



4th Doctoral Conference of the PhD in Technology Assessment

The role of indicators in technology decisions in innovation processes: A new case study

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1. Objective of the presentation

To explain the need for a second case study to my PhD thesis.

2. PhD Thesis context

- Aim of the thesis: To understand the role of indicators and scientific evidences in technology decisions taken in innovation processes.
- Most relevant *types of technology* decisions during innovation:
 - acquire equipment or a specific technology.
 - develop a product or a specific technology.
 - buy property rights.
 - • design of technology policies (programs, measures, actions, projects, etc.).

2. PhD Thesis context

- Most relevant *innovation actors*:

- Business R&D&I leaders: Business researchers normally in charge of R&D projects or Innovation departments in companies.
- Researchers: Public researchers, academics, and Health related R&D leaders of projects.
- • Policy makers: Representatives or officials involved in innovation policy making.

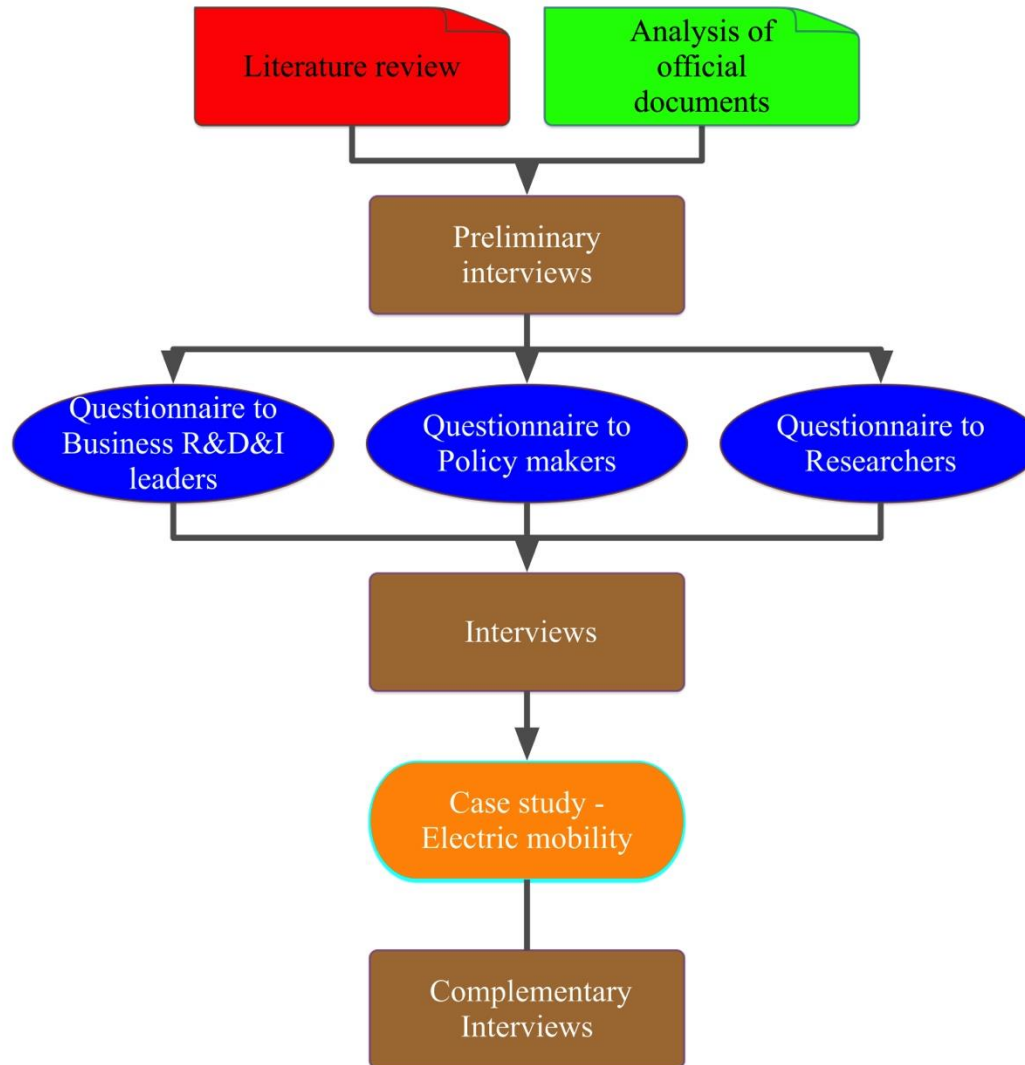
- Research questions:

Q1: Are indicators used in technology decisions in innovation processes?

