



**NEXOGENESIS**  
STREAMLINING WATER RELATED POLICIES

## NEXOGENESIS 3rd Stakeholder Workshop

«Water-energy-food-ecosystem Nexus governance, policies and stakeholder engagement in the Lielupe River Basin»

*15 June 2023, Vilnius*



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101003881.



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# Recap of NEXOGENESIS project and activities in the Lielupe Case study

*Daina Indriksone, Ingrida Bremere, Baltic Environmental Forum – Latvia*  
15.06.2023, Vilnius, Lithuania

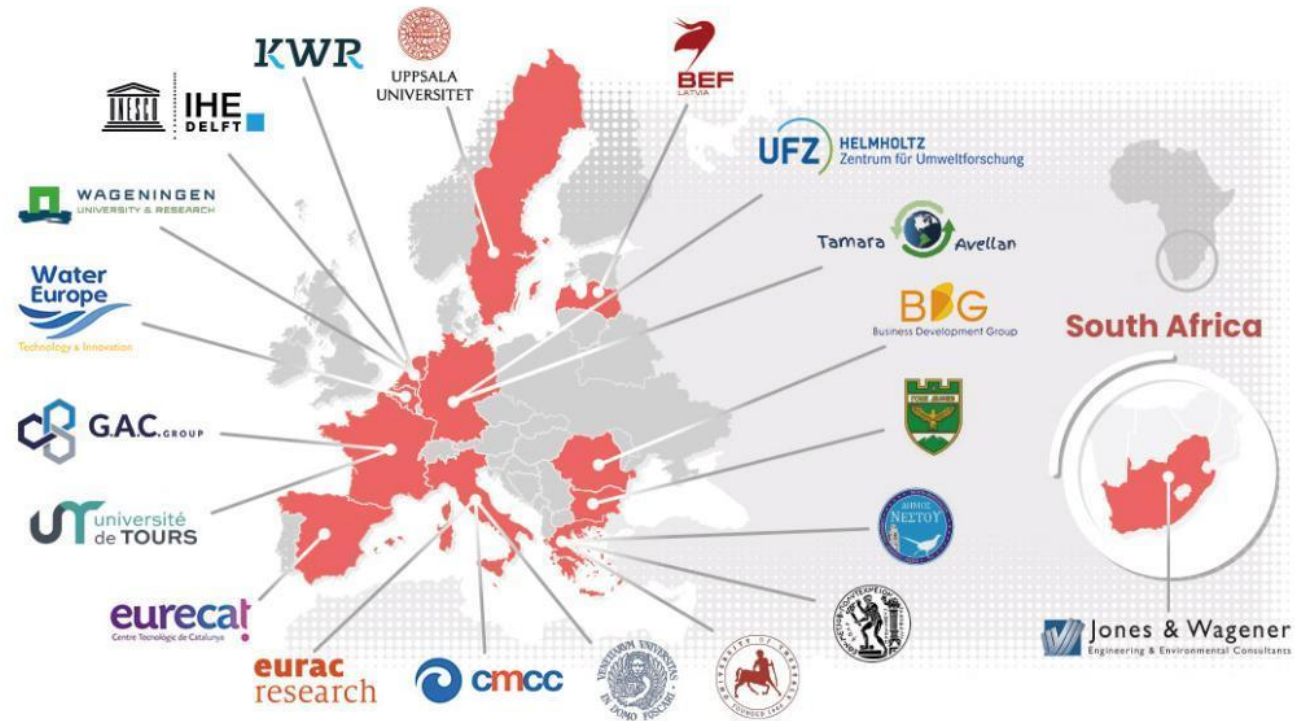
## NEXOGENESIS 3rd Stakeholder Workshop



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# What is NEXOGENESIS?

- European research project (Horizon 2020)
- Sep 2021-Aug 2025
- 20 partners
- 5 case studies

