

# Using serious game systems (SGS) to mediate learning and transformation in situations characterized by controversy and uncertainty in a changing climate

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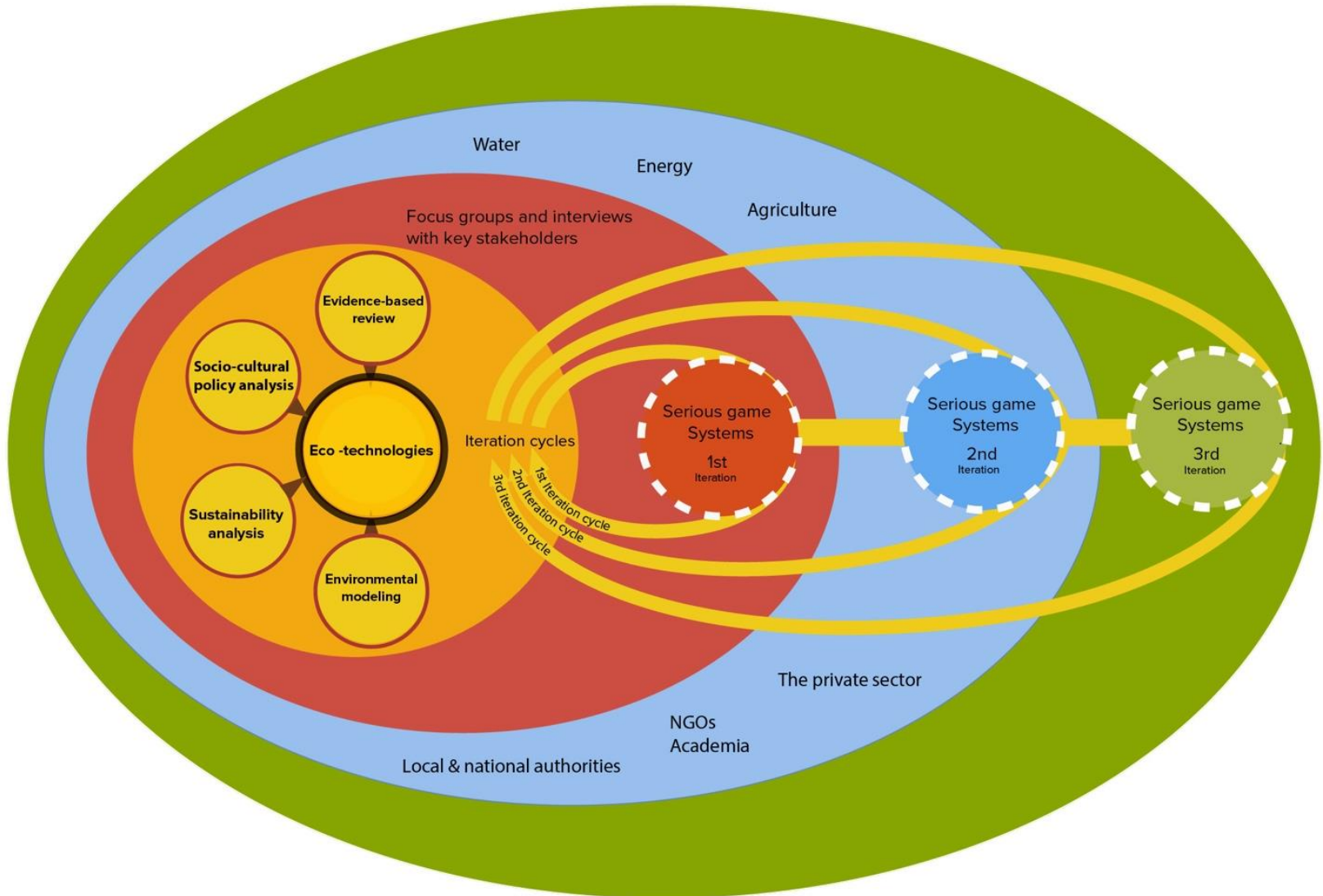


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**SWEDES**

# Process design for the serious game system in the BONUS RETURN project



## The “normal” narrative: our role as scientists in communicating the risks associated with climate change adaptation

- Our practice enables us to identify CCA issues.
- We can set boundaries around the systems where these issues are manifest.
- There is an ideal state for any system
- We can define this state.
- We can determine how to transform towards this state

