

TOO MANY CHALLENGES AND SHOCKS UNDER THE SECTORAL APPROACH

Sea Level Rise ↔ Land use changes ↔ Land degradation ↔ Desertification

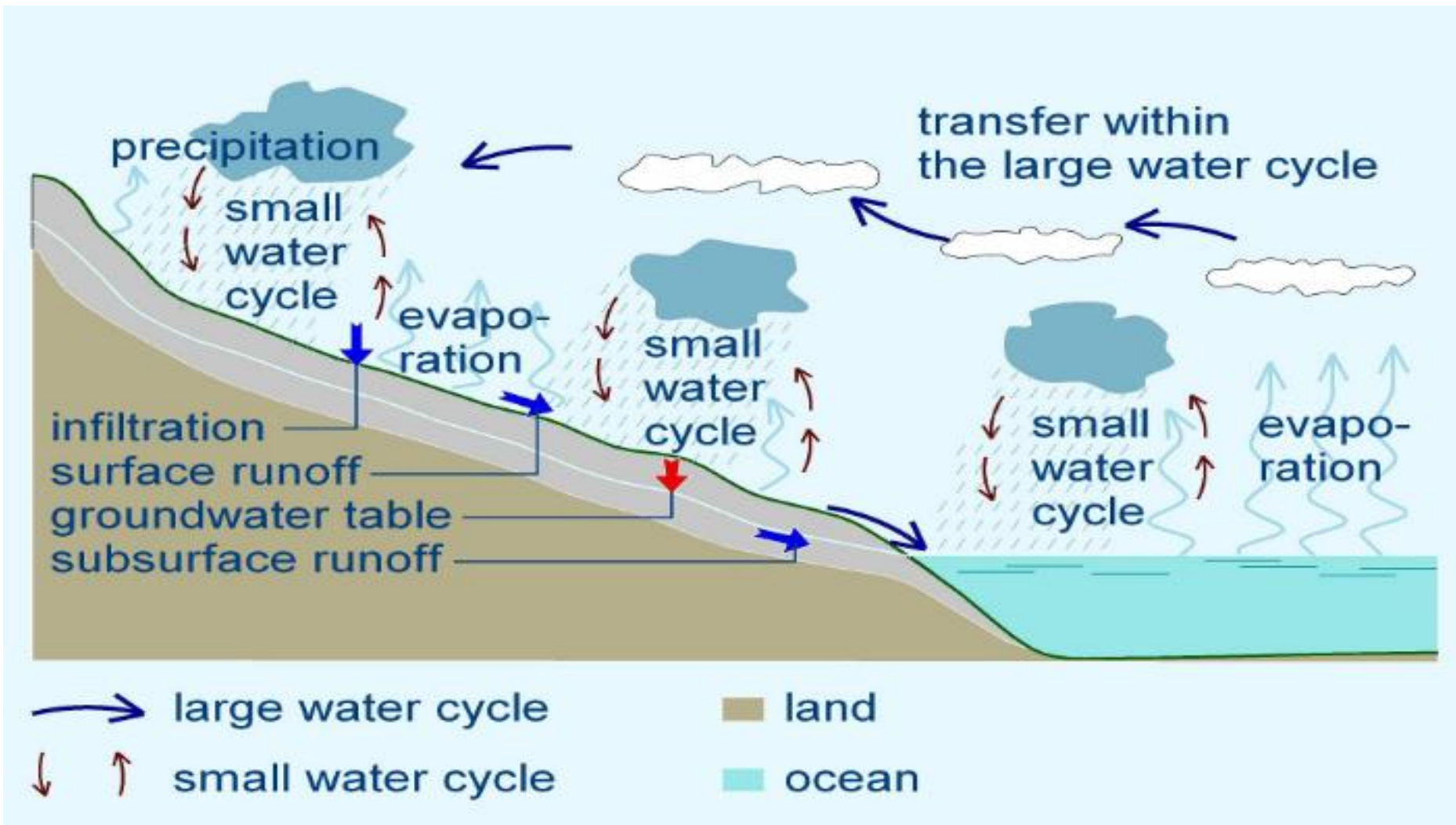
Decline of biodiversity ↔ Loss of ecological connectivity ↔ Chain of cascade effects

Growth of heat islands ↔ Decline of biotic pump ↔ Increase in extreme weather events

Floods, droughts, water & soil pollution ↔ Drop in groundwater levels ↔ Melting glaciers

Rising temperatures of oceans and seas ↔ Temporal and spatial changes in precipitation

Stability of WATER cycles - small on land, large and global



Components of small water cycles that we change:

1. Land plots (m²)
2. Soil
3. Plants
4. Rainwater

Three basic functions of land:

1. Production
2. Utility
3. Ecosystem

No systematic assessment of land use / changes impacts on change of river basin hydrology, climate and water cycles!

