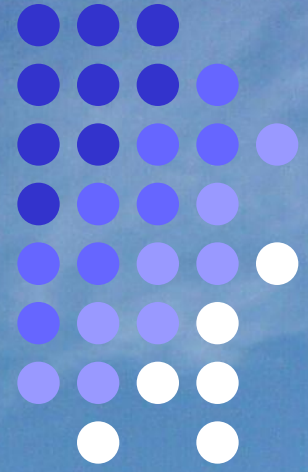


# Grand challenges – a new framework for foresight evaluation?



Effie Amanatidou  
PhD researcher MIOIR –  
Research & Innovation Policy Analyst

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# Aim of the paper

- to examine the role of foresight in accommodating the special needs in dealing with grand challenges; even more, to examine whether special conditions or factors can be set for foresight exercises to be successful in contributing to dealing with grand challenges and in turn to build an evaluation framework based on these conditions.

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# Research questions

- What are the main factors associated with the nature of grand challenges that should attract attention in designing and implementing foresight with the purpose of dealing with grand challenges?
- Accordingly, what should be the special features of a foresight programme in dealing with grand challenges?
- Can an evaluation framework be designed for assessing actual or potential contribution of foresight programmes in dealing with grand societal challenges?



# Outline

- Nature of grand challenges
- Main functions of foresight
- Relevance of foresight impacts with the necessary elements in dealing with grand challenges
- Foresight internal and external factors
- Building a foresight evaluation framework
- Main conclusions and further areas of research.



# Nature of grand challenges

- Examples: environment and climate change, over-exploitation of natural resources, energy and water scarcity, and implications from an ageing population...
- Complex and interrelated requiring a multi-disciplinary approach in finding possible solutions engaging different knowledge bases as well as policy coordination and coherence
- Global nature demanding a multi-actor and multi-level governance approach in finding solutions
- Also opportunities for development calling for an integrated approach in research and innovation
- But cannot be tackled with technological solutions alone, and requiring social changes and responsibility thus promoting concepts like 'transformative and responsible innovation'.



# Nature of grand challenges

- Overall, grand challenges stress the importance of multi-disciplinary research, a multi-actor approach in examining current state of affairs and exploring possible solutions, multi-level governance and policy coordination across geographical boundaries and the numerous affected policy areas, as well as an environment enabling research and innovation generation and exploitation both in science and technology and society.



# Main foresight functions

- Function 1: ‘Informing and directing policy planning’ through extended / improved knowledge and improved capacities in strategic thinking;
- Function 2: ‘Facilitating decision-making and policy implementation’ through platforms for interaction / joint learning and strengthened ties, alignment and mobilisation of actors around shared visions;
- Function 3: ‘Embedding more stakeholders’ views in policy-making’ through increased & more diverse base of actors involved in decision-making.



# Main foresight functions – the ‘informing’ function

Function	Rationale	Key objectives
<p>Informing and directing policy planning through extended / improved knowledge and improved capacities in strategic thinking.</p>	<ul style="list-style-type: none"><li>• Informing funding &amp; investment priorities</li><li>• Eliciting research and innovation agendas</li><li>• Reorienting science and innovation systems</li><li>• Benchmarking national science and innovation systems</li><li>• Raising the profile of science and innovation to attract investments</li><li>• Providing anticipatory intelligence to system actors</li><li>• Increasing understanding about the future</li><li>• Informing policy and public debates</li></ul>	<p>Extending breadth of knowledge about future, supplying strategic anticipatory intelligence, building capacity and framing knowledge into policy-support.</p>





# Main foresight functions – the ‘facilitating’ function

Function	Rationale	Key objectives
Facilitating decision-making and policy implementation through platforms for interaction / joint learning and strengthened ties, alignment and mobilisation of actors around shared visions.	<ul style="list-style-type: none"><li>•Building networks / coalitions around shared problems</li><li>•Building trust among actors unused to working together</li><li>•Aiding collaboration across administrative / epistemic boundaries</li><li>•Highlighting inter-disciplinary opportunities</li><li>•Changing mindsets about the future</li><li>•Building future visions to help system actors chose develop. paths</li><li>•Enabling informed buy-in to decision-making processes</li></ul>	Collective knowledge creation and learning, aligning and mobilising actors around shared visions, strengthening inter-actors’ relations, and nurturing a foresight culture.