# The global sustainable development narrative

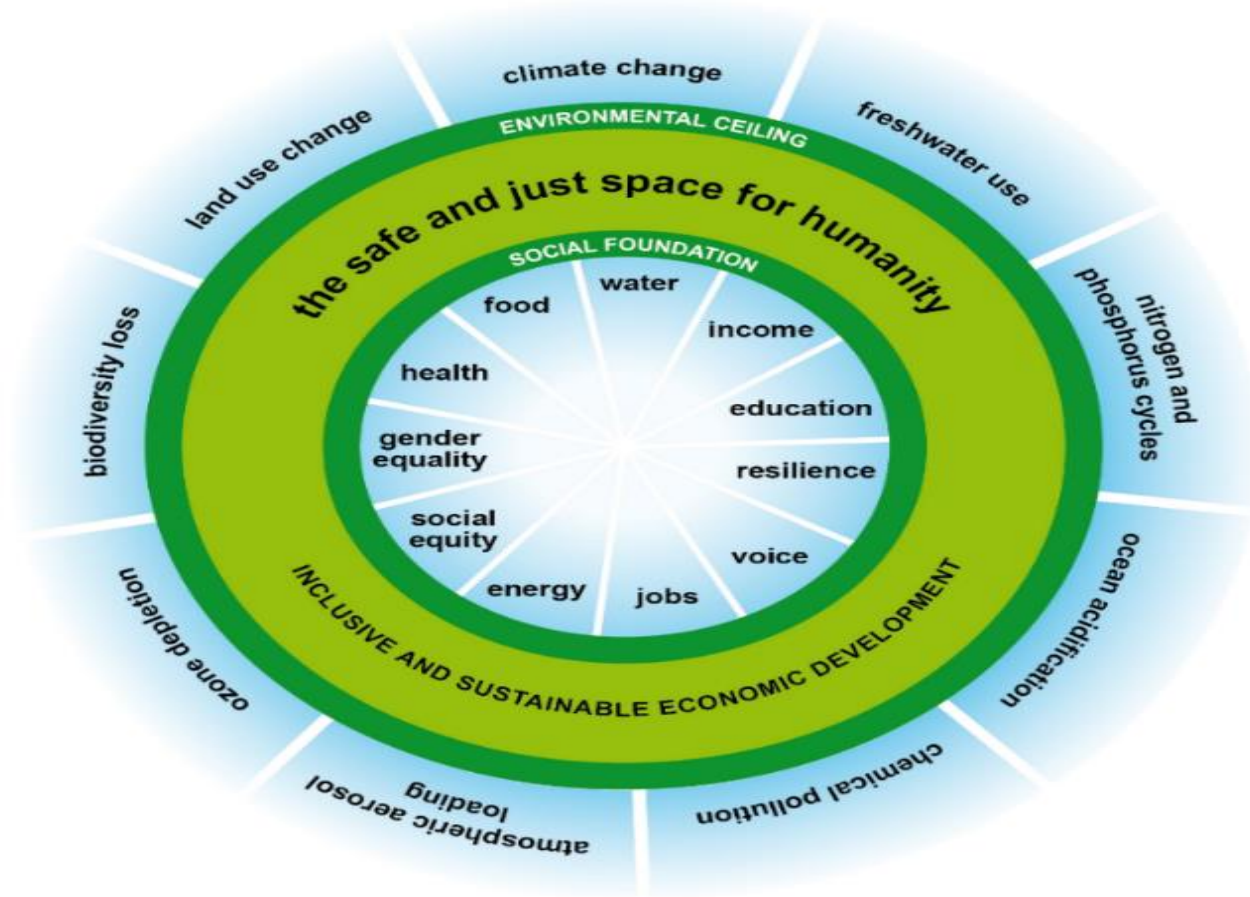
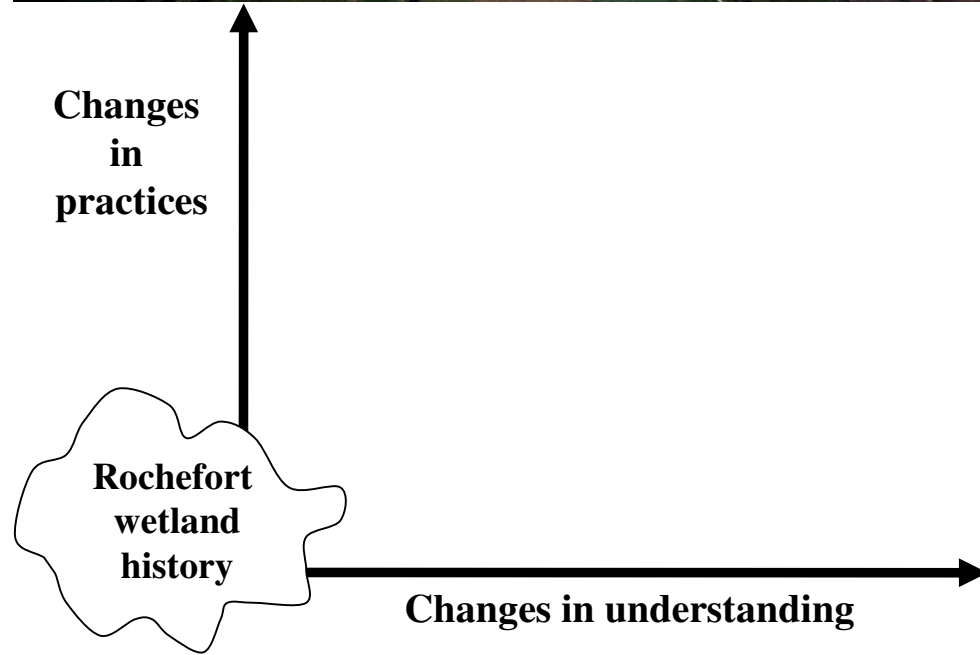


Figure: The doughnut of social and planetary boundaries (Raworth, 2012, p.4)

