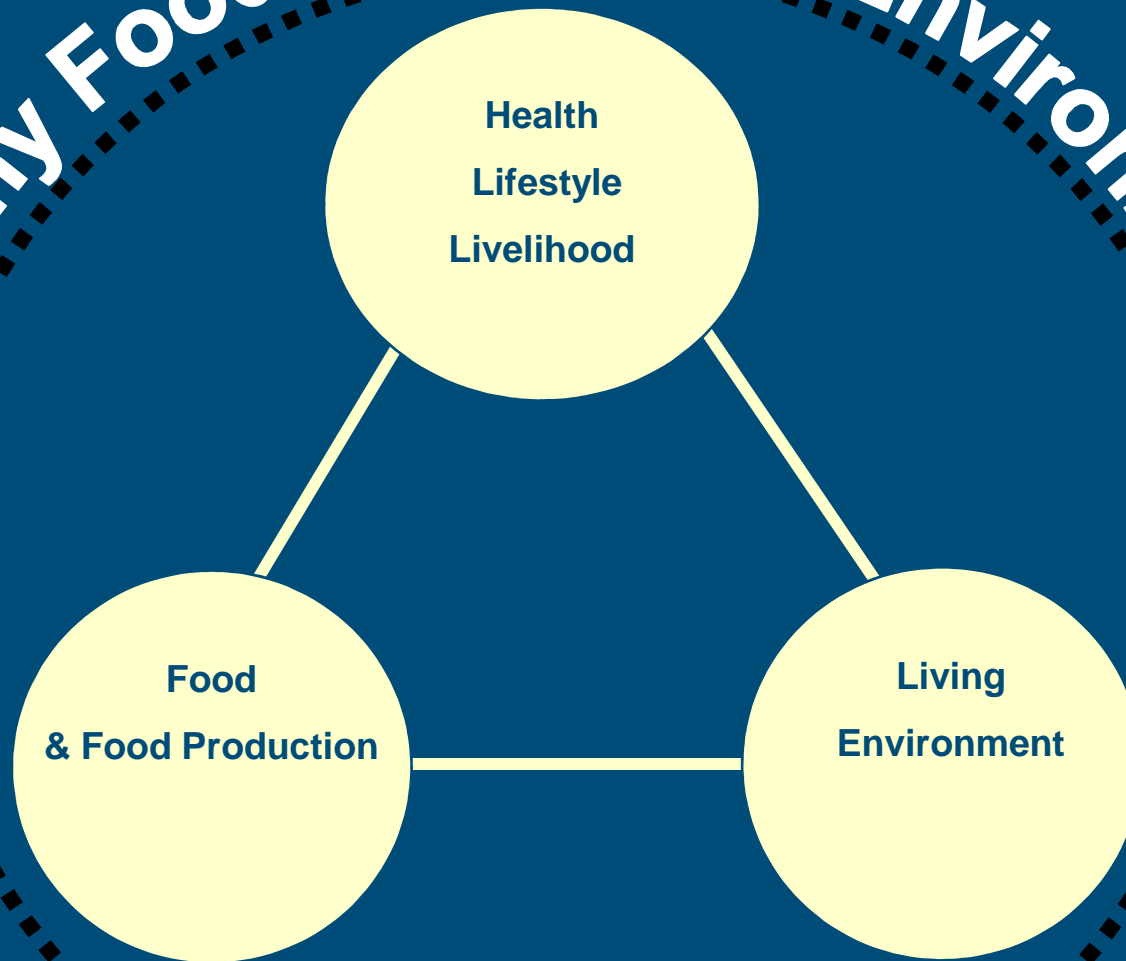


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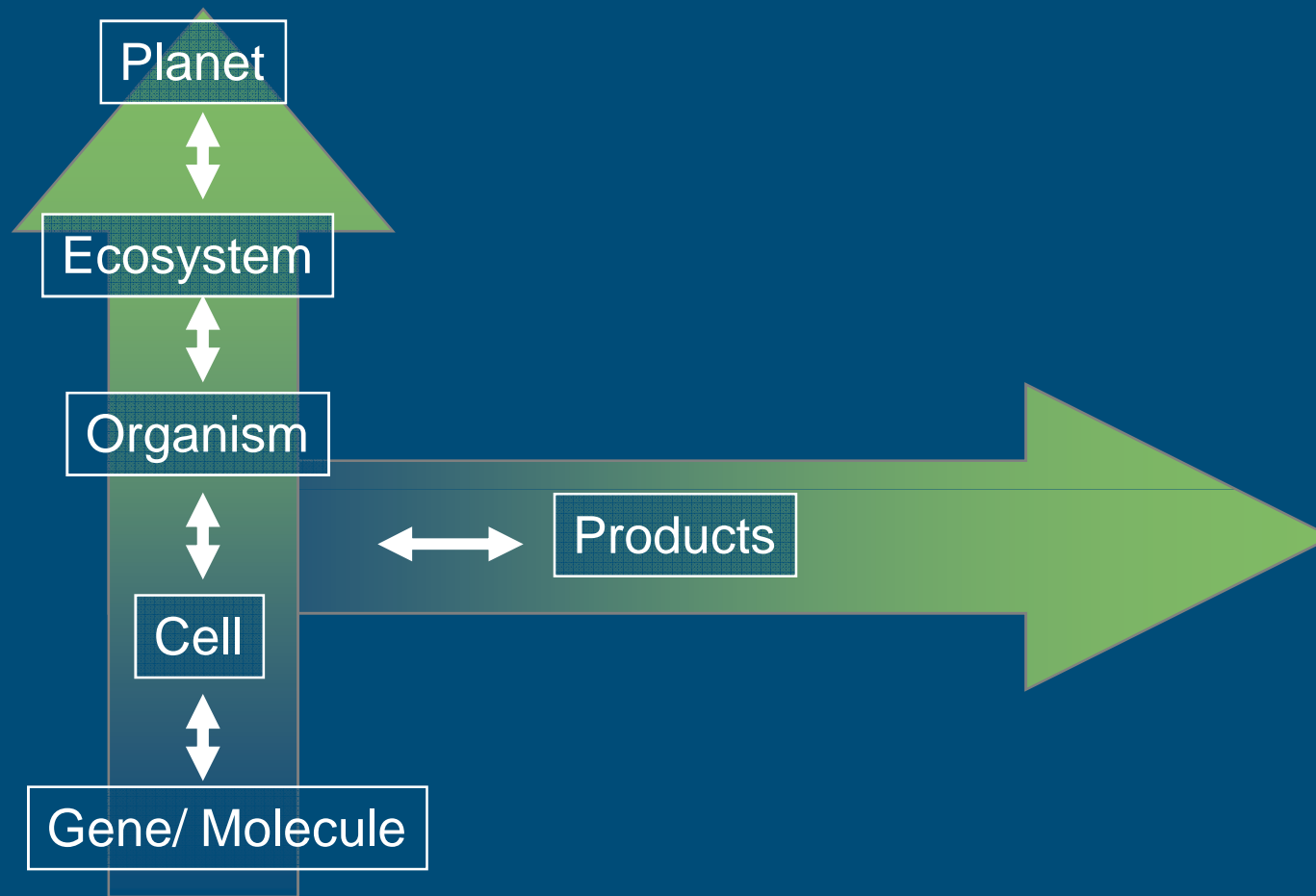