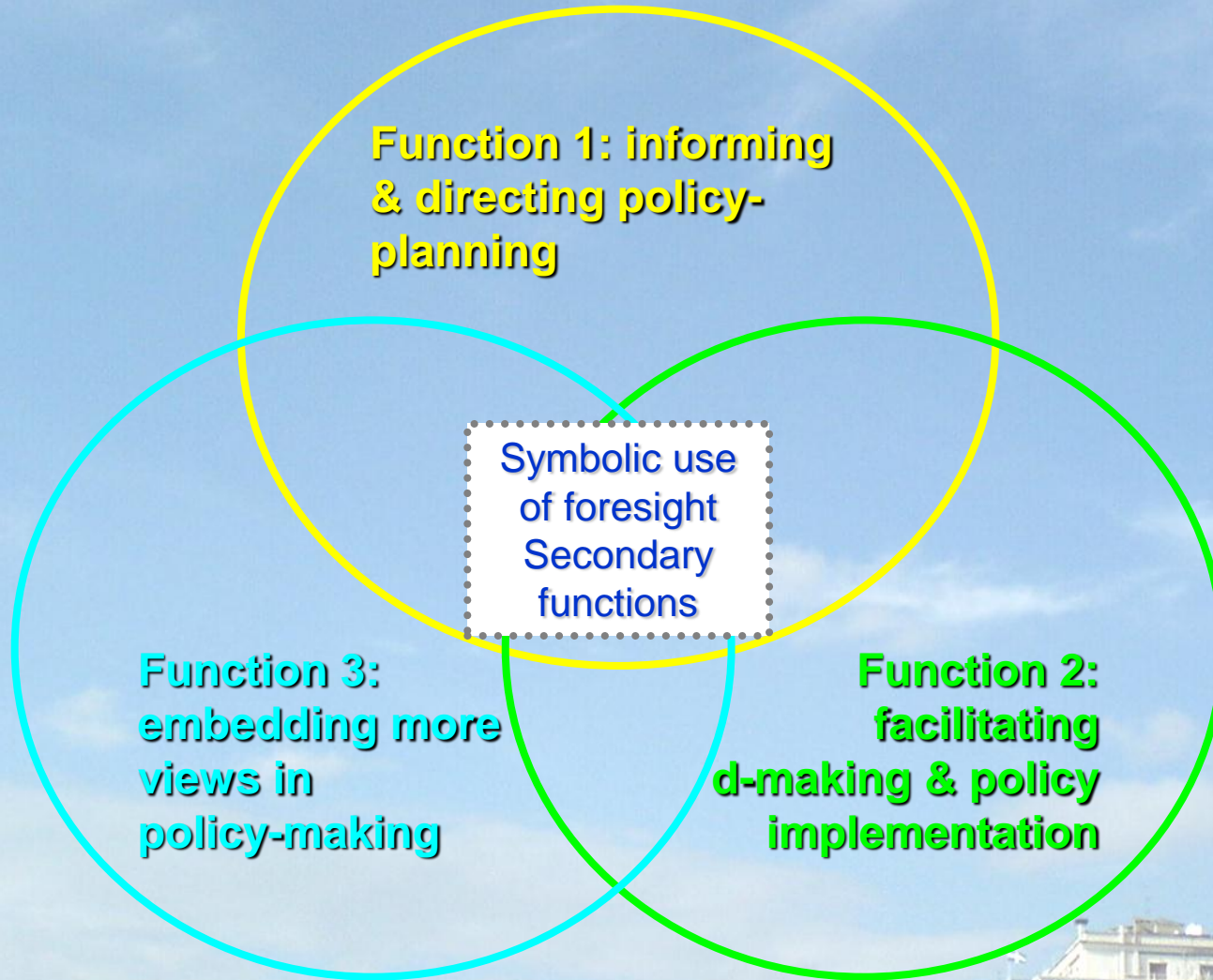


# Main foresight functions – the ‘embedding’ function

Function	Rationale	Key objectives
Embedding more stakeholders’ views in policy-making through increased & more diverse base of actors involved in decision-making.	<ul style="list-style-type: none"><li>•Increasing number / involvement of system actors</li><li>•Extending range of types of actors in decision-making</li></ul>	Bringing new actors in strategic debate, providing social forums for strategic reflection, debate and action and improving governance by supporting inclusiveness, transparency and legitimacy.