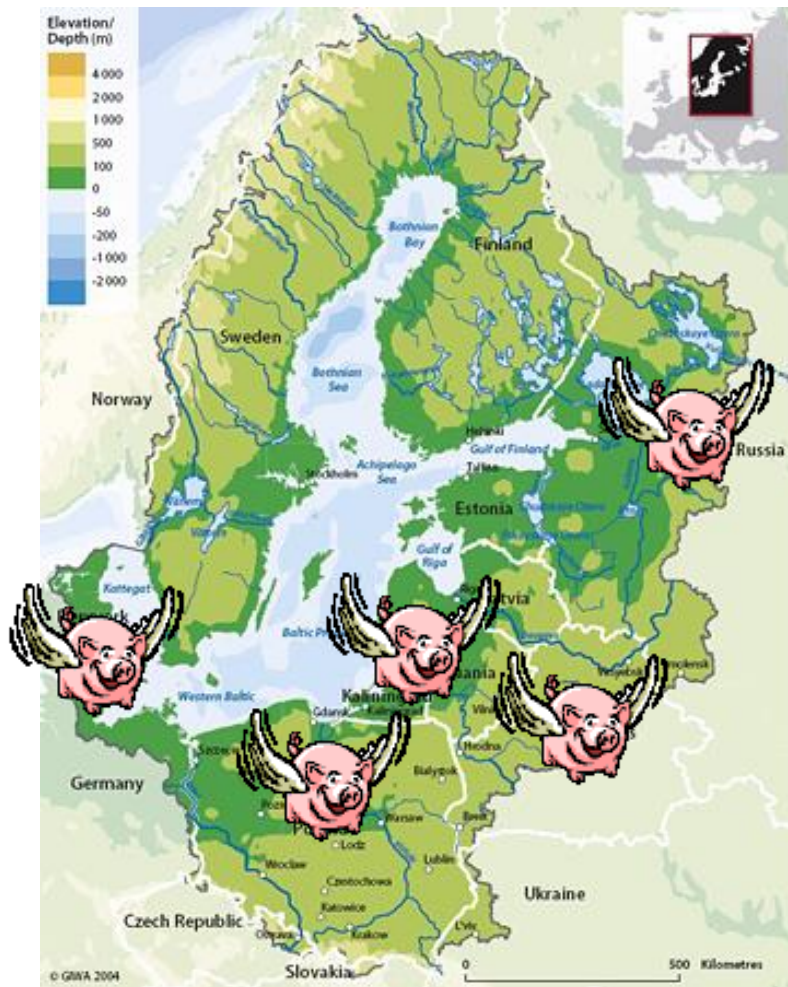
## The Local Narrative

Two different ways of understanding wetland management of Atlantic Marshes :

1. One of these is centered on the high agronomic potential of the wetland
2. The other one is centered on the wetland's high biological potential



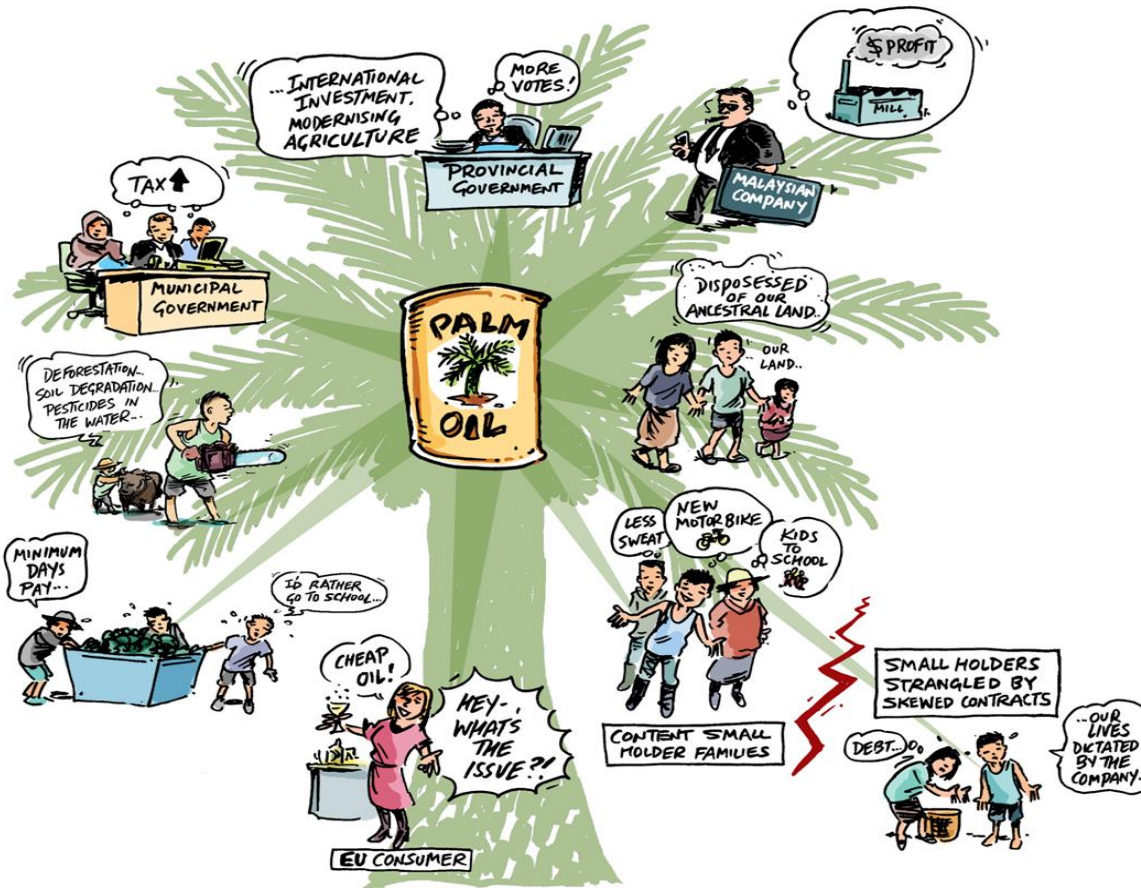
## A regional sustainability narrative



**Map 1.** Translocation of the Danish Pig Industry to less regulated BSR contexts (Source: data from Baltic Compass)

# A trans-regional Sustainability narrative

## The Implementation of the Renewable Energy Directive in the BSR and Palm Oil Production in West Kalimantan



**Figure 1.** Depicts the impact of the Renewable Energy Directive on the water and food security for smallholder palm oil producers in West Kalimantan (Source CADWAGO project).

## The Intersectional Narrative

### Gender perspectives on the Role of Municipalities as Implementers of the WFD in Coastal Sweden – Acknowledging the Presence of Power

