

Preparing for an energy-scarce future: questions and answers for the communal level and beyond

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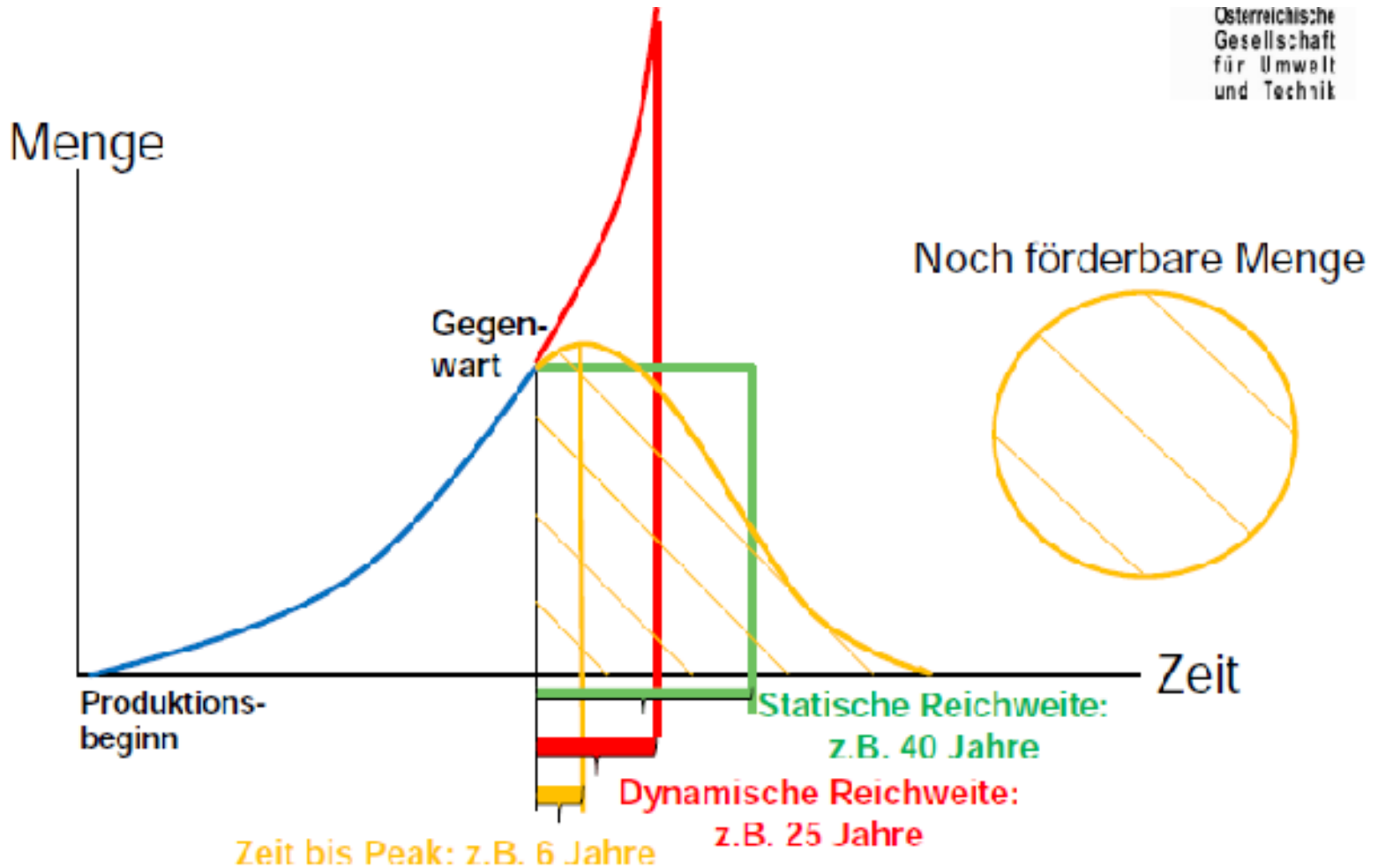
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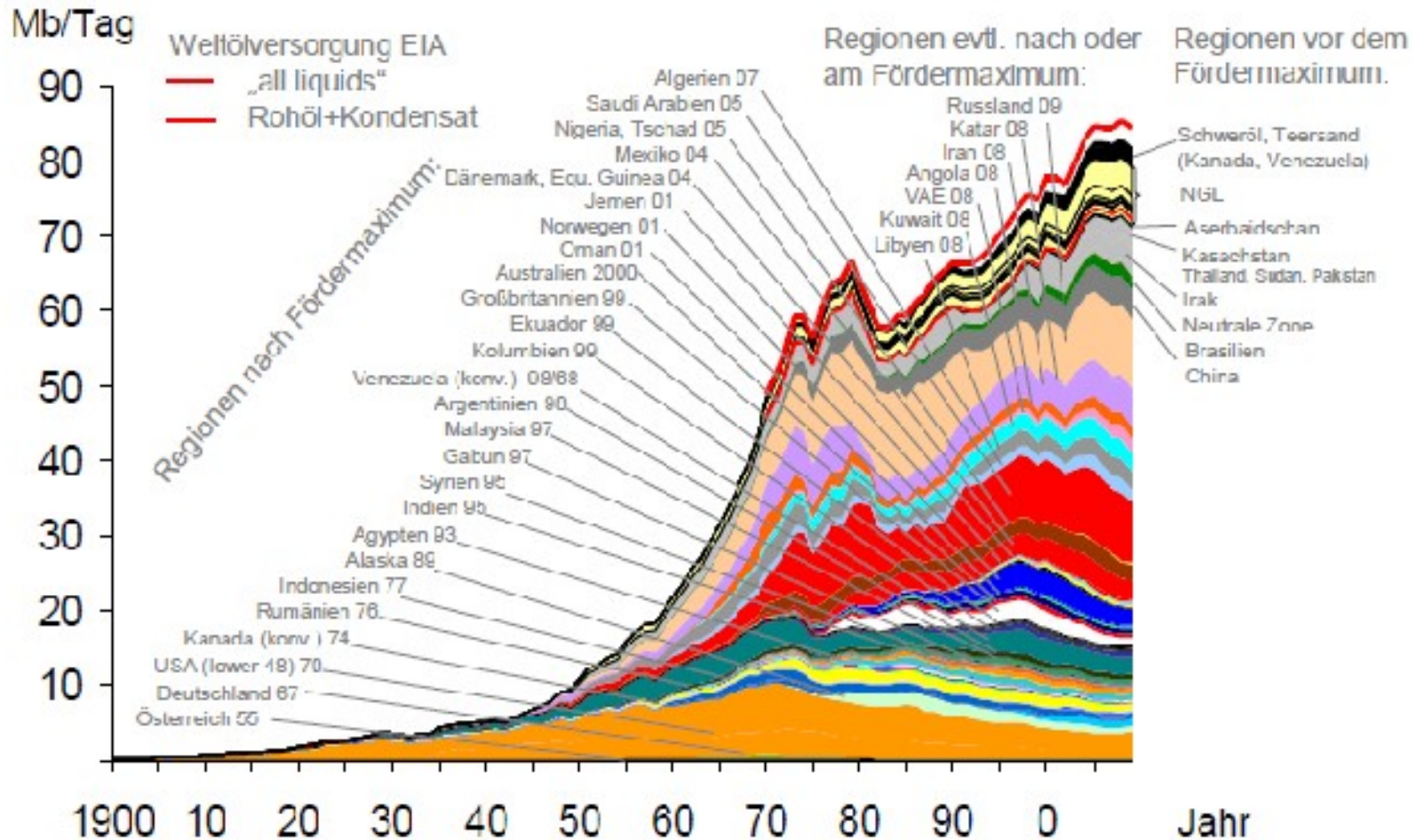