# Interrelation of functions



# Relevance of F impacts to GC

Foresight functions	Impact types	Grand challenges needs
<p>Informing and directing policy planning through extended / improved knowledge and improved capacities in strategic thinking.</p>	<p>Improved knowledge base about future            Framing knowledge into policy support            Capacity building</p>	<p>Multi-disciplinary approach in research and exploring possible solutions</p>
<p>Facilitating decision-making and policy implementation through platforms for interaction / joint learning and strengthened ties, alignment and mobilisation of actors around shared visions.</p>	<p>Collective learning and knowledge creation            Foresight culture development            Improved decision/policy-making            Improved system actors and inter-actor relations            Improved policy systems</p>	<p>Multi-actor approach;            Multi-level governance;            Policy coordination;            Research and innovation generation &amp; exploitation</p>
<p>Embedding more stakeholders' views in policy-making through increased &amp; more diverse base of actors involved in decision-making.</p>	<p>Strengthened role of society in public policy-making:            Improved governance with open and transparent procedures</p>	<p>Social changes and innovations            More participatory governance</p>



# Factors affecting F success

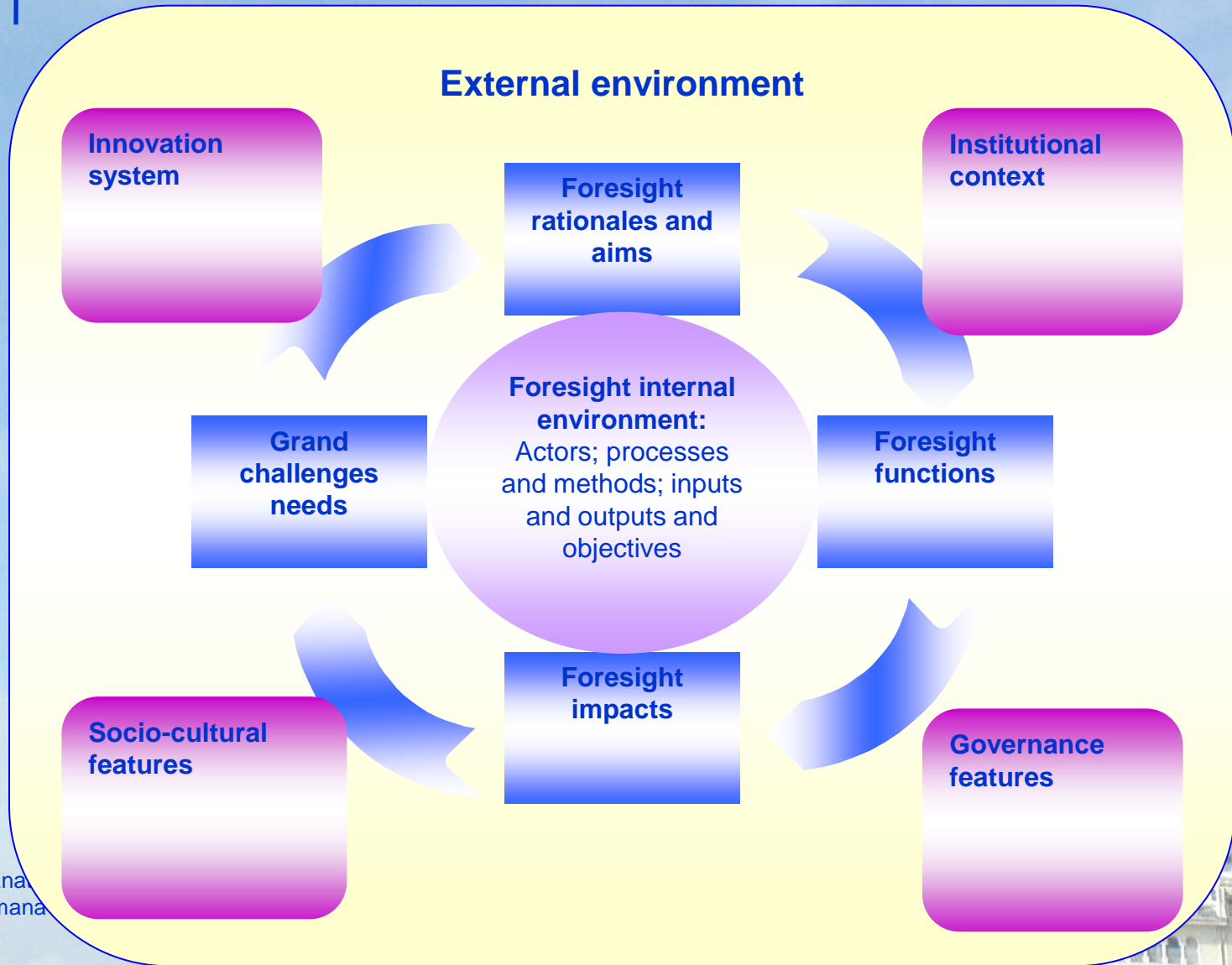
- Internal foresight factors (APIO)
  - ‘actors’,
  - ‘processes and methods’,
  - ‘inputs and outputs’, and
  - ‘objectives’
- External foresight factors (ISSOG)
  - ‘institutional context’,
  - ‘structures and state of innovation systems,
  - ‘socio-cultural’, and
  - ‘governance’ features



