Developing the EU Long-Term Climate Strategy

Rome workshop

Work Program

Date	Action
By January 29 2018	Workshops in five European cities
By March 1 2018	Have technical paper written Have policy paper written
By March 15 2018	Launch the papers

- **Objectives**
  - Get a better understanding of the challenges around a new EU climate strategy
  - Promote stakeholder involvement during the renewal of the 2050 Roadmap
  - Provide independent and high-quality research on, and analysis of, potential elements of the renewed roadmap, and potential trade-offs between elements (technical paper)
  - Translate this technical work into a policy paper, proposing two or three internally consistent set of choices

- **Deliverables**
  - 5 workshops in EU cities
  - Technical Paper
  - Policy Paper
  - Launch event in Brussels

Document structure

1. Background

    1.1   Need for a new EU long-term climate strategy

    1.2   Impact of the EU 2050 Roadmap

    1.3   Assumptions for EU 2050 Roadmap have changed

2. Premises

3. Process to elaborate the long-term climate strategy

    3.1   Initial drafting and issuance

    3.2   Modelling

4. Issues for consideration in a roadmap

    4.1   Core Issues

        4.1.1   Purpose and target audience

        4.1.2   Interaction with other strategies

        4.1.3   Type of document

        4.1.4   Ambition

        4.1.5   Desired granularity of mitigation targets

        4.1.6   Timeframe

    4.2   Coverage and intensity of coverage

        4.2.1   General focus of the long-term climate strategy

        4.2.2   Sectoral focus of the long-term climate strategy

Dive into the Document:

1. Background

2. Premises

3. Process to elaborate the Long-Term Climate Strategy

4. Issues for consideration in a roadmap

1.1 Need for a new EU long-term climate strategy

- **Coordination with UNFCCC**
  - Parties to the Paris Agreement are invited to:
    - Submit updated, more ambitious NDCs by 2020, and every 5 years thereafter
    - Communicate, by 2020, long-term low greenhouse gas emission development strategies (1/CP.21 Par 35)
  - Report of progress made by Parties:
    - Biennial Update Reports (BURs) by non-Annex I Parties
    - National inventory submissions
  - 2018 Facilitative dialogue, to take stock of collective efforts and progress towards next round of NDCs

- **Coordination within Energy Union**
  - Governance proposal foresees that member states send national "long-term low emission strategies" to the Commission
  - Unclear how Commission will assess consistency of those strategies with EU-commitments? (-> EU wide strategy)

- **What is a roadmap?**
  - A roadmap is commonly understood as a detailed plan to guide progress towards a goal. The scope and focus of a roadmap can vary:
    - It can outline wide-scope strategies and transition paths
    - It can also offer more granular operational tools, formulating instructions for strategy implementation

■ **The 2050 Roadmap is an influential document, and cited by:**

- European energy and climate texts:
  - 'Energy Efficiency Directive' (2012)
  - 'A policy framework for climate and energy in the period from 2020 to 2030' (European Commission – 2014)
  - 'Impact Assessment accompanying the Proposal for a Directive on the energy performance of buildings (European Commission – 2016)
  - Etc.

- Member States documents, including roadmaps:
  - 'National Low Carbon Roadmap 2050' (Portuguese Government)
  - 'Long term budget forecast: Report of the Federal Government' (Austrian Federal Ministry of Finance – 2016)
  - 'Update of the sectoral analyses of the CGEDD report (…) on the 4-fold division of greenhouse gas emissions by 2050' (French Ministry of the Environment, Energy, and the Sea - 2017)
  - Etc.

- The industry have developed their own roadmaps, setting out how to achieve the sectoral objectives set by the 2050 Roadmap:
  - 'European chemistry for growth: unlocking a competitive, low carbon and energy efficient future' (CEFIC – 2013)
  - 'A steel roadmap for a low carbon Europe 2050' (EUROFER The European Steel Association)
  - Etc.