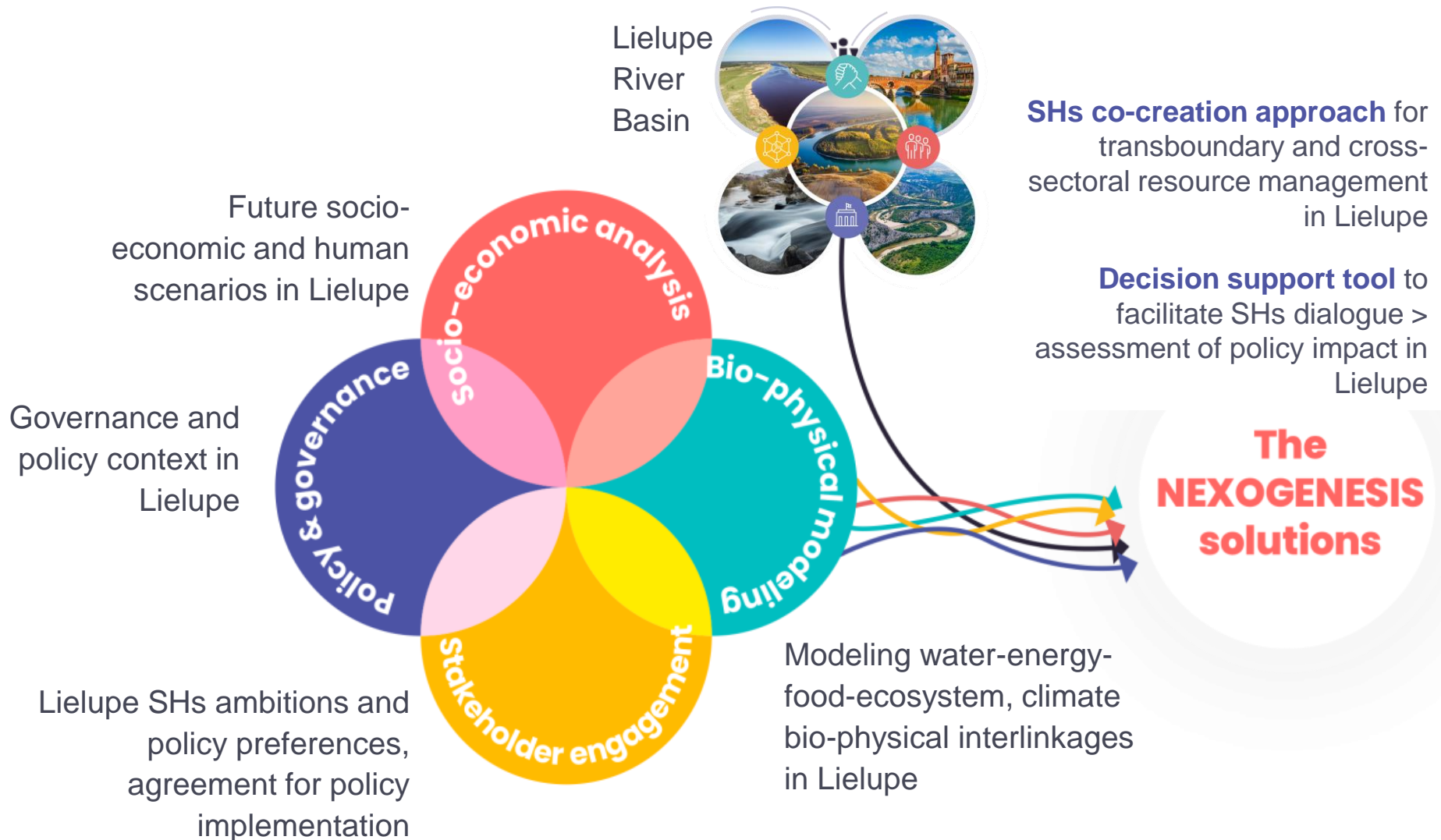


To facilitate collaboration for design and implementation of integrated water-energy-food-ecosystems (WEFE) policies and practices

# 5 Case studies: Transboundary and national river basins

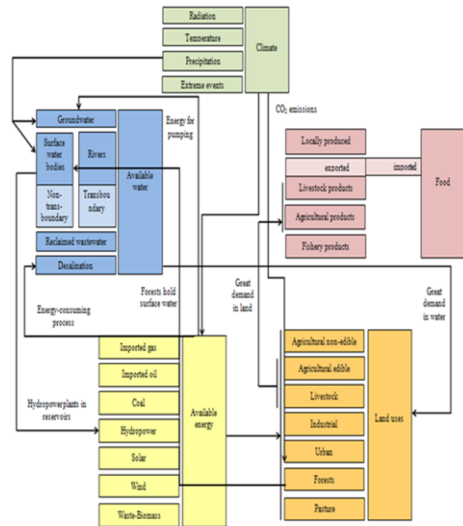


# What can NEXOGENESIS do for Lielupe Case study?



# Nexus System Thinking and Integration

## Casual loop maps



## Model

It is a tool that connects quantitative data from the sectors of water, energy, food, ecosystem and climate change by simulating the interrelations between them

## Stakeholder involvement

Identification of the:

- critical components of the WEFEC nexus
- relevant policies and policy gaps
- connections / disagreements
- hotspots in the region
- validation of the causal loop maps
- implementation of the stakeholder agreement

## Products

- Complexity science tools - prototypes (tools) for all the Case Studies
- Quantified interlinkages between the water-energy-food-ecosystem-climate sectors
- Assessment of the impacts of policies in related to the nexus sectors
- The WEFEC nexus footprint
- Climate Projections/ Different scenarios
- Sensitivity analysis