# Healthy Food and Living Environment

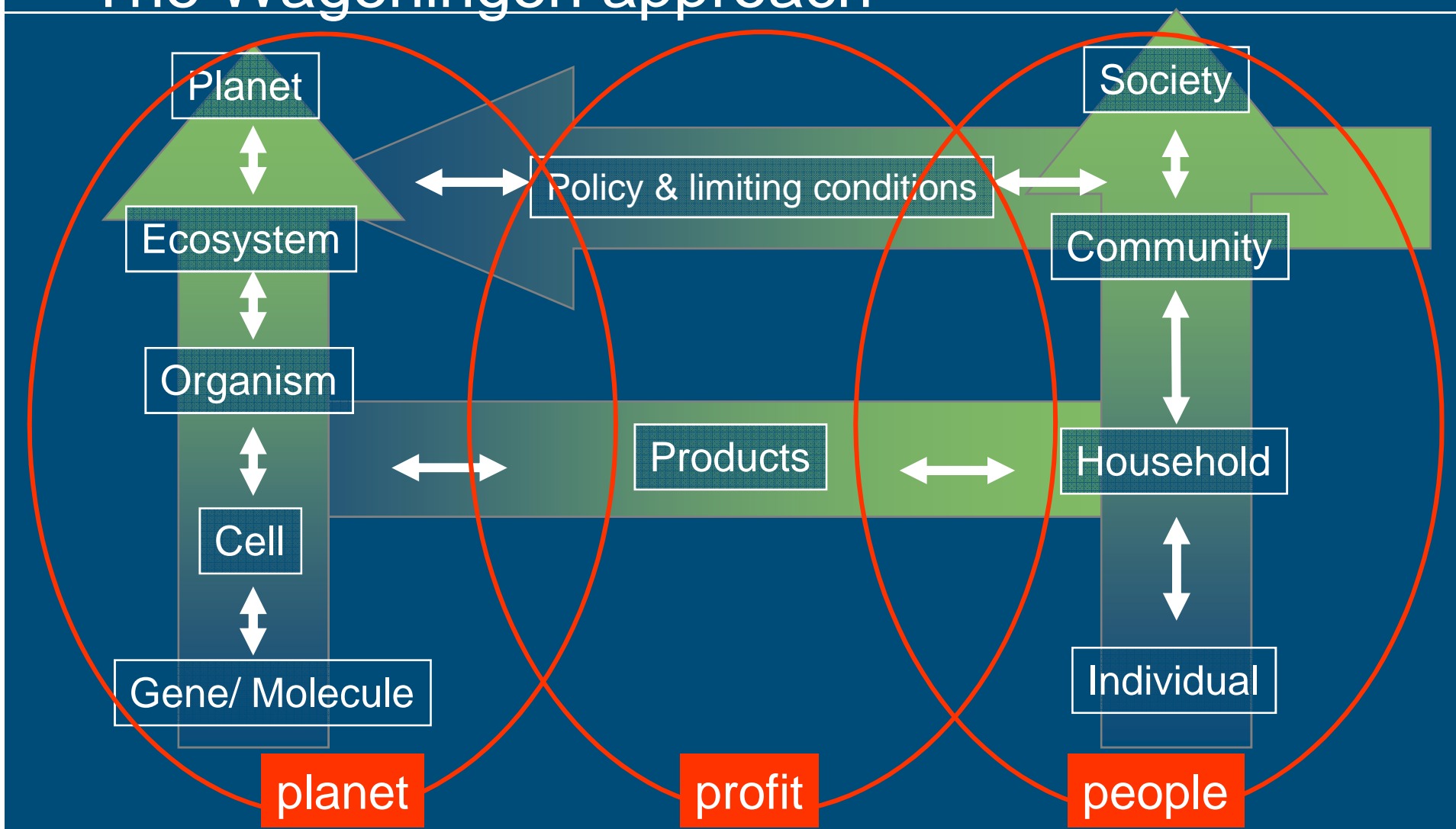


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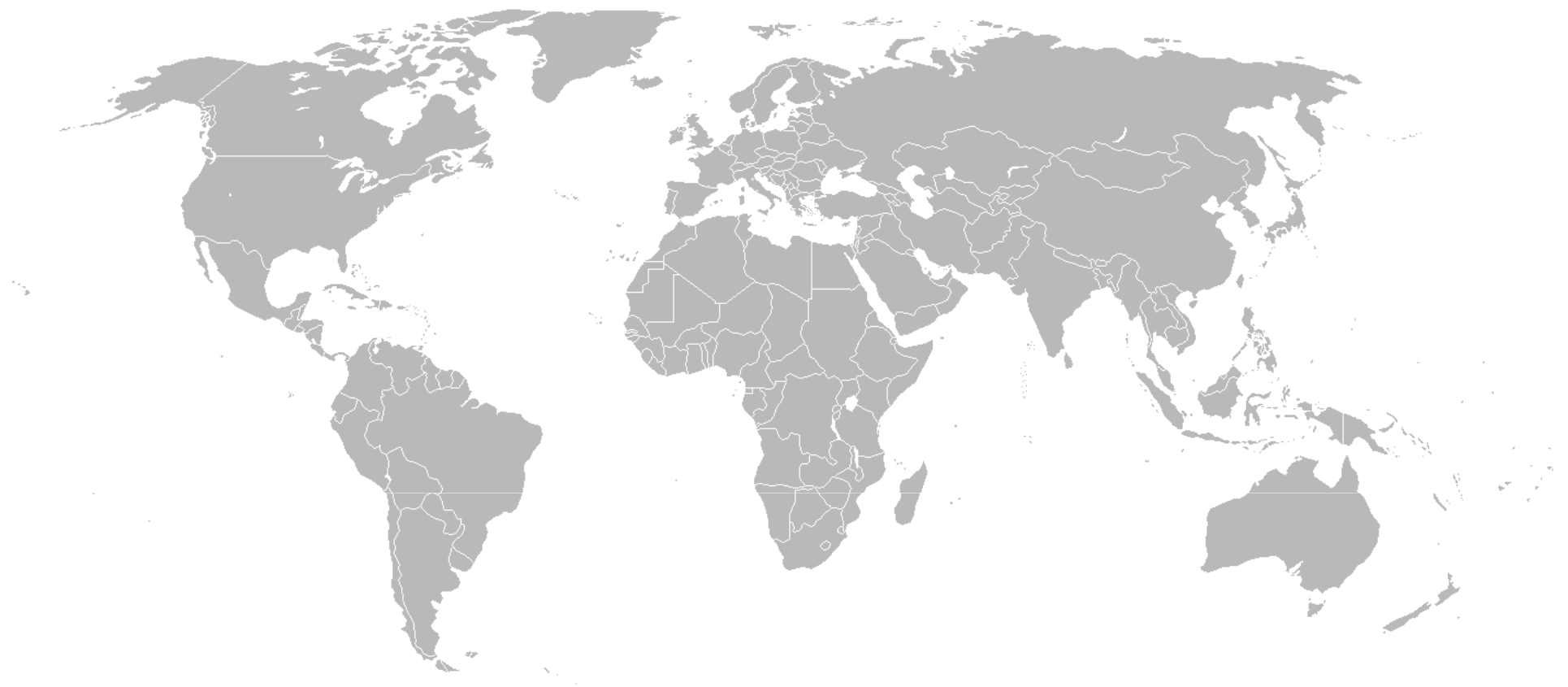


