Risks of low-carbon transition in Poland
Warsaw, October 12, 2017
Centrum Konferencyjne Ogrodowa 58 (VIP room)

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Energy-driven pathways and long-run economic growth:
A Fuzzy Cognitive Mapping risk analysis

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Two policy strategies and their "stories"

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Deployment of Intermittent Renewable Energy Sources and long-run economic growth

1. The labour loss
2. The energy security
3. The barriers of entry
4. Development of competences
5. Low EU-ETS prices

Support for Coal-Based Power and Long-run Economic Growth

1. International reputation
2. Maintaining competitiveness in coal technologies
3. The lock-in and the waste of coal R&D effort
4. Dependence on imported coal
5. High EU-ETS prices

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Deployment of Intermittent Renewable Energy Sources and long-run economic growth

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Deployment of Intermittent Renewable Energy Sources

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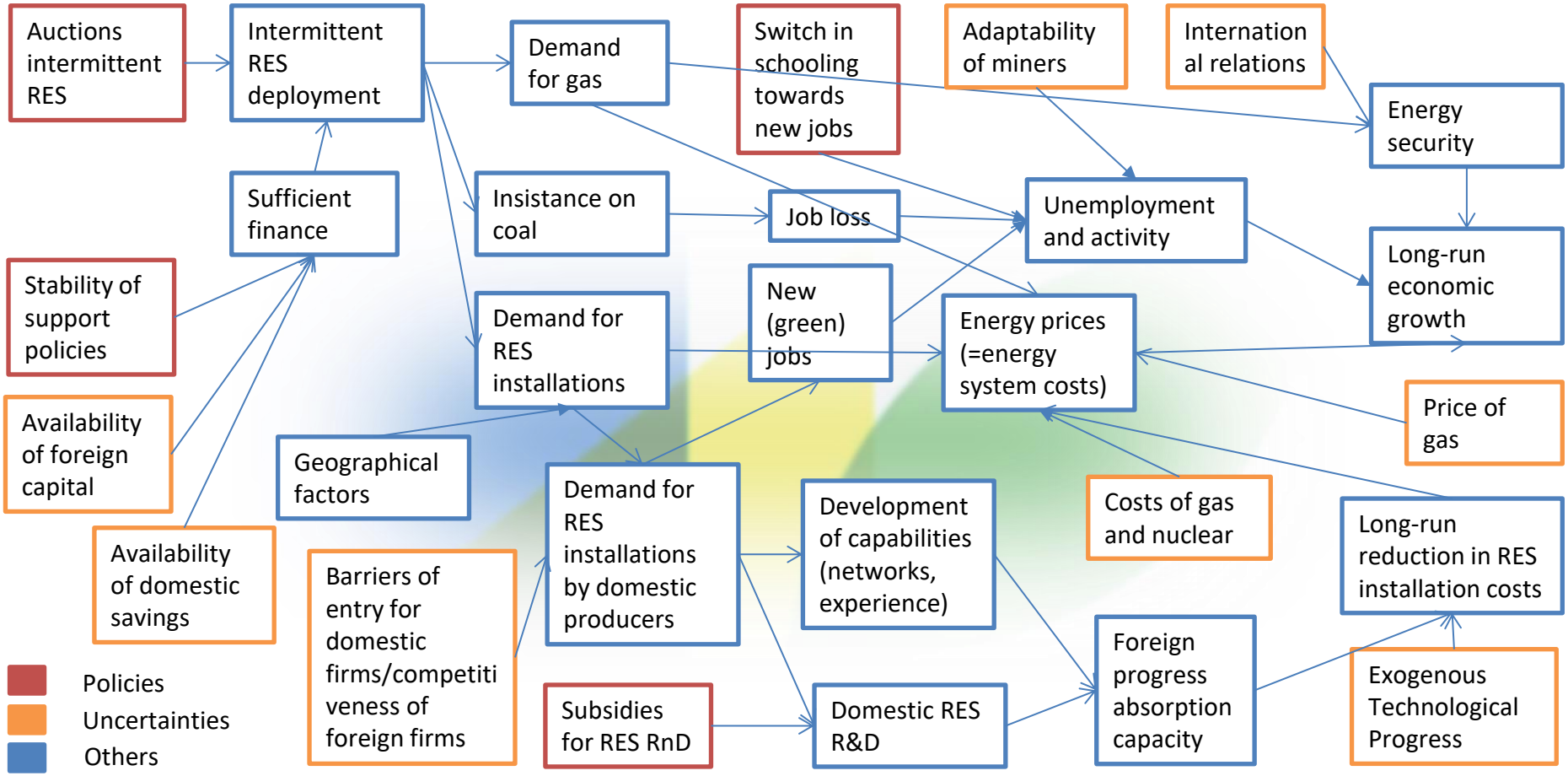

