Engineering the POlicy-making LIfe CYcle

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cress

Project Overview

- Objective ICT-2011.5.6 target ICT solutions for Governance and Policy Modeling
- Start October 2011, Duration 36 Months

Project Background

- EU directive 20-20-20: objective for 2020
  - 20% reduction of CO_2 emissions (from 1990 levels)
  - 20% energy comes from renewable resources
  - 20% improvement in the EU's energy efficiency

Renewable energy requirement

- Total requirement for 2013: 177 kTOE (Tonnes of Oil Equivalent) of electrical energy from renewable sources

Project Partners

No.	Name	Country	Main skills
1	ALMA MATER STUDIORUM Università di Bologna (UNIBO)	ITALY	Hybrid Optimization techniques, constraint and integer programming meta-heuristics
2	University College Cork	IRELAND	Policy modelling, game theory and mechanism design
3	The University of Surrey	UK	Social Simulation, policy modelling, data analysis
4	Universidade do Porto	PORTUGAL	Machine Learning and Logic Programming
5	Fraunhofer Institute for Computer Graphics Research	GERMANY	Information visualisation and visual analytics (interactive and semantics-based visualisation of decision-critical information)
6	Regione Emilia Romagna	ITALY	Policy developer, e-participation promoter
7	PPA-Energy	UK	Technological and economical advice in the electricity sector
8	ASTER	ITALY	technology transfer, research results dissemination
9	Università di Ferrara	ITALY	Multi-objective optimization statistical learning

Project Policy Question

What should we do in order to produce a defined amount of energy with the best social, economic, environmental impact involved?

Vision

- To support policy makers in their decision process across a multi-disciplinary effort aimed at the **engineering of a policy making life-cycle** that **integrates, in a unique way, global and individual perspectives** on the decision process.

- To **evaluate the economic, social and environmental impacts during policy making** (at both the global and individual levels).

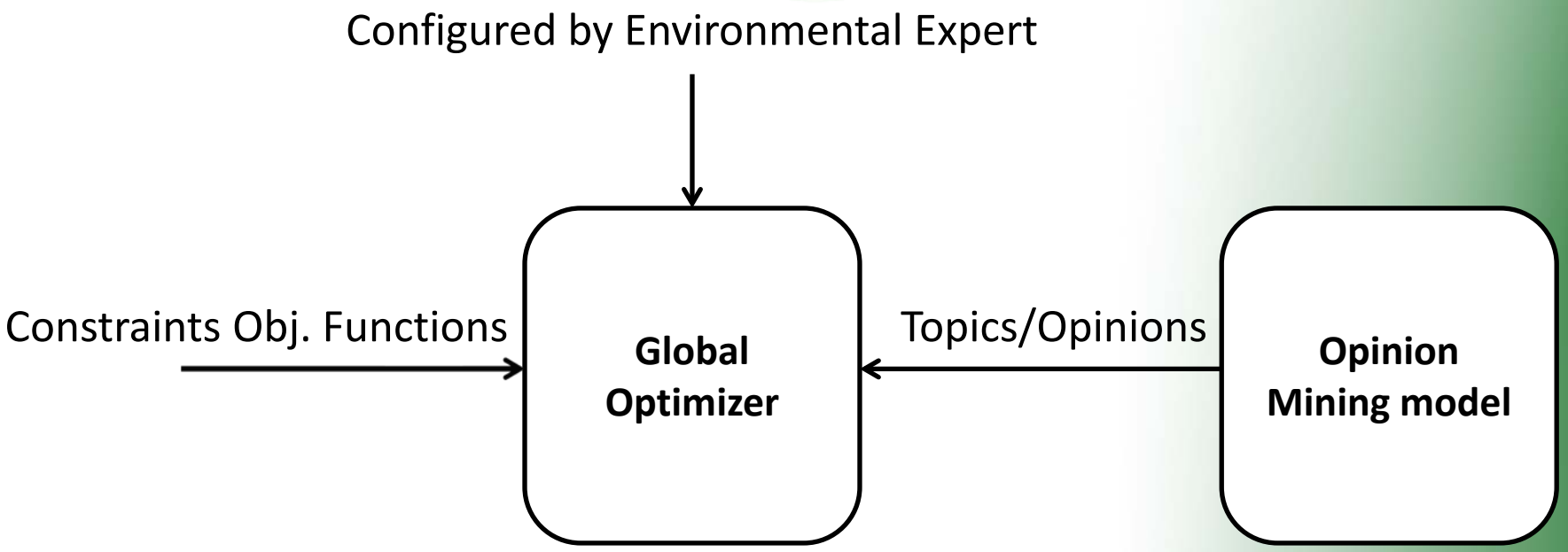
- To **derive social impacts** through **opinion mining** on **e-participation data**

