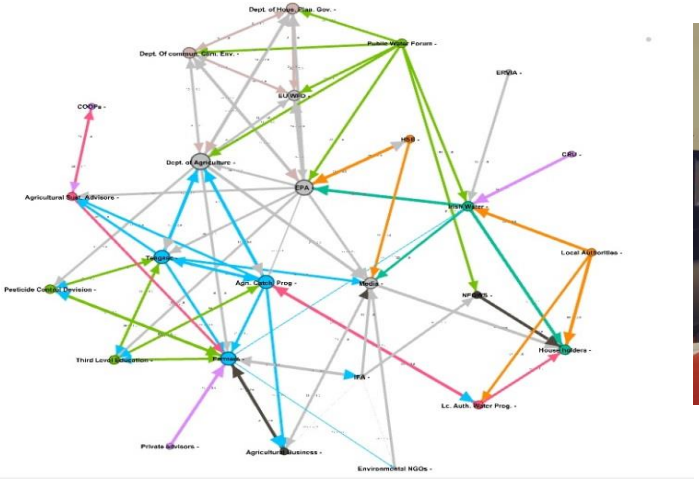
WATERPROTECT

USING FUZZY COGNITIVE MAPS AND STAKEHOLDER ENGAGEMENT TO ACHIEVE SAFE DRINKING WATER IN IRELAND



Shervin Shahvi, Per-Erik Mellander, Phil Jordan, Owen Fenton

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INTRODUCTION

- Main objective
  - Reach good drinking water quality in Ireland
- Identify the regulatory **bottlenecks** for protection of drinking water
- This will help improve the decision-making and management system for drinking water in Ireland
- To do this you must involve/collate the views of as many stakeholders as is possible
- We know pretty much about the science... Still not enough!
- The WFD requires member states to include stakeholder participation in the process of developing plans for water use management.
- What tools can we use to achieve this??????

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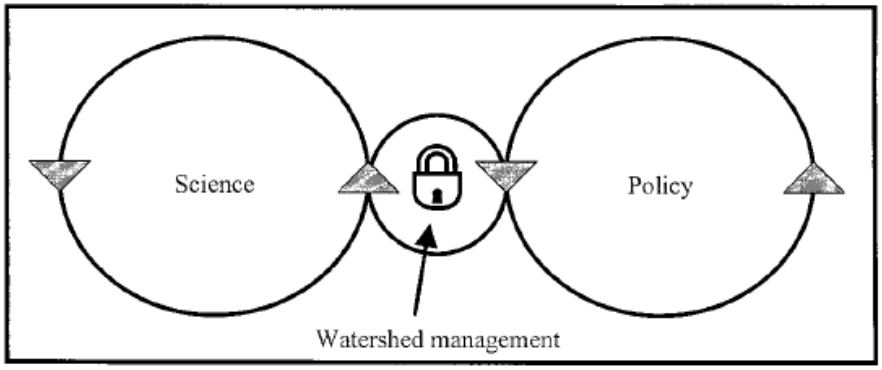
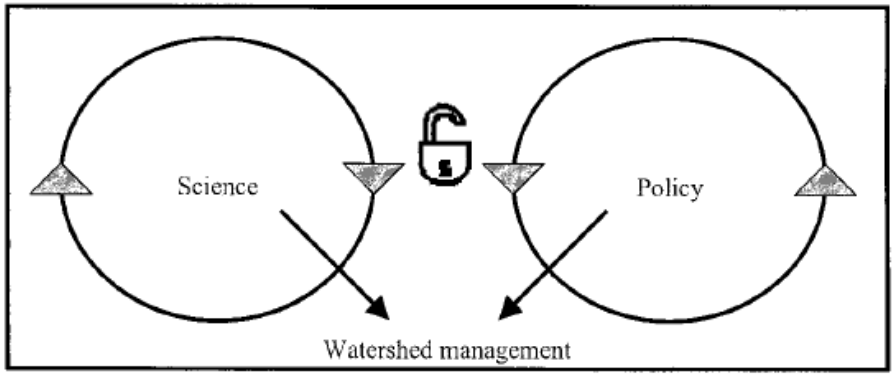
WATER GOVERNANCE

"Policy-Science paradigm lock"





Wolosoff & Endreny, Environ Mag (2002)

Developing a tool to "un-lock" the "Policy-Science paradigm lock" by using Fuzzy Cognitive Mapping of:

*i) Stakeholder **perception** of the water governance structure*

ii) Indicators for drinking water quality

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METHODOLOGY

- FCM works based on the pre-defined and the additive indicators (variables, factors) and the relationship among them (Ozesmi & Ozesmi, 2003)

- Graph theory is a well-known tool to map management analyses (Ozesmi & Ozesmi 2003, 2004)

- Steady State condition provides:
- Comparison between different stakeholders
- Hierarchal point of view analysis
- The what-if environmental management scenarios

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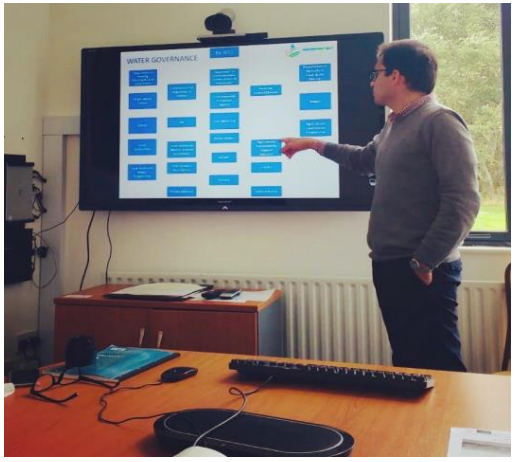
METHODOLOGY

- In a steady-state condition, some of the variables can be used for “what-if” scenarios by fixing them at a desirable value at each step of the iteration (Kosko 1987, Ozesmi & Ozesmi 2003, 2004).