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THE LABOUR LOSS STORY

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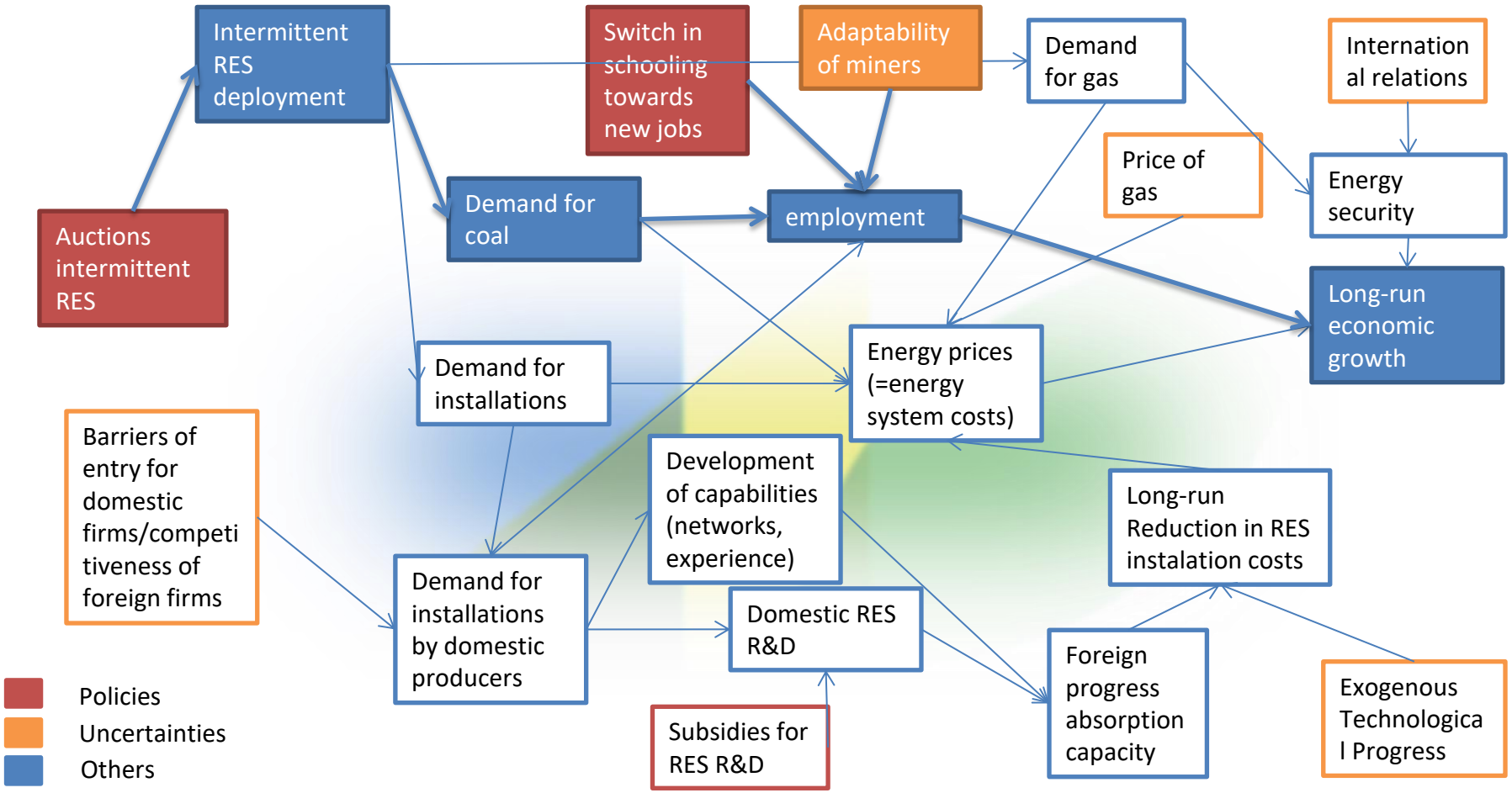

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THE ENERGY SECURITY STORY

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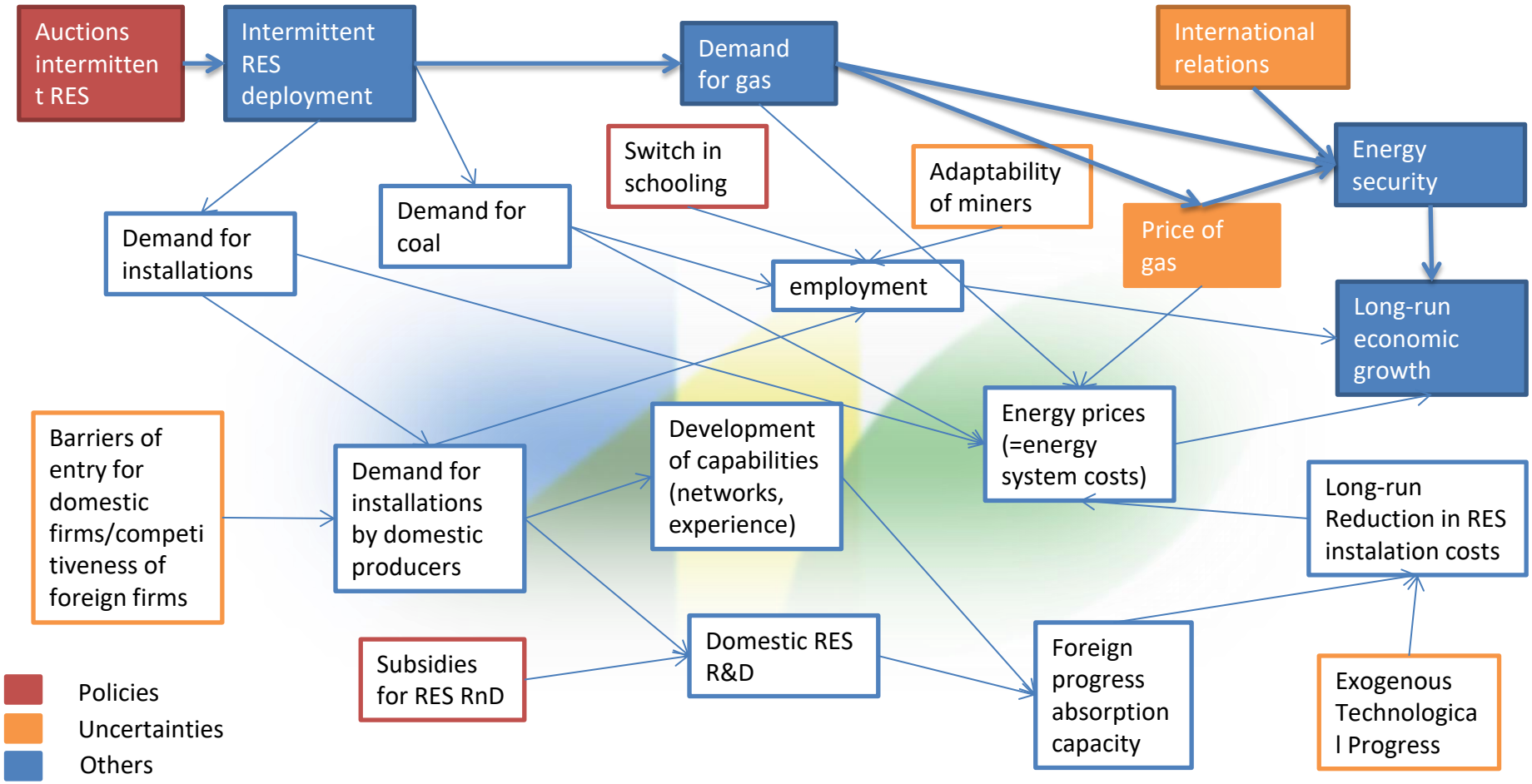