Supply of limited resources

Osterreichische
Gesellschaft
für Umwelt
und Technik



Past oil production



Datenquelle: Österreich, Deutschland, USA, Kanada, Niederlande, UK, Norwegen, Dänemark, Saudi Arabien, Brasilien: Statistiken nationaler Behörden/Firmen; Für andere Staaten US-EIA, soweit verfügbar. Für die verbleibenden Staaten BP Statistical Review und LBST-Schätzung. Historische Zahlen bis 1970 bzw. für manche Staaten bis 2006: IHS-Energy soweit nicht aus oben genannten Quellen ermittelt; Analyse LBST Feb 2010

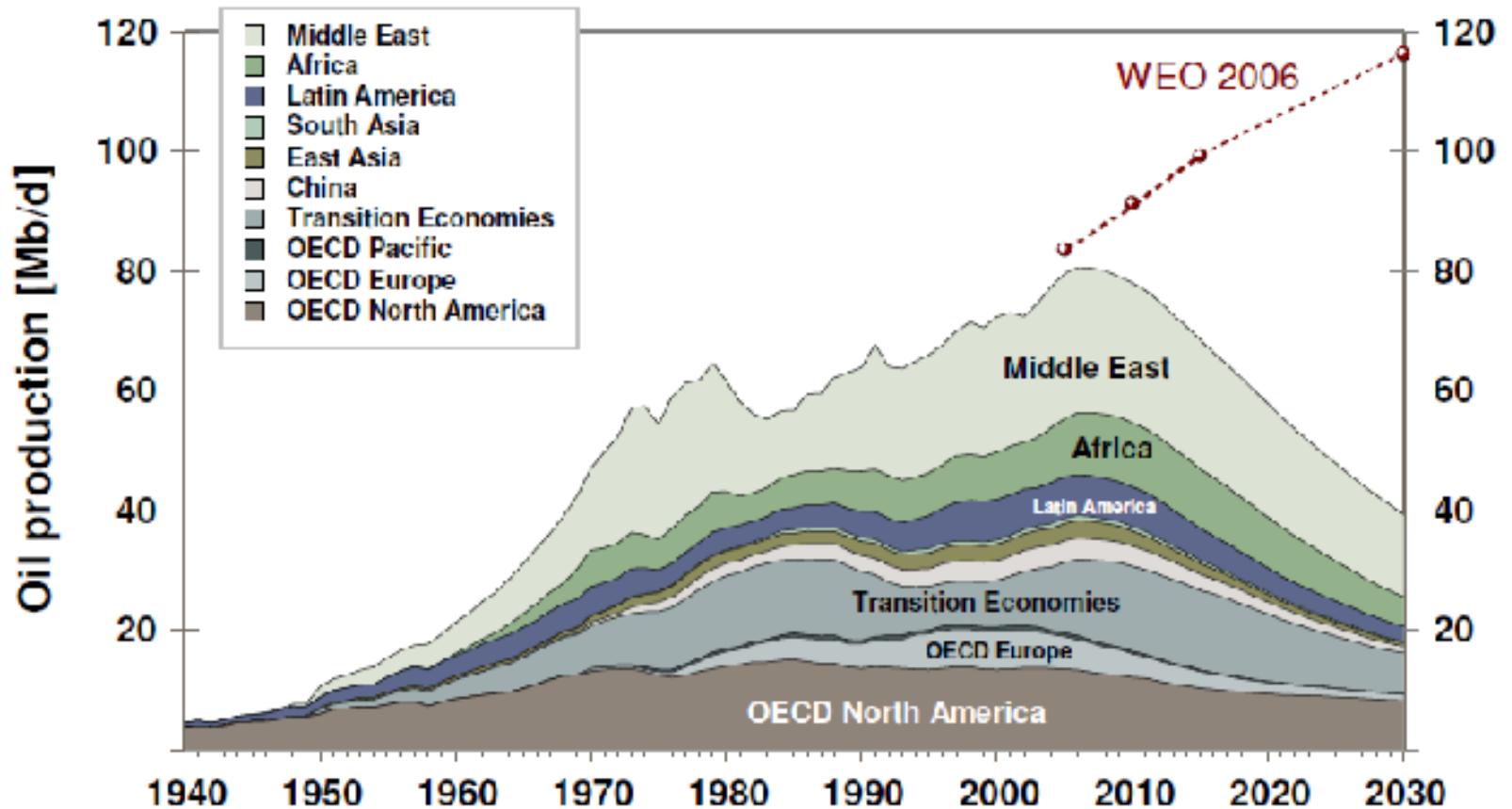
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Source: Zittel (2010)