# Building the F evaluation framework - assumptions

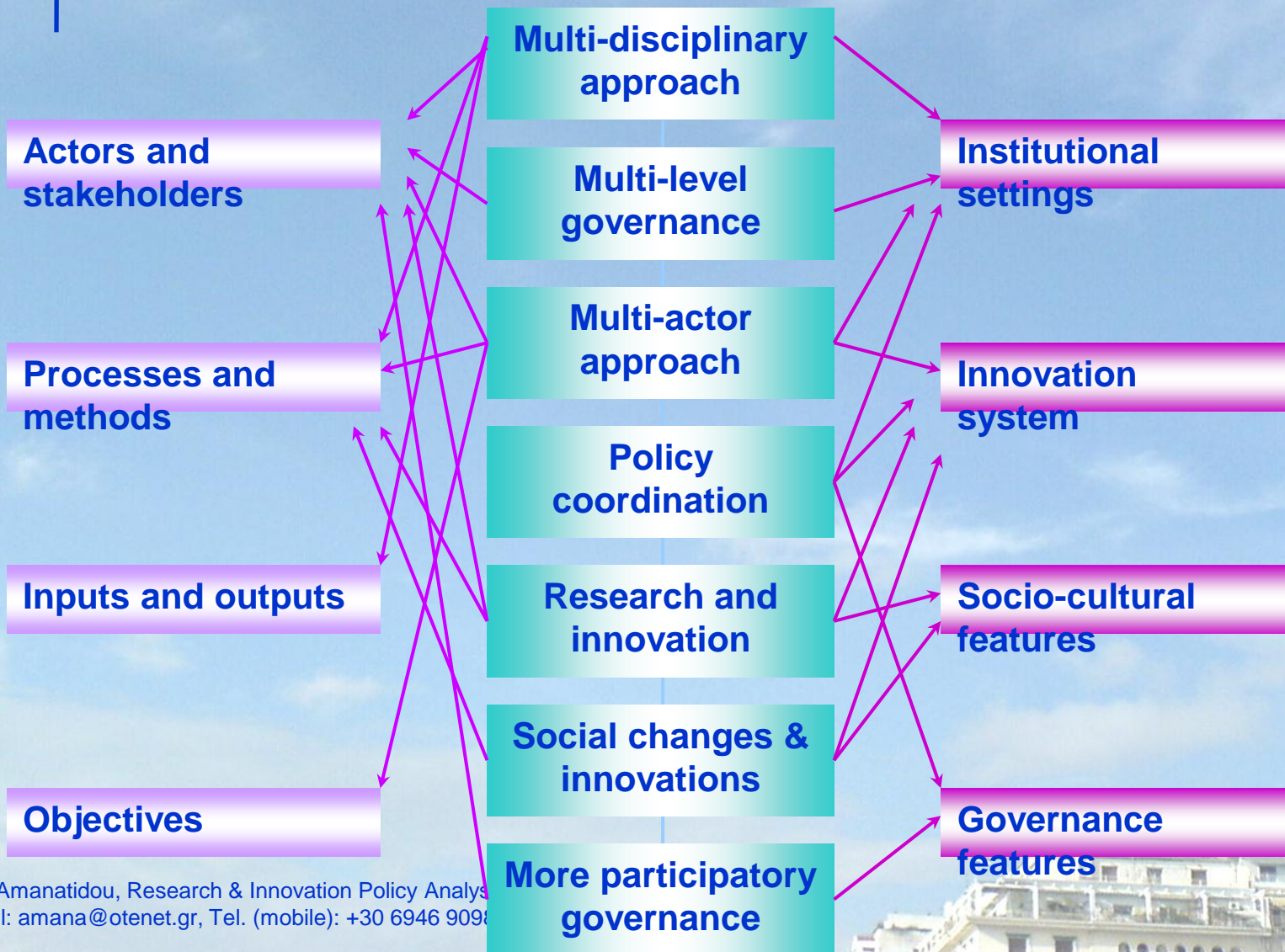
- The evaluation approach is set by the following assumptions:
  - The possible foresight contributions / impacts to dealing with grand challenges presuppose certain foresight rationales and functions;
  - The special needs of grand challenges translate into special foresight internal and external factors;
  - These factors can be turned into specific principles against which foresight exercises can be assessed.

