



Conseil Français de l'Énergie

2nd South East Europe Energy Dialogue
Thessaloniki, 21-22 May 2008

**Deciding the Future:
Energy Policy
Scenarios to 2050**

Jean Eudes Moncomble
Secrétaire général,
Conseil Français de l'Énergie





Approach

Traditional Approach – Top-down

- Many recent in-depth studies of the sustainability of energy systems.
- Strong top-down perspective from experts.
- Focus on macro-economic and global or regional energy aspects.

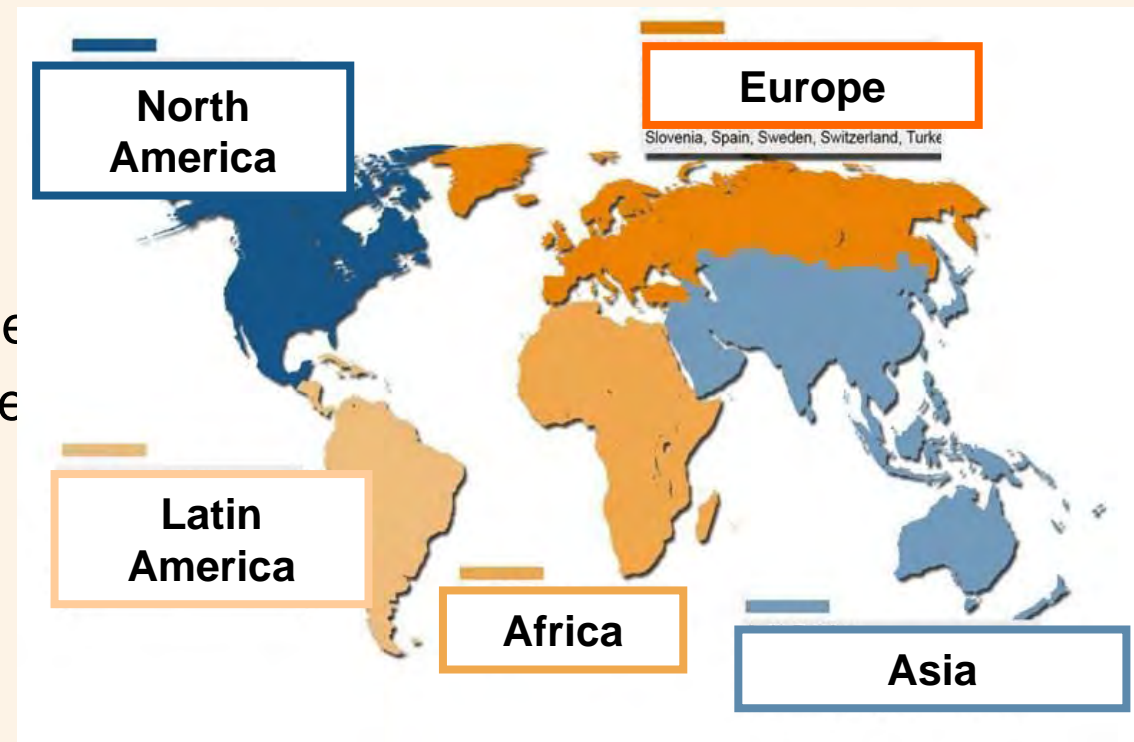
This Study is **Different** – Bottom-up

- Conversely, it is the decision makers that influence, plan, and manage regional and local energy systems on a daily basis.
- This report captures and collates their priorities and opinions, from the bottom up, in each of the five regions of the World Energy Council.