- To **aid the policy maker, citizens and stakeholders with visualization tools**

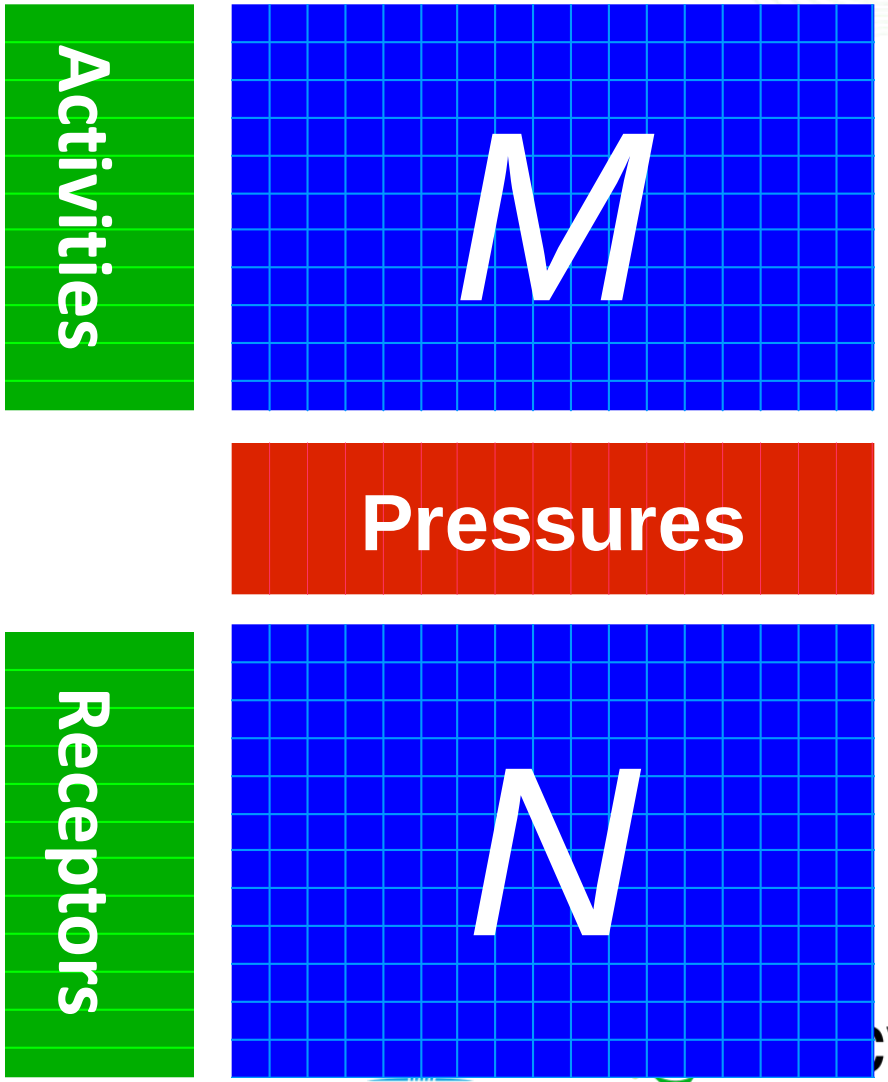
The General Methodology

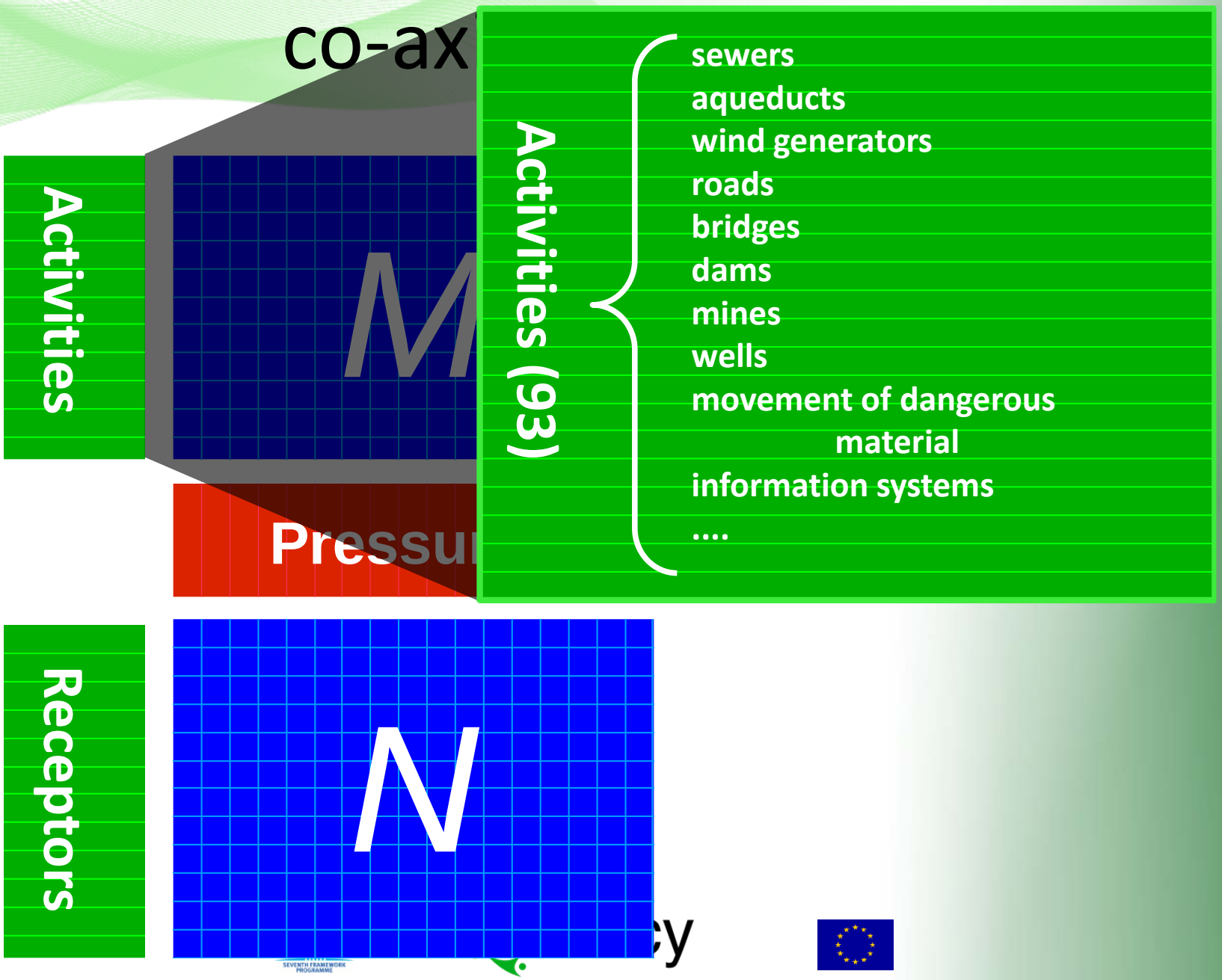
- 5 different components:
  1. Global Optimization
  2. Opinion Mining
  3. Game Theory / Mechanism Design
  4. Social Simulation
  5. Visualization
- Demonstration how different components can contribute together to answer the common question
- Discussion what different assumptions are made by different approaches/components