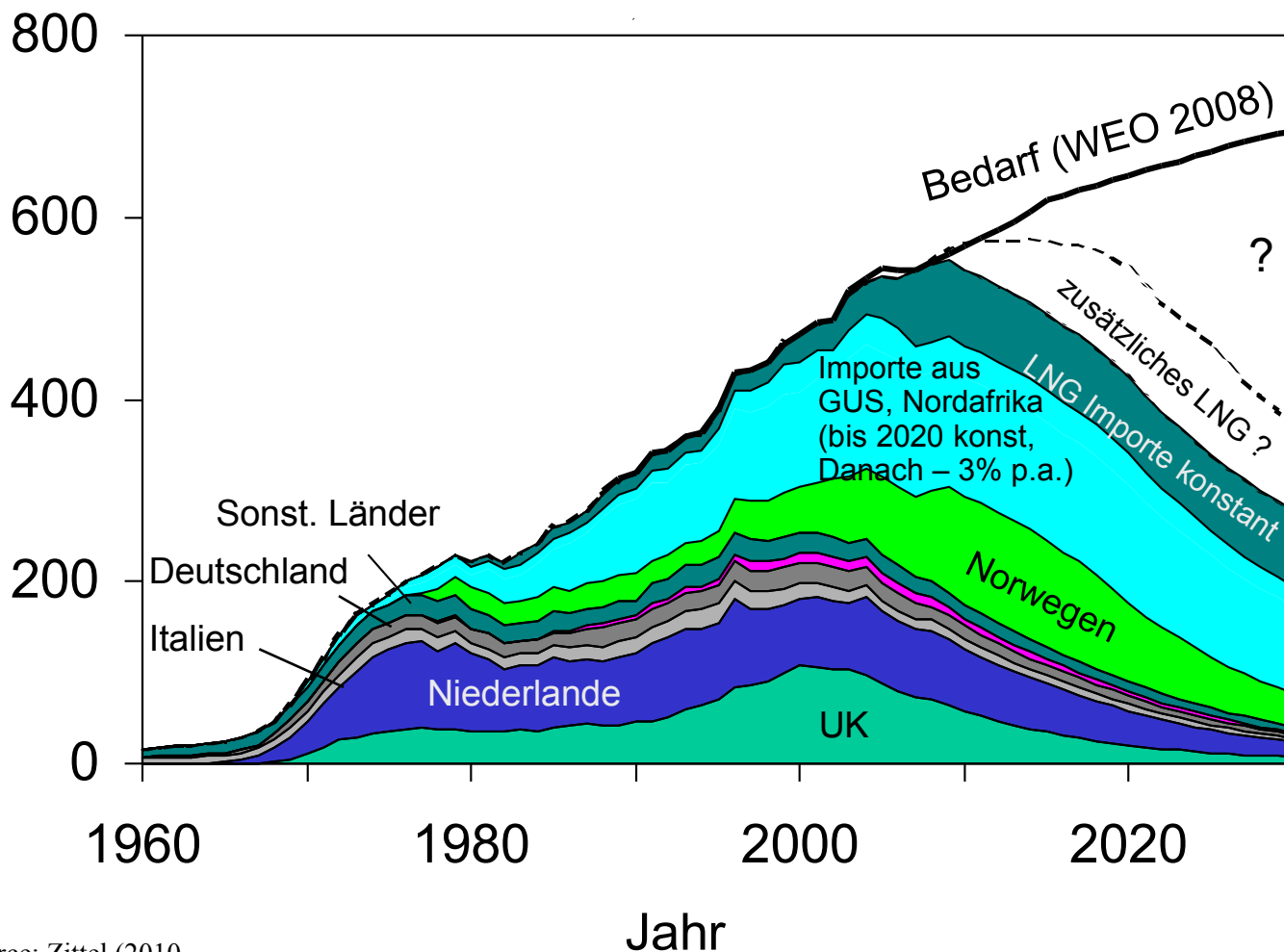
Past and future oil production



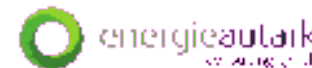
Source: Energy Watch Group (2008): Zukunft der weltweiten Erdölversorgung

Past and future gas production (Europe)

Mrd. m³/Jahr



Source: Zittel (2010)



Peak Oil & Peak Gas – some (preliminary) conclusions and predictions

(according to Werner Zittel)

- Global oil production is at its peak (or has already peaked).
- Around 2030 only little and very expensive oil will be available in Europe.
- Production of natural gas in Europe will decline by 80% until 2030.
- Imports of natural gas (to Europe) would have to increase by 200-300 Mrd. m³/a (to match demand).
- Importance of non-conventional gas will remain marginal.