- The face to face interviews with different groups

- Groups of interviewees:
- *Individuals*
- *Policy developer*
- *Researchers*
- *Regulators*



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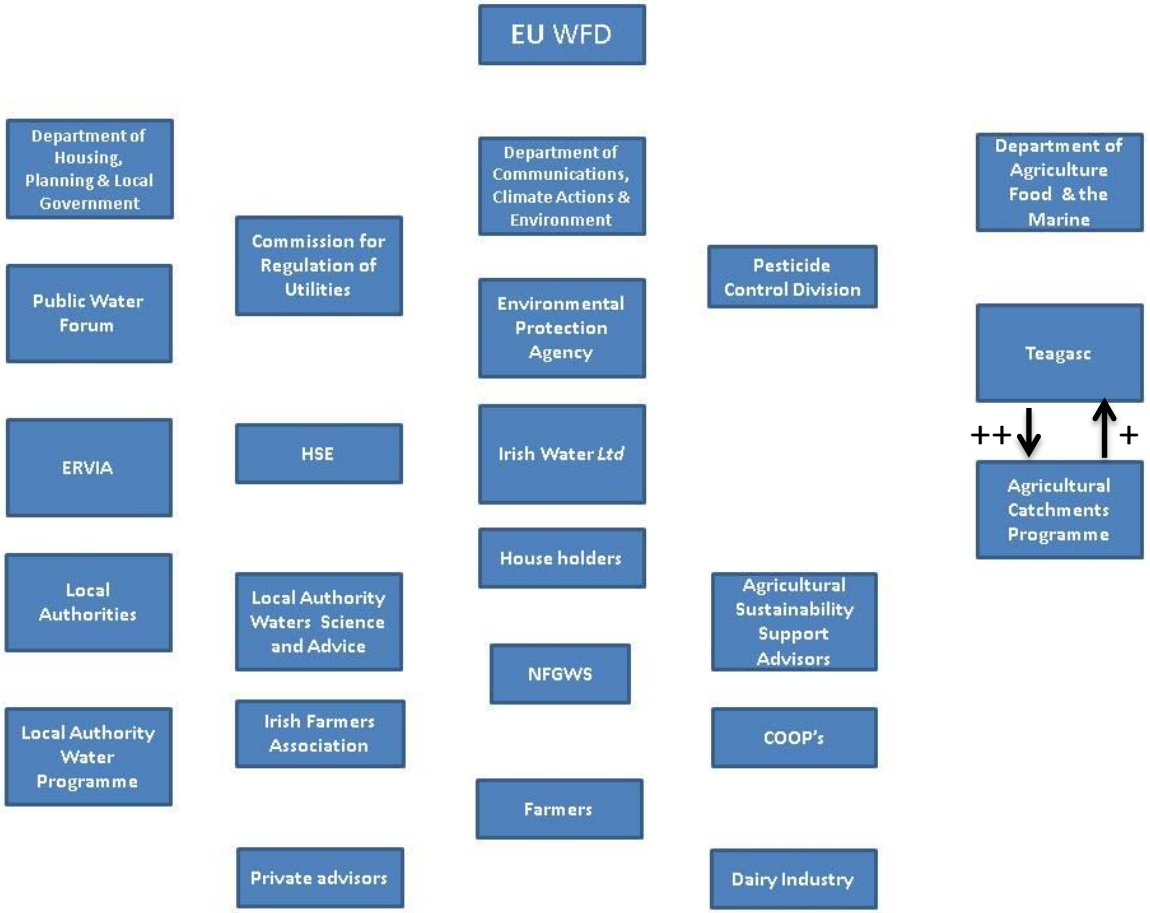
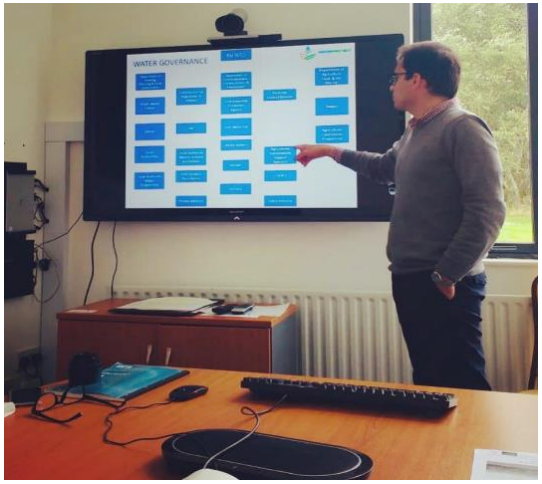
INTERVIEWS AND MAPS

i) Stakeholder perception of the water governance structure

Stakeholder groups to identify/weight connections/missing connections between the different actors in the water governance