The General Methodology



co-axial matrices

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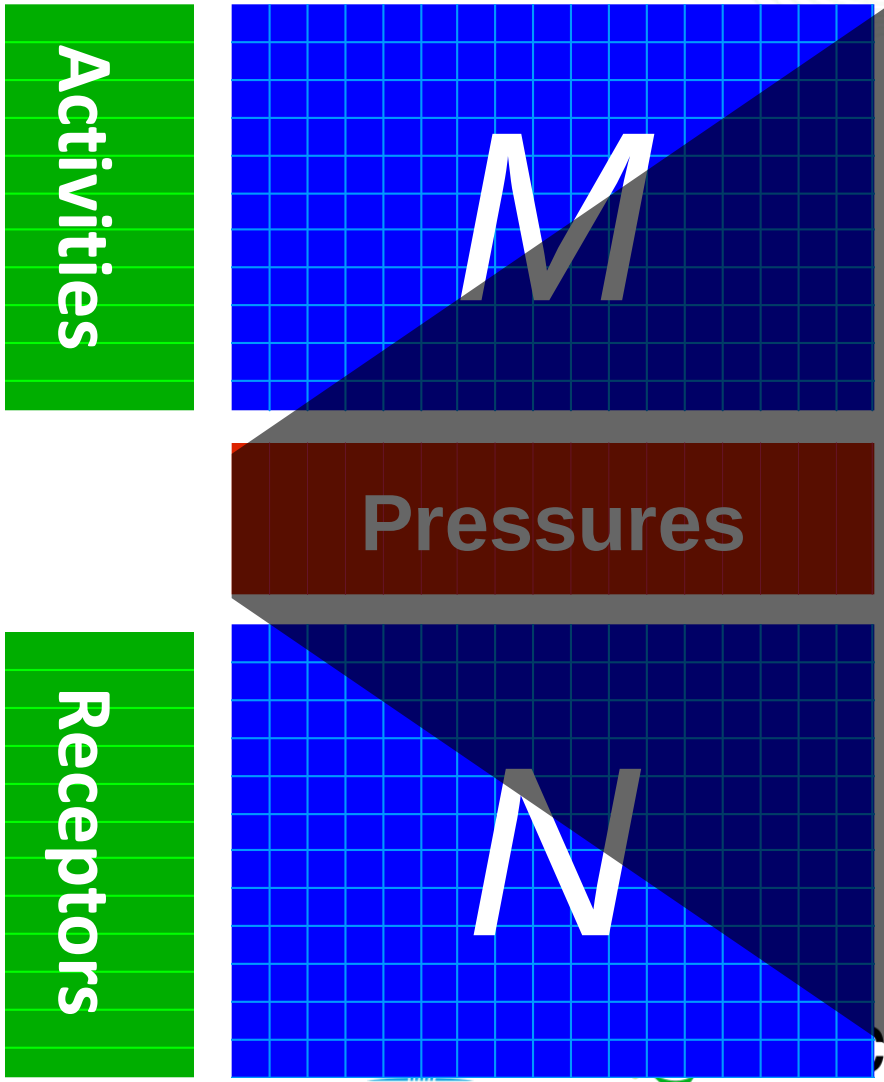
co-axial matrices



Pressures

NEGATIVE: (29)