# The Wageningen approach

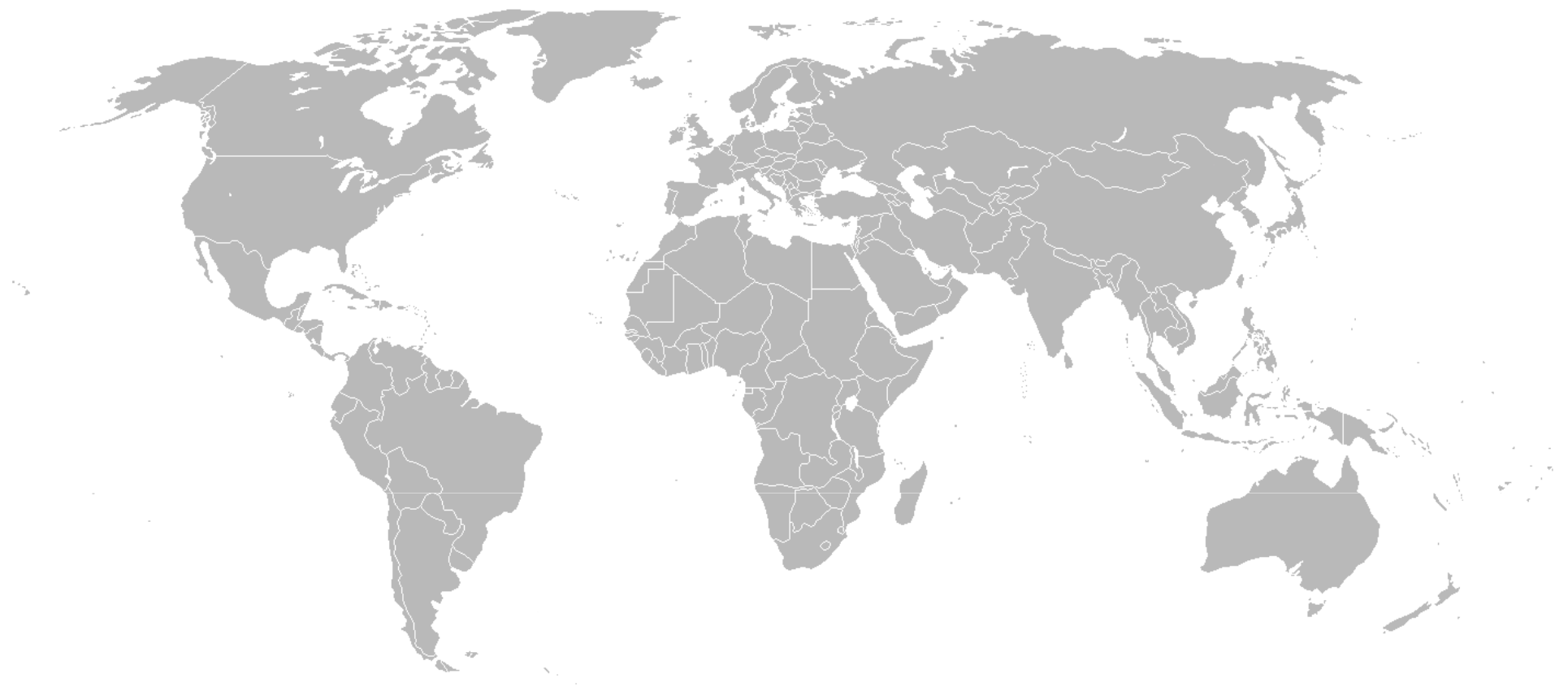


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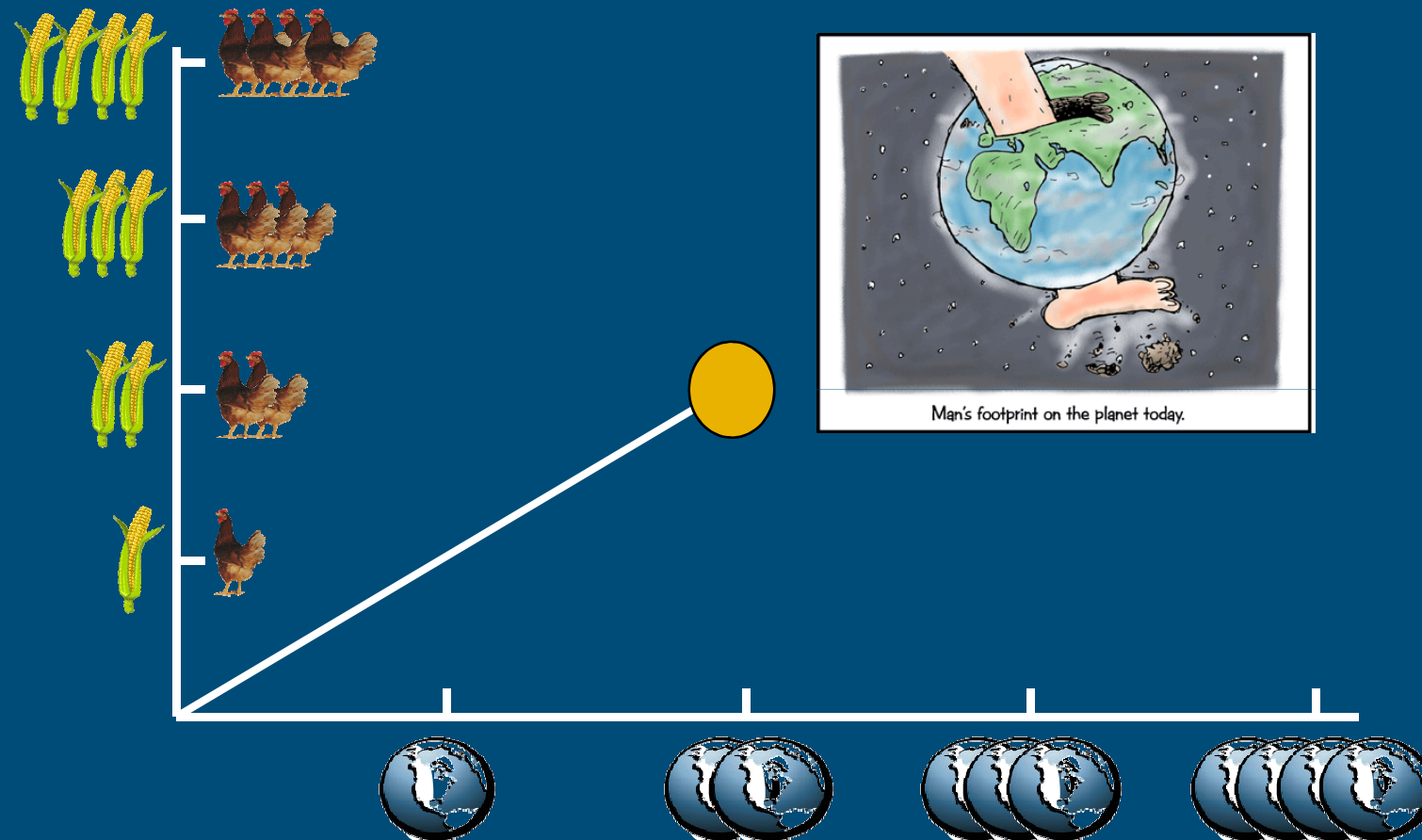