Q2: Are indicators influential in technology decisions in innovation processes?

→ Q3: How are indicators used in technology decisions in innovation processes?

3. Methodology



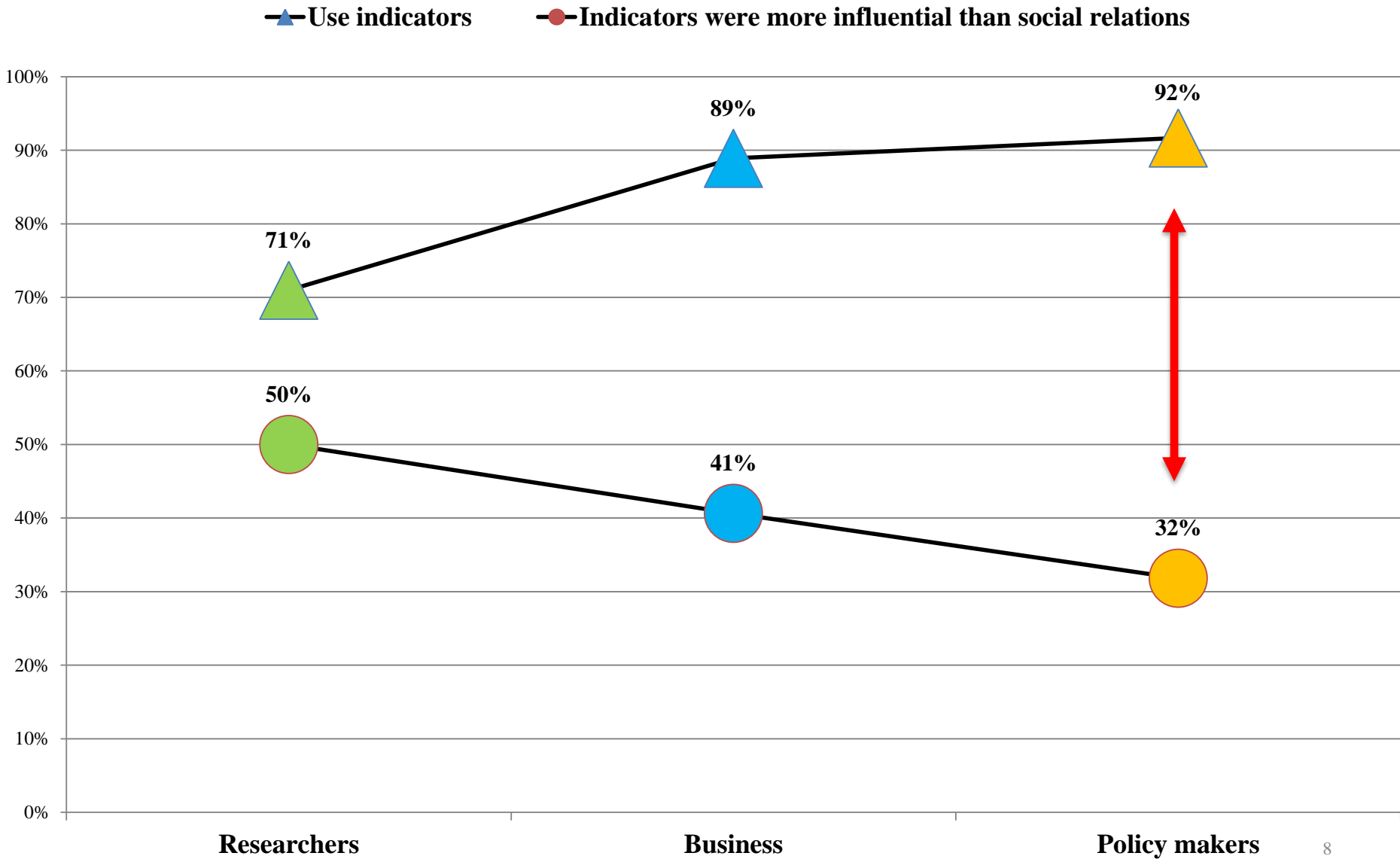
3. Methodology

- Include one case study targeting mostly policy makers because literature warned about the complexities of innovation policy making, using:
 - Metaphors: the *Innovation Policy Dance* between innovation practice, public intervention and theory (Kuhlmann et al 2010), or
 - Expressions of complexity:
 - *muddling through* (Lindblom 1979) or
 - *black box* of decision making (Strassheim and Kettunen, 2014).
- The case study addressed the Portuguese Electric Mobility Programme named Mobi-E because:
 1. Included interactions between policy makers and companies
 2. A small number of actors involved.
 3. High visibility of policy
 4. It was never studied.