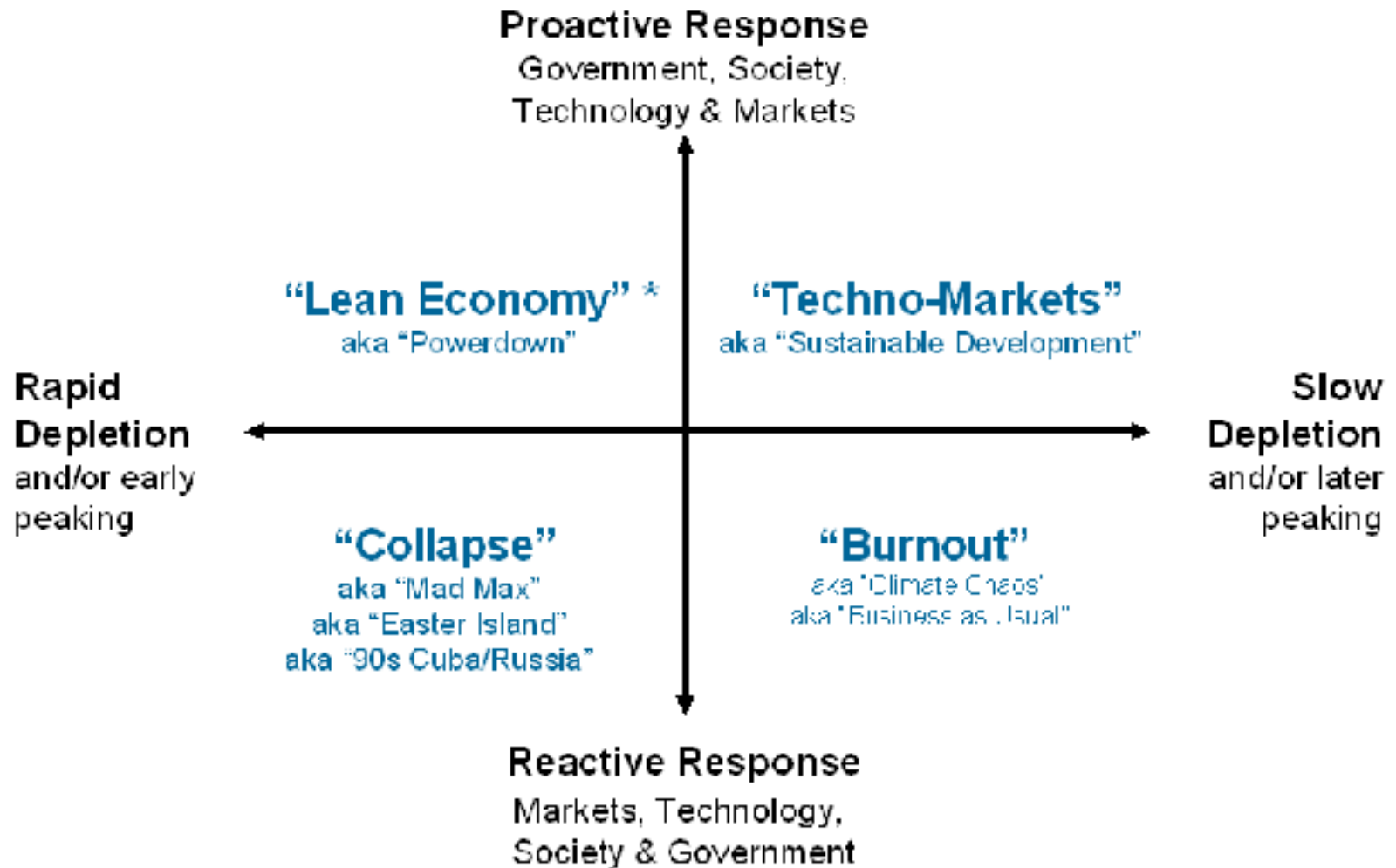
Declining net energy

Basic hypothesis:

Available net energy for societies will decline.