*...Addressing the Issues: Examples...*



*...Addressing the Issues: Agroproduction*

# Agroproduction in the 21st century: feeding the world

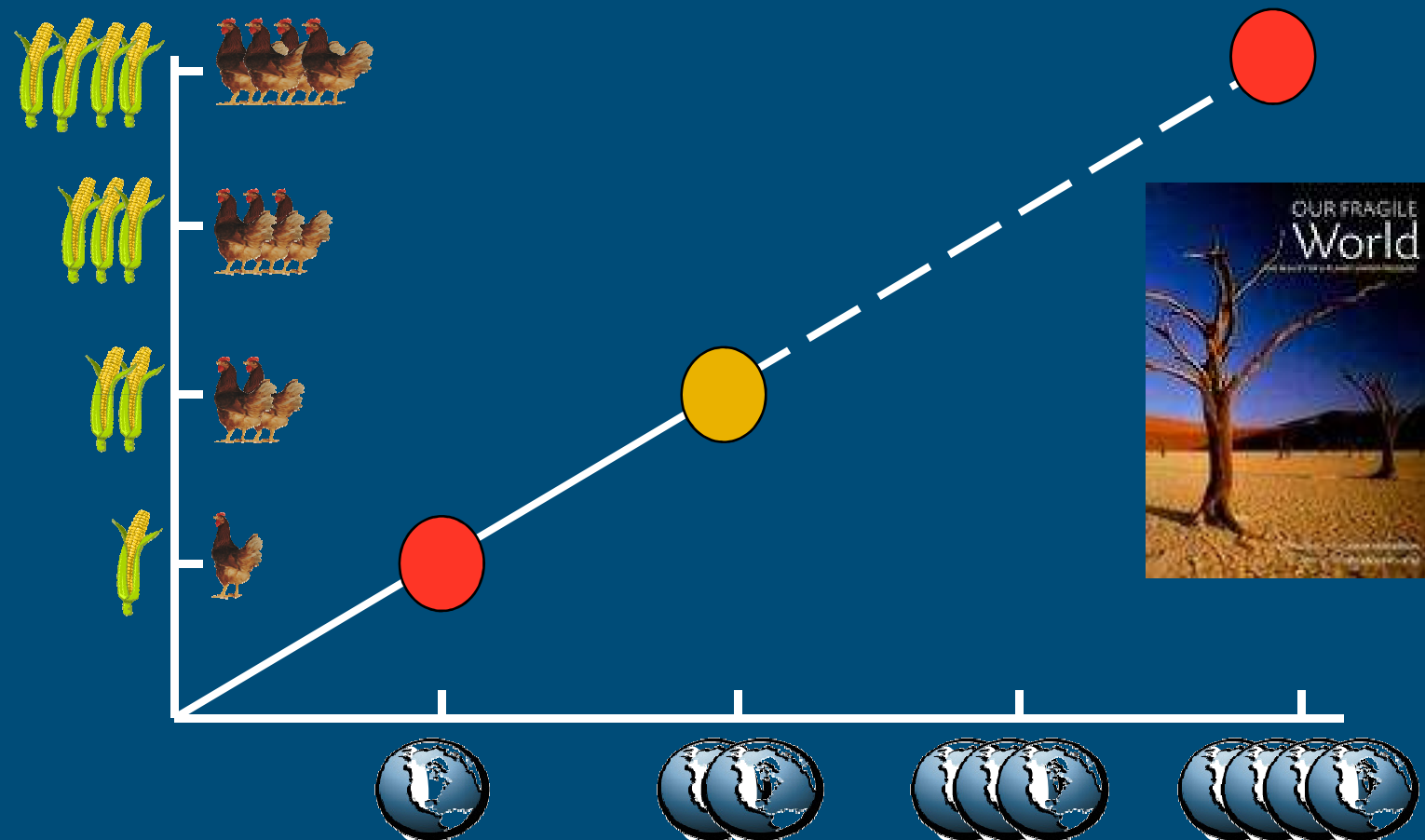


# Yield reduction is no solution

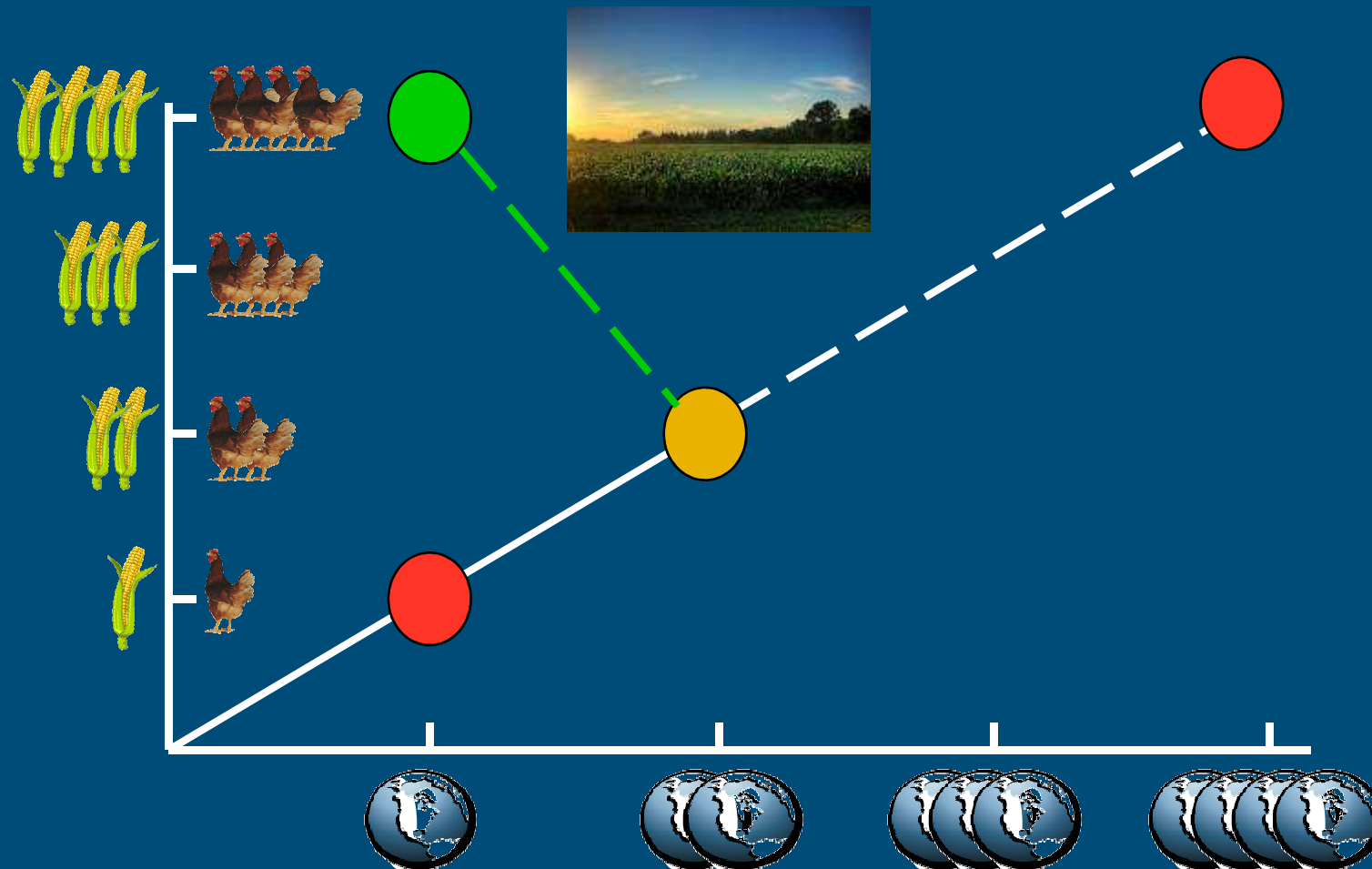




# Extra area use is no option



# Challenge: to change direction



# 2x more biomass in 2050

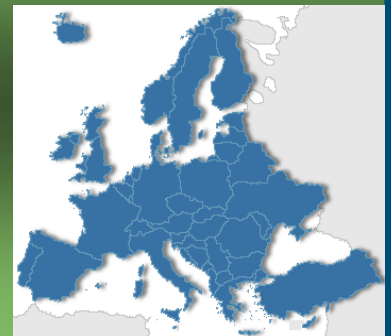
Maximal yield

Real  
production



Maximal yield

Real production



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# Increase of maximal yield

## Center for Photosynthesis Research

*Towards BioSolar Cells*

Wageningen University and Research Centre  
Leiden University  
VU University Amsterdam  
University of Groningen



March 2008

Photosynthesis is the base of  
plant biomass production



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# Towards BioSolar Cells

## ■ Plant level

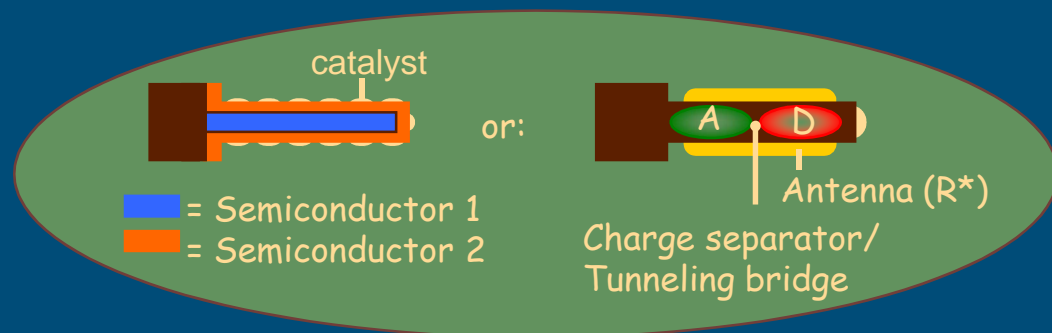
- *Increase of photosynthetic efficiency*
- Example: better grow with lower light intensity

## ■ Cel level

- *Direct production of fuels*
- Example: algae pilot plant

## ■ Subcellular level

- *Semi-synthetic photosystems*
- Example: Fuel producing solar cells





# Algae pilot facility



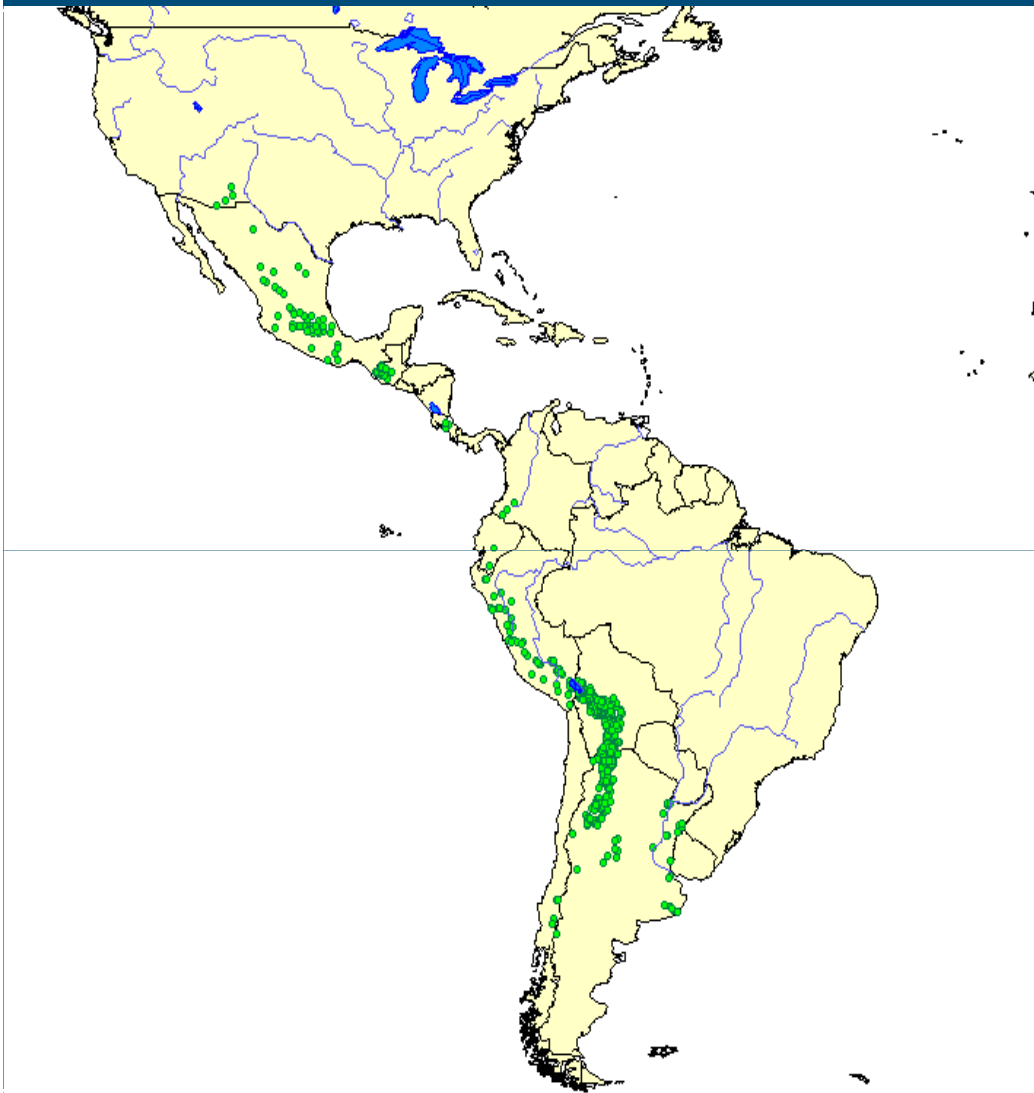
# Facts and figures

- Costs of Phytophthora in the Netherlands:
  - 12 – 15 applications per season
  - > 50% of all biocides in the Netherlands
  - Environmental load: 1,424,000 kg fungicides per year
  - Costs:

• Fungicide:	60	M€/jr
• Application:	60	M€/jr
• Loss:	30	M€/jr
• Total:	150	M€/jr