"Much talk has surrounded this so-called low carbon roadmap. What is already clear is that it provides direction for Europe. It defines a horizon for Europe's industry, decision-makers and society at large to embrace"

1.3. Assumptions for the EU 2050 Roadmap have changed (1)

- **New carbon commitments**
  - 2030 Framework: binding target of an at least 40% domestic reduction in GHG emissions by 2030 compared to 1990.
  - This target is now enshrined in the European NDC to the Paris Agreement. The Agreement has also led to new carbon constraints, including the concepts of carbon neutrality by the second half of the century and negative net-emissions.

- **New international order**
  - Some of its aspects will impact the constraints faced by the EU
  - Facilitative dialogue and updating of Nationally Determined Contributions

- **Science of climate change**
  - 2014 IPCC report
  - IPCC Special Report on limiting the temperature increase to 1.5 °C above pre-industrial levels, to be delivered in 2018.
  - UNEP 'Emissions Gap Report 2017'

1.3 Assumptions for the EU 2050 Roadmap have changed (2)

- **Other changes**
    - Economic crisis and changes in the economic environment
    - US shale gas revolution
    - Fukushima nuclear disaster
    - China at a further stage in development, with higher income levels
    - Did we miss anything ?

1.3 Assumptions for the EU 2050 Roadmap have changed (3)

	2011 ROADMAP *2020 Forecast*	2016 REFERENCE *2020 Forecast*		Change in expectation
GDP (in Million 2005 EUR)	14,164	13,033	-8%	Lower growth
CO2 emissions, energy related (Mt)	3,511	3,281	-7%	Lower CO2 emissions
Discount rates — Power Generation	9%	7.5 – 8.5%	-1pp	Lower discount/interest rates
Discount rates — Private Individuals	17.5%	11% – 14.75%	-4.5pp	
Oil price (in 2008 dollars)	88	80	-9%	Lower oil price
EUA Price	16.5	15	-9%	Lower EU ETS allowance price
Gross Energy Consumption (mtoe)				
Coal	263	251	-5%	Fossil fuels largely close to forecast; coal decreased quicker; gas increased slower than expected
Natural Gas	413	385	-7%	
Net Gas Imports	302	279	-7%	
Renewables	278	267	-4%	Renewables in plan
Net Generation Capacity (GW)				
Wind	231	207	-10%	Wind precisely forecasted; lower expectations
Solar	53	136	155%	Solar outpaced expectations
CCS	*2050 Forecast* 101	*2050 Forecast* 19	-81%	CSS more unlikely

Source: Own calculations, based on European Commission's Low Carbon Roadmap (2011), Energy Roadmap (2011) and EU Reference Scenario (2016).

