A collection of objects is arranged on a light-colored surface. On the left, there is a portion of a chessboard with several pieces. Below the chessboard are two medals: one with a red ribbon and a white star, and another with a blue ribbon and a white star. A pair of gold-rimmed glasses with thin temples is positioned diagonally across the center. In the bottom left corner, there is a circular compass with a white face and black markings. The background is a plain, light-colored surface.

Expected Payback Period as a key factor shaping future energy mix


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Agenda

- ◆ How does an expected payback period frame investors preferences within the energy mix?
- ◆ Why governments are forced to step in?
- ◆ Why R & D can once again abruptly change the energy market?



How does an expected payback period frame investors preferences within the energy mix (1)?

- ◆ Expected payback period is widely known as a key investment decision factor however rarely analyzed in depth and explicitly by policy makers.
- ◆ Private investors (or their intermediates) usually expect short to medium terms return periods. Payback periods beyond 10 years are rarely accepted – usually by investors with governmentally supported/regulated vehicles.



How does an expected payback period frame investors preferences within the energy mix (2)?

- ◆ Investment in most of conventional energy sectors offer long payback periods: even plants construction times are long (fossil fuel based power plants 1-10 years, mines 3 – 7 years, substantial hydrocarbon fields development at least 2 years).
- ◆ Most of non-conventional energy sources offer medium to short payback periods. They are also cheaper in terms of capital investment and quicker to construct.



Favoured energy sources based on payback periods

- ◆ Favorable position (selected):
 - solar,
 - wind,
 - natural gas based electricity generation,
 - expansion of already existing conventional plants and, in few cases, mines.
- ◆ Unfavorable position (selected):
 - coal based energy generation,
 - nuclear energy.



Imbalances (storage issue)

- ◆ Unfortunately almost all energy sources with favorable position are burdened on supply side by nature.
- ◆ The ones with unfavorable position can be flexibly managed and counter balance supply of natural resources.
- ◆ Also investments in fundamental infrastructure usually are characterized by long payback periods.



Why governments are forced to step in?

- ◆ Non conventional sources are constrained on a supply side. If solely private investors are to determine the future energy mix, there will be immanent imbalances in the system.
- ◆ Governments are the only investors to close the above mentioned gap directly or indirectly:
 - as an owner of selected energy sources,
 - as a guarantor of certain arrangements securing adequate return for private investors (see case of the UK Nuclear Program).




Why private investors will not replace governments in long term investments?

- ◆ Theoretical grounding:
 - after the 2008 financial crises investors have exposed a growing reluctance to long-term commitments (in illiquid assets),
 - finance as a science is badly equipped with instruments evaluating long term investments.
- ◆ Practical grounding: in all known PPP projects governments had to act as an ultimate guarantor of financial payback. Only tools in use have varied.




How governments are present?

- ◆ Directly:
 - as a Party of complex agreements,
 - as a (co) owner of an investing company.
- ◆ Indirectly:
 - as a consortium member/supporter in its own country.
 - as a consortium member/supporter in a foreign country.



Why R & D can once again abruptly change the energy market?

- ◆ The next breakthrough technology will have to meet three requirements:
 - offer short to medium term payback period,
 - be manageable on supply side,
 - meet minimum environmental requirements.
- ◆ Such technology would limit, if not eliminate a need for governmental intervention leaving energy markets to free competition.



Why R & D can once again abruptly change the energy market?

- ◆ Now the priorities expressed in most R & D programs are substantially different. For example in the Horizon 2020 program under capture “Secure, clean and efficient energy” priorities are: low cost low carbon energy supply, alternative fuels and mobility sources, smart grids.
- ◆ Based on history in most cases technologies requiring big projects with long term payback periods will get most financing (CCS, biofuels etc.).



Thank you for your attention

For further information please
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