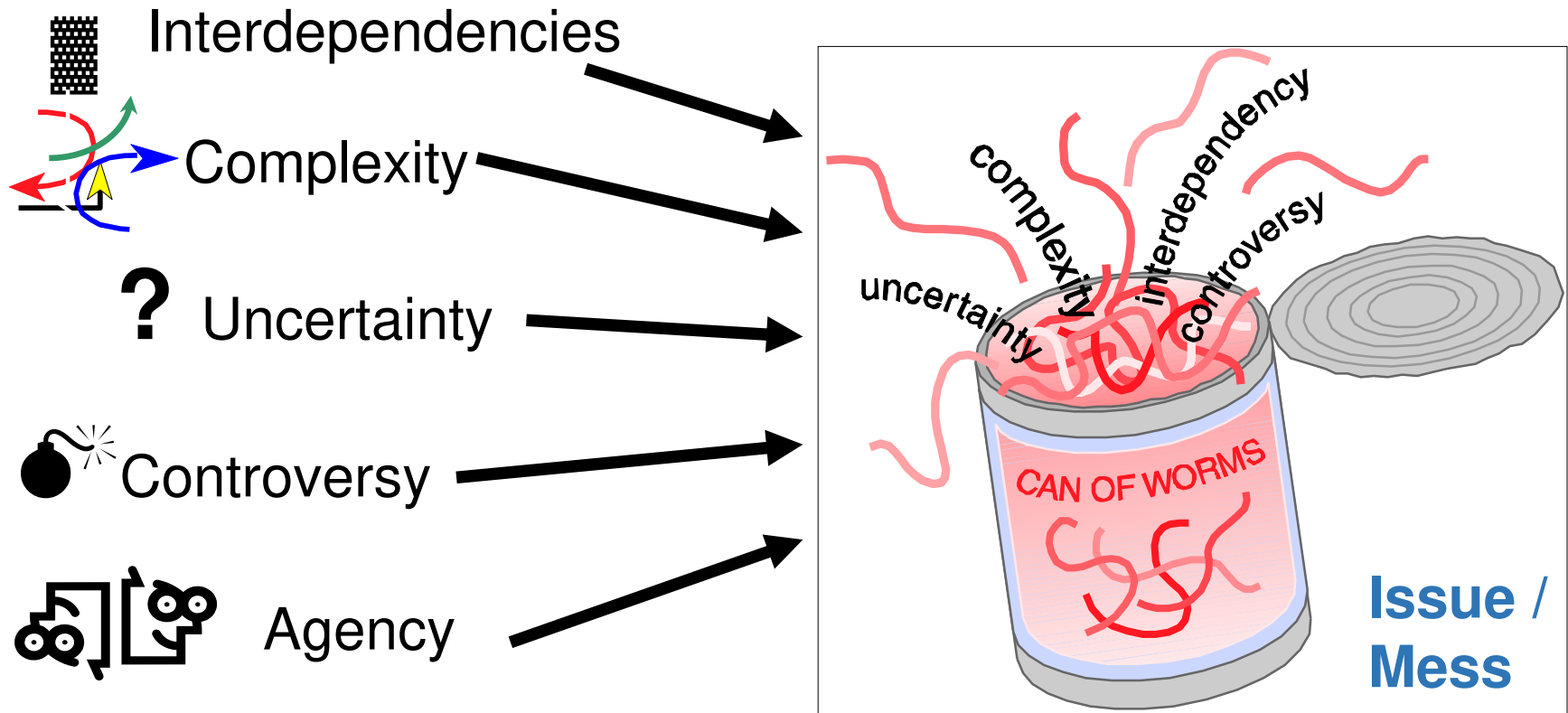


WFD has been an attempt to transcend a ‘fragmented’ environmental legislative approach through the introduction of context-specific and stakeholder-defined targets, manifest ‘good ecological status’ and ‘good chemical status.’





# 'Framing' matters in Adaptation



After: Ackoff, (1974) – messes and difficulties; Schön (1995) - the 'real-life swamp'; Rittel and Webber, (1973) - 'wicked' and 'tame' problems

## The Post Normal Narrative

- Different stakeholders see different *systems*, with different constraints.
- As scientists we need to transcend the role of *stateholders* that promotes the world view underpinning particular constellation of stakeholders.
- *Power* is present in these systems and this distorts the praxis of adaptation
- As scientists working in different institutional settings, when tackling sustainable development we are always faced with social dilemmas and or wicked problems.

3 case study contexts

Fyrisån

Vantaanjoki

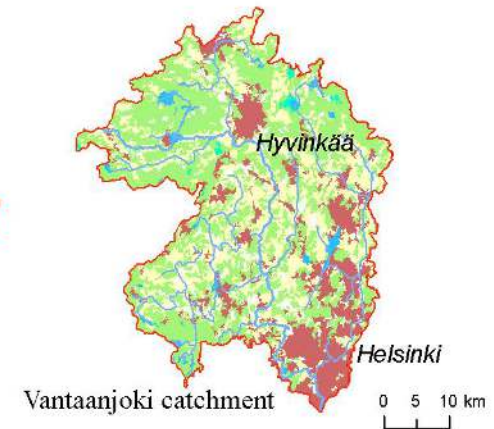
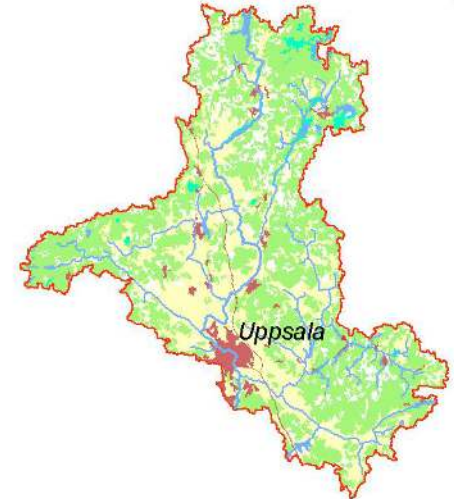
Slupia