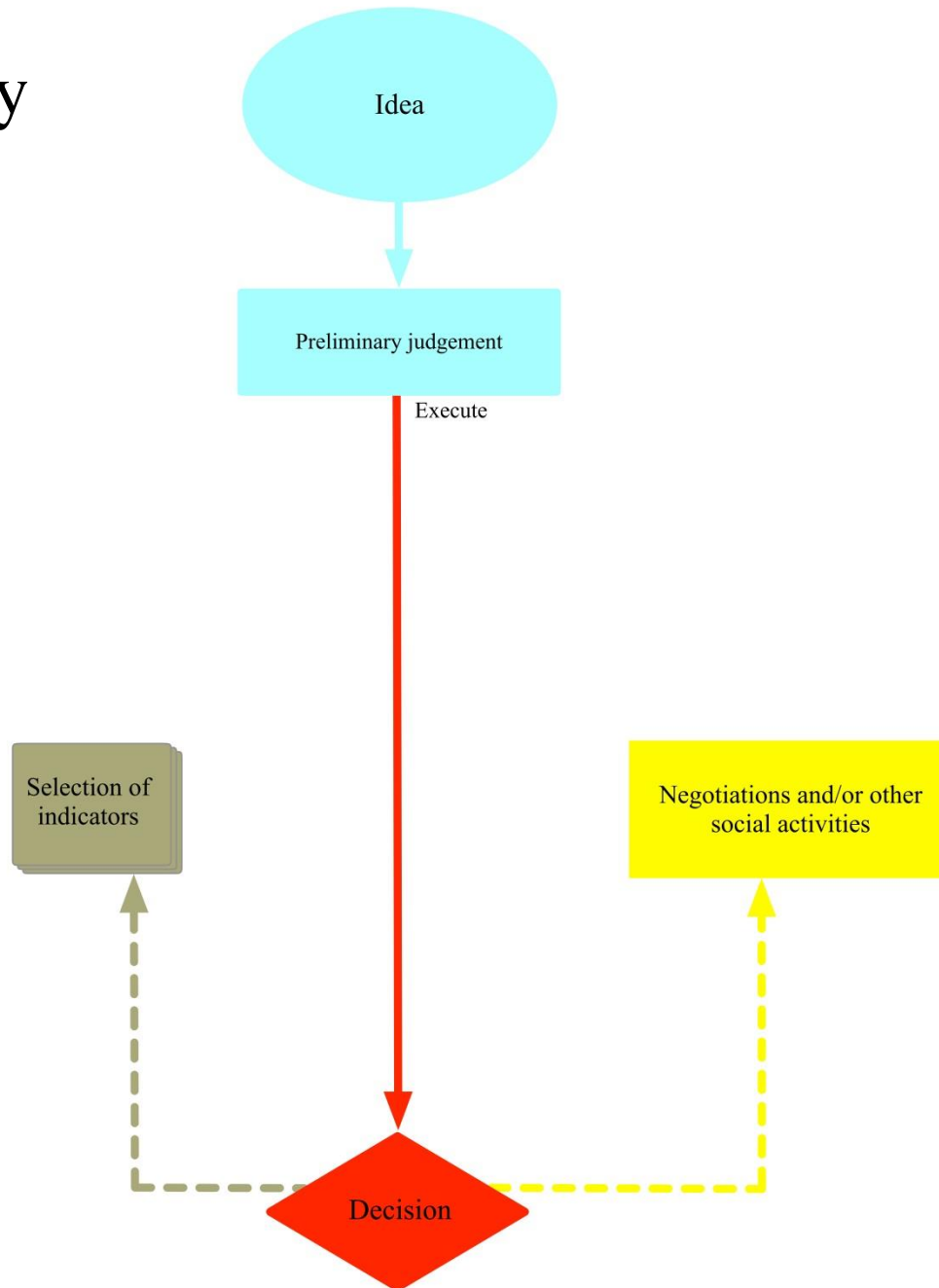
3. Methodology

- The objective **was not** to explain how innovation policy is made.
- The aim **was only** to understand how indicators were used by policy makers (and the other groups).
- But, the role of indicators in policy making was not completely clarified because:
 - 1. Contradictorily, policy makers claimed to use indicators most significantly (compared to the other groups), at the same time that claimed *social activities* to have more influence in the decisions (than indicators).
 - 2. The case study revealed that indicators were used *after* the decision was taken.