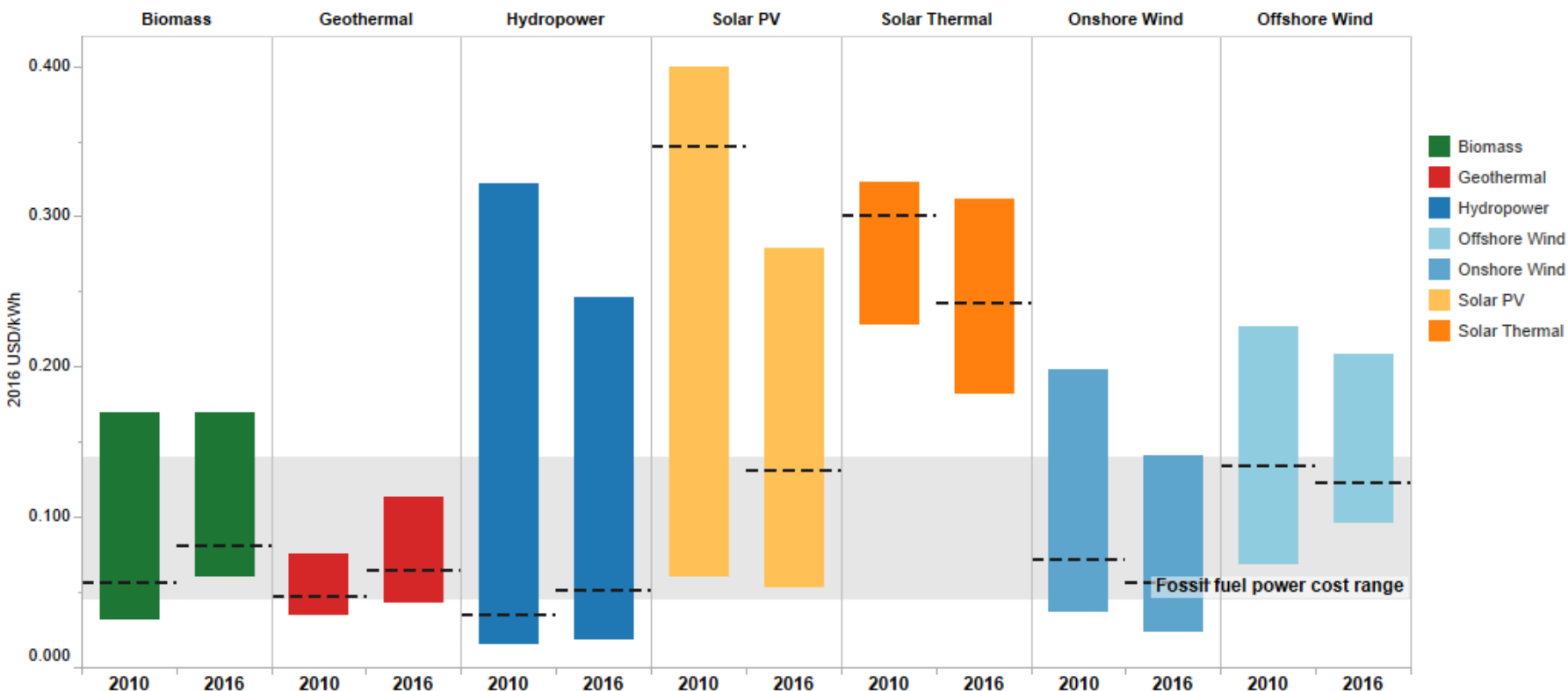⇒**Need for an update**

- **Costs of renewables continued to decrease**

Levelised Cost of Electricity 2010- 2016

Note: All costs are in 2016 USD. Weighted Average Cost of Capital is 7.5% for OECD and China and 10% for Rest of World. Preliminary data for 2016.

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Source: Irena (2016)

2. Premises

Dive into the Document:

1. Background
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3. Process to elaborate the long-term climate strategy
4. Issues for consideration in a roadmap

2. Premises (1)

2.1 Is technology neutrality an appropriate assumption for the LTCS?

□   Yes

□   No

2.2 What is the appropriate approach to attribute emissions?

□ *Emission source approach*

○ *The new LTCS could follow the 2011 Roadmap's focus on the supply side of emissions (measure emissions at its source, e.g. burning of fossil fuels)*

□ *End-use approach*

○ *The new LTCS could alternatively use an end-use approach (how many emissions are in a final product, its 'carbon footprint')*

2.3 Is policy neutrality an appropriate assumption?

- ☐ *Yes*
- ☐ *No*

2.4 What narrative, if any, should the new LTCS employ?

- ☐ *No narrative*
- ☐ *Green growth*
- ☐ *Peak oil*
- ☐ *Energy security*
- ☐ *Did we miss any narrative?*

2.5 Is climate change policy an objective and how does it relate to the delivery of co-benefits?

☐ Climate change as a stand alone driver

☐ Co-benefits as a stand alone driver

☐ Climate change and co-benefits jointly presented as drivers

2.6 What type of analysis should be underpinning the document?

☐ *Cost analysis*

  o *Purely data driven, identifying the most cost-efficient decarbonisation pathway*

☐ *Policy analysis*

  o *Including political constraints in the analysis*

2. Premises (4)

2.7 Should the LTCS assume that the Paris Agreement ratcheting up mechanism will function?

☐ *Yes*

- o *The LTCS must work under the assumption that all Parties will increase their ambition*

☐ *No*

- o *The LTCS should consider the risk of the ratcheting up mechanism not delivering*

2.8 Should the LTCS take into account the following economic developments, and if so how?

	0 not at all	1 mention the issue	2 refer to other EC doc's	3 discuss qualitatively	4 Incl. in modelling	5 core focus of the LTCS
Vanishing sectoral boundaries						
Digitalisation						
Decentralisation						
Automatisation						
Other developments?						