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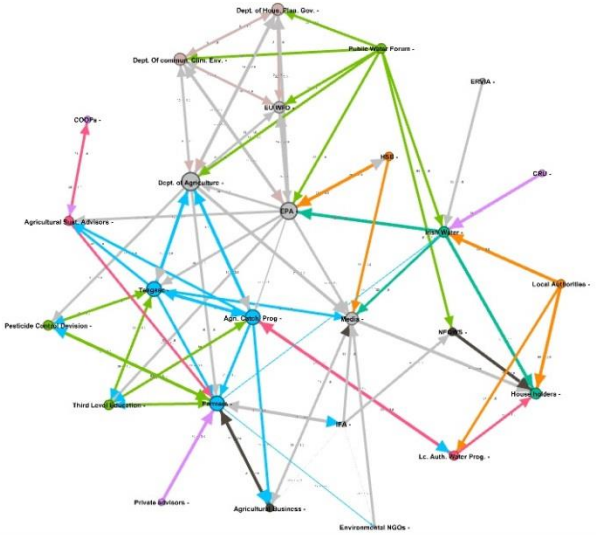
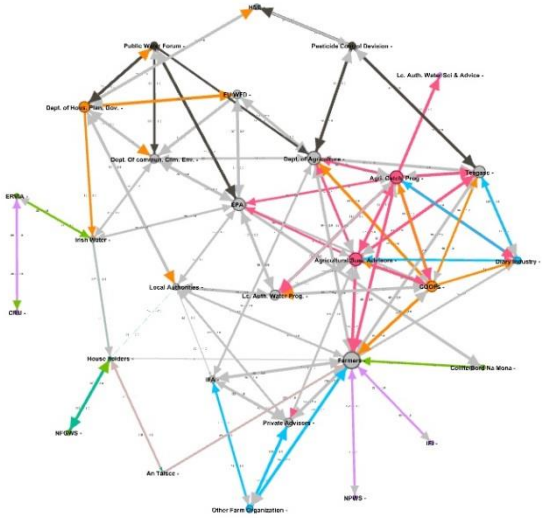
WATER GOVERNANCE MAPS