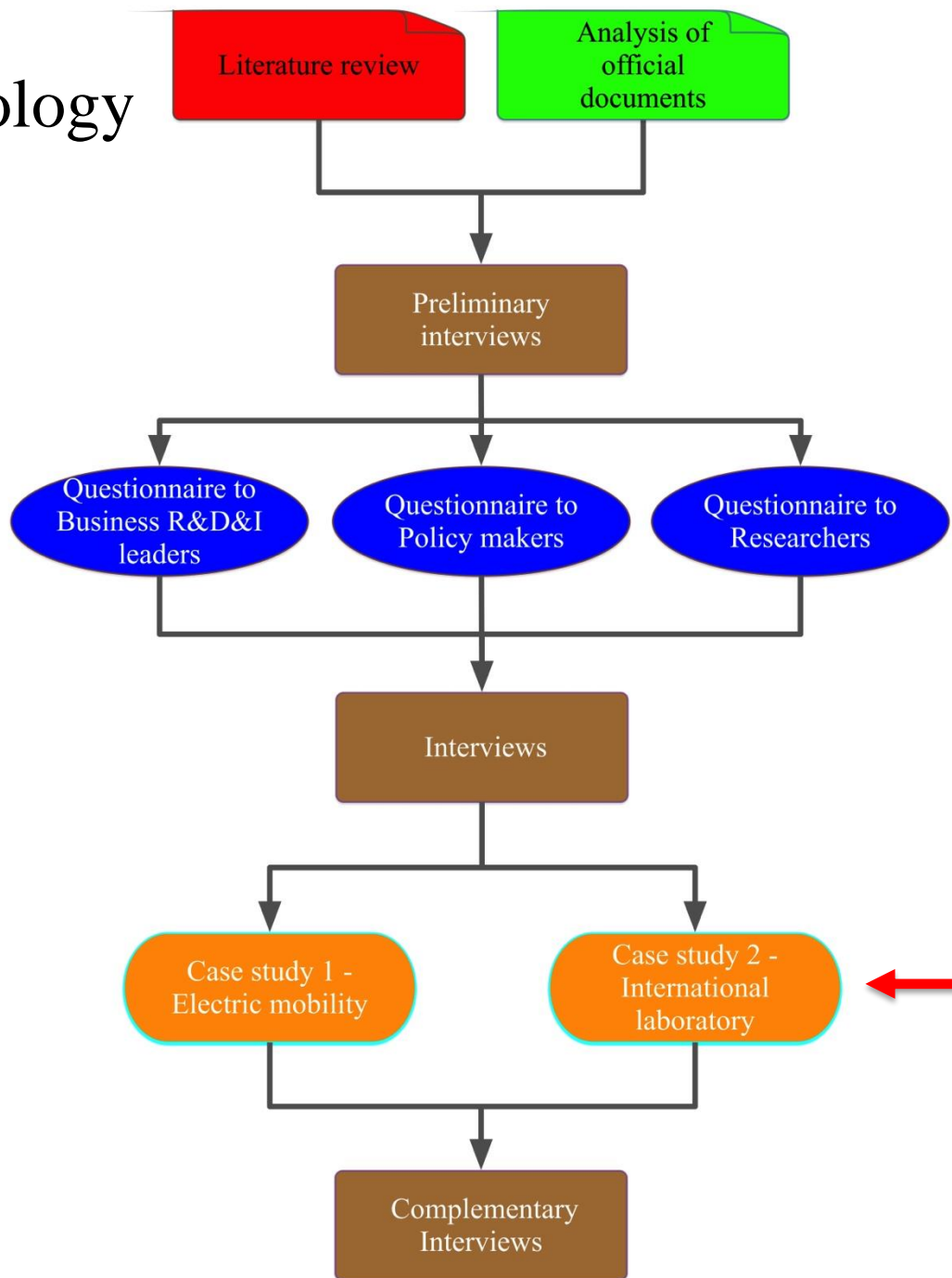
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