3. Process to elaborate the long-term climate strategy

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4. Issues for consideration in a roadmap

3.1 Initial drafting and issuance (1)

3.1.1 Who has political ownership of the LTCS? Who issues it?

The legal status and political ownership (voting rights) of the LTCS have to be determined. Possibilities include:

- ☐ A "technical" document that is not voted in Parliament or Council (e.g., a Commission communication)
- ☐ A "political" document that needs to be approved by a vote of Parliament and Council
- ☐ Another option?

3.1.2 If the document is binding, who is responsible for enforcement?

- ☐ European Commission
- ☐ European Court of Justice
- ☐ Binding but with no enforcement tools

3.1.3 How should the consultation process be organised?

- Purpose of the LTCS is important for the type of consultation:

  □ Document as an initiator of debate
    - A finished document for stakeholders to discuss
  □ Document sets out options to start the discussion with stakeholders
    - A document setting out options for stakeholders to choose from
  □ Document integrates contributions from stakeholders
    - A document that will integrate stakeholder input before being published

3.1.3 How should the consultation process be organised? (2)

- Breadth of consultation

    □ Process that is internal to EU institutions
    □ Selected stakeholders
        o Academics, business associations, Member States, think tanks etc.
        o How are they selected and by whom?
    □ Open call for stakeholders
    □ Citizen engagement process
        o Intense process of engaging actively with EU citizens in different fora

3.1.3 How should the consultation process be organised? (3)

- Timing of consultation

  - ☐ Before drafting
    - o Setting priorities and discussions on methodology
  - ☐ During drafting
    - o Possibility to gather feedback on a work in progress
  - ☐ After drafting
    - o Create awareness and discussion on the topic
    - o Possibility for feedback loops, with discussions on first draft that can be revisited

3.1.4 How important is outreach?

Closely linked to the purpose document

- ☐ Ex ante, involving stakeholders and communicating from the beginning of the process
- ☐ Ex post, involving stakeholders and communicating after completion of the LTCS

3.2 Modelling (1)

3.2.1 What is the purpose of modelling?

☐ Serve as an intellectual basis for discussion

- Ensure consistency (Modelling as an accounting framework)*
- Make a complex discussion on premises and assumptions transparent

☐ Show feasibility of decarbonisation*

☐ Find lowest cost pathways (optimization)

☐ Compare different pathways*

☐ Determine optimal policies

☐ Determine socioeconomic-impacts (e.g., investment need, distributive effects)(*)

☐ Determine when system choices need to be made

* Option chosen in 2011 Roadmap

3.2.2 Which target function / constraints?

☐ Minimal cost*
☐ Maximization of societal benefit

- Mitigation target
  - ☐ One fixed mitigation target in all scenarios (e.g., 80% in 2050)*
  - ☐ a range of targets

- Constraints:
  - ☐ ensuring resilience (e.g., target can still be reached after failure of CCS)
  - ☐ "fair" distribution of efforts between sectors/countries

3.2.3 Model governance questions

	EC	JRC	MS	modellers	stakeholder	board
Who selects model(s)	2011					
Who decides on scenarios	2011					
Who sets assumptions	2011		2011	2011		

3.2.3.1 Where do the models come from?
- ☐ in house*
- ☐ commissioned
- ☐ external (e.g. ECF)

3.2.3.2 How many models?
- ☐ One model for all questions*
- ☐ Multiple models for different q's
- ☐ Multiple models for same q

3.2 Modelling (4)

3.2.4 Openness requirements:

more open

- ☐ Proprietary data and model* [continuity, control]
- ☐ Partially open (e.g. data)
- ☐ Allow model runs for (selected) stakeholders
- ☐ Complete open source

- [how extensive should results and methodology by documented?]