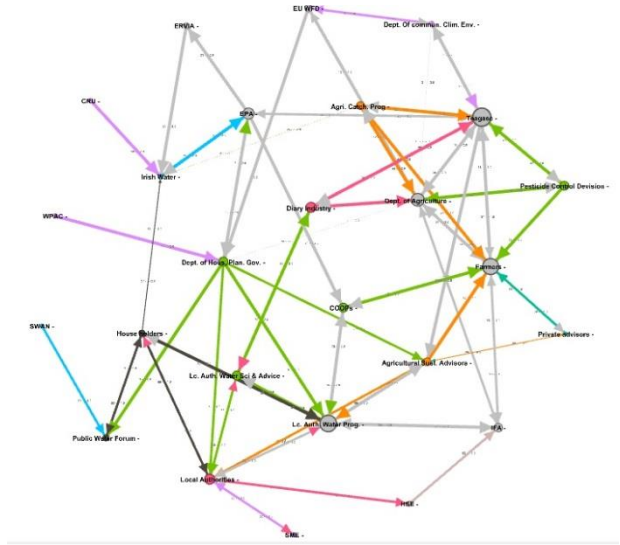
Advisor group 1



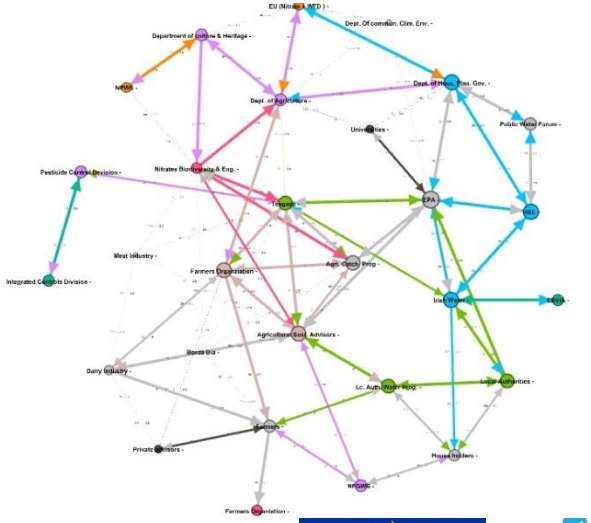
Advisor group 2



Researcher group



EU group



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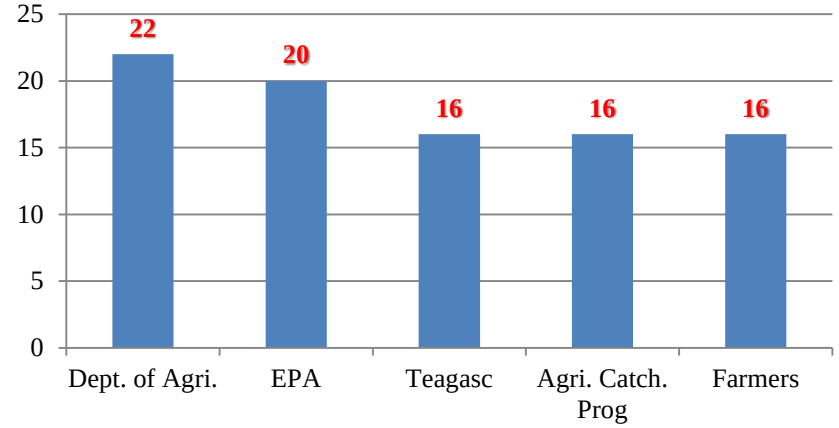
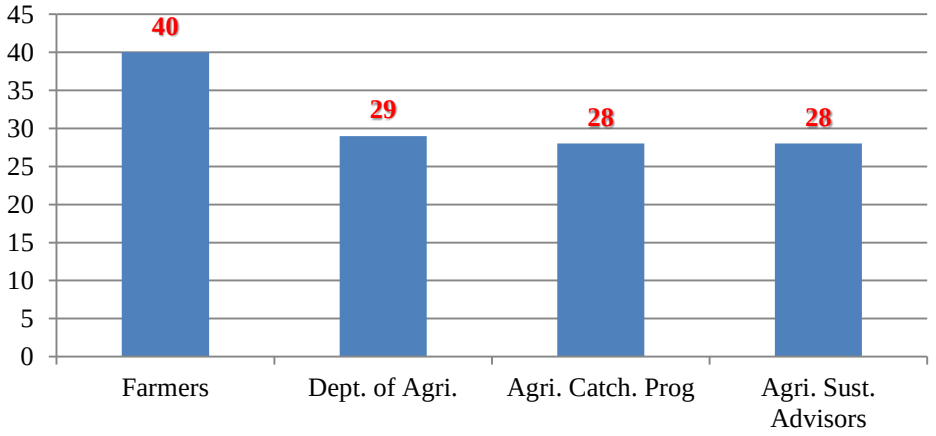
RESULTS, RANKING OF STAKEHOLDERS