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THE BARRIERS OF ENTRY STORY

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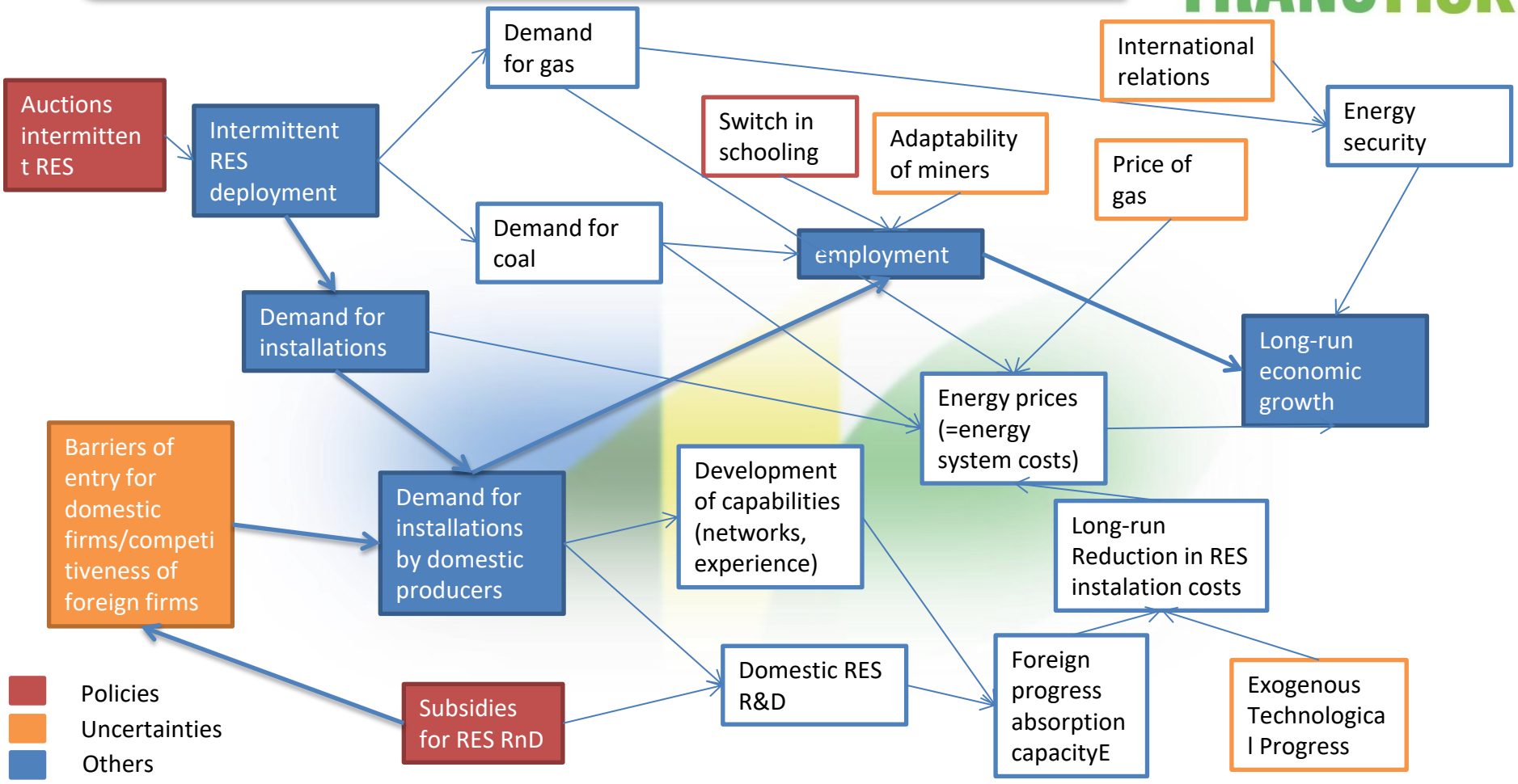

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DEVELOPMENT OF COMPETENCES STORY

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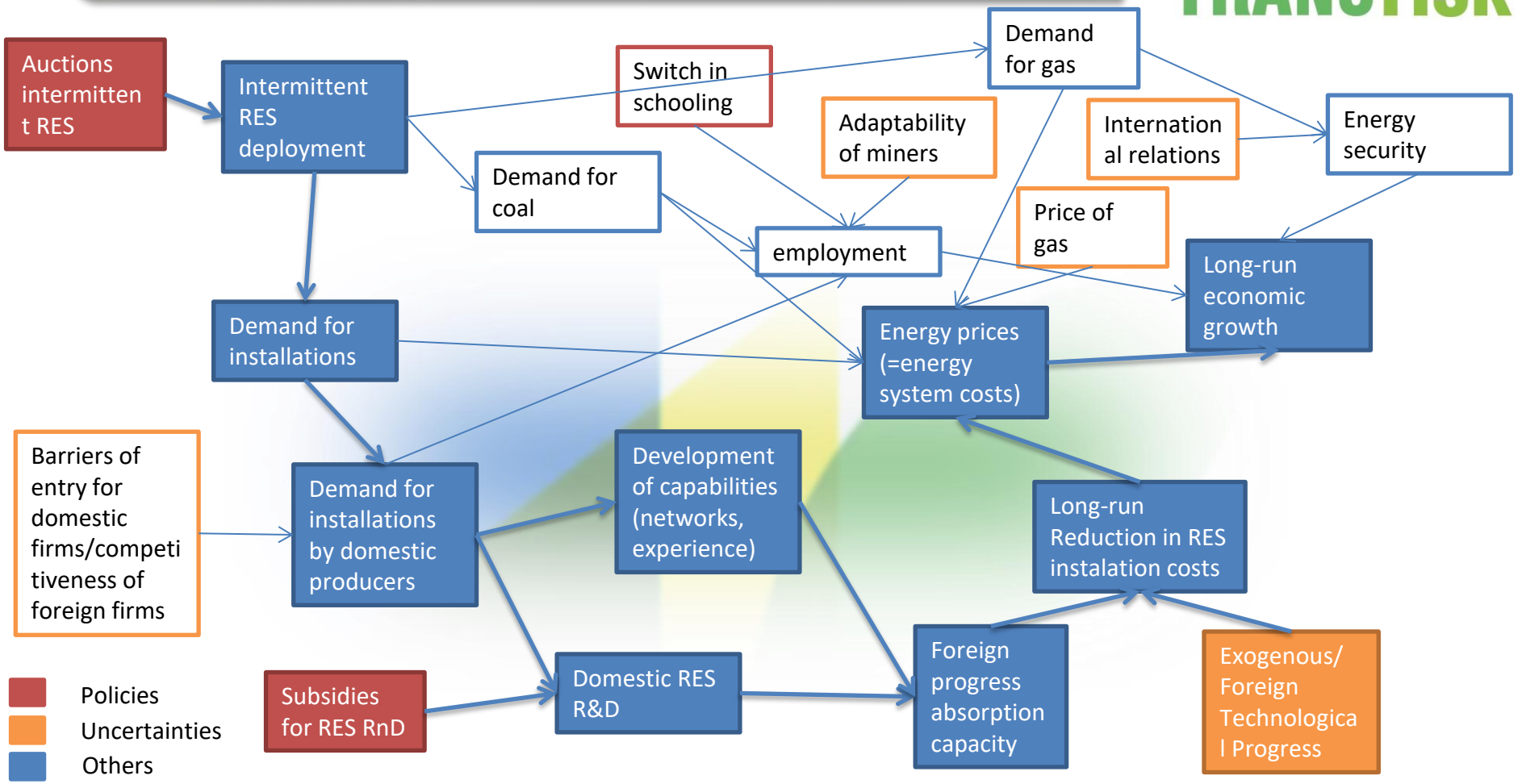