## “Map and data”



## Playing field

Fyris catchment



**System relevant  
data & models**

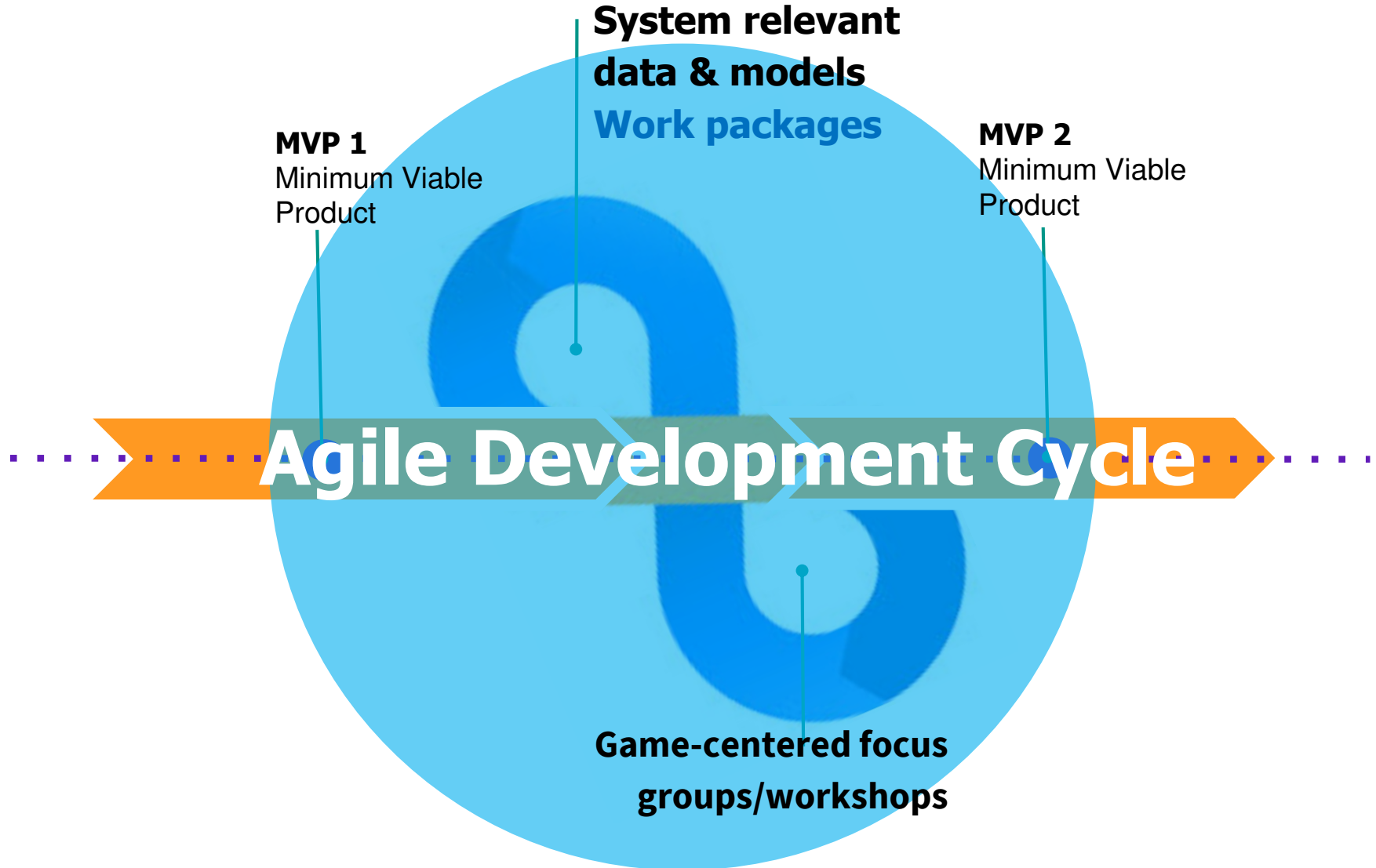
**Work packages**

**MVP 1**  
Minimum Viable  
Product

**MVP 2**  
Minimum Viable  
Product

**Agile Development Cycle**

**Game-centered focus  
groups/workshops**



# Scientists and Researchers

Inclusion of peer reviewed  
and validated scientific data

**Not just the dissemination of findings...  
But a collaborative process of co-inquiry**

Aspects of Interpretative  
phenomenological analysis (IPA)