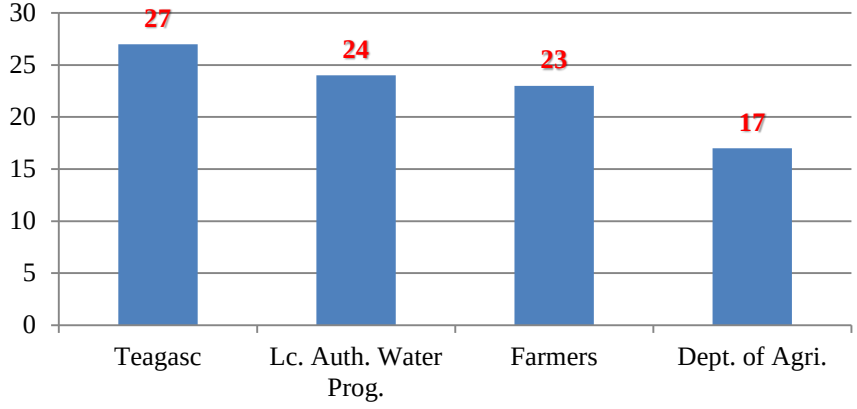
Advisor Group 1



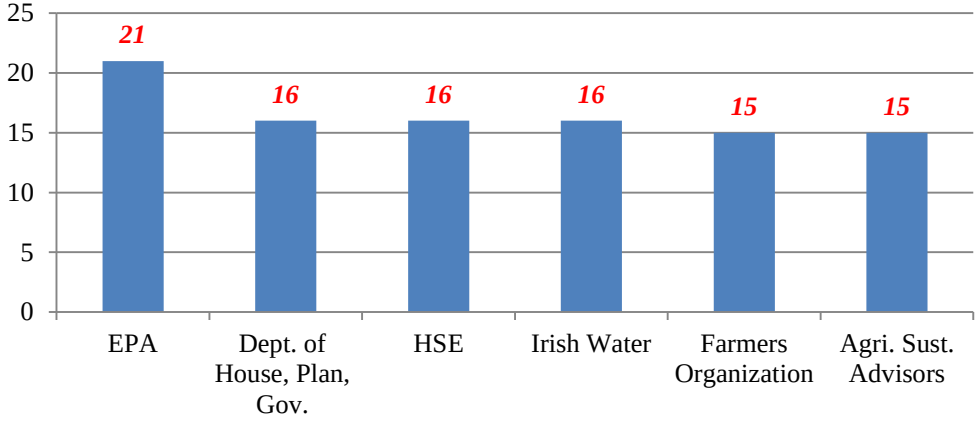
Advisor Group 2



Researcher Group



EU Group



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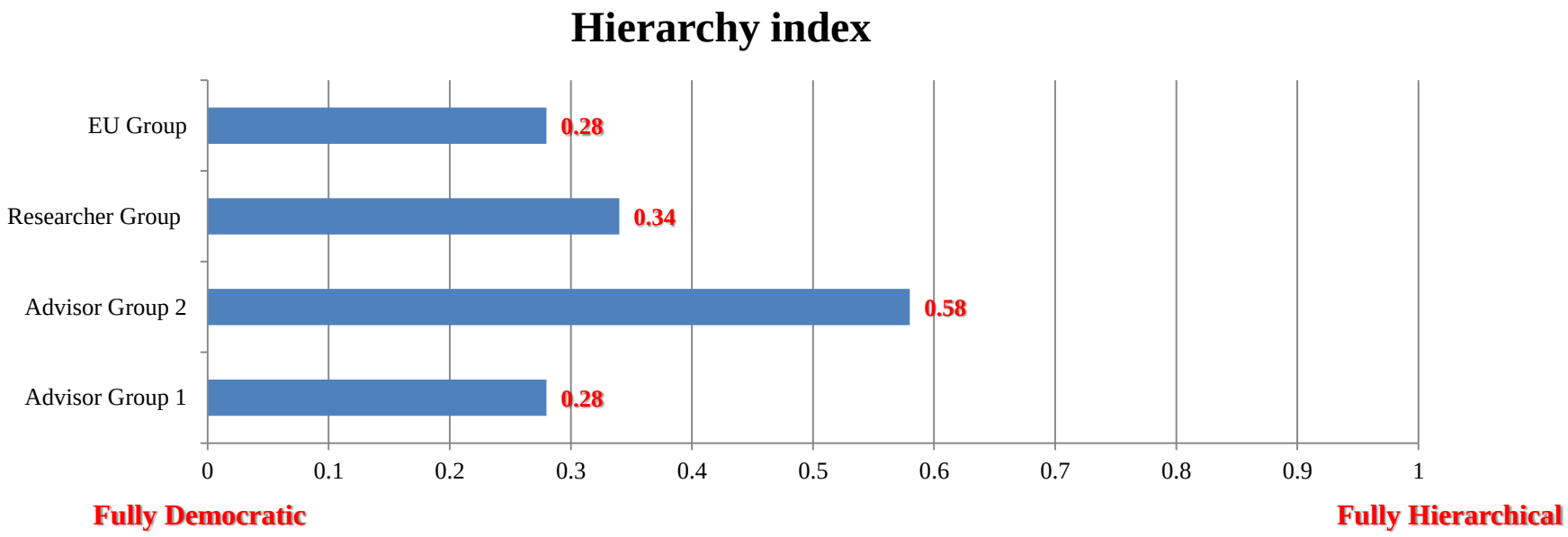
PART I: RESULTS



Most Missing Connections :
NGOs, Individuals

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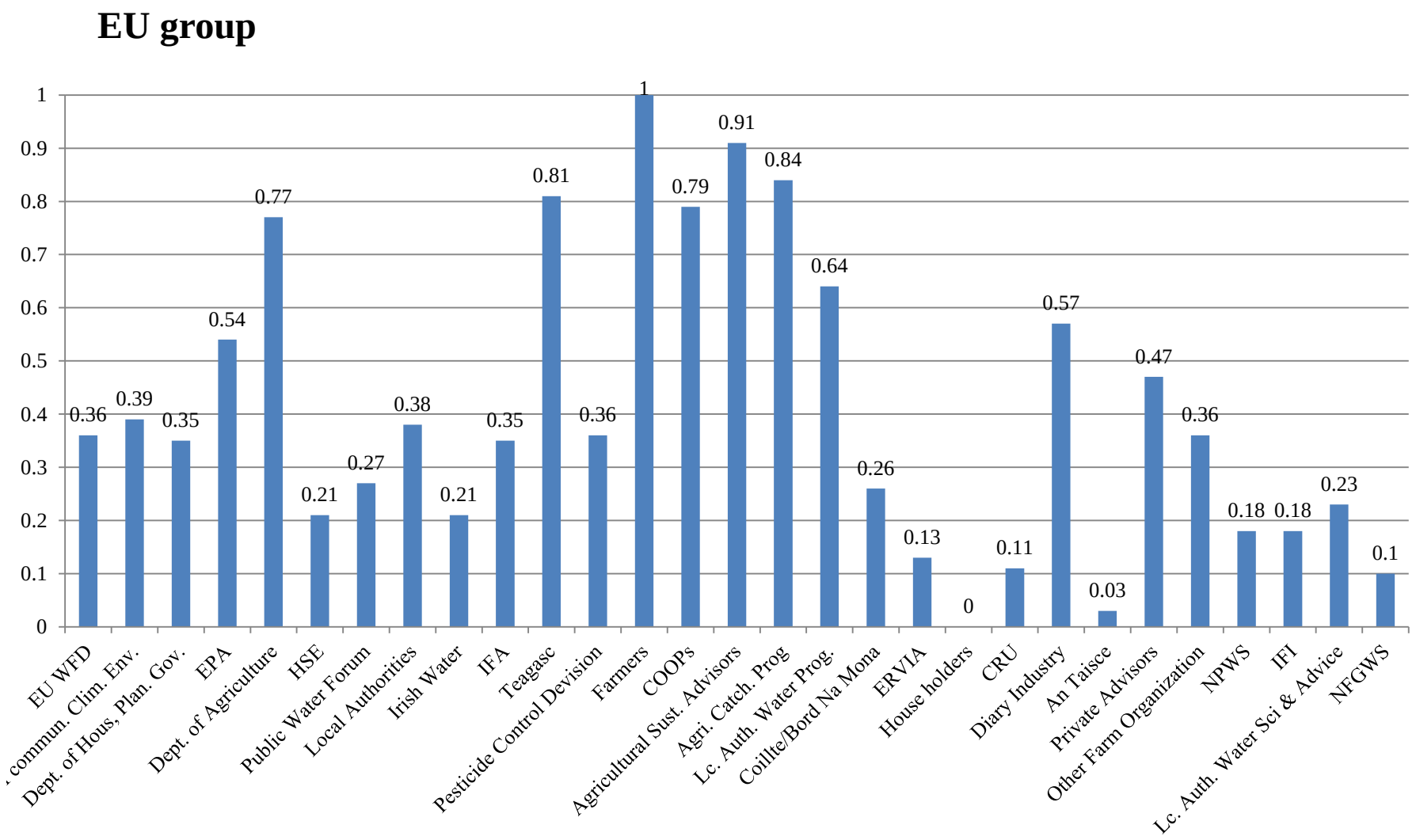
STEADY-STATE CONDITION