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Support for Coal-Based Power and Long-run Economic Growth

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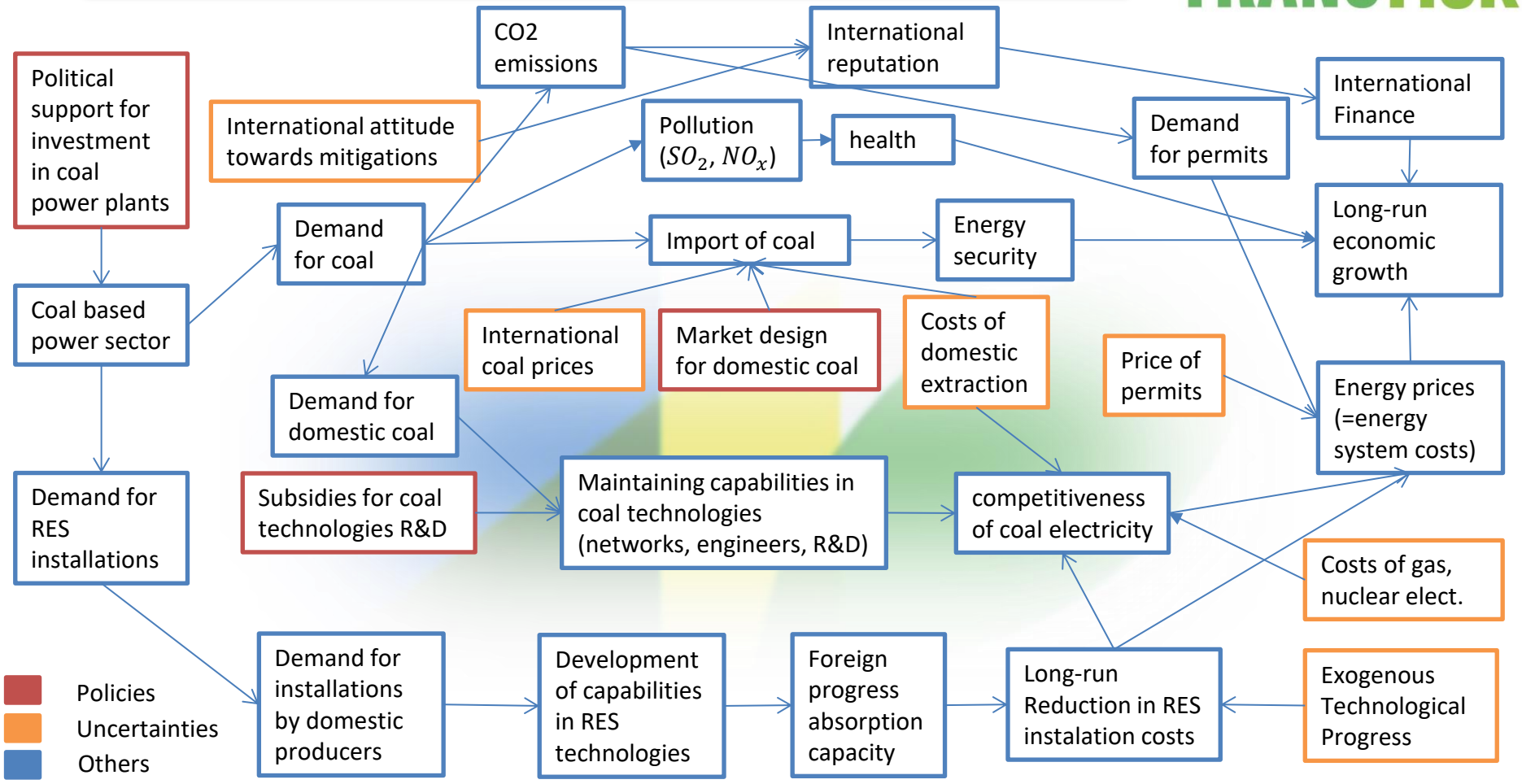
SUPPORT FOR COAL BASED POWER