Extraordinary and Invaluable Participation

- 3 years of work
- 5 Regions
- almost 70 WEC Member Countries
- 400 individuals; all decision makers



Project Organisation

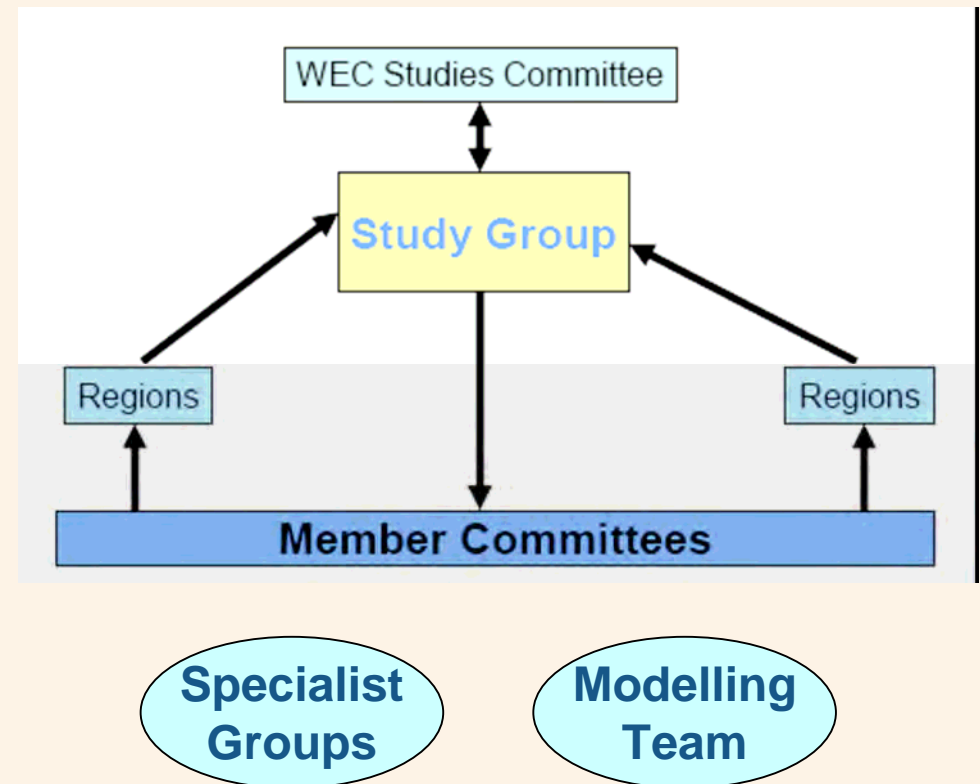
The **Study Group** provided the framework and final integration.

The **Member Committees**, with local and regional decision makers, provided the substance.

The **Regions** provided the consistency checks and primary integration.

The **Specialist Groups** brought last information on technologies and provided consistency of regional analysis.

The **Modelling Team** provided quantitative picture for all scenarios.





Evaluation of the Scenarios

We evaluated each of the scenarios on the basis of positive and negative implications for the achievement of the WEC Millennium Goals.