energy consumption
water consumption
modification of water flows
dispersion of dangerous material
production of waste
prod. smells
prod. noise
prod. electromagnetic fields
risk of accidents
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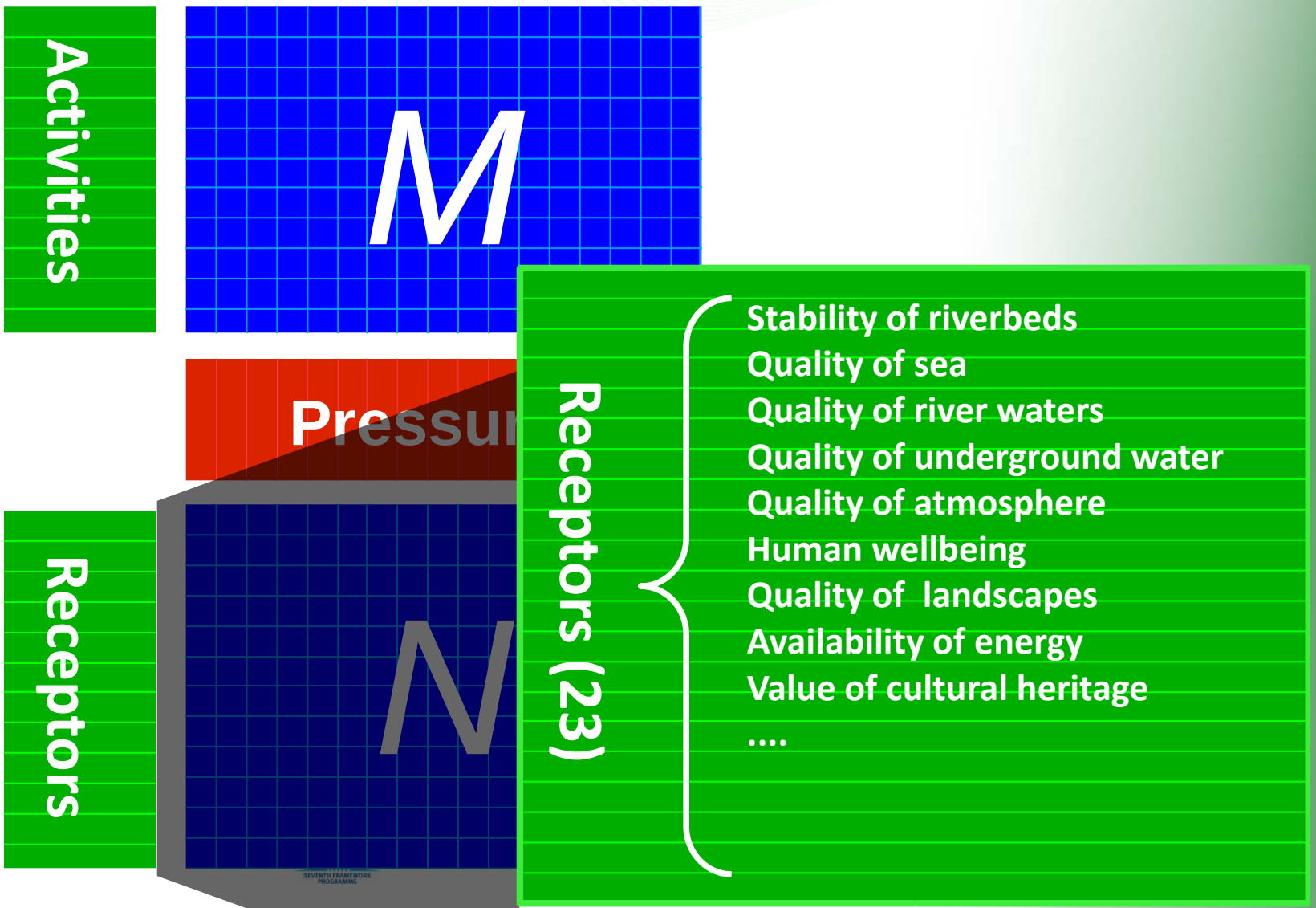
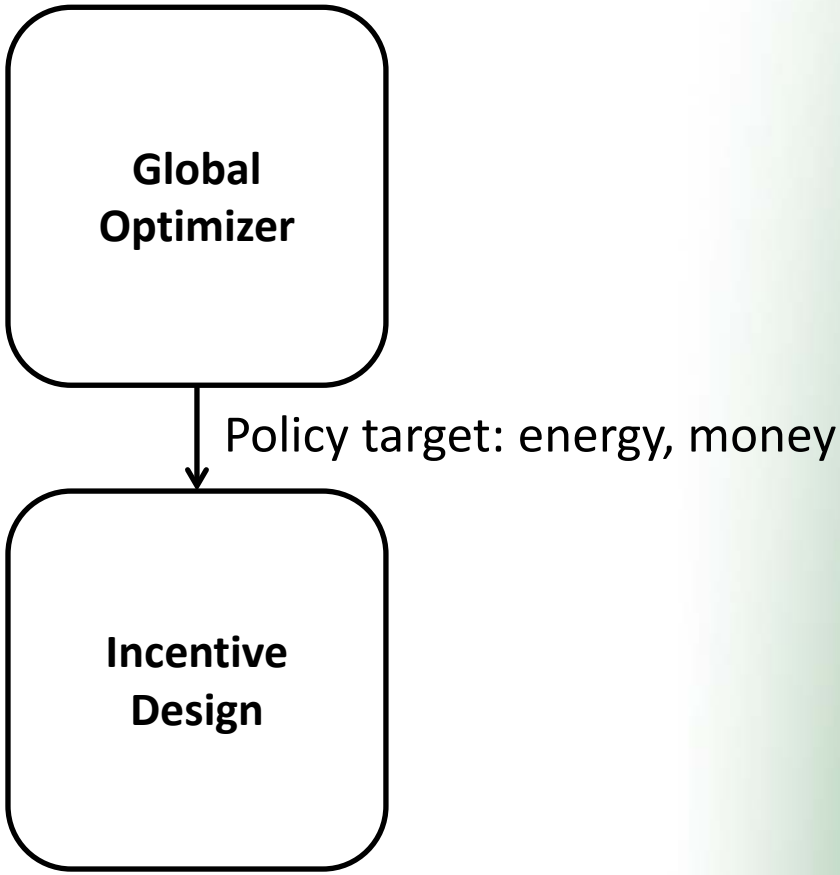
POSITIVE: (19)