# Improved plant yield: GMO-cisgenesis





# The sustainable solution: GMO



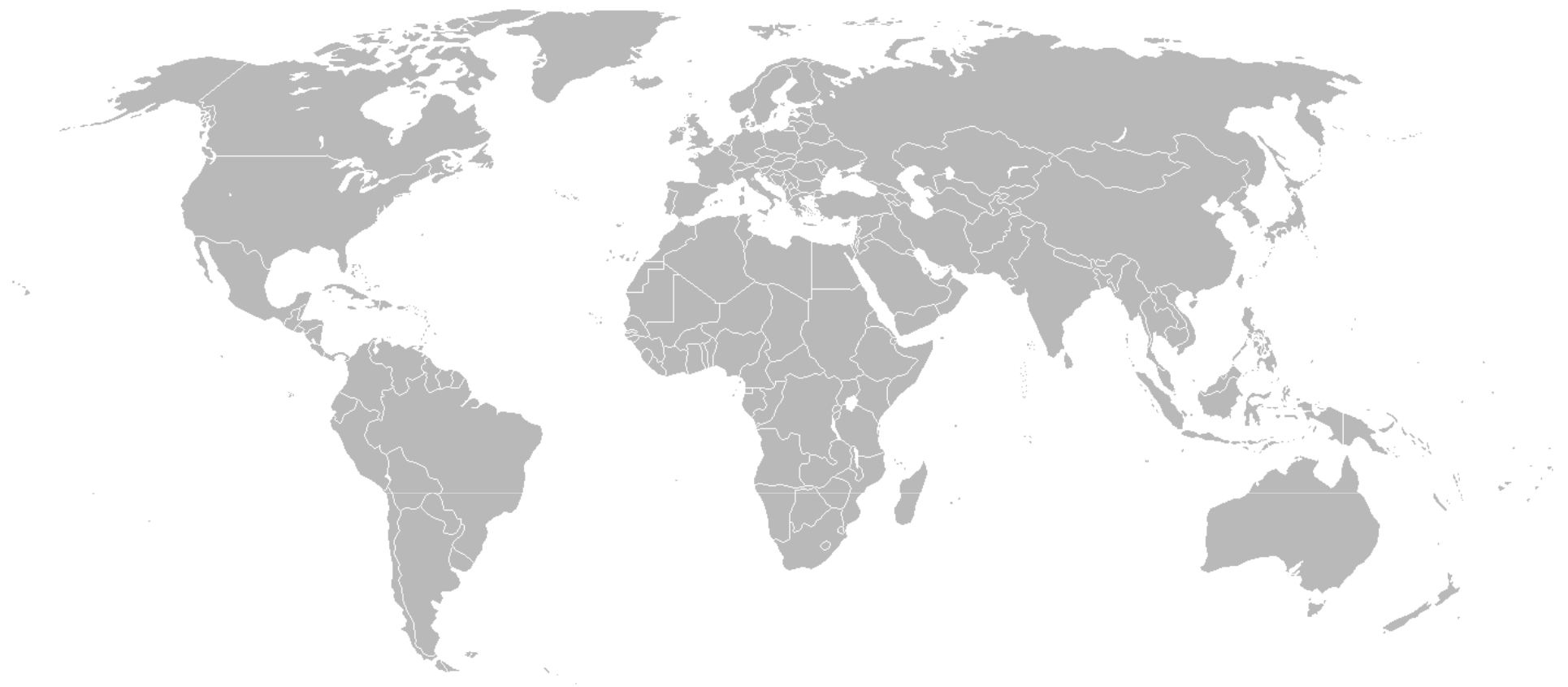
**Aveka + cisgene**

**Aveka**



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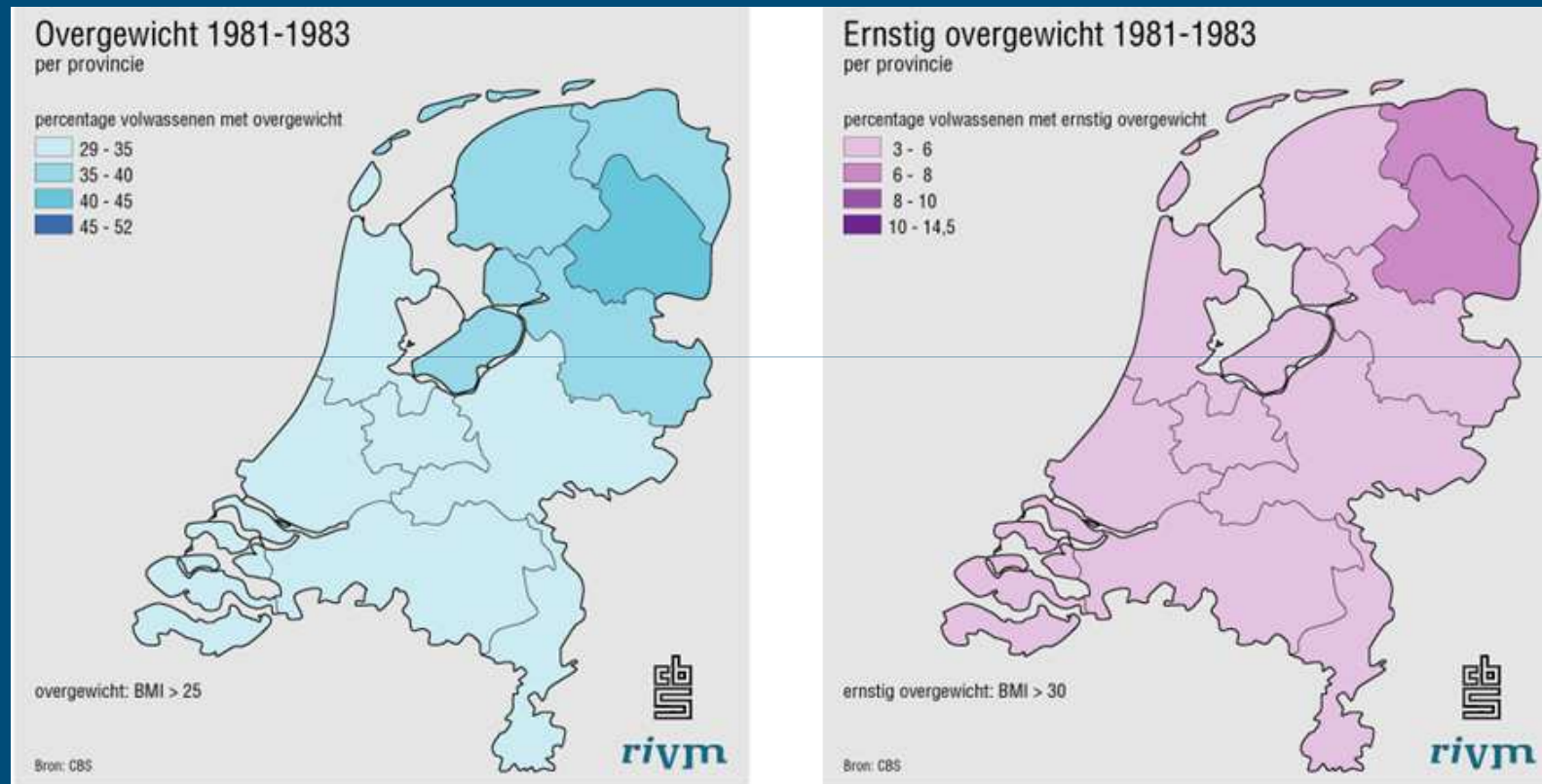
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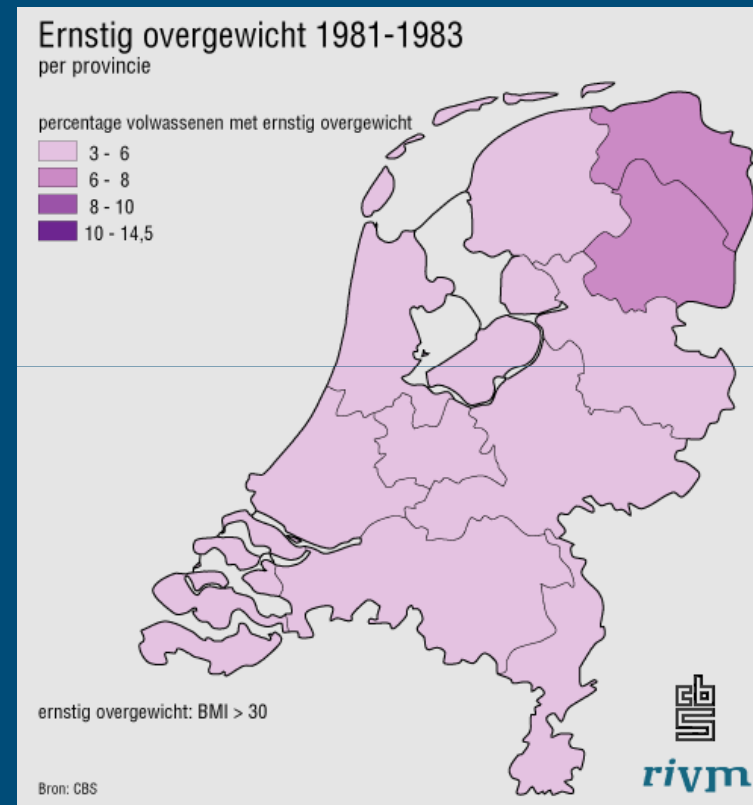
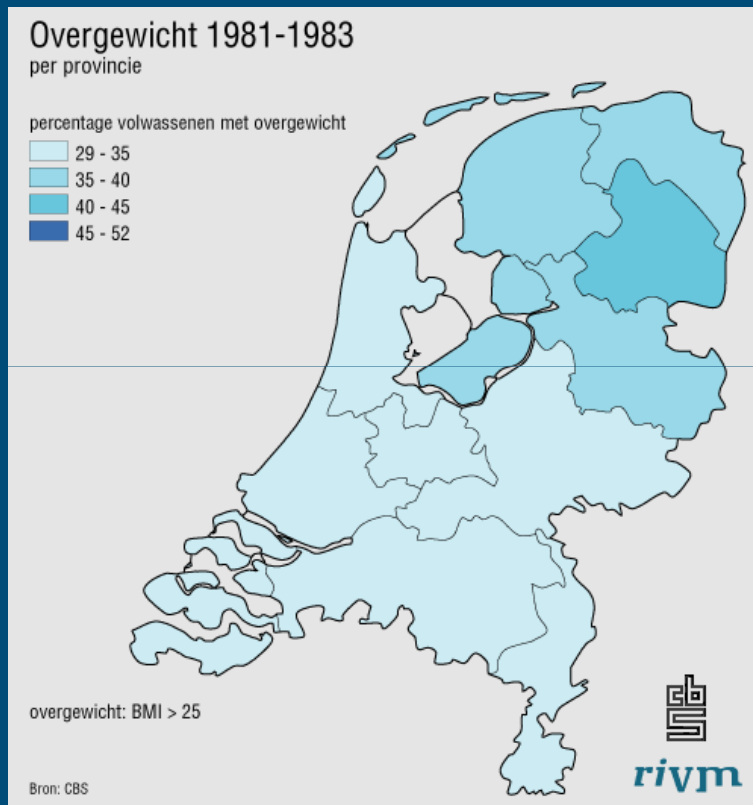
*...Addressing the Issues: Food and health*