# Stakeholders and Public

**System relevant  
data & models  
WP 2, 4**

June - July 2018

**System relevant  
data & models  
WP 2, 3, 4**

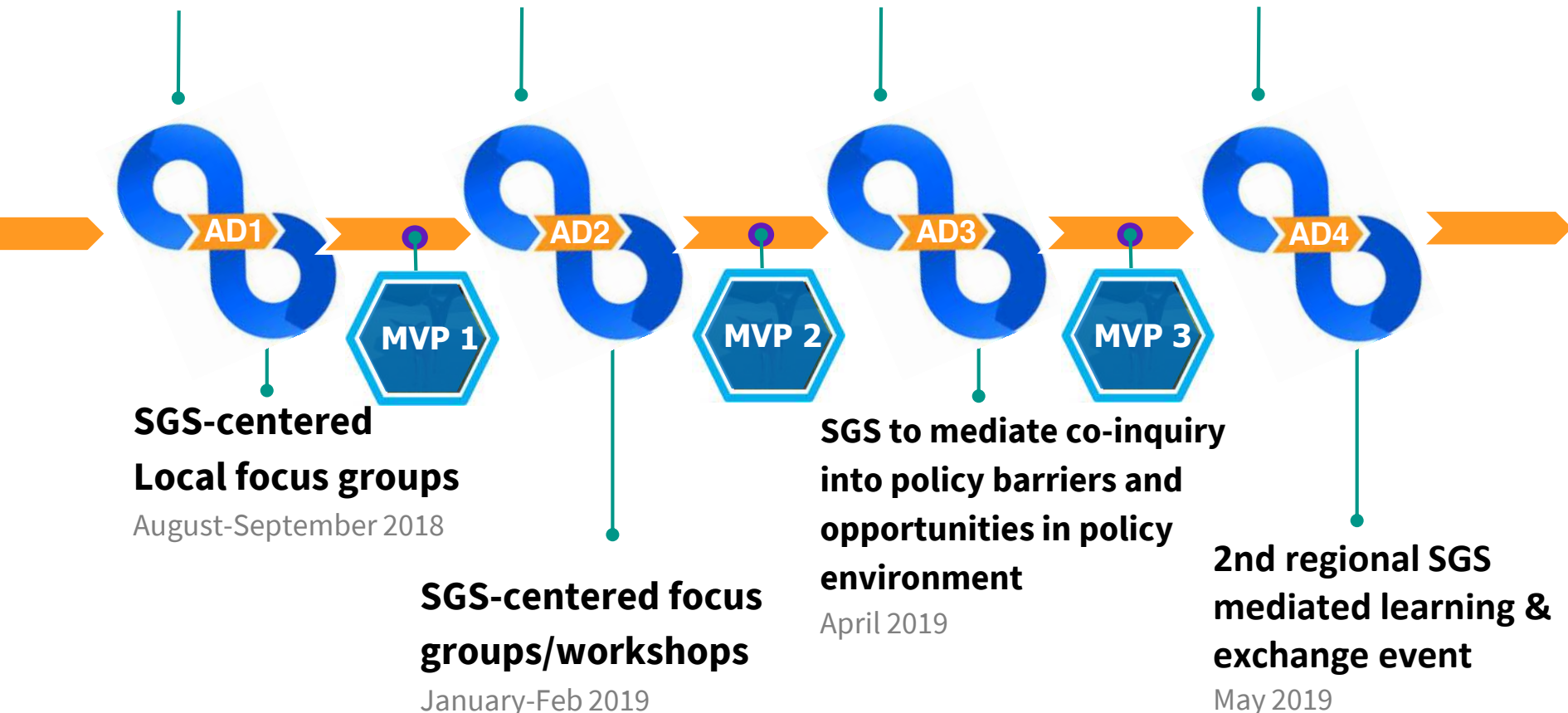
Aug & Dec 2018

**System relevant  
data & models  
WP 3, 4, 5**

Feb & Mar 2019

**System relevant  
data & models  
WP 3, 4, 5**

May & June 2019

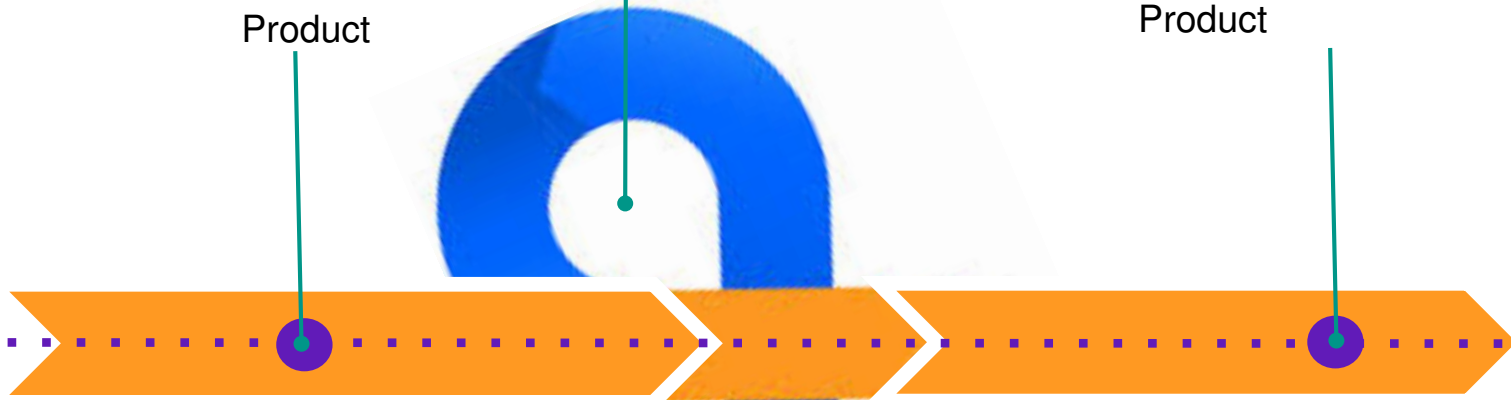


**System relevant  
data & models**

**Work packages**

**MVP 1**  
Minimum Viable  
Product

**MVP 2**  
Minimum Viable  
Product



**Game-centered focus  
groups/workshops**



**MVP 1**  
March 2018

**System relevant  
data & models**  
Work packages



**Game-centered focus groups/workshops**

August-September 2018



**MVP 2**  
Jan 2019

**System relevant  
data & models**  
Work packages



**Game-centered focus groups/workshops**

May- Sept 2019

**System relevant  
data & models**  
**Work packages**

**MVP 3**  
March 2019



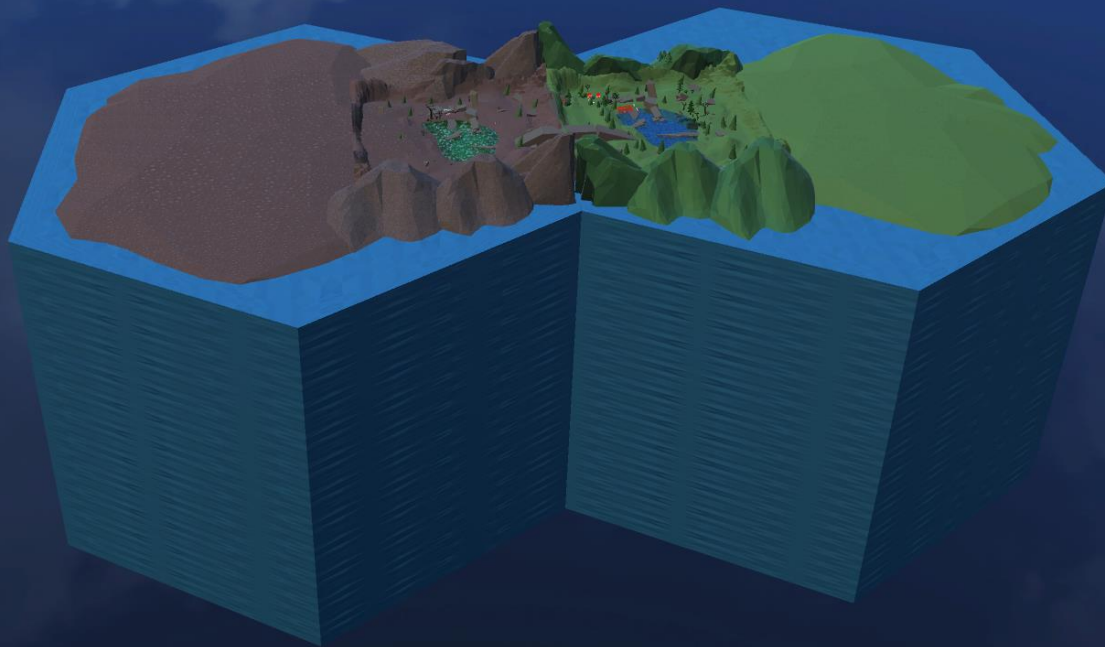
**Game-centered focus groups/workshops**