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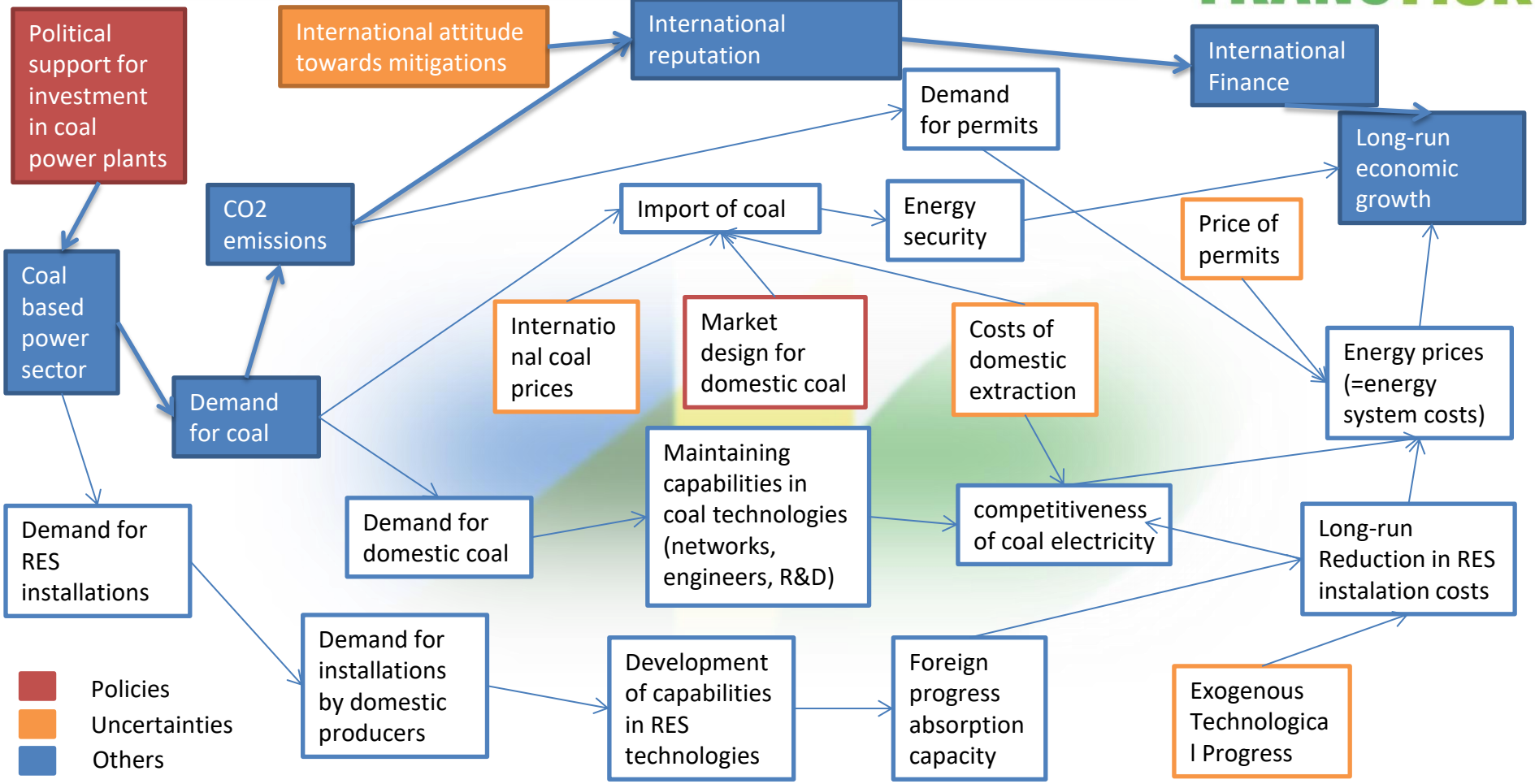
INTERNATIONAL REPUTATION STORY



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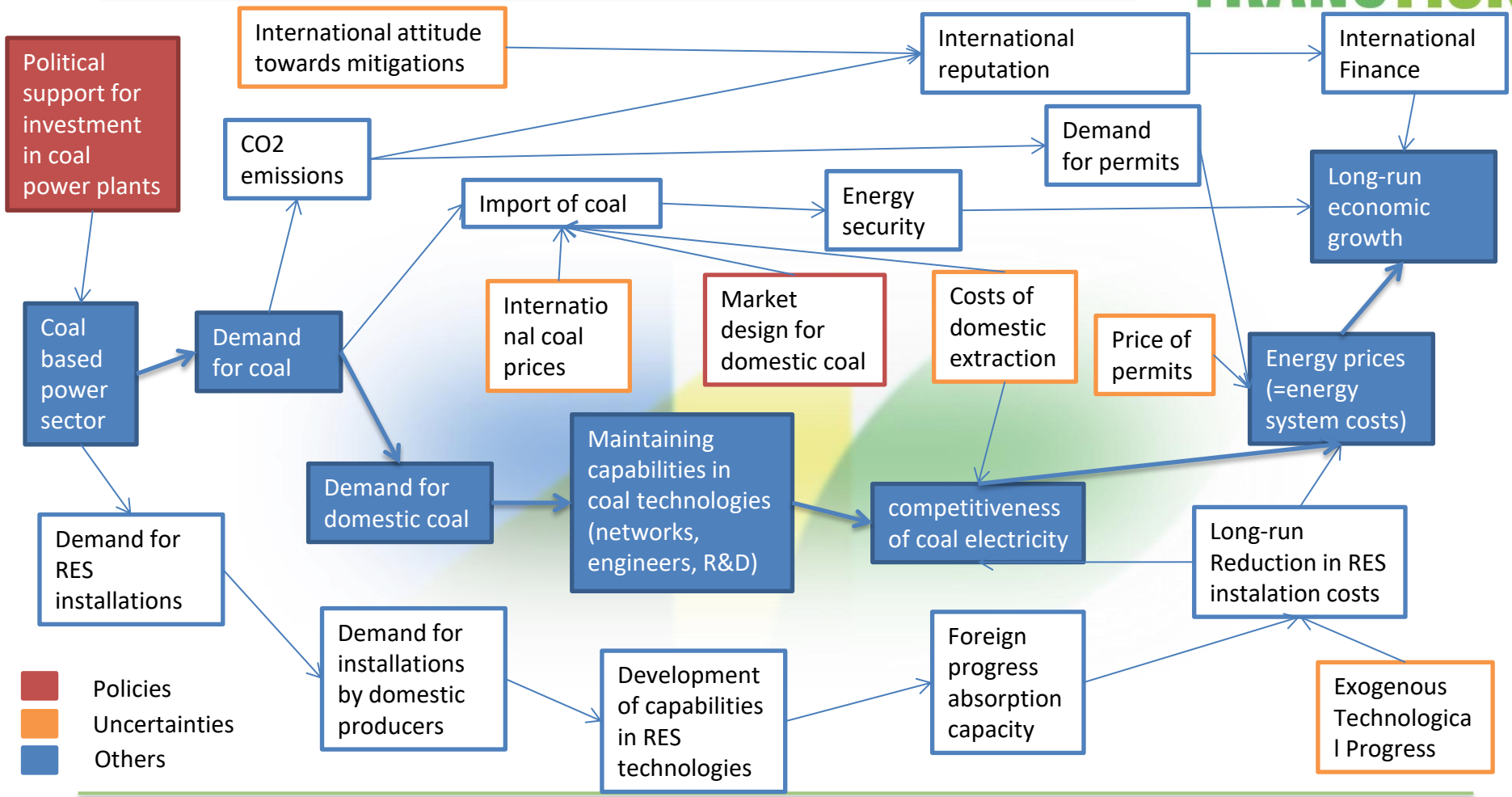
MAINTAINING COMPETITIVENESS IN COAL TECHNOLOGIES