3.2.5 Dealing with uncertainty:

complexity

- ☐ A few scenarios
- ☐ Comparison with other models
- ☐ Selected sensitivity tests on key assumptions
- ☐ Full-blown sensitivity analysis

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   4.1 Core Issues
   4.2 Coverage and intensity of coverage

4.1 Core Issues (1)

4.1.1 Purpose and target audience

Which audience does the LTCS target?

- ☐ UNFCCC/ other countries
- ☐ Citizens
- ☐ Business community
- ☐ Member States
- ☐ All EC Services (e.g., DG ENER)

### What is the purpose of the LTCS?

- ☐ Input for UNFCCC process
- ☐ Induce increased ambition
- ☐ focus investment decisions
- ☐ Input for Energy Union governance process
- ☐ Inform EU policies
  - ☐ Provide benchmark
  - ☐ Set national/sectoral targets
  - ☐ Coordinate national/sectoral policies

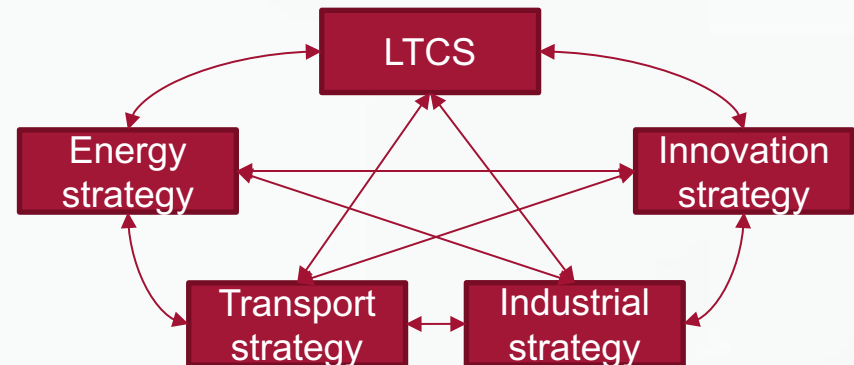☐ Possibly different products for different purposes/stakeholders
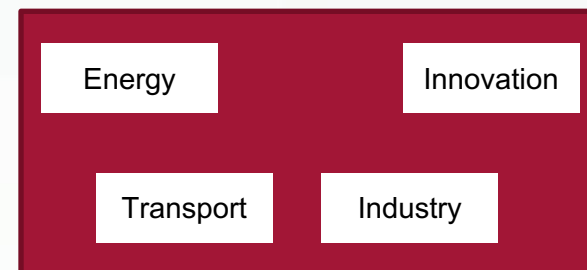
4.1.2 Interaction with other strategies

☐ Current picture:
A climate strategy broken down in sectoral "action plans"
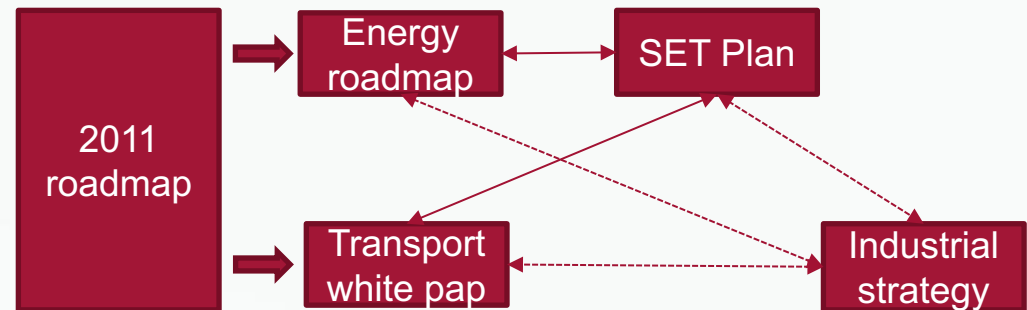
☐ A suite of consistent strategies based on common modelling [decentralised process]

☐ One integrated strategy [centralised process]

4.1 Core Issues (3)

4.1.3 Type of document

☐ *One-off document*

☐ *One-off document based on continuous modelling**

☐ *Regularly repeated document (e.g., every 2 or 5 years)*

☐ *Constantly updated content in a fixed structure*

☐ *Visionary document*
  o *Mainly qualitative*
  o *Long-term targets and broad transition path*