## End Users

- Authorities
- Policy makers at local level/municipalities
- NGOs
- Agricultural chambers
- Farmer associations
- Water utilities
- Other organisations



# Latvia-Lithuania transboundary Lielupe river basin district

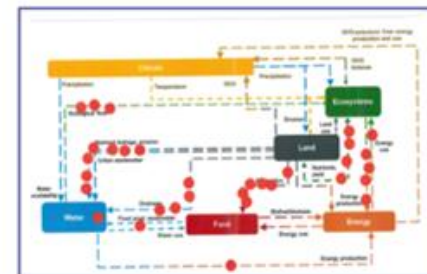
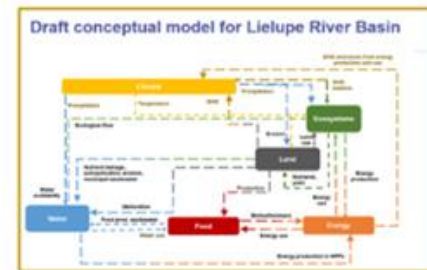
- **Well-developed agricultural activities** (fertile soils)
- **Decreasing biodiversity:** reduced meadows and pastures, pressure on grassland habitats
- **Pollution of water bodies** by increased use of fertilizers and nutrient runoff
- **Increasing flood risks:** high precipitation, pressure on hydrotechnical infrastructure



- Catchment area: 17 787.6 km<sup>2</sup>
- Agricultural land: ca. 62%
  - Forests: ca. 30%
  - Wetlands: ca. 1.5%

# How it started in 2022...

- Discussion with stakeholders in Latvia (27.01.2022) on socio-economic development from the municipality perspective; mind-mapping to collect ideas
- International stakeholder workshop (10.02.2022) to initiate discussion on critical WEFE Nexus interlinkages;
- NXG session with LV & LT stakeholders (27.05.2022) to present the conceptual model and point to most crucial interlinkages



Today we will look at SH engagement process





# Getting «closer» to stakeholders

- **Governance assessment** of resource management procedures & practices
- 2 stakeholder interview rounds in LV and LT (June – September 2022)

Today we will look at assessment results



# Cross-border co-operation

- Promotion of **regional & local cooperation activities** for integrated management of the Lielupe River Basin resources



# Focus groups on policy interventions

- Desk research screening policy documents
- Policy coherence assessment
- Validation by stakeholders in Focus groups in Latvia (09.03.2023) and Lithuania (31.03.2023)

Today we will select policy instruments of priority importance in WEFE sectors

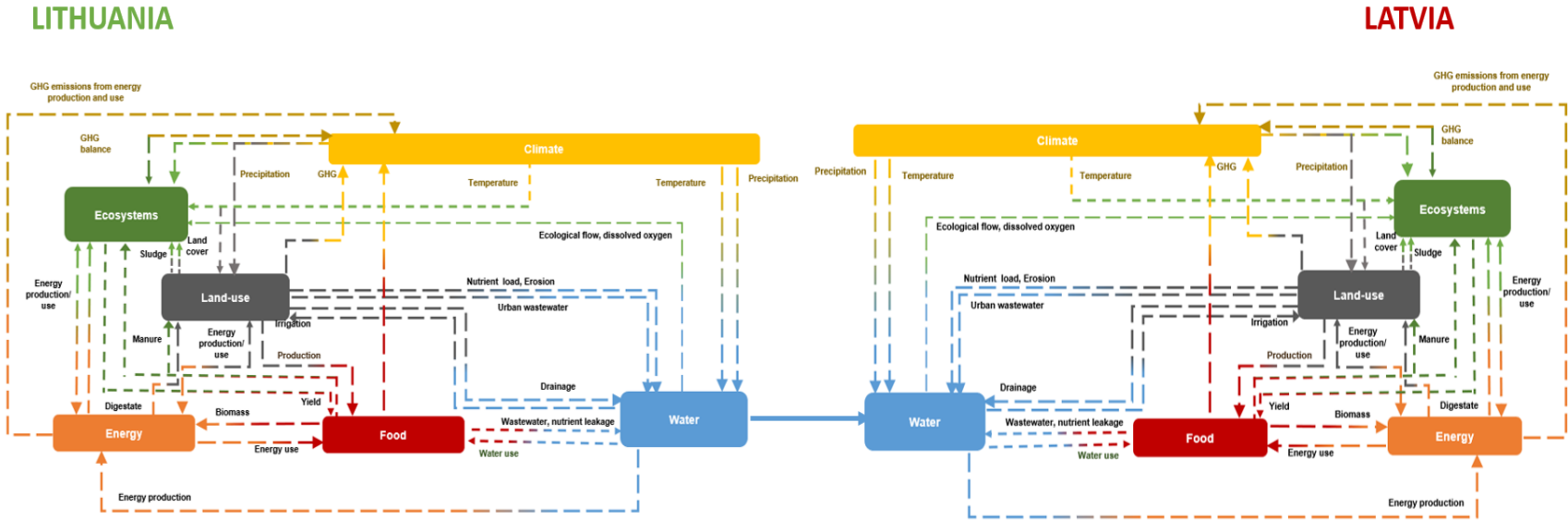
Policijas grupa	Normatīvs akta nosaukums	PILNĪBA					
		Ūdens	Enerģija	Atkriti	Arēna	Ekoloģija	Atsārņi
Ūdens	Ūdens kvalitātes apsekošanas sistēmas izstrādes plāns	█	█	█	█	█	█
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Ūdens	Procesa ūdens, nātrija un gaisa apsekošanas sistēmas izstrādes plāns	█	█	█	█	█	█
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Arēna	Mūzikas telpas	█	█	█	█	█	█
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# Conceptual model for the Lielupe River Basin