Jan- April 2019



## “Hexagon game system”

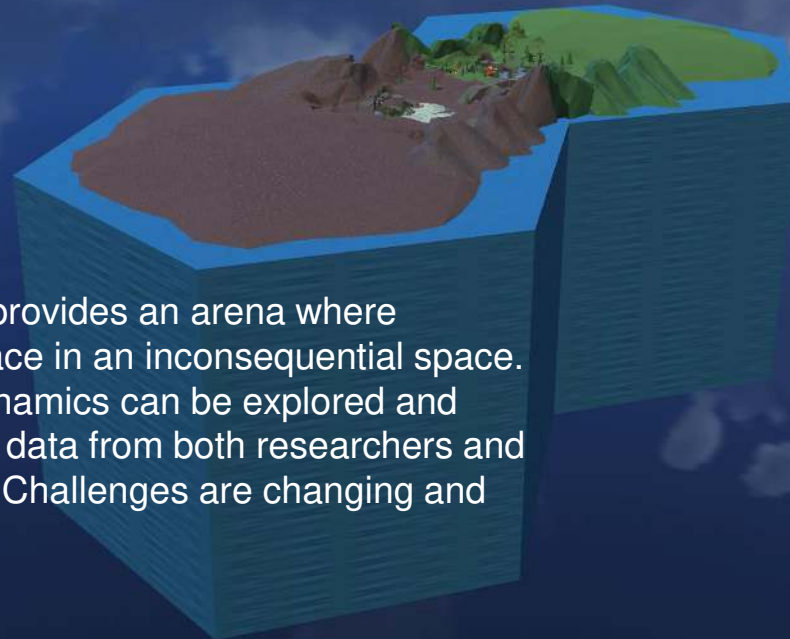
The serious game system platform to foster a learning environment for stakeholders to support the identification, assessment and implementation of eco-technologies.





## “Hexagon game system”

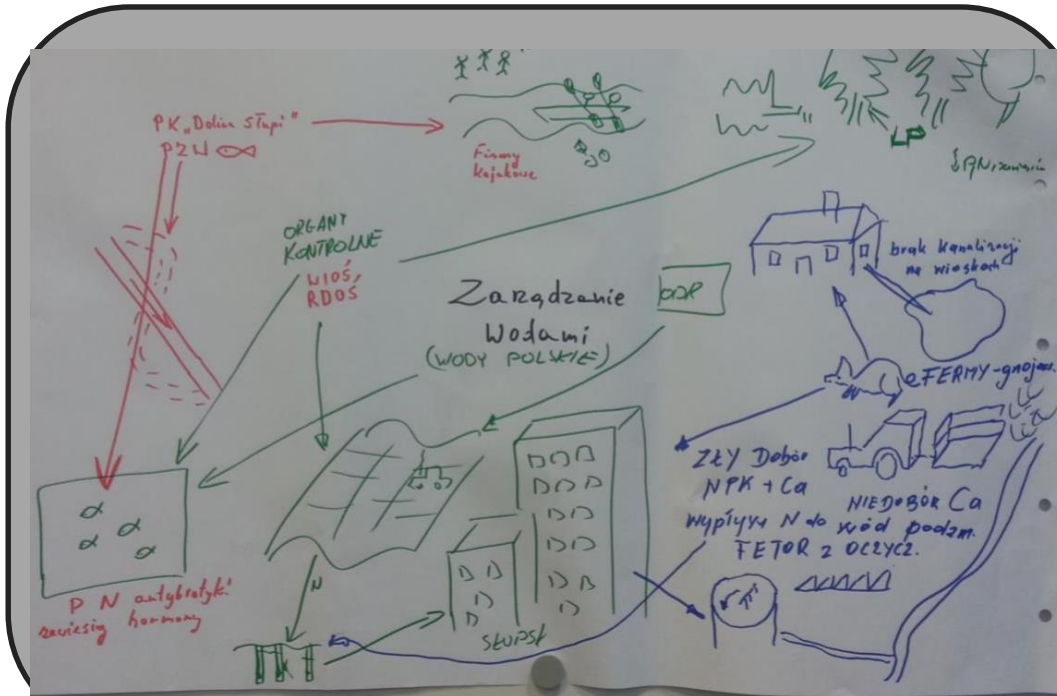
The environment of the SGS provides an arena where consequential actions take place in an inconsequential space.



The environment of the SGS provides an arena where consequential actions take place in an inconsequential space. And where complexity and dynamics can be explored and negotiated as informed by the data from both researchers and locally situated stakeholders. Challenges are changing and constant



## Systemic representation



## “Rich Picture”

An arena for discussion



“Rich Pictures”