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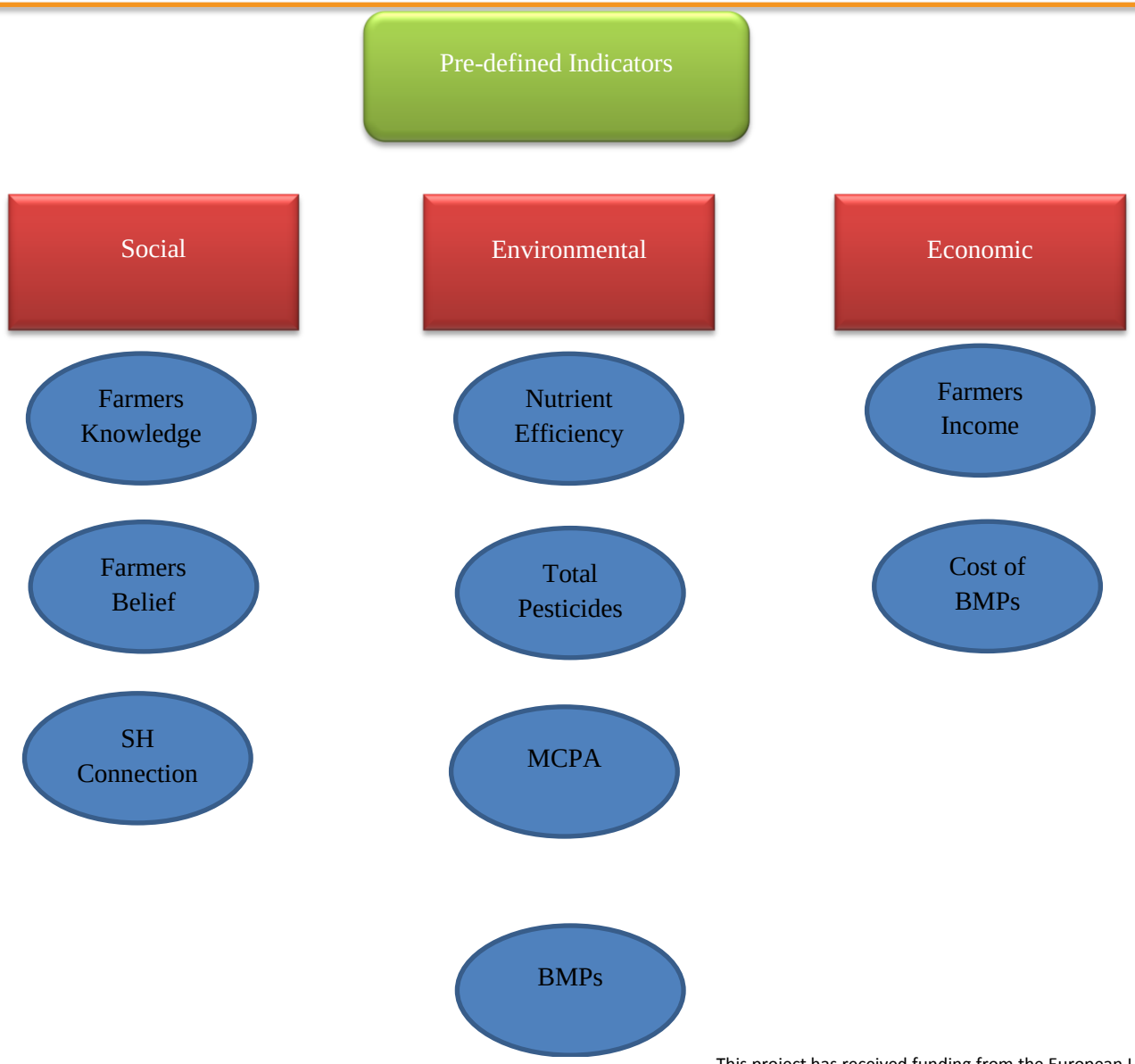
PART II, INDICATORS