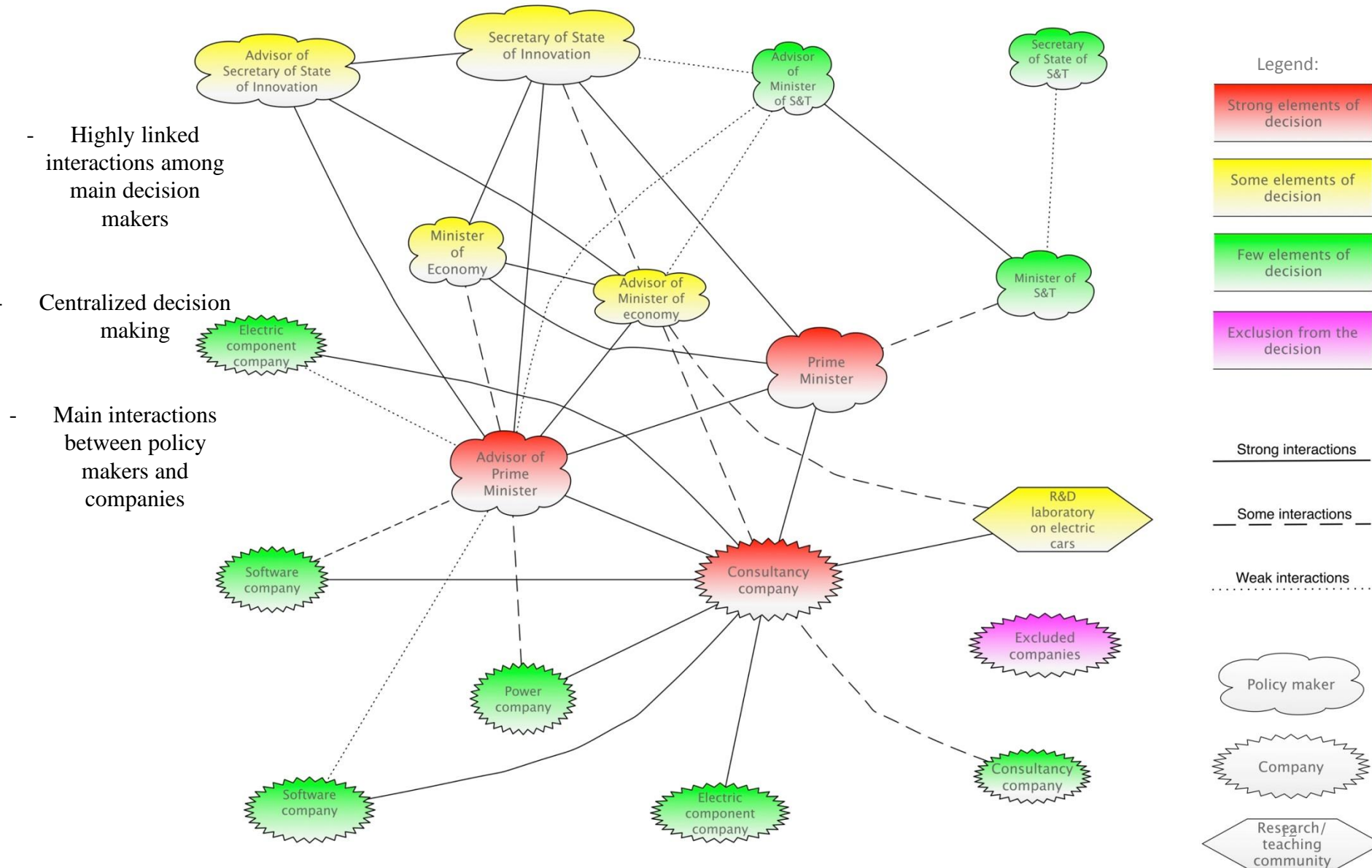