creation of work opportunities
reduction of pollution
creation of new ecosystems
savings of natural resources
...

co-axial matrices



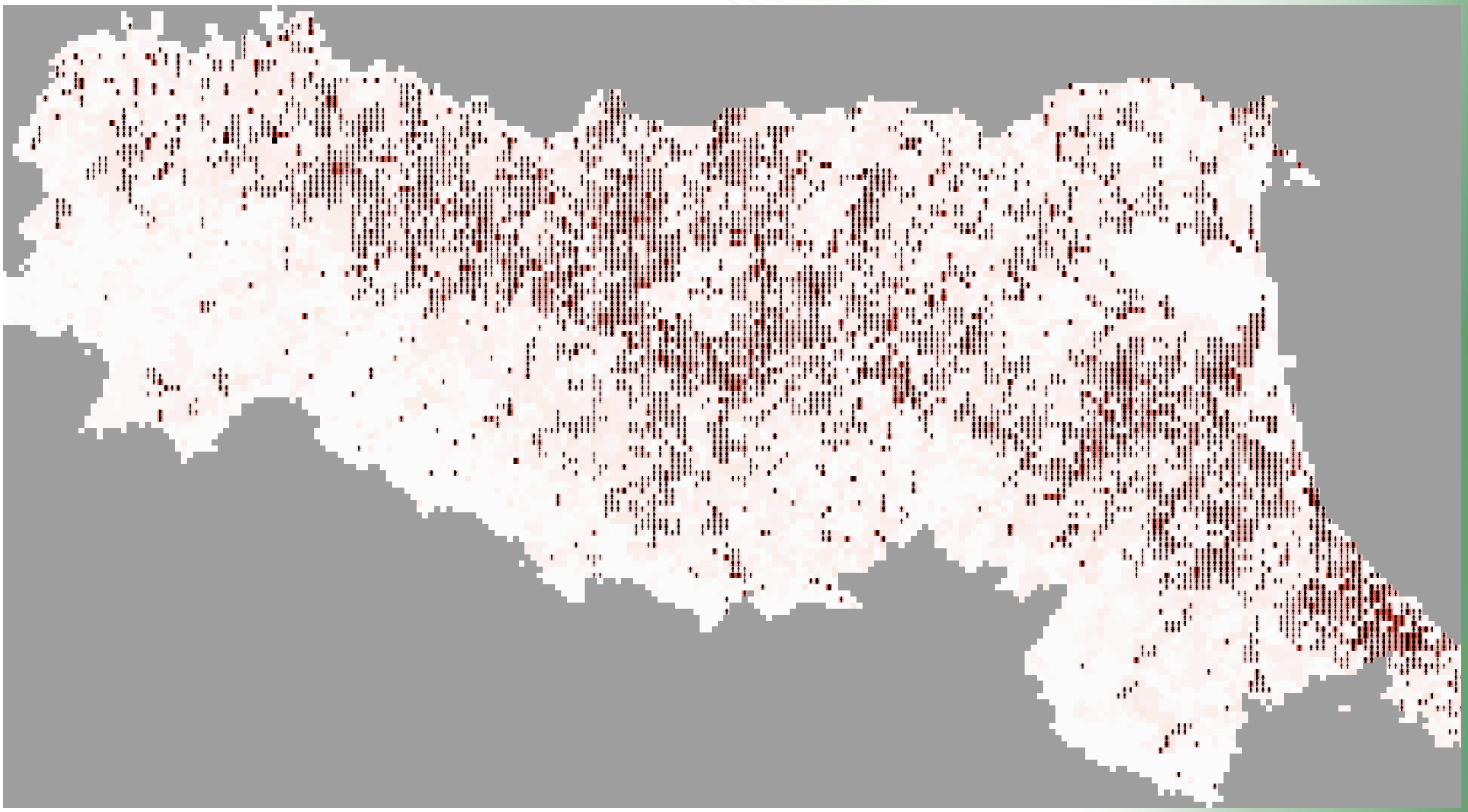
The General Methodology



Individual PV adoption criteria

- Location and housing situation influences the PV decision
- Financial issues affect the PV decision, and also act as restrictive element