WEC Millennium Goals

Accessibility: access to affordable modern energy for all people

Availability: reliable and secure energy supply

Acceptability: protect and preserve the local and global environment



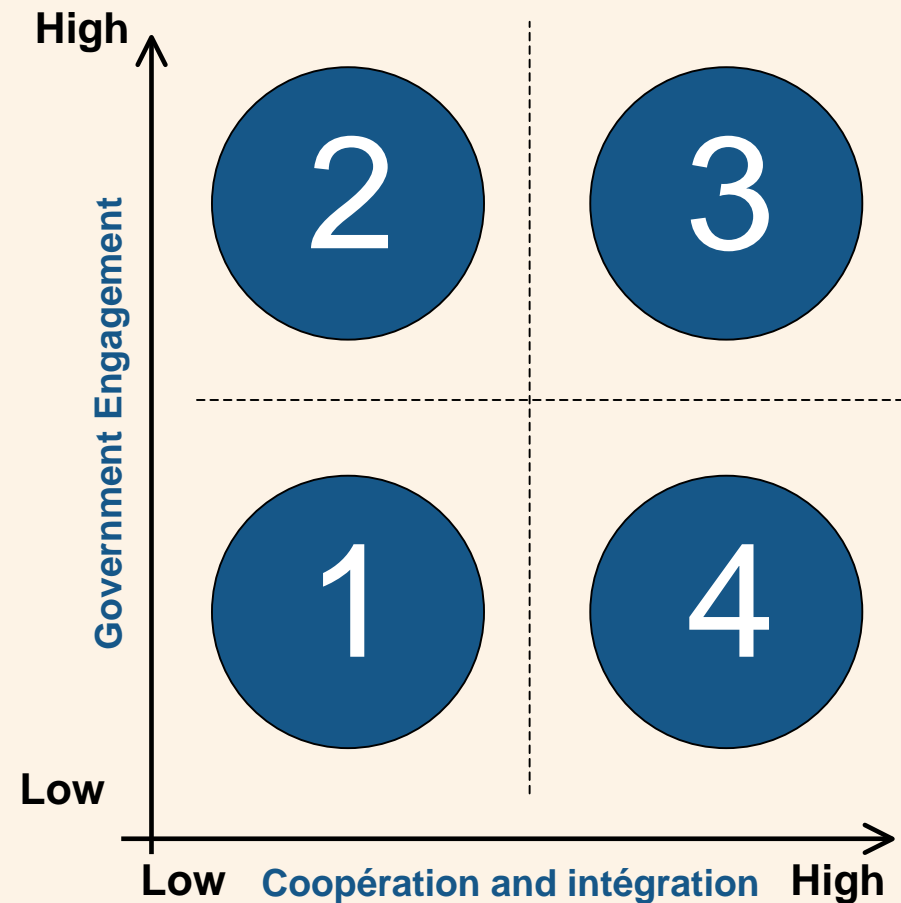
Measures – Study Framework

We studied Energy Policy within the framework of:

- **Government Engagement (High – Low)**
- **Cooperation and Integration (High – Low)**

These dimensions have real interest across the spectrum of WEC member counties.

The study is qualitative, with some quantitative validation.





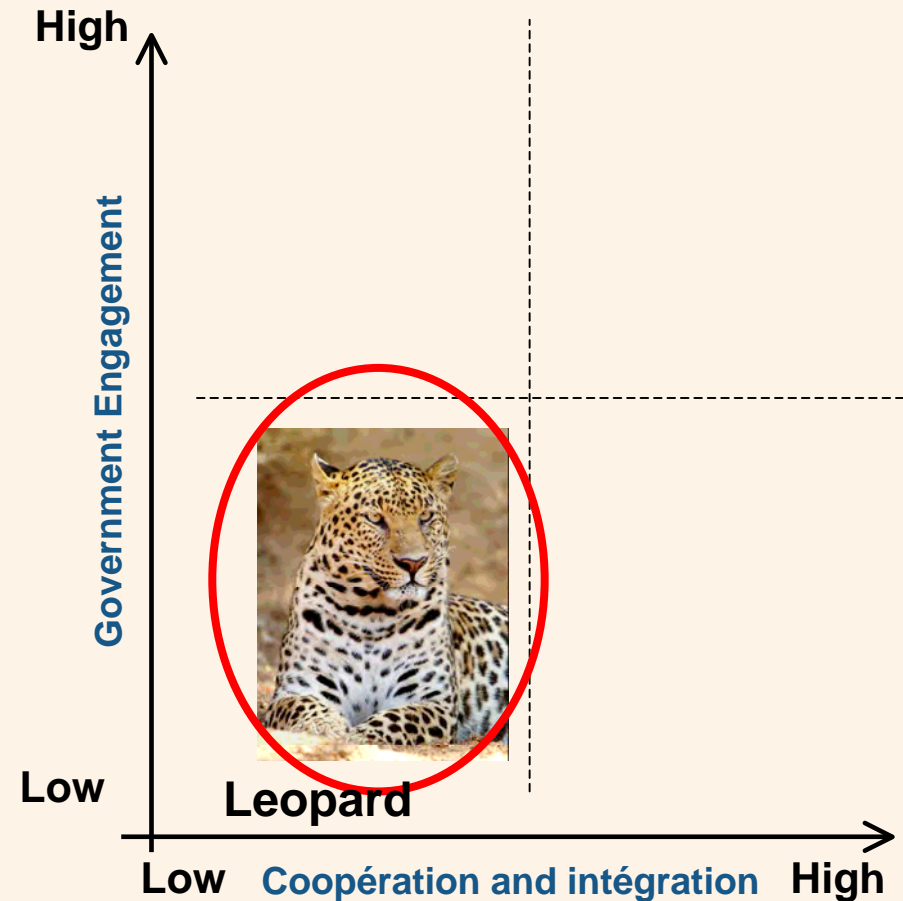
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Scenarios