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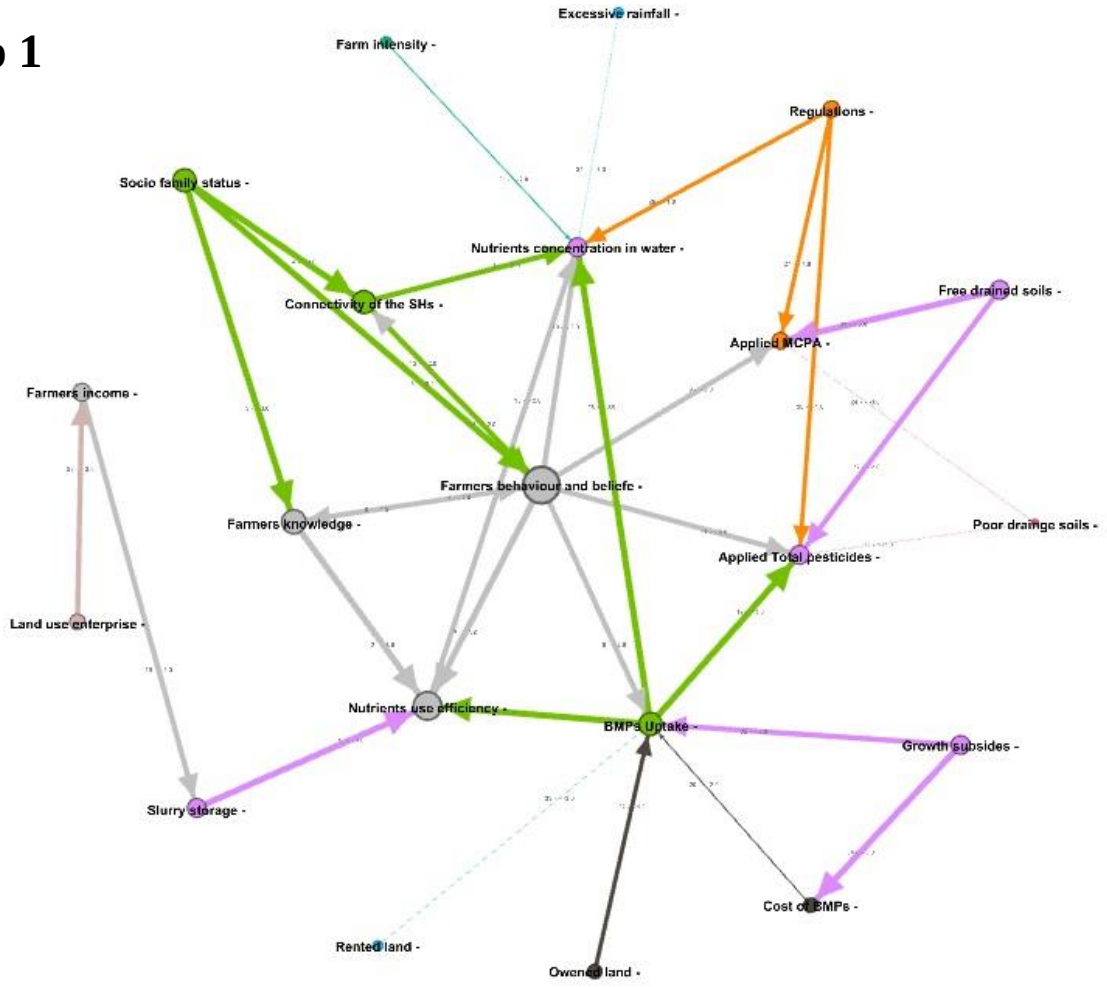
PART II, RESULTS

Advisor group 1



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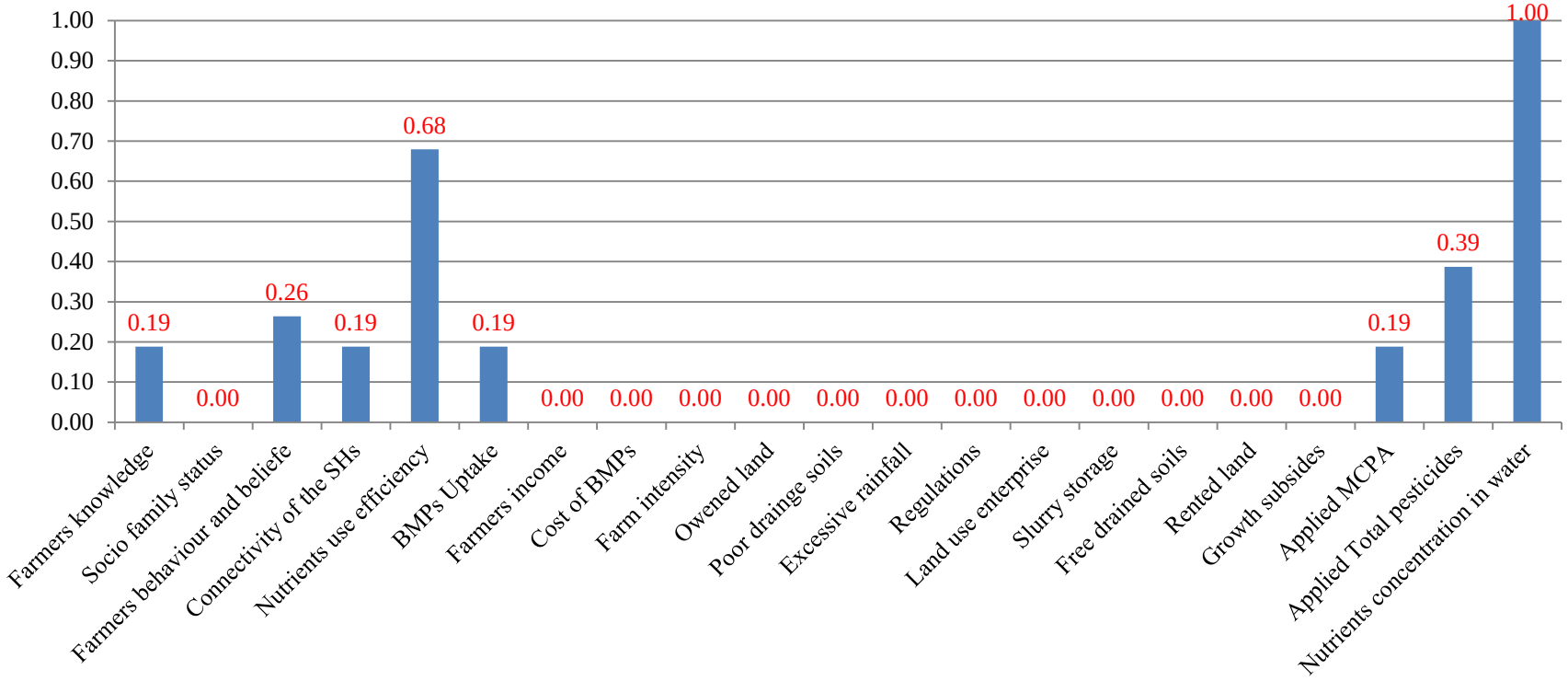
PART II, RESULTS