☐ *Comprehensive document*
  o *Quantitative*
  o *Detailed transition scenarios*

☐ *Mixed document*
  o *comprehensive pre 2050, and visionary post 2050*

4.1.4 Ambition

- **Where is the ambition level determined?**
  - □ *Input in the analysis*
    - □ *based on current Paris Agreement commitments*
    - □ *Include provisions for possible ratcheting up pathways*
  - □ *Output of the LTCS*
    - □ *Result of techno-economic scenarios*
    - □ *Result of cost-minimization*

- **Type of mitigation target**
  - □ *One deterministic target (e.g., 80% in 2050*)*
  - □ *A range of targets (e.g., 80%, 90%, 100% in 2050)*
  - □ *A distribution to reflect uncertainty (e.g., _____/_____)*
    -80%

4.1.5 Desired granularity of mitigation targets

- **Time dimension:**
  - ☐ *Only an endpoint (e.g., 2050)**
  - ☐ *One intermediate target (e.g.: 2030 / 2050)*
  - ☐ *A fixed frequency (e.g.: 1y, 2y, 5y, 10y)*
  - ☐ *Carbon budgets*
  - ☐ *other*

- **Sectoral dimension:**
  - ☐ *Only total greenhouse gases*
  - ☐ *Split into major use sectors (e.g., transport, buildings, agriculture)**
  - ☐ *Split into finer emission source (e.g., freight transport, person transport)*
  - ☐ *Split energy into fuel sources (e.g., coal, oil, gas)*
  - ☐ *other*

- **Geographic dimension:**
  - ☐ *EU only**
  - ☐ *EU and MS*
  - ☐ *Regional*
  - ☐ *other*

4.1.6 Timeframe

- ☐ *2050**
- ☐ *2060*
- ☐ *2100*
- ☐ *Rolling timeframe (e.g. 40y into the future)*

Issues that can:

- **Not be included**

- **Be included: in what degree of detail?**
  - Mention the issue
  - Refer to other European Commission documents
  - Discuss qualitatively
  - Include in modelling
  - Core focus of the LTCS

4.2.1 General focus of the LTCS
4.2.2 Sectoral focus of the LTCS

4.2.1 General focus of the LTCS

	0 not at all	1 mention the issue	2 refer to other EC doc's	3 discuss qualitatively	4 Incl. in modelling	5 core focus of the LTCS
Adaptation	2011					
Mitigation scope beyond the EU (e.g., include international exchanges of mitigation outcome)		2011				
EU PA obligations beyond mitigation (finance, technical, …)	2011					
Policy						
- Discuss which level (EU,MS,local) should be responsible	2011					
- Discuss concrete policy measures (e.g. standards, ETS)		2011				
Innovation		2011				
Social and regional impacts					2011	
Macroeconomic impact					2011	