3. Methodology

- It was decided to include another case study: Creation of an international laboratory
- International Nanotechnology Laboratory was selected because:
 1. Previous analysis of official documents indicated the decision was framed within a more rational frame than the previous case study.
 2. Easier access to a small number of policy actors (transparency).
 3. Included policy makers and researchers.
 4. It was never studied.
- Conclusions:
 - No indicators used (validated descriptions in the interviews about the *symbolic* use of indicators).
 - Some elements of scientific evidences were used in the decision (linked to the professional background of policy makers).

4. Conclusions

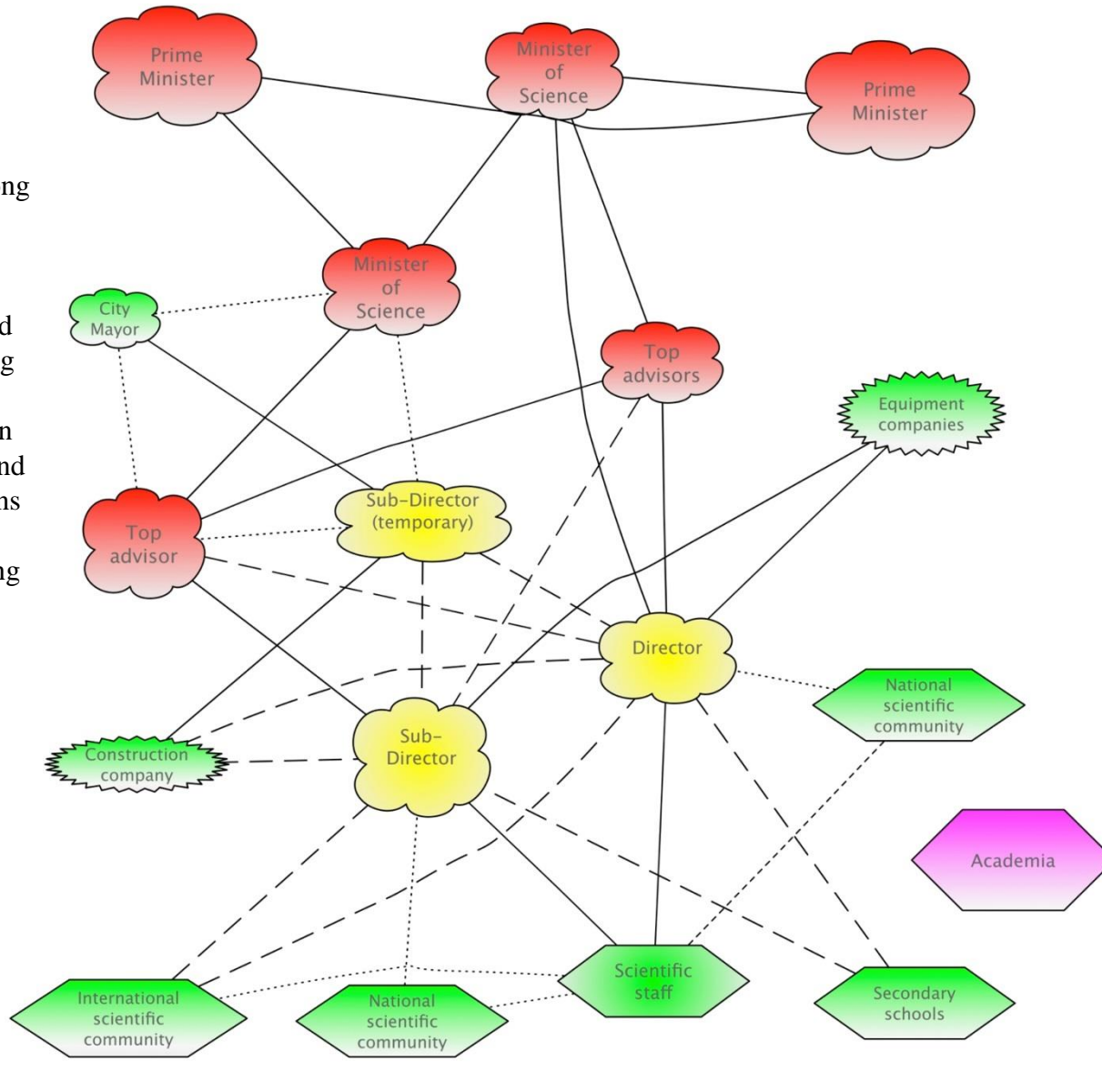
Map of actors in case study 1 – Mobi-E programme



4. Conclusions

Map of actors in case study 2 - International Laboratory

- Highly linked interactions among main decision makers
- Less centralized decision making
- Mainly between policy makers and weak interactions with research/teaching groups



Legend:

Strong elements of decision

Some elements of decision

Few elements of decision

Exclusion from the decision

Strong interactions

Some interactions

Weak interactions

Policy maker

Company

Research/teaching community

4. Conclusions

- The second case study complemented the answer to a research question (Q3 How are indicators used?) by revealing in detail the type of tool policy actors were referring to when they talked about indicators (e.g. scientific evidences).
- Case studies are useful to deepen the understanding of a phenomenon.
- **Most importantly to Technology Assessment, case studies can be a valuable research method to determine:**

how actors behave and what they want when facing a technology decision.

Thank you.