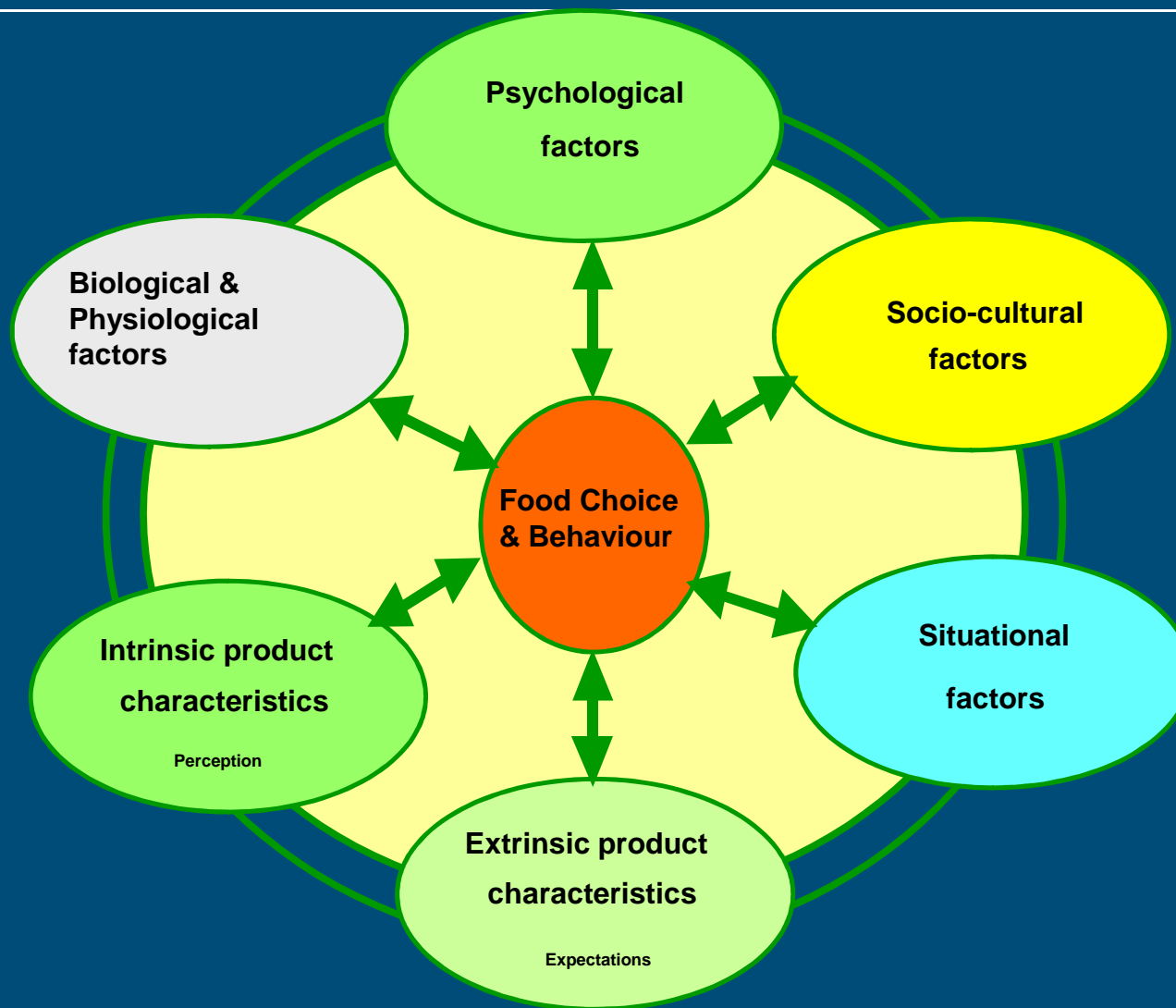


# Obesity in the Netherlands



# Obesity in the Netherlands





# Restaurant of the future



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WAGENINGEN **UR**





A normal university  
restaurant



Look inside...



Diners being observed



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# Manipulable environment



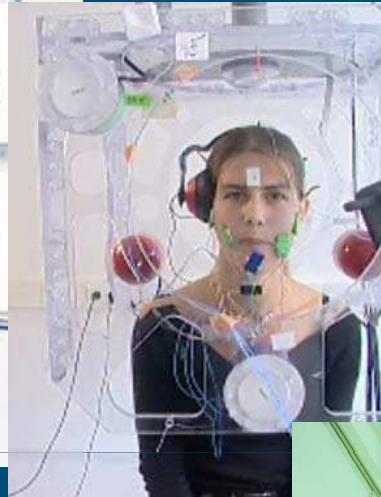
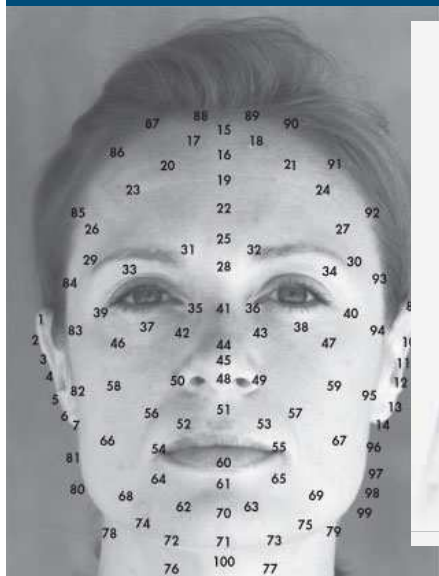
- Light, odor, etc.
- Type of products
- Type of information