Leopard (Low Government – Low Cooperation)

- Domestic economic development is the primary driver, underpinned by domestic energy security.
- Government engagement is constrained and there are few levies or subsidies.
- International treaties, where they exist, are ineffective.
- There is very little progress on any of the measures under this scenario.
- For the developing regions, this scenario leads to social and climatic degradation.

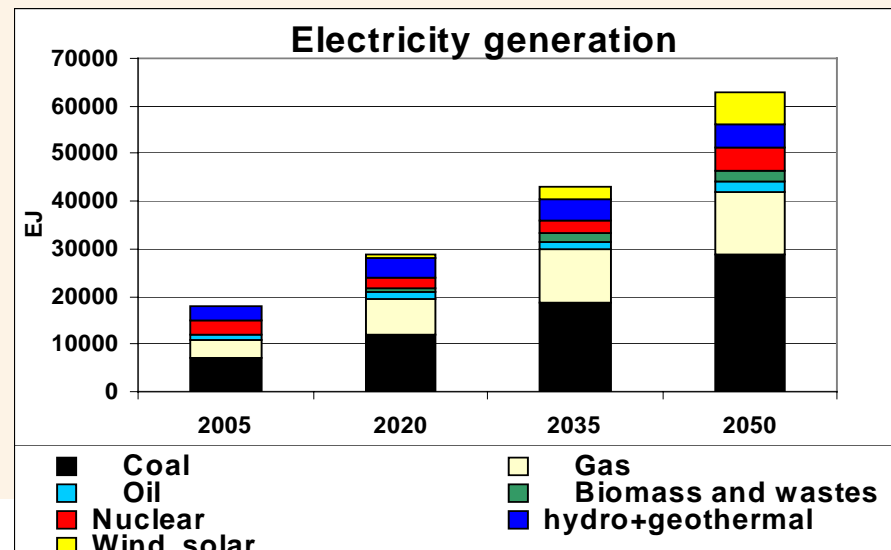
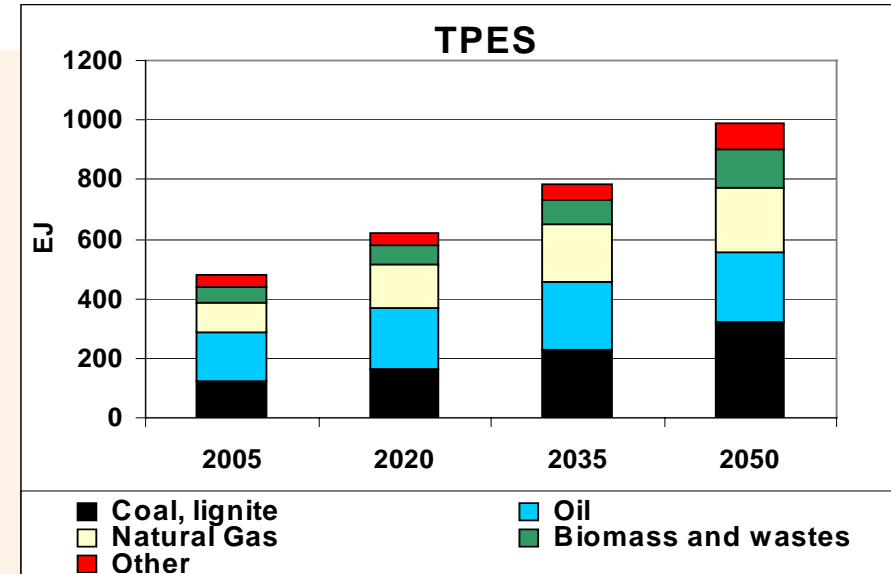