Advisor group 1



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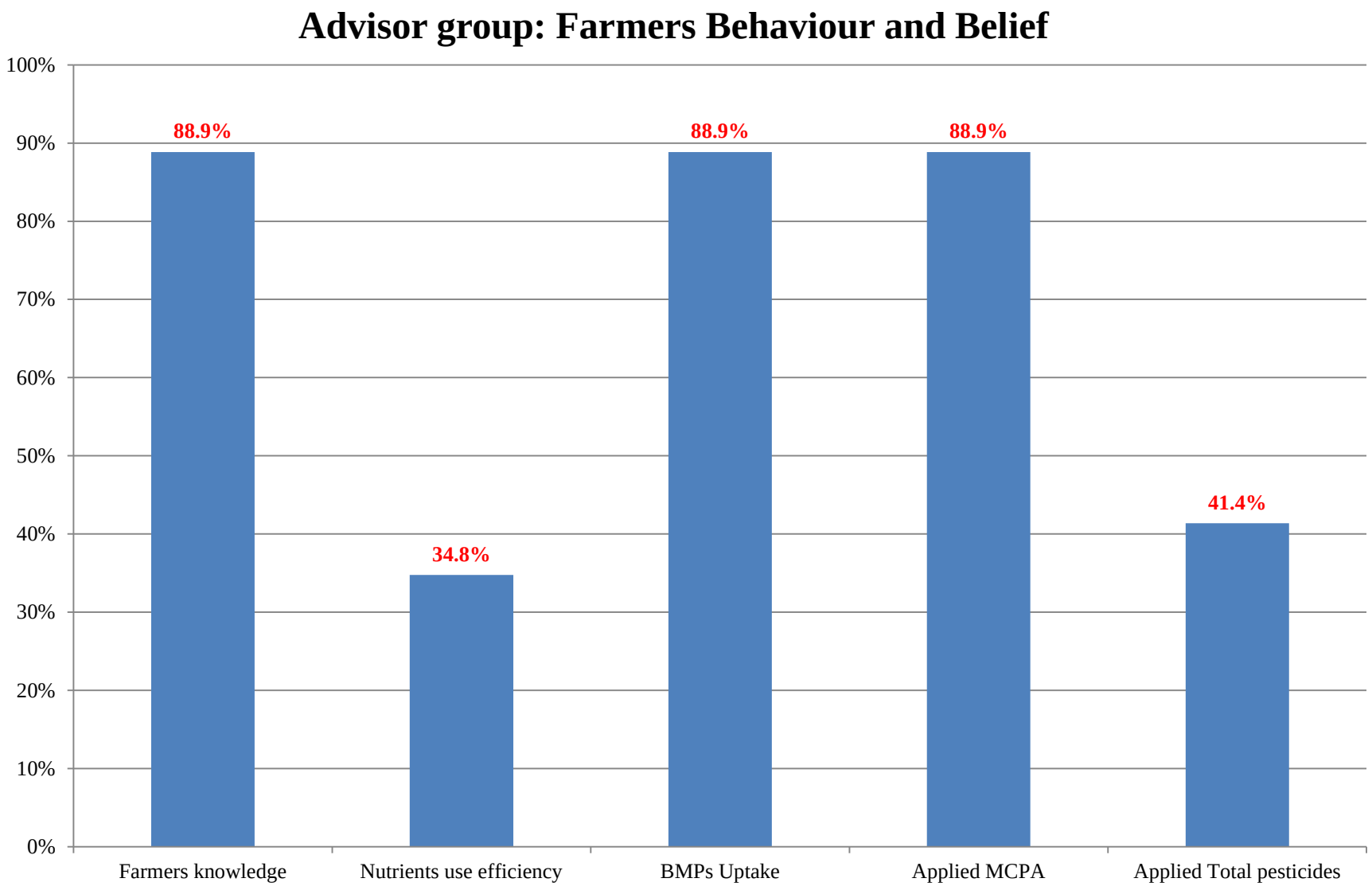
WHAT-IF SCENARIOS



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SUMMARY

- *Engagement of stakeholders highlights some very interesting outcomes:*
- *Their views about the Water Governance in Ireland:*
  i. *The Advisory group 1, researchers and EU have a democratic point of view.*
  ii. *The Advisory group 2 are closer to a hierarchal end.*
  iii. *The NGOs are a "missing" connection within Water Governance in Ireland.*
- *Their views about the indicators affecting the water quality:*
  i. *The pre-defined indicators were chosen as the most important.*
  ii. *Abstract indicators i.e. knowledge and behaviour can be a starting point in scenarios.*
- *Mapping stakeholder perception of the water governance structure and water quality indicators helps us to unlock the "Policy-Science paradigm"*
- *WATERPROTECT has an important role to inform and engage!*

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THANKS AND ANY QUESTION?

For more information:
http://www.water-protect.ie/
http://water-protect.eu/

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