

Mestrado em Engenharia do Ambiente / *Master on Environmental Engineering*  
**Gestão e Políticas de Ambiente e Território/**  
***Environment and Territory Management and Policies 4/P4***

*Territorial environmental components*

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# Territorial Environmental Components

**Biophysical variables-** describe the biological and physical characteristics of the territory

- natural variables – result from natural processes and phenomena
- anthropic variables – its occurrence depends on human action

**Socio-economic variables**

- describe the social characteristics and economic activities of a community

# Territorial Environmental Components

## **Biophysical variables**

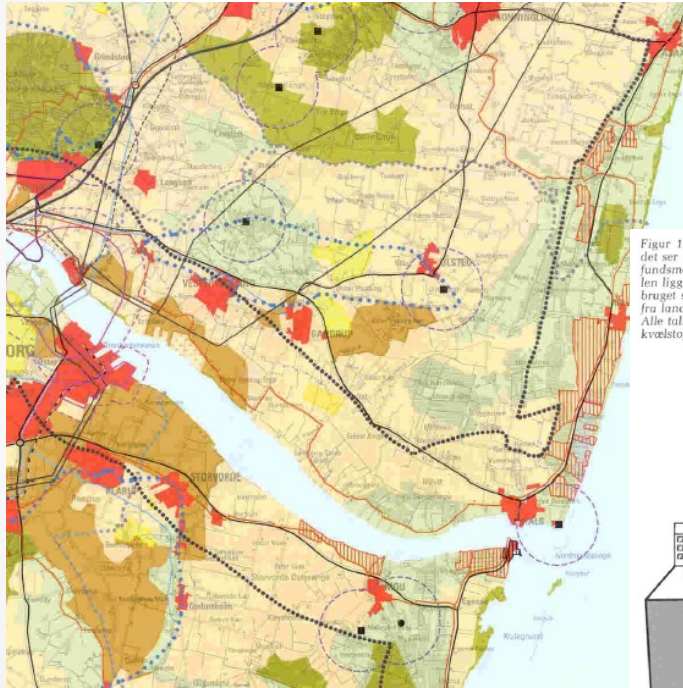
- natural
- anthropic

## **Socio-economic variables**

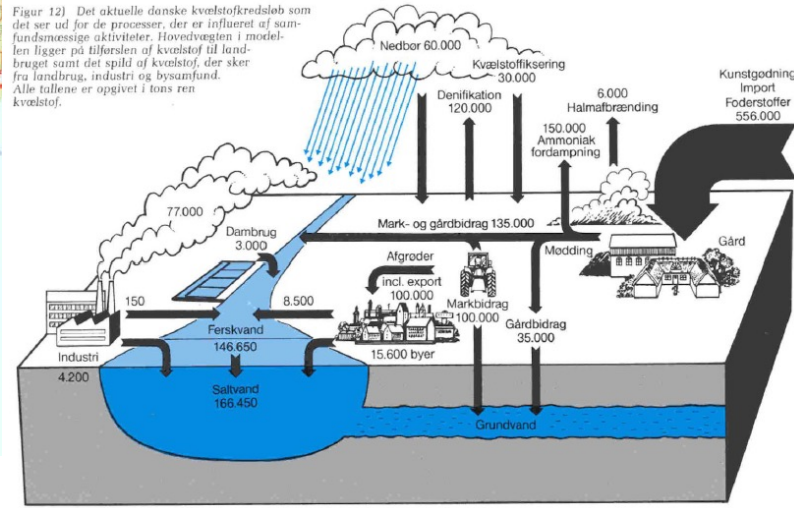
Represent drivers of change

Represent potential capacities

# Environment and territory management: Area and flow



Figur 12) Det aktuelle danske kvælstofkredsløb som det ser ud for de processer, der er influeret af samfundsmæssige aktiviteter. Hovedvægten i modellen ligger på tilførslen af kvælstof til landbruget samt det spild af kvælstof, der sker fra landbrug, industri og bysamfund. Alle tallene er opgivet i tons ren kvælstof.