# The F evaluation framework – to fill in...





# Building the F evaluation framework – factors vs. GC







# Building the F evaluation framework – F principles

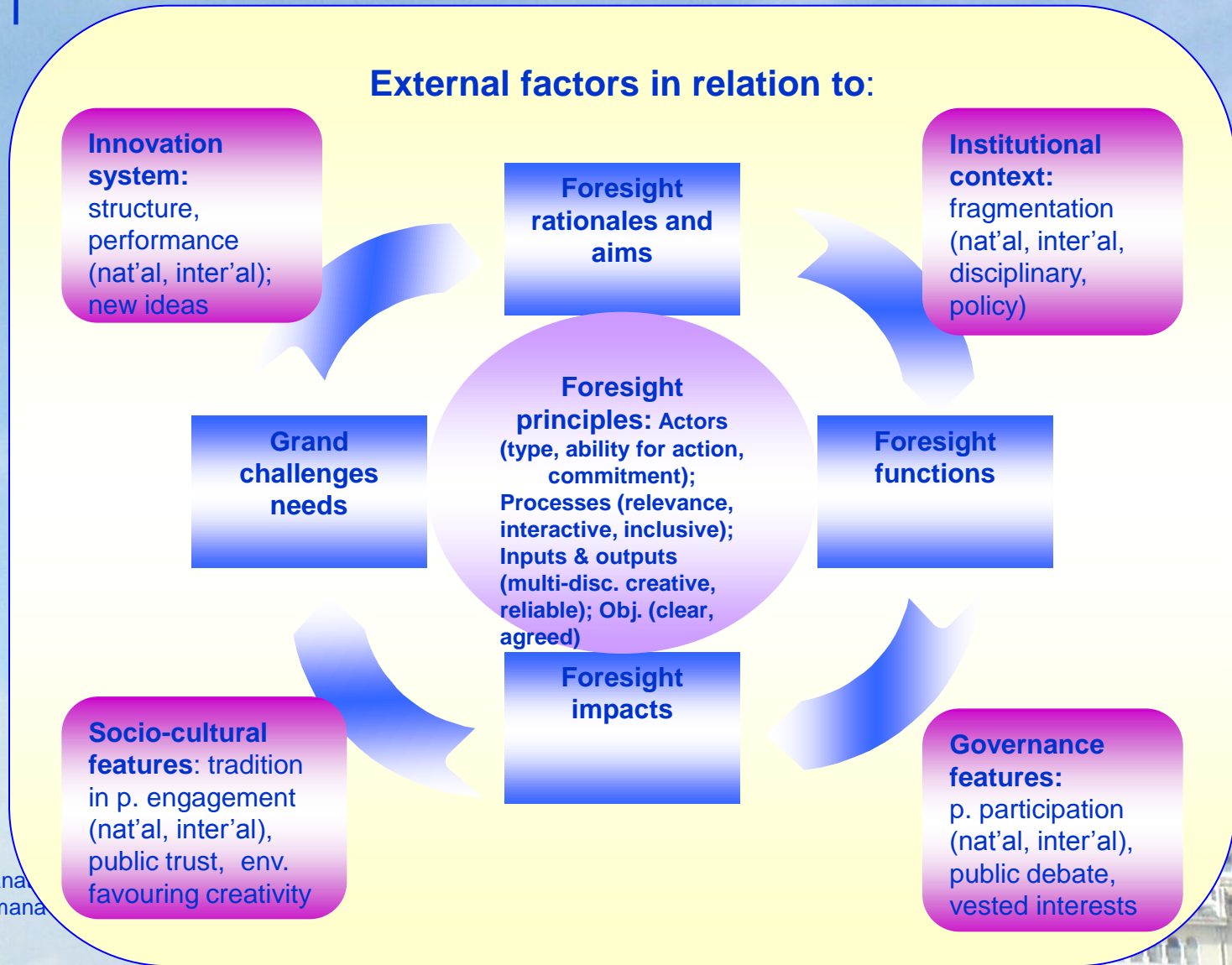
• Foresight internal factors / principles	• Foresight external factors
<ul style="list-style-type: none"><li>• Actors:<ol style="list-style-type: none"><li>1. Relevance of types of actors to the nature of grand challenge (international, national, ability to take action);</li><li>2. Degree of high-level political support/commitment at national / international levels;</li><li>3. Fragmentation of participating institutions at the national / international levels.</li></ol></li></ul>	<ul style="list-style-type: none"><li>• Institutional context<ol style="list-style-type: none"><li>1. Inter-institutional configurational relations; fragmentation among institutions in policy system at national / international levels.</li></ol></li></ul>
<ul style="list-style-type: none"><li>• Processes &amp; Methods<ol style="list-style-type: none"><li>1. Accordance/ relevance to problems, objectives and special features of grand challenge;</li><li>2. Degree methods draw on experience/expertise/creativity/interactions;</li><li>3. Transparency, openness and inclusiveness of processes.</li></ol></li></ul>	<ul style="list-style-type: none"><li>• Structures / state of innovation system<ol style="list-style-type: none"><li>1. Type / state of innovation system and performance at national / international levels;</li><li>2. Promotion of new ideas and experiments on political agendas at national / international levels.</li></ol></li></ul>