- Other main parameters affecting the PV decision (Jager2006):
  - identity (environmental sensitivity)
  - feeling of belongingness to a group
  - feeling of freedom
  - trust in the government and future
  - perceived bureaucracy
  - awareness

Results so far…



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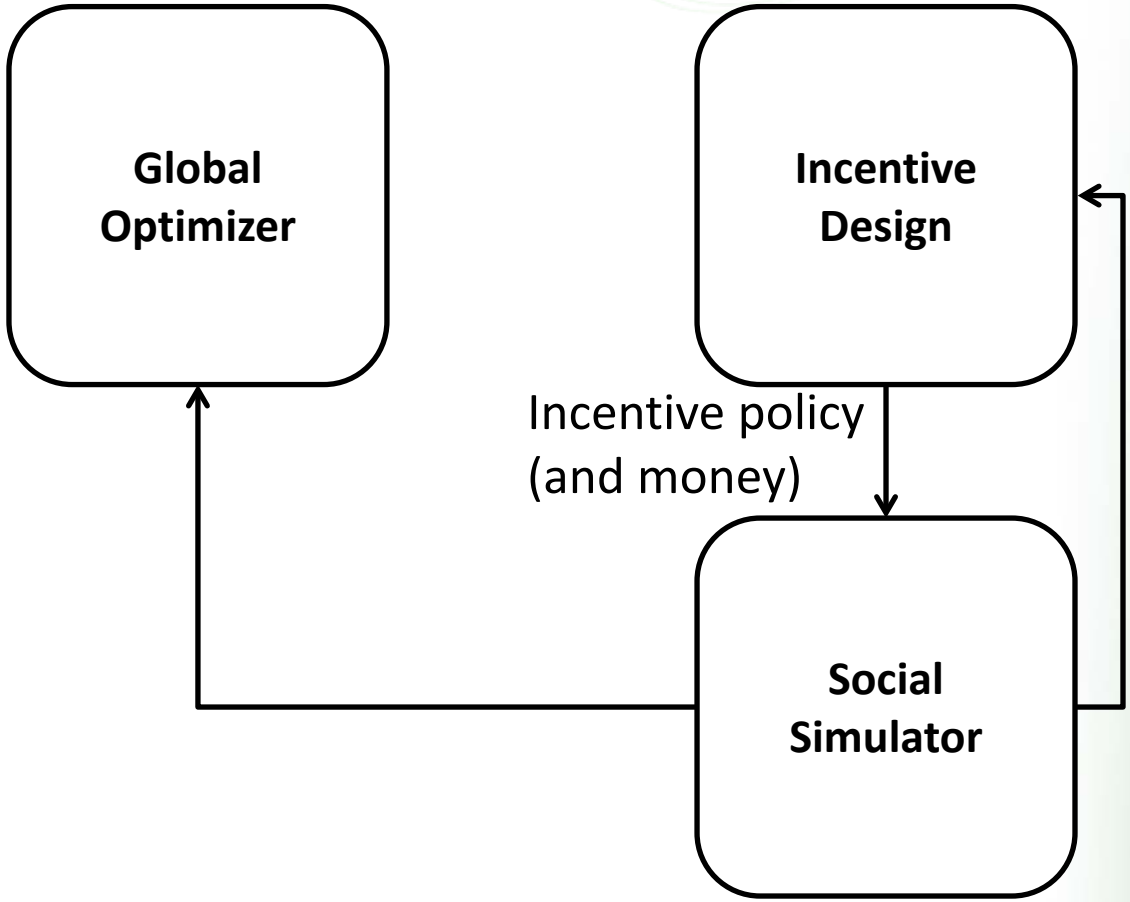