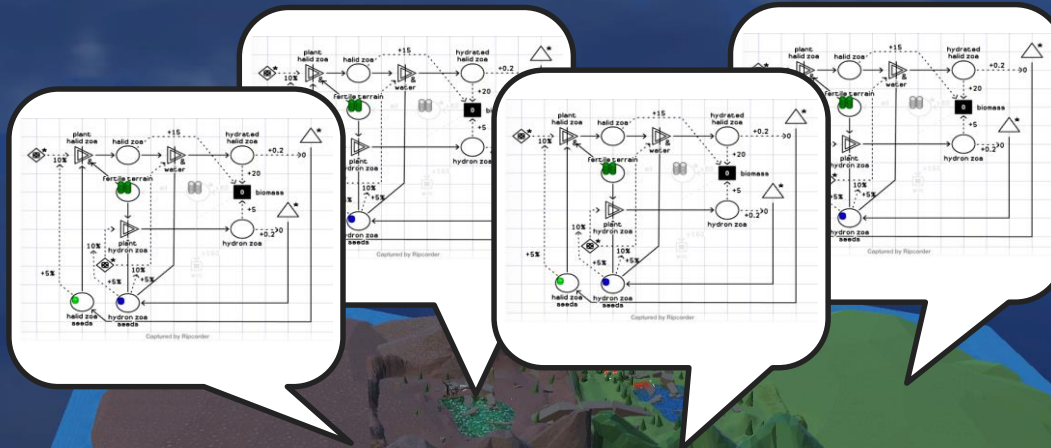


“Rich Picture”  
Even Richer

With dynamics and contextual dialogue



## “Machinations”



## Systemic representations

Agile

Approximate & evolving

Attributive & connected

Stakeholder driven

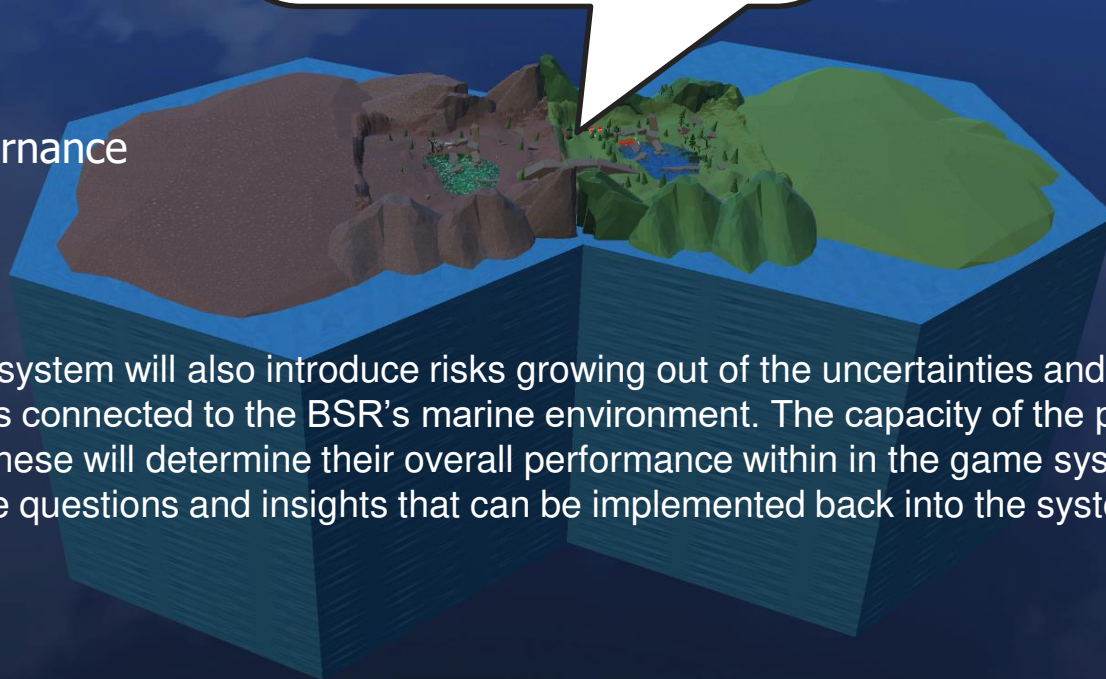
The Game system operates  
An economy of values toward  
evaluative states: “Win-states”



Cyclical variations  
Adaptive variability

Unexpected situations  
impacting the system

- Climate change
- Natural disasters
- Rapid shifts in governance



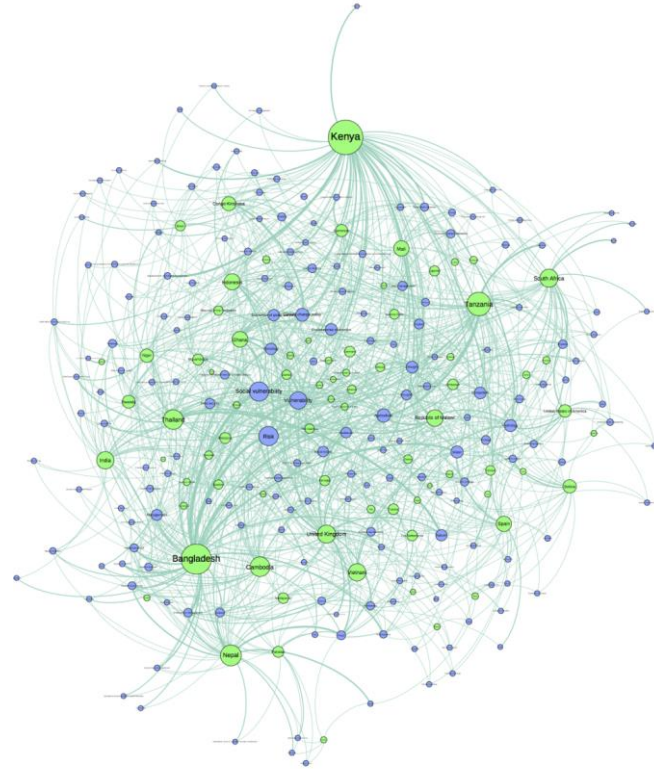
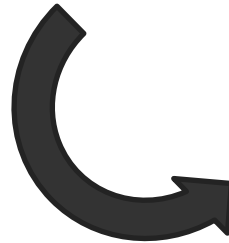
The gaming system will also introduce risks growing out of the uncertainties and controversies connected to the BSR's marine environment. The capacity of the player to navigate these will determine their overall performance within in the game system and generate questions and insights that can be implemented back into the system.



# New constellations of stakeholders pave the way for real transformation



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Geographic coverage of issues by country on weADAPT, 2013  
<http://www.sei-international.org/mediamanager/documents/Publications/Climate/SEI-WP-2015-08-CAMA-weADAPT-visualization.pdf>