# Building the F evaluation framework – F principles

•Foresight internal factors / principles	•Foresight external factors
<ul style="list-style-type: none"><li>• Inputs &amp; Outputs</li><li>1. Scientific rigor, reliability, multi-disciplinarity, creativity richness of perspectives;</li></ul>	<ul style="list-style-type: none"><li>• Socio-cultural context</li><li>1. Tradition (type and extent) of public engagement in relevant processes at national / international levels;</li><li>2. Degree of public trust in national / international institutions;</li><li>3. Culture encouraging creativity/innovation;</li></ul>
<ul style="list-style-type: none"><li>• Objectives &amp; Background</li><li>1. Clear, non-divergent objectives; clear communication of objectives;</li></ul>	<ul style="list-style-type: none"><li>• Governance</li><li>1. Degree governance promotes public participation at national / international levels;</li><li>2. Public awareness on issues examined and style of debate; role of 'vested interests';</li></ul>

# The F evaluation framework – filled in





# The F evaluation framework – evaluation issues

- Behavioural additionality
- Cognitive capacity additionality

*The former can address any changes in the behaviour of agents caused by foresight performance either during or after the programme ends, thus enabling examination of anticipated impacts that may appear in the long-run. The latter directly links with the value of knowledge in terms of the social configurations responsible for producing and using it and also in terms of the multi-disciplinarity needed for dealing with grand challenges*



# Conclusions

- A special evaluation framework can be designed to assess the contribution of foresight in dealing with grand challenges. This can be done by establishing the relevance of foresight roles and functions and consequent impacts to grand challenges and by translating the special requirements in addressing grand challenges into specific evaluation criteria based on the internal and external factors influencing foresight exercises.
- From the evaluation issues usually applied in foresight evaluation, behavioural and cognitive capacity additionality seem to be particularly relevant in dealing with grand challenges.



# Areas for further research

- The special features of grand challenges to understand individual nature and inter-relatedness and inform evaluation framework.
- The role that foresight could play in EU and national initiatives dealing with GC - it is mainly the 'informing' function that is currently being addressed.
- How foresight can contribute to identifying actors and setting suitable mechanisms and structures for enabling cross-national responses to GC. Evaluating the 'structuring' role of foresight a worthwhile challenge.



- Thank you for your attention!

[amana@otenet.gr](mailto:amana@otenet.gr)