Leopard (Low Government – Low Cooperation)

International energy prices				
	2005	2020	2035	2050
Oil (\$/bl)*	54	59	90	118
Gas (\$/Mbtu)* European market	5,4	7,3	10,6	15,3
Coal (\$/t)* European market	72	89	104	117

* : all costs are given in constant 2005\$ PPP

Oil & gas production				
	2005	2020	2035	2050
World oil production (Mbl/d), of which :	80	98	110	111
Conventional, of which :	78	90	98	91
Gulf countries	21	34	49	51
Non-conventional	2	7	12	20
World gas production (Gm3), of which :	2818	4311	5504	6195
Gulf countries	255	647	1291	2030
CIS	729	942	1380	1571

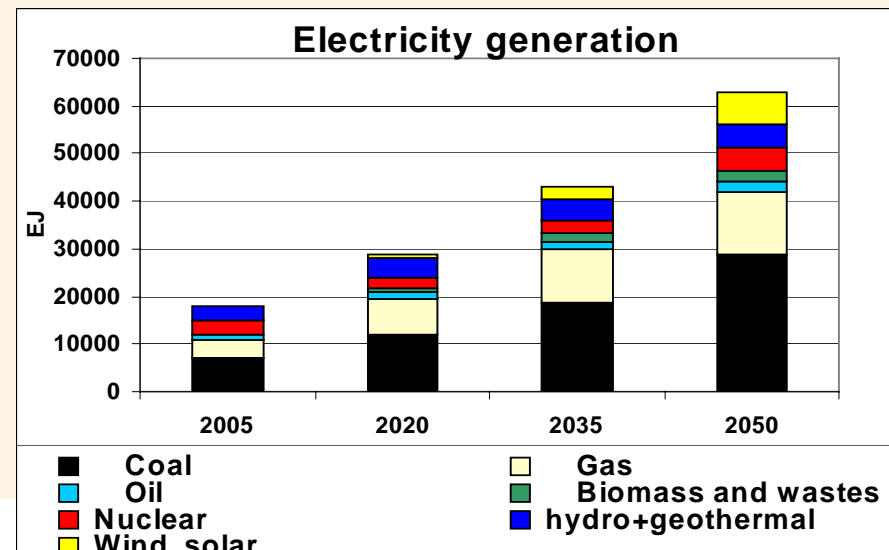
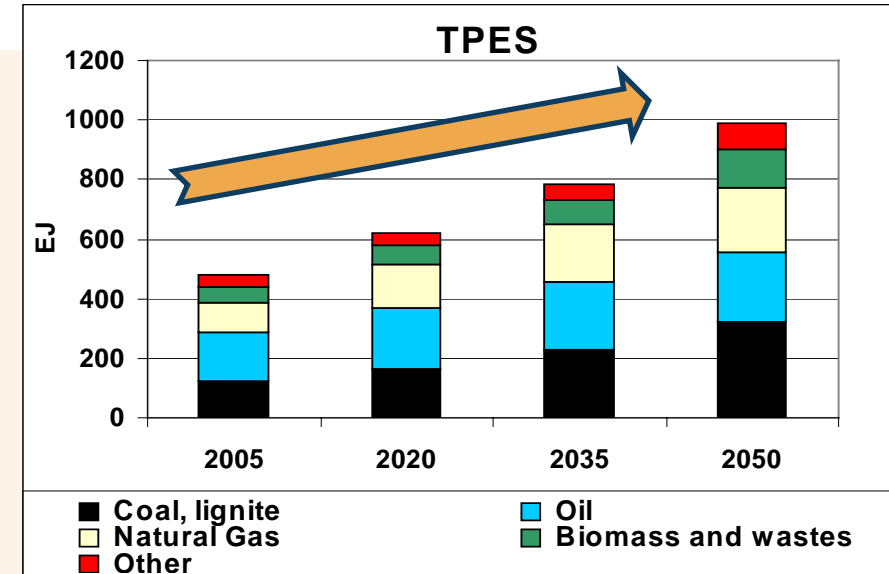