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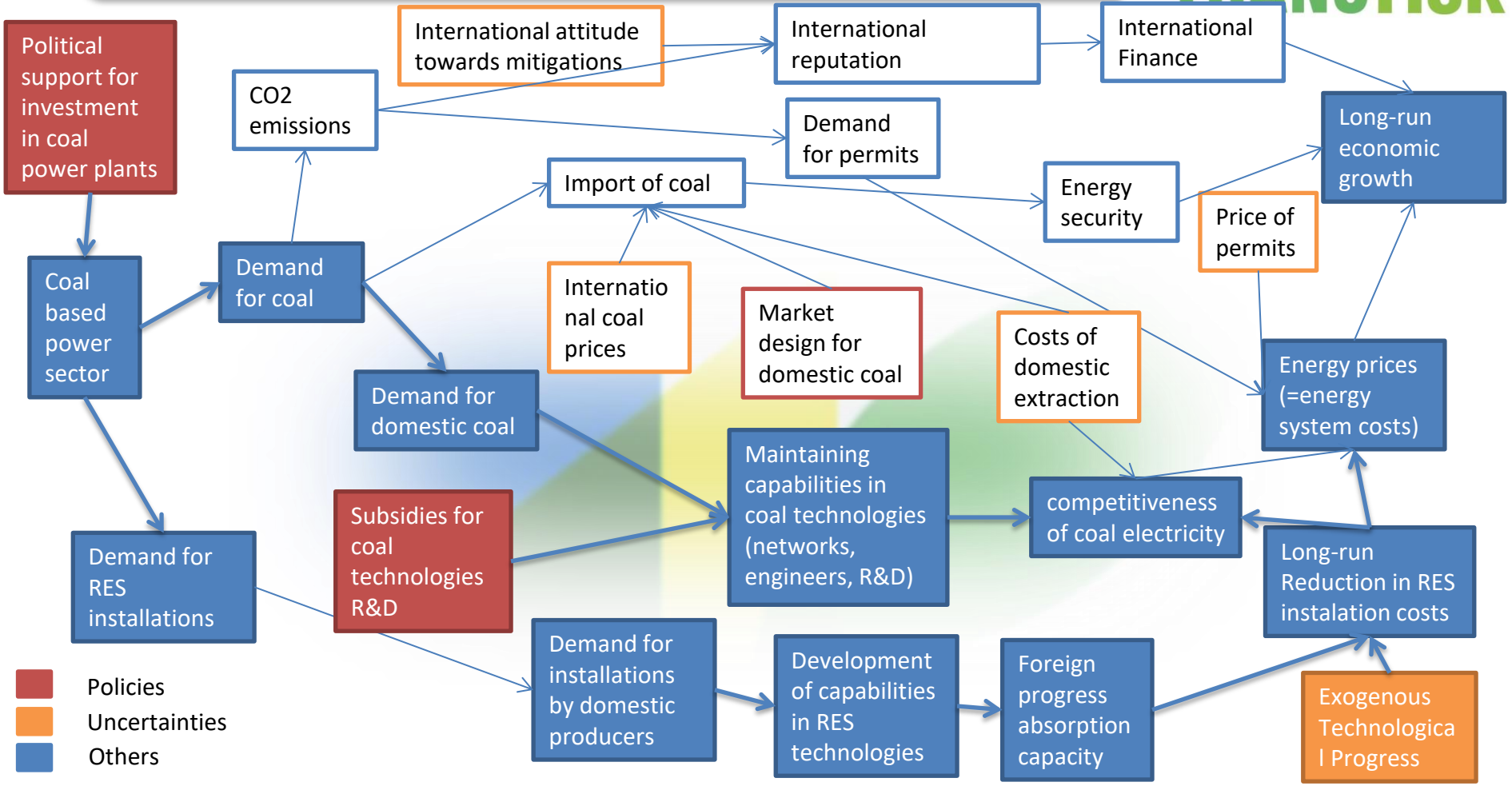
THE LOCK-IN STORY AND THE WASTE OF COAL R&D EFFORT



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DEPENDENCE ON IMPORTED COAL STORY

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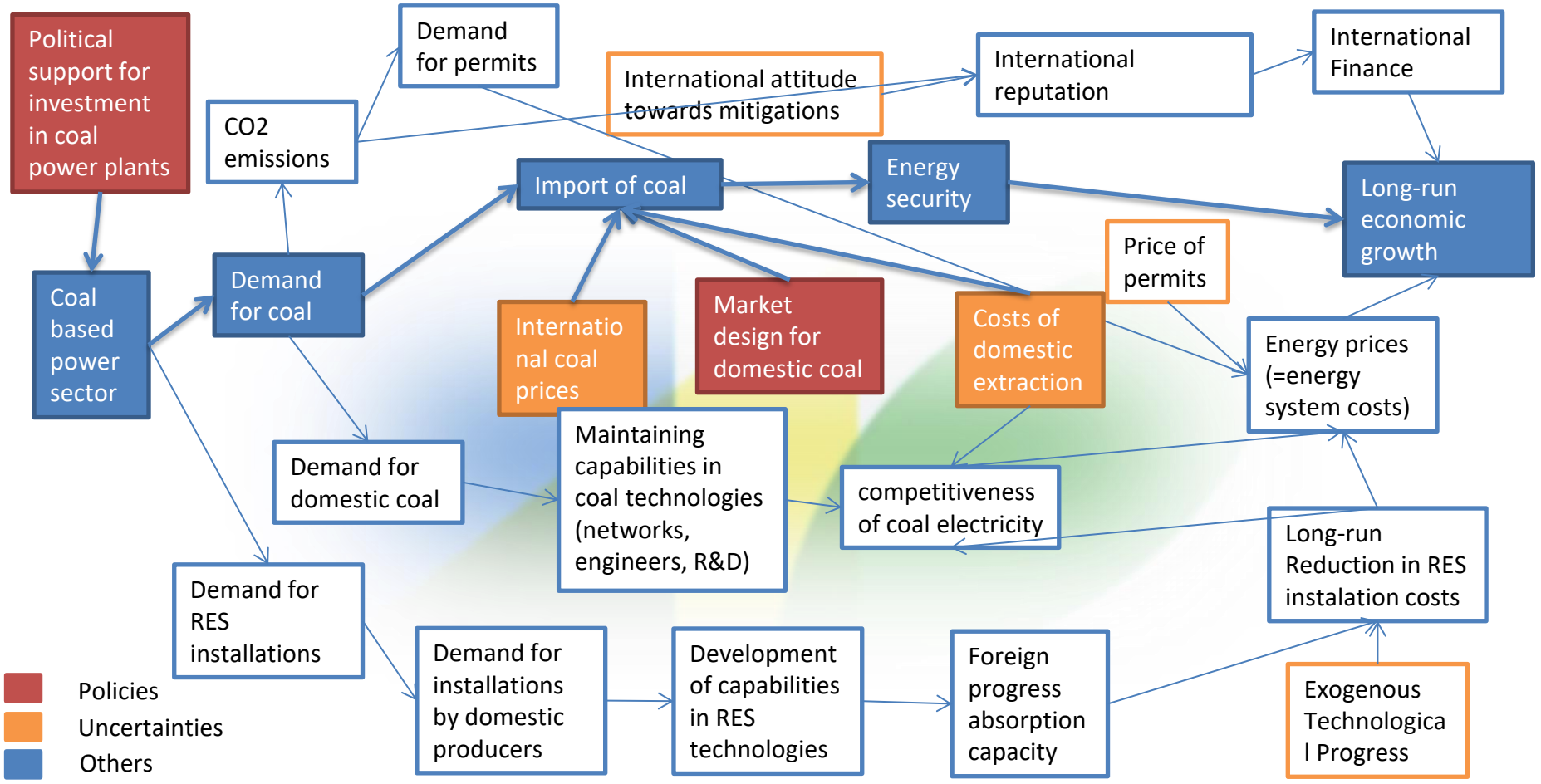