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# Territorial analysis: area and flow



# BIOPHYSICAL VARIABLES

## NATURAL

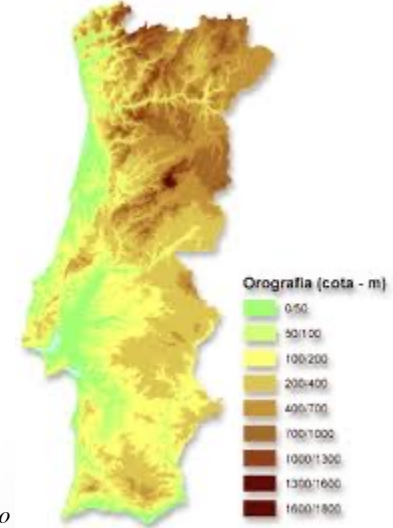
TOPOGRAPHY - Interest: baseline characterization, comfort, risks, stability, potencial, productivity

“**Relevo**” / **Relief** – physical configuration

Hypsometry – altimetric zones

Slopes - morphological inclination

Exposition - solar or eolic exposure



# BIOPHYSICAL VARIABLES

## NATURAL

**CLIMATE** - interest: comfort, productivity, risks

Macroclimate – major climatic regions

Mesoclimate

- Temperature
- Pluviosity
- Humidity
- Winds
- Cloudiness, frost, solar exposure, evaporation and evapotranspiration

Microclimate – particular characteristics





# BIOPHYSICAL VARIABLES

## NATURAL

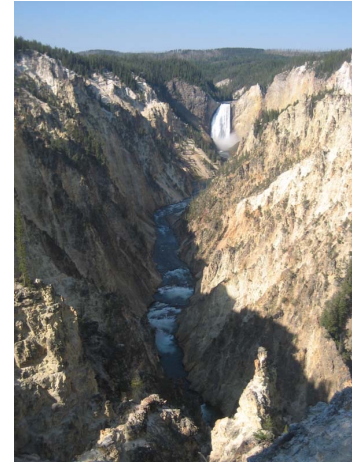
**GEOLOGY** - interest: stability, resistance, resources (raw materials)



**GEOLOGY** – geological times, formation period of geological layers

**LITOLOGY** – lito-stratigraphy - nature, texture, composition and other rocks properties

**GEOMORPHOLOGY** – explains the genesis and the current morphology of the territory





# BIOPHYSICAL VARIABLES

## NATURAL

SOILS - interest:  
productivity, permeability and risks

Pedological concept  
(Land) Soils use capacity  
Soils self- depuration capacity

Problem of sealed soil  
Friável / friable , brittle



# BIOPHYSICAL VARIABLES

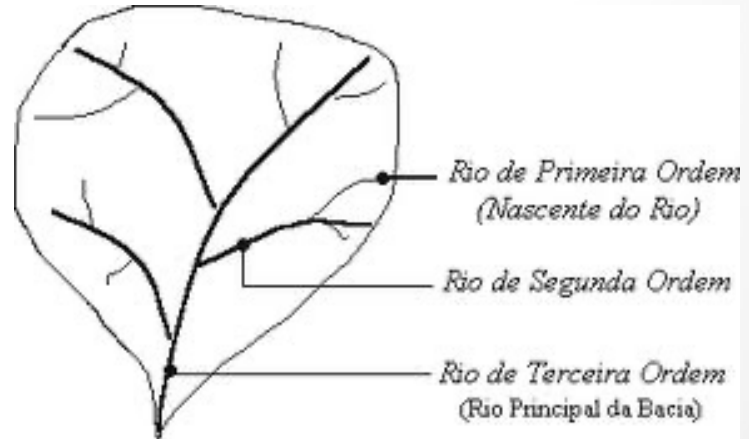
## NATURAL

HYDRIC RESOURCES - Interest: supply, energy, recreational, natural unit and risks

Hydrographyc network

Hydrology

Hydrogeology



# BIOPHYSICAL VARIABLES

## NATURAL

BIOLOGICAL RESOURCES - Interest: sensitivities and potential, scientific and heritage value, recreational and economic value

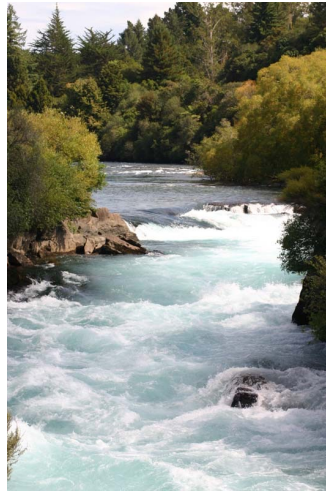
Ecosystems

Habitats

Wetlands

Fauna

Flora/vegetation



# EU Soil Strategy 2030

## The vision for soil

By 2050, all EU soil ecosystems are in healthy condition and are thus more resilient, which will require very decisive changes in this decade.

By then, protection, sustainable use and restoration of soil has become the norm. As a key solution, healthy soils contribute to address our big challenges of achieving climate neutrality and becoming resilient to climate change, developing a clean and circular (bio)economy, reversing biodiversity loss, safeguarding human health, halting desertification and reversing land degradation.

Brussels, 17.11.2021  
COM(2021) 699 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL  
COMMITTEE AND THE COMMITTEE OF THE REGIONS

EU Soil Strategy for 2030  
Reaping the benefits of healthy soils for people, food, nature and climate

{SWD(2021) 323 final}

# EU Soil Strategy 2030

Soil for climate change mitigation and adaptation

Soil and the circular economy

Soil biodiversity for human, animal and plant health

Soil for healthy water resources

Making sustainable soil management the new normal

Preventing desertification

Preventing soil pollution

Restoring degraded soils and remediating contaminated sites

Soil and the digital agenda

Soil research and innovation

Private finance and EU funding

Soil literacy and societal engagement

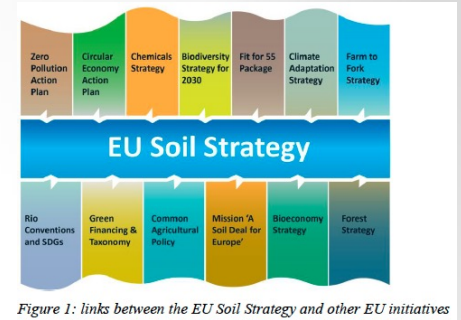


## Discuss: EU Soil Strategy 2030 in policy

Talk about your policies/strategies

Choose two core opportunities for your policy  
from the EU Soil Strategy 2030

(15 min)



# BIOPHYSICAL VARIABLES

## ANTHROPIC

Active elements in spatial planning, with strong and direct spatial expression.

Result from human action on the territory and can be in better or worse balance with natural factors.

# BIOPHYSICAL VARIABLES

## ANTHROPIC

### SPATIAL (LAND USE) OCCUPATION

Interest: crucial, impossible to do spatial planning without knowing the occupation (spatial areas and land uses)



# BIOPHYSICAL VARIABLES

## ANTHROPIC

LANDSCAPE- interest: open book on the effects of human action on the territory

Visual physical expression of natural phenomena (natural landscape) and human action (human landscape)

Types of landscape

Landscape quality (value and sensitivity)

Vision index

Landscape units



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# BIOPHYSICAL VARIABLES

## ANTHROPIC

HERITAGE – CULTURAL RESOURCES - interest: the history of a people / society, in a territory, of a civilization

Etnographic

Built

Archaeological

Cultural activities





# BIOPHYSICAL VARIABLES

## ANTHROPIC

PHYSICAL ENVIRONMENTAL QUALITY-  
interest: environmental disfunctions or  
disturbing factors, liabilities

Water Pollution

Air Pollution

Noise

Solid waste



# BIOPHYSICAL VARIABLES

## ANTHROPIC

RISKS – natural and resulting from human activities

Sismicity

Flooding

Fire

Erosion

Land sliding

Biological and chemical contamination

Industrial hazards