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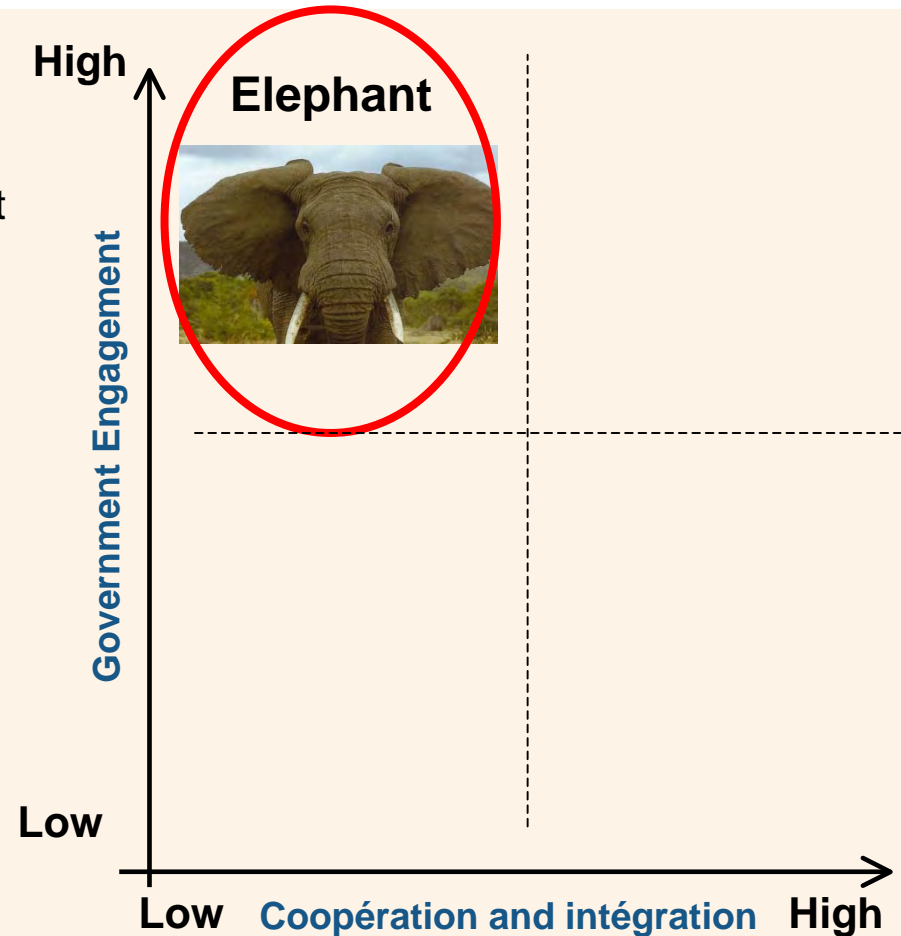
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World TPES doubling from 2005 to 2050

Elephant (High Government – Low Cooperation)

- Strong, hierarchical leadership from governments.
- The first priority is domestic energy security to support structured economic activity and growth.
- Focus on development, and protection, of indigenous resources.
- Limited use of international bilateral agreements.
- Government engagement ensures steady improvement in all the measures.
- Low cooperation inhibits progress in developing regions due to technology and resource constraints.