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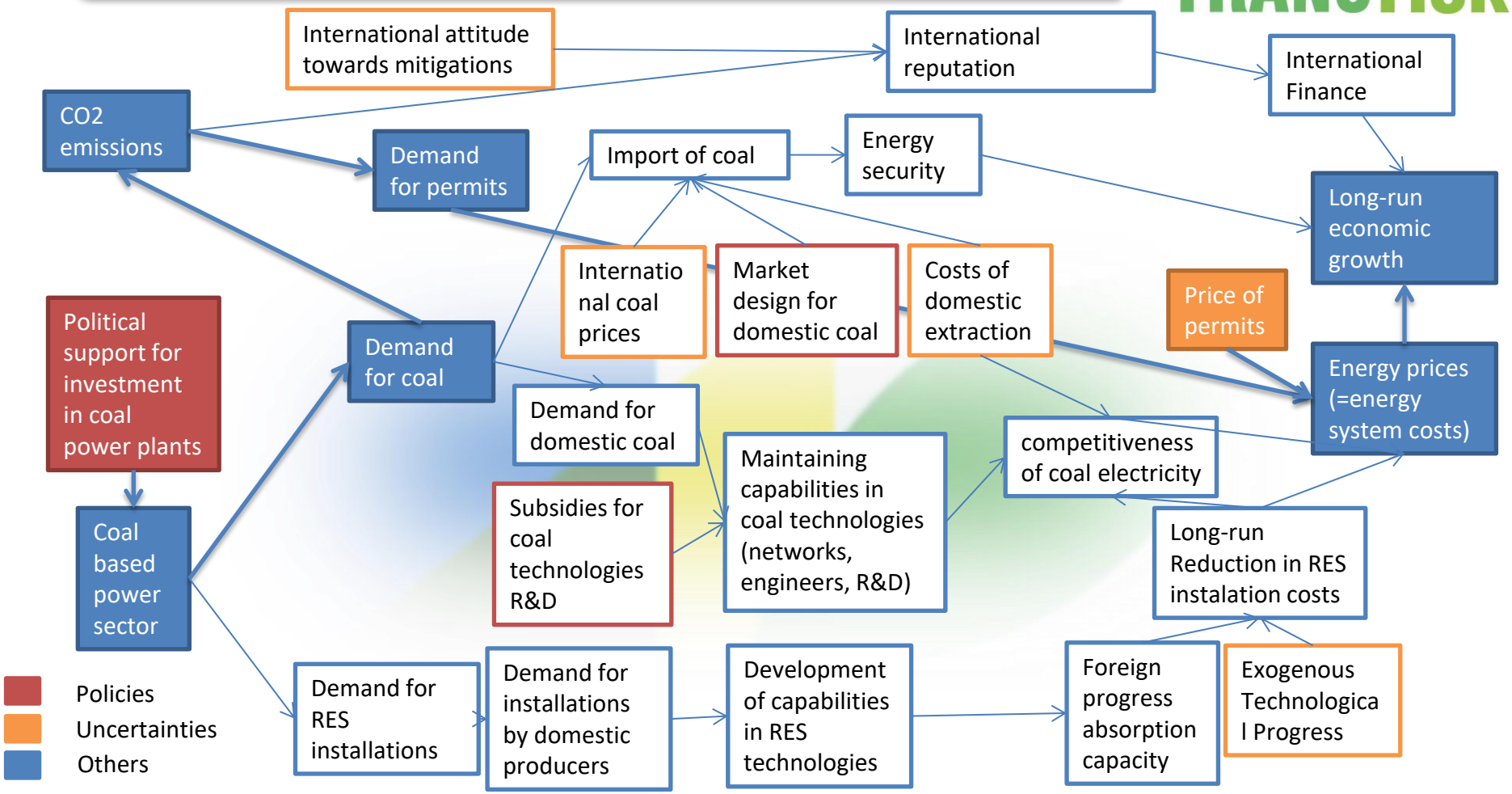
HIGH EU-ETS PRICES STORY



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Fuzzy Cognitive Mapping Exercise

Eliciting your knowledge

What is the purpose?