- Visualization of biophysical interlinkages
- Water is our uniting Nexus sector between LT and LV



# Prioritisation of interlinkages (SH views in LV & LT)

<i>Nexus sectors and interlinkages</i>			<i>Score in Lielupe RB sub-basins</i>	
<i>Provider</i>	<i>Interlinkage</i>	<i>Recipient</i>	<i>Latvia</i>	<i>Lithuania</i>
Climate	Precipitation	Water	0.895	0.800
	Temperature	Water	0.816	0.650
	Precipitation	Land-use	0.829	0.675
	Temperature	Land-use	0.711	0.575
	Precipitation	Ecosystems	0.776	0.600
	Temperature	Ecosystems	0.750	0.750

<i>Nexus sectors and interlinkages</i>			<i>Score in Lielupe RB sub-basins</i>	
<i>Provider</i>	<i>Interlinkage</i>	<i>Recipient</i>	<i>Latvia</i>	<i>Lithuania</i>
Water	Ecological flow	Ecosystems	0.816	0.800
	Irrigation	Land-use	0.737	0.750
	Water use	Food	0.842	0.725
	Energy production	Energy	0.737	0.350

<i>Nexus sectors and interlinkages</i>			<i>Score in Lielupe RB sub-basins</i>	
<i>Provider</i>	<i>Interlinkage</i>	<i>Recipient</i>	<i>Latvia</i>	<i>Lithuania</i>
Energy	GHG	Climate	0.842	0.900
	Energy use	Food	0.605	0.650
	Energy use	Ecosystems	0.645	0.600



# Prioritisation of interlinkages (SH views in LV & LT)

Nexus sectors and interlinkages			Score in Lielupe RB sub-basins	
Provider	Interlinkage	Recipient	Latvia	Lithuania
Food	Wastewater	Water	0.947	0.575
	GHG	Climate	0.776	0.625
	Biomass	Energy	0.645	0.550
	Manure	Ecosystems	0.697	0.650
	Manure	Land-use	0.724	0.675

Nexus sectors and interlinkages			Score in Lielupe RB sub-basins	
Provider	Interlinkage	Recipient	Latvia	Lithuania
Ecosystems	GHG	Climate	0.566	0.575
	Yield	Food	0.724	0.725
	Energy production	Energy	0.553	0.400

Nexus sectors and interlinkages			Score in Lielupe RB sub-basins	
Provider	Interlinkage	Recipient	Latvia	Lithuania
Land-use	GHG	Climate	0.658	0.800
	Nutrient load	Water	0.842	0.850
	Erosion	Water	0.737	0.900
	Urban wastewater	Water	0.789	0.675
	Drainage	Water	0.868	0.850
	Production	Food	0.816	0.650
	Energy production	Energy	0.592	0.425
	Land cover	Ecosystems	0.789	0.750



# NEXOGENESIS activities in LV and LT in 2023

- **System Dynamics Modelling** considering biophysical interlinkages, socioeconomic development scenarios, climate projections and policy impacts
- Data collection for population of models (Posters!)
- Developing a **decision support tool**
- Facilitating process towards the design and adoption of a (transboundary) **stakeholder agreement** for integrated management of the Lielupe River Basin resources at various levels



# You are kindly invited to follow NEXOGENESIS

- NEXOGENESIS website:  
<https://nexogenesis.eu/>
- NEXOGENESIS social media:
  -  Twitter: [@NEXOGENESIS\\_eu](https://twitter.com/NEXOGENESIS_eu)
  -  LinkedIn: [@NEXOGENESIS](https://www.linkedin.com/company/NEXOGENESIS)
  -  YouTube: [@nexogenesis4209](https://www.youtube.com/channel/UCnexogenesis4209)