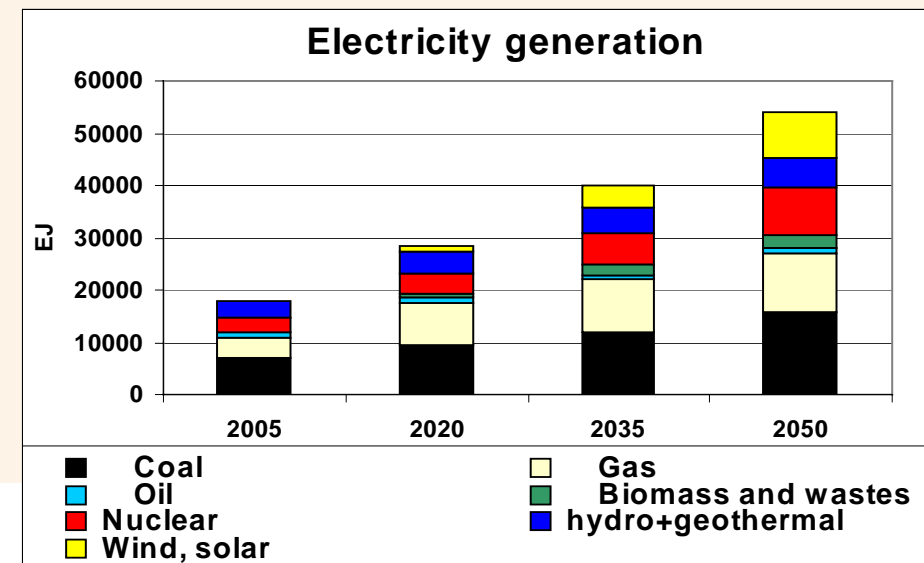
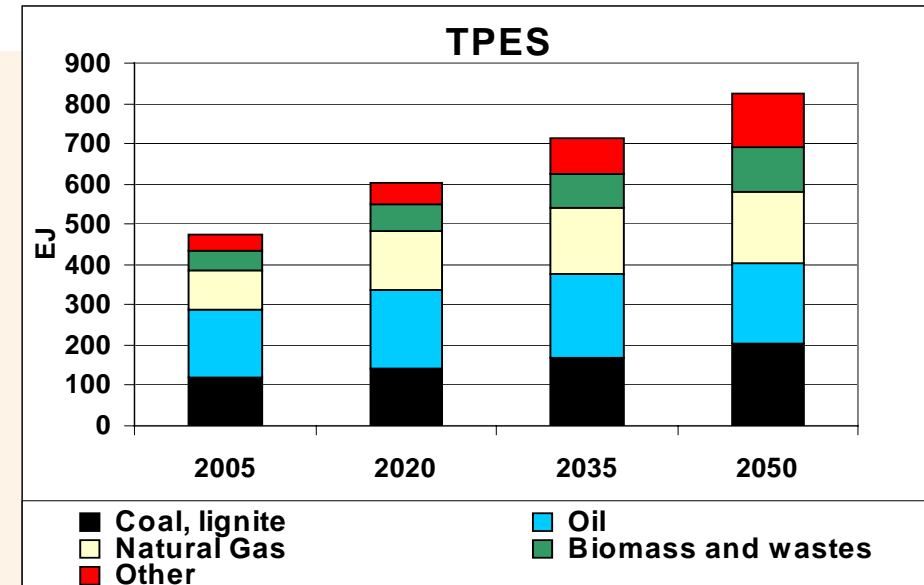
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Oil (\$/bl)*	54	59	73	91
Gas (\$/Mbtu)* European market	5,4	6,9	8,9	11,2
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Oil & gas production				
	2005	2020	2035	2050
World oil production (Mbl/d), of which :	80	94	101	96
Conventional, of which :	79	86	82	68
Gulf countries	22	33	42	38
Non-conventional	2	9	19	28
World gas production (Gm3), of which :	2858	4192	4724	5025
Gulf countries	259	607	979	1458
CIS	735	853	1070	1277





Elephant (High Government – Low Cooperation)