- Declining supply of fossil fuels.
- Production of remaining fossil fuels is more and more energy-intensive.
- There are several limitations regarding the uptake of renewable energy and energy efficiency technologies. Some of them provide little net energy.

A map of future scenarios (1)



A map of future scenarios (2)



Proactive Response
Government, Society,
Technology & Markets



“Lean Economy” *
aka “Powerdown”

“Techno-Markets”
aka “Sustainable Development”

Rapid Depletion
and/or early peaking

Slow Depletion
and/or later peaking

“Collapse”
aka “Mad Max”
aka “Easter Island”
aka “Cuba/Russia”

“Burnout”
aka “Climate Chaos”
aka “Business as Usual”



Reactive Response
Markets, Technology,
Society & Government



Consequences of peak oil & peak gas (1)

Economy

- Economic growth and a financial system depending on economic growth will become less and less feasible.
- Economic instabilities will rise possibly leading to a systemic collapse (Korowicz 2010).

Consequences of peak oil & peak gas (2)

Transport and settlement structures

- Dramatically rising costs for fossil-fuel based transport. Fuel rationing is possible.
- Dispersed settlement structures are becoming increasingly dysfunctional, are losing value and may eventually be abandoned.

Consequences of peak oil & peak gas (3)

Agriculture

- Rising prices for food production and food. Food shortages may be possible.
- Possibly: Declining agricultural productivity, more people working in agriculture.
- Rising pressure to produce energy from biomass. Rising conflicts between production of bioenergy and food (and other usages of biomass).

Priorities for the energy transition

1. Structural changes <-> behaviour
2. Technical efficiency
3. Renewable energy



Options for action, communal level (1)

- ***First steps***
- ***Long-term energy transition plans***
- ***Structural measures (spatial structures, economy)***
- ***Communal resilience (crisis management) plans***

Options for action, communal level (2)

First steps

- *Role model function of communal government*
- *Controlling and visualising communal energy consumption*
- *Awareness-raising, offering possibilities for participation*
- *Mobilising key personell*

Options for action, communal level (3)

Long-term energy transition plans

- *Setting the priorities right*
- *„Energieleitbild“, „Energiekonzept“*
- *joining e5 programme*
- *Energy Descent Action Plan*

Options for action, communal level (4)

Spatial structures

- *Fostering proximity – city of short distances („Stadt der kurzen Wege“)*
- *Development of settlements in accordance with public transport*
- *Fostering „decentral concentration“*
- *(Re)establishing local supply with goods („Nahversorgung“)*
- *Energy-efficient and solar buildings*

Options for action, communal level (5)

Economy

- *Questioning and revisioning current development goals*
- *Fostering local economic activities*
- *„Energy Resilience Assessment“ for enterprises*
- *Re-Skilling*

Options for action, communal level (6)

Creating communal resilience (crisis management) plans

- *Assessing the vulnerability of infrastructure, defining priorities*
- *Stockpiling and inventorisation*
- *Establishing (energy)autonomous systems*
- *Mobilising short-term behaviour change*
- *Integrating social perspective; participatory design*
- *Fostering re-skilling*
- *Community Resilience Plan“ (Heinberg)*

Recommendations for political reforms (1)

- *Rethinking administrative and regional responsibilities:*
e.g. competence shift for spatial planning
- *Cancelling problematic investments* (leading into the wrong direction): motorways, shopping centers in peripheral regions, etc.
- *Eco-social fiscal reform:* eco-social tax reform, cancelling counterproductive subsidies, etc.
- *Pro-active crisis prevention:* Crisis management plans on different regional levels, developing rationing schemes)

Recommendations for political reforms (2)

- *Information and awareness campaigns: Re-skilling, „Simple living“ campaigns*
- *Socio-economic measures: reduction of labour time, fighting energy poverty, fostering solidary economies)*
- *Establishing a comprehensive model region*

Thank you for your attention!

Project „Powerdown“:

www.powerdown.at