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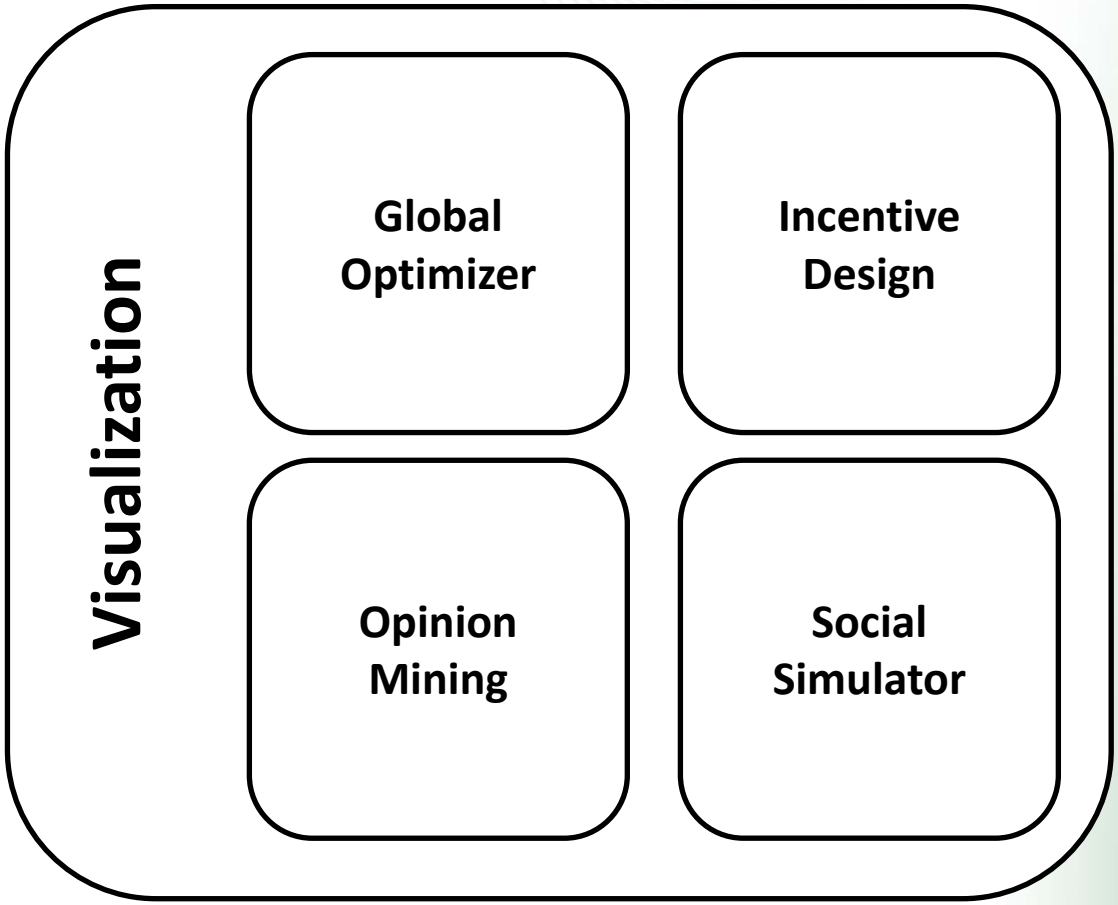

Further Research

- Questionnaire to gather opinions on photovoltaic: http://questionario.epolicy-project.eu/
- Interviews with photovoltaic panel installers
- PhD dissertation (Daan Kolkman): “The development and use of computational models in public sector policy-making“

Related projects in Cress

- **GLODERS**: The Global Dynamics of Extortion Racket Systems (c.elsenbroich@surrey.ac.uk)
- **WholeSEM**: Whole Systems Energy Modelling Consortium (n.gilbert@surrey.ac.uk)
- **TellMe**: Transparent communication in Epidemics: Learning Lessons from experience, delivering effective Messages, providing Evidence (j.badham@surrey.ac.uk)
- **ERIE**: Evolution and Resilience of Industrial Ecosystems (n.gilbert@surrey.ac.uk)

Any questions?

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