4.2.1 General focus of the LTCS: transition

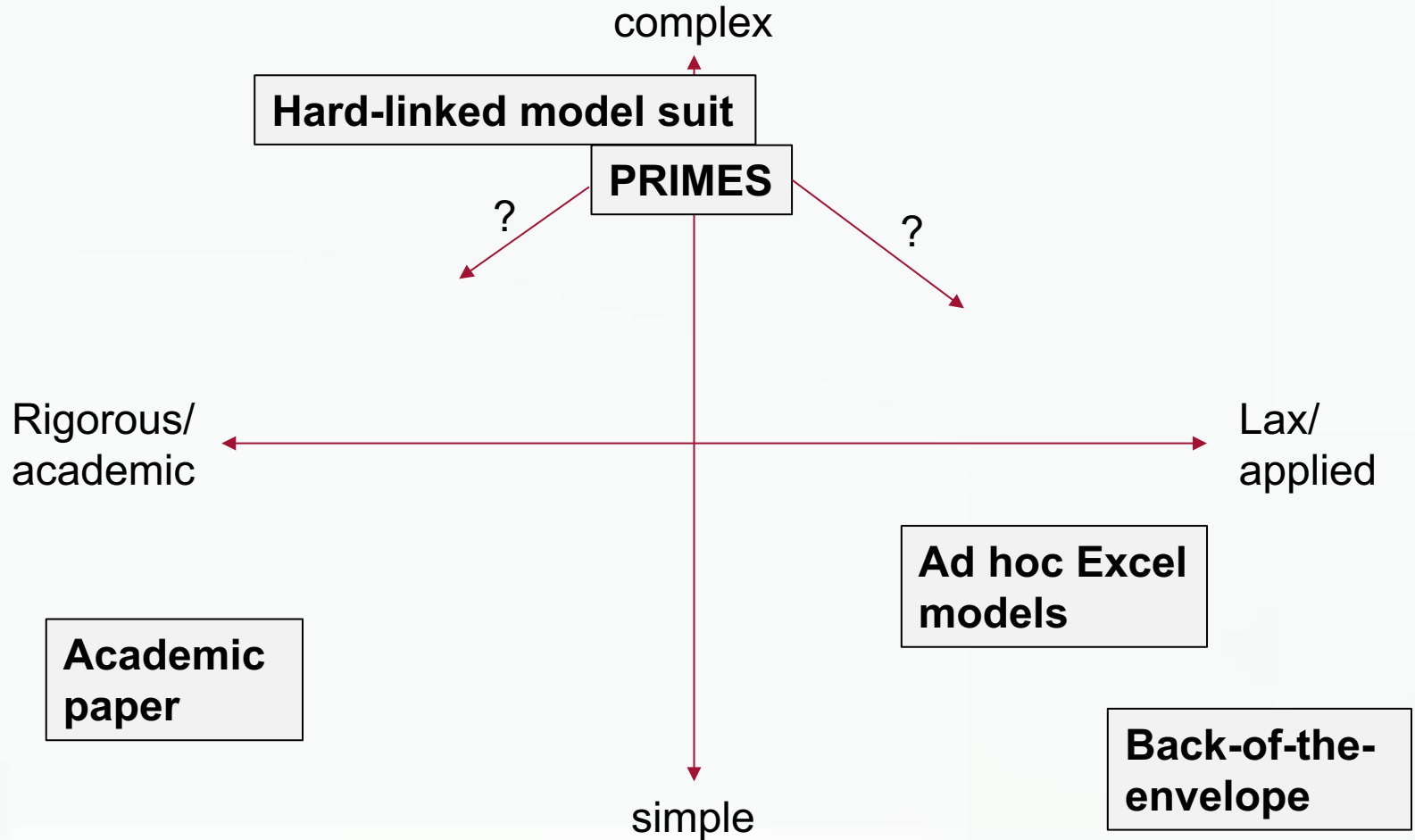|	0 not at all	1 mention the issue	2 refer to other EC doc's	3 discuss qualitatively	4 Incl. in modelling	5 core focus of the LTCS
Implications of system choices (e.g. Hydrogen vehicle vs Battery electric vehicle system)	2011					
- **Determine by when certain choices need to be taken**	2011					
Optimal transition speed (e.g.: early action with currently available technologies vs. late action with yet unavailable technologies)	2011					
Resilient transition (e.g., dealing with unexpected technology developments)	2011					
Stranded assets in the transition (e.g., which assets might become stranded, how to deal with them)	2011					
Competitive transition (how to deal with carbon leakage)		2011				

4.2.2 Sectoral Focus of the LTCS

Mitigation areas	0 not at all	1 mention the issue	2 refer to other EC doc's	3 discuss qualitatively	4 Incl. in modelling	5 core focus of the LTCS
Electricity sector						2011
Transportation						2011
Residential heating						2011
Industry					2011	
LULUCF				2011		
Negative emissions		2011				

Annex

Modelling-Annex: Which effects to consider?

- **Which variables to include**
  - ☐ Infrastructure
  - ☐ Finance
  - ☐ Fiscal
  - ☐ Innovation
  - ☐ Macro-economy
  - ☐ Regional
  - ☐ Industrial (e.g., where will electric vehicles be produced)
- **Time and geographic resolution**