SOIL – Carbon and Water Bank of Landscape

ecosystem services of soil and landscapes – new economy

As reservoir of water and carbon:

- groundwater recharge / carbon and water capture

As a basis for vegetation cover and space for soil biodiversity

- plants holder, ecological stability, food production, cooling effect

As a distributor of sunlight energy and rainwater

- rainwater and solar energy distribution; green and blue water recharge

As upper layer of plots is part of micro-catchments and catchments

- every land plot is micro river basin and has its size share on the climate stability

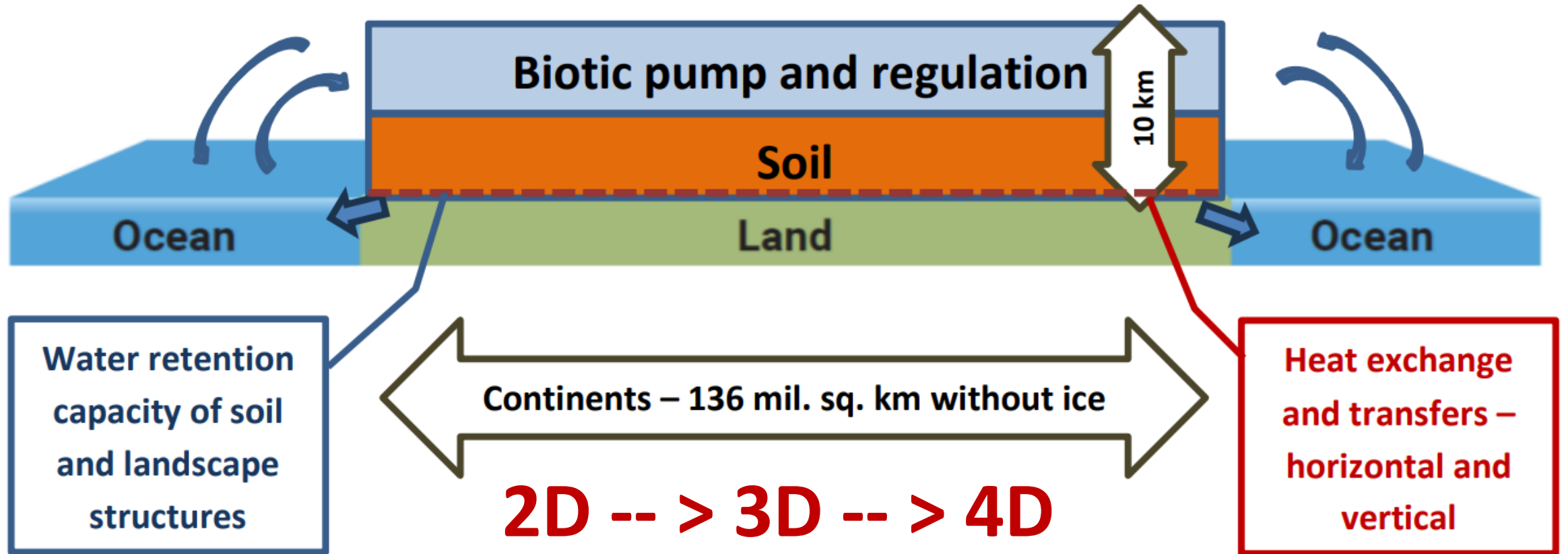


LAND and its SOIL is the key impact, transformation and distribution layer in the systems of permanent natural cycles – water, carbon, nutrients and solar energy fluxes in the river basins, environmental and climate stability at local, regional, national, continental and global levels.