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1. Capturing stakeholder-driven narratives: what impact do Polish stakeholders think policies and risks have on the Polish economy?
2. Using stakeholders' knowledge towards understanding which of the two pathways (RES or COAL) is more beneficial to Poland's economic growth.
3. Simulating that knowledge to stress-test the two pathways against different risk-driven scenarios.
4. Informing stakeholders of the results in a way that helps understand which route we should follow
5. On a second level, appreciating which of the policies/directions of each pathway are more beneficial for the success of the pathway

EPU N·T·U·A

Low-carbon transition: Global Map

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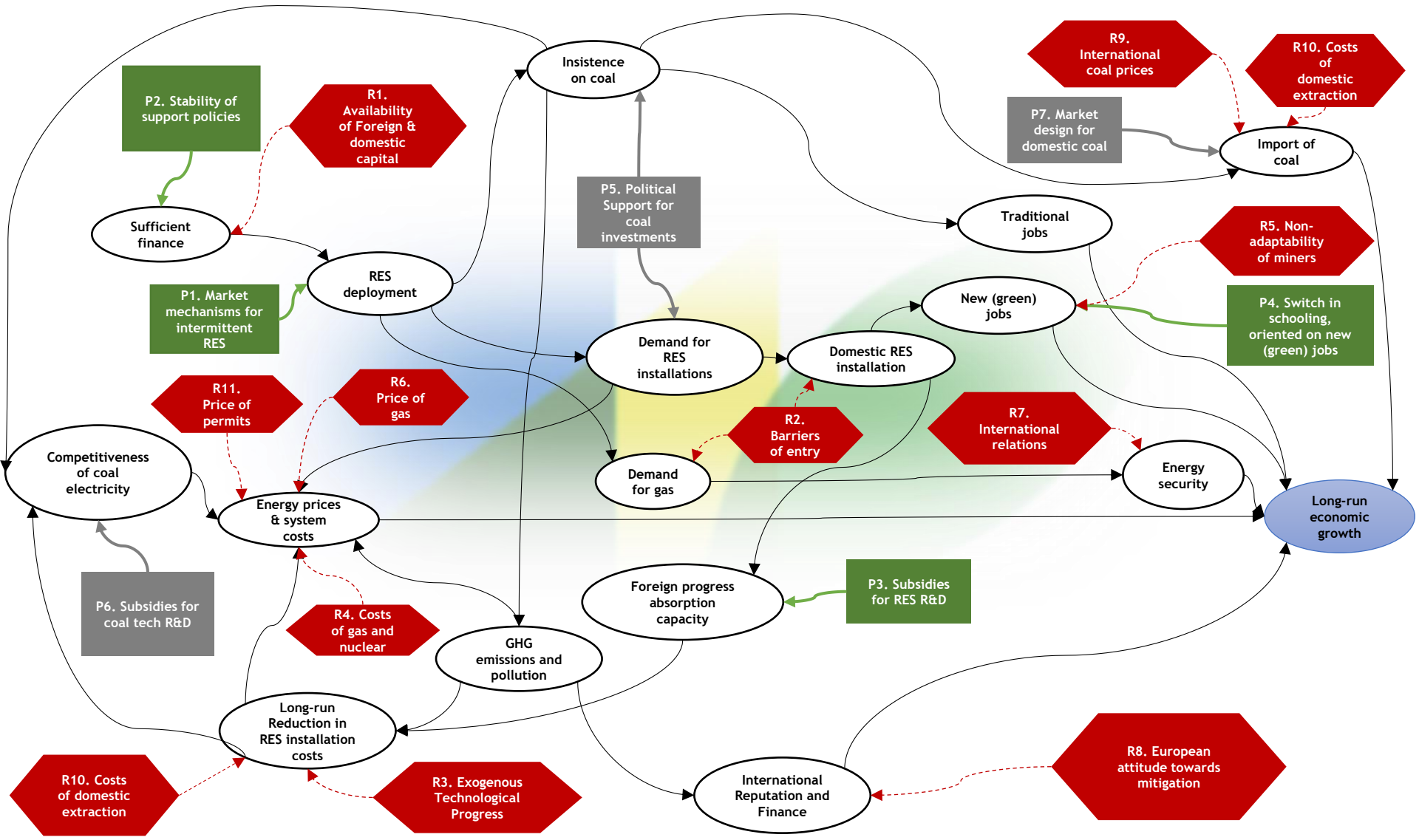


Filling in the Stakeholder Input Table

- Please fill in each white (blank) cell of the table, by indicating the type and level of impact that the row concept (on the right) has on the column concept (on the top), and disregarding all other cells.

- A positive impact means that a positive change on the row concept will have a positive effect on the column concept, whereas a negative impact means that a positive change on the row concept will have a negative effect on the column concept.

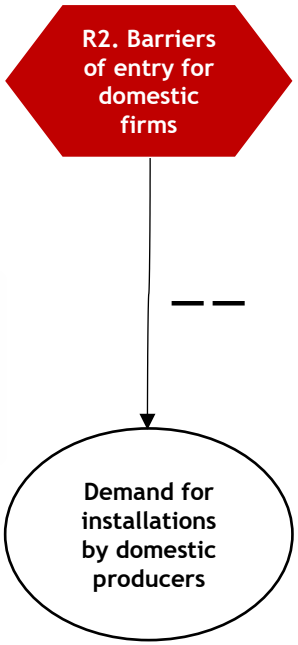
- Also, please use the following set of variables:

+	=	positive, very weak impact
++	=	positive, weak impact
+++	=	positive, strong impact
++++	=	positive, very strong impact
-	=	negative, very weak impact
--	=	negative, weak impact
---	=	negative, strong impact
----	=	negative, very strong impact

Leave blank if you deem there is no connection between the two concepts.

Stakeholder Input Table: Example

	Intermittent RES deployment	Sufficient finance	Demand for coal	Demand for RES installations	Demand for installations by domestic producers	Employment	Demand for gas	Energy security	Energy prices (=energy system costs)	Foreign progress absorption capacity
R1. Availability of foreign and domestic capital										
R2. Barriers of entry for domestic firms/competitiveness of foreign firms					– –					
R3. Exogenous Technological Progress										
R4. Costs of gas and nuclear										
R5. Adaptability of miners										
R6. Price of gas										
R7. International relations										
R8. International attitude towards mitigations										



Example: Smart meters in Greece

	Installation of smart meters	Costs for end-users, owners	Public acceptance of energy saving measures	Social compliance and behavioural change	Better energy monitoring and control of utility bills	Rebound effect	Energy saving and efficiency
P6. Deployment of smart metering systems	++++						
R2. Political instability	—						
R3. Bureaucracy	— —						
R4. Demanding regulatory framework in relation to market maturity	—						
R5. Inadequate banking sector	—						
R6. Social opposition	—		— —				
R7. Inexperienced personnel - poor technical skills	— —						
Installation of smart meters		+			++		
Costs for end-users, owners			— —				
Public acceptance of energy saving measures				+++			
Social compliance and behavioural change							++
Better energy monitoring and control of utility bills			+			+	

Example: Smart meters in Greece