- 16 video cameras
- Tracking cameras



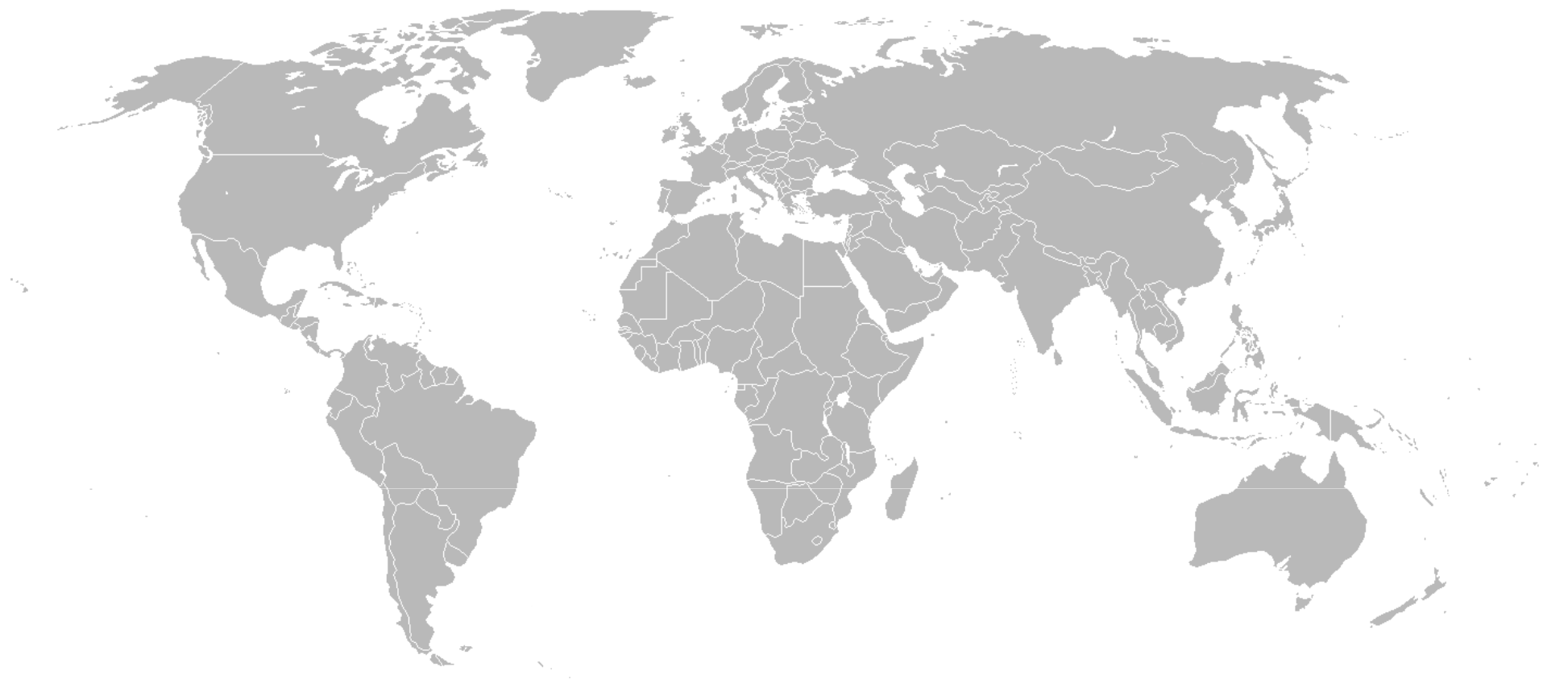
# Observational Research



New Laboratories for:  
Sens & Mood & Mind



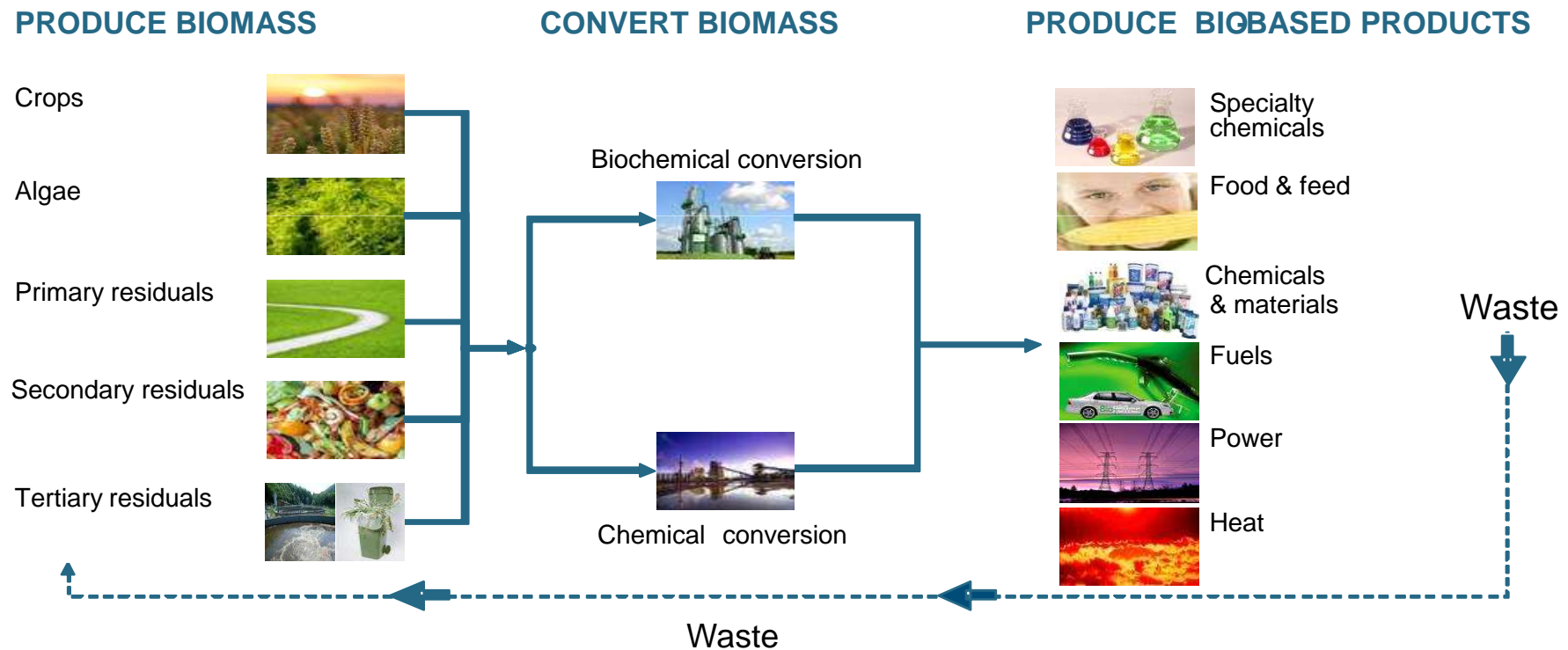
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*...Addressing the Issues: Biobased economy*



# Cascade the Biomass



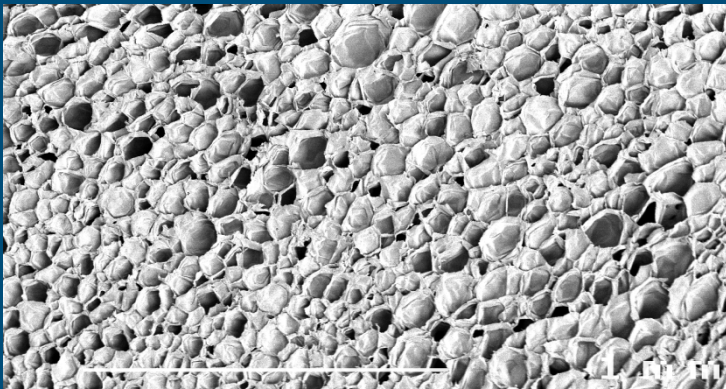
# Application: PLA composite materials

- Large injection moulded panels
  - Excellent strength
  - Good impact
  - Good processing

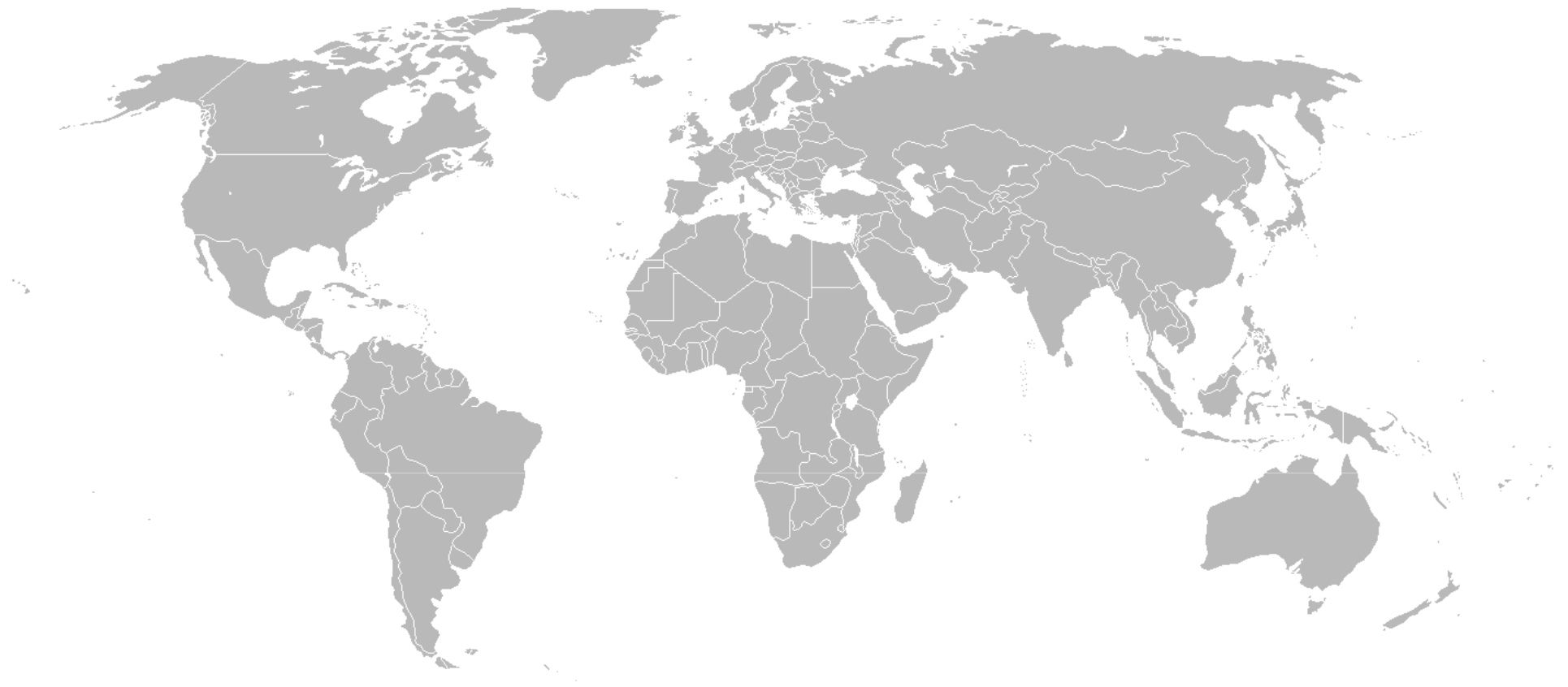


# Application: 3D-foamed structures

- Expandable bead technique
  - Good cell structure
  - Density <30 g/l

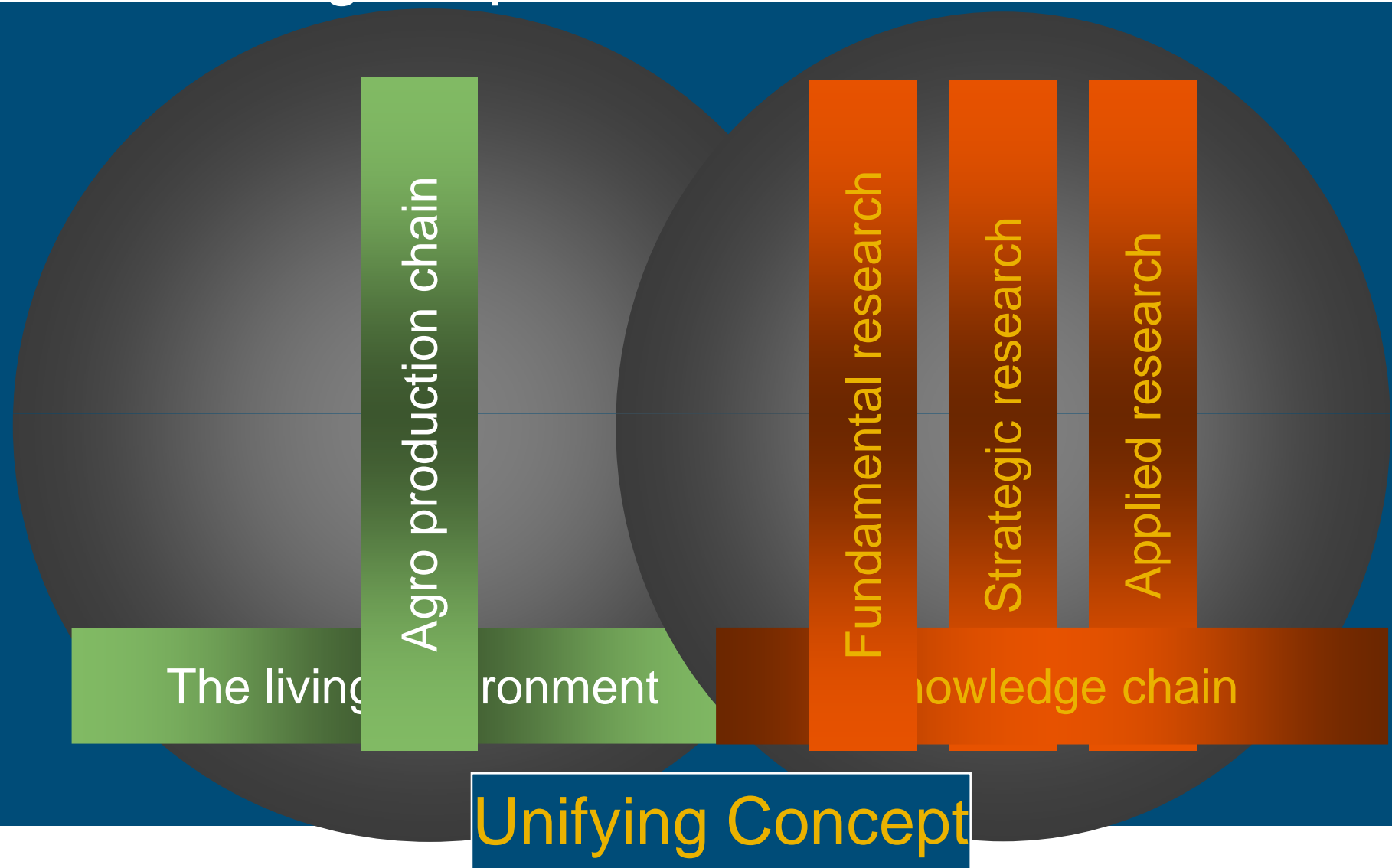






*... New arrangements...*

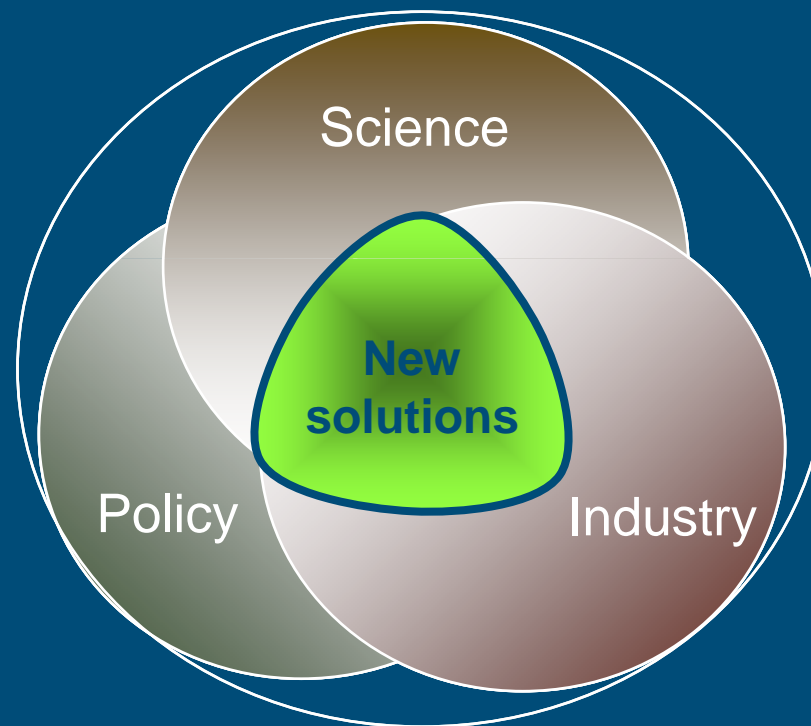
# Rethinking the position



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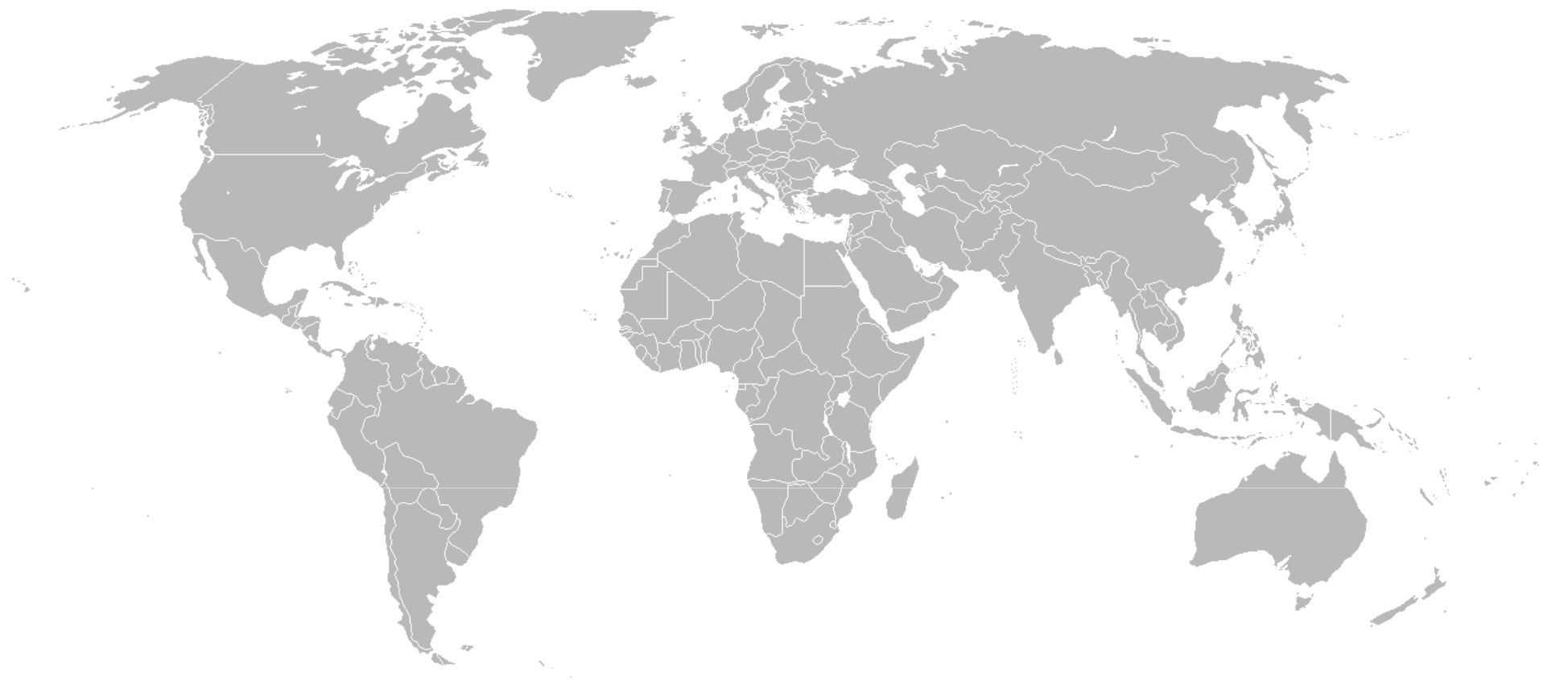
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# Developing an economy based on knowledge and innovation: New arrangements



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*...Innovation Development in Europe...  
Starts now!*