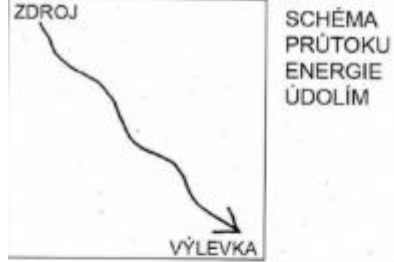
Global water cycle stability drives stability of CLIMATE

the solution lies in restoring small water cycles on land

10 YEAR ACTION PLANS – FOR COMMUNITIES, REGIONS, COUNTRY, GLOBAL

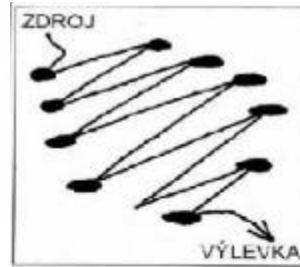
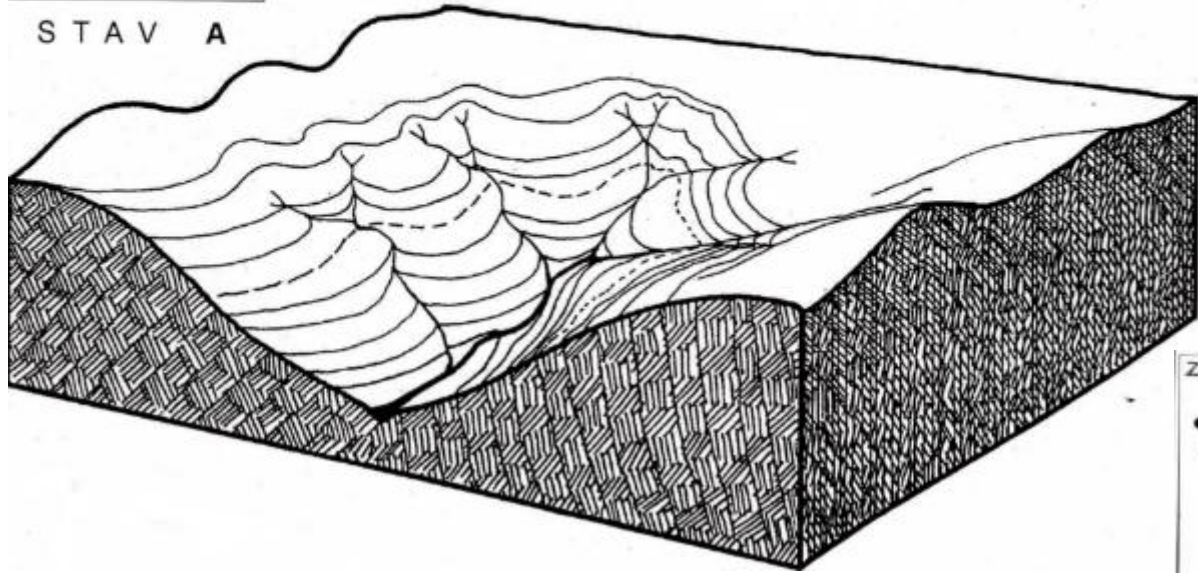


Key environments of Earth's climate system are interconnected by water cycles !

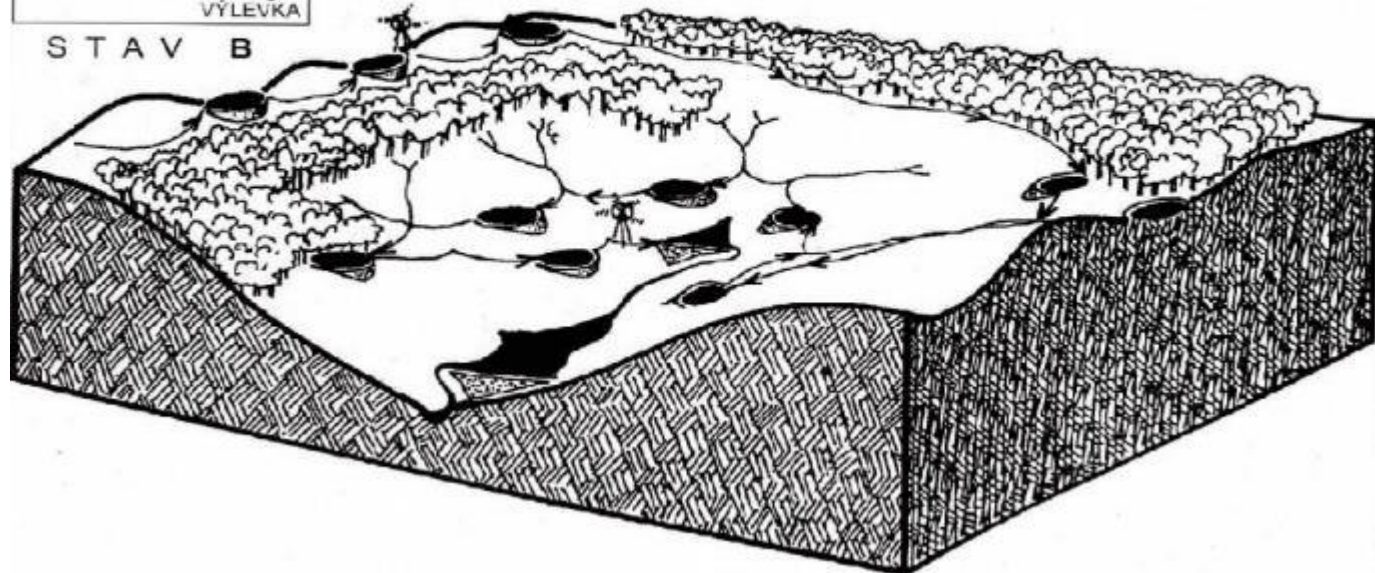


Transformation to climate active landscapes by land rehydration and soil health improvement

S T A V A



S T A V B



- **Integrated water and soil planning on local level, good legislation support and rain water budgets!**
- **Every square metre or hectare of soil counts.** It has its share on rise or decline of flood and drought risks.

- **Till 2035 we need to increase water retention capacity of soil and landscape structures!**
- **It is highly decentralised water infrastructure of landscape enabling ecosystem services**
- **It would support groundwater recharge, food and biomass production, cooling of land.**



10 YEAR ACTION PLANS

Geographic / administrative level	Area (km ²)	Rainwater budget / year (km ³)	Adaptation / increase of water retention capacity of soil & land structures**	Higher ecosystem use of rainwater km ³ /year
Global	136 000 000	120 000	750 + 1500 = 2250 km ³	9 000
Europe	10 110 000	7 582	51 + 102 = 153 km ³	612
European Union	4 200 000	3 150	21 + 42 = 63 km ³	252
BioEast plus region (incl. UA, MD, WB*)	2 000 000	1 500	10 + 20 = 30 km ³	120
Danube river basin	795 686	600	4 + 8 = 12 km ³	48
Spain	505 990	250	2,5 + 5 = 7,5 km ³	30
Slovakia	49 036	36	0,25 + 0,5 = 0,75 km ³	3

KPI

* Western Balkan countries

****COSTS OF THE ACTION: support in €/m³ (rural/urban)**



BIOEAST THEMATIC WORKING GROUP FRESHWATER

WATER SOIL CLIMATE NEXUS

STRATEGIC RESEARCH AND INNOVATION AGENDA

FRESHWATER INNOVATIONS
BOOSTING SUSTAINABILITY AND RESILIENCE FOR LAND AND OCEANS

POLICY EXPERT DISCUSSION
18th DECEMBER
ONLINE 2-3 PM

BLUEMISSION 4A

BIO-HUB.CZ/en/bioeast-twg/twg-freshwater

Water – Soil – Climate Nexus

Strategic priority of the BIOEAST Thematic Working Group Fresh Water Based Bioeconomy

Water-Soil-Climate Nexus emphasises sustainable water management as a critical factor in addressing the climate crisis

BIOEAST TWG Fresh Water Bioeconomy is promoting this new holistic approach, comprehensive solution & bottom-up approach in water planning to showcase the BIOEAST solution for water, soil and climate for the whole EU.

WATER SOIL CLAIMED NEXUS APPROACH

Thematic SRIA for Europe



TIMELINE

WHAT IS BEHIND US



POLICY EXPERT DISCUSSION
18th DECEMBER
ONLINE 2-3 PM



KEY FINDINGS AND PARADIGM SHIFT WITHIN THE NEXUS APPROACH

The central role of water in Earth's climate system • Hydrology / climate land use impacts

Impacts assessment on water cycles • Funding of soil and landscape ecosystem services

Monitoring of small water cycles • Integrated NEXUS planning • New GDP accounting

Land rehydration, landscaping, NBS • Regenerative soil and water management • IWRM

EU Partnerships • ERA • Systemic reduction of climate risks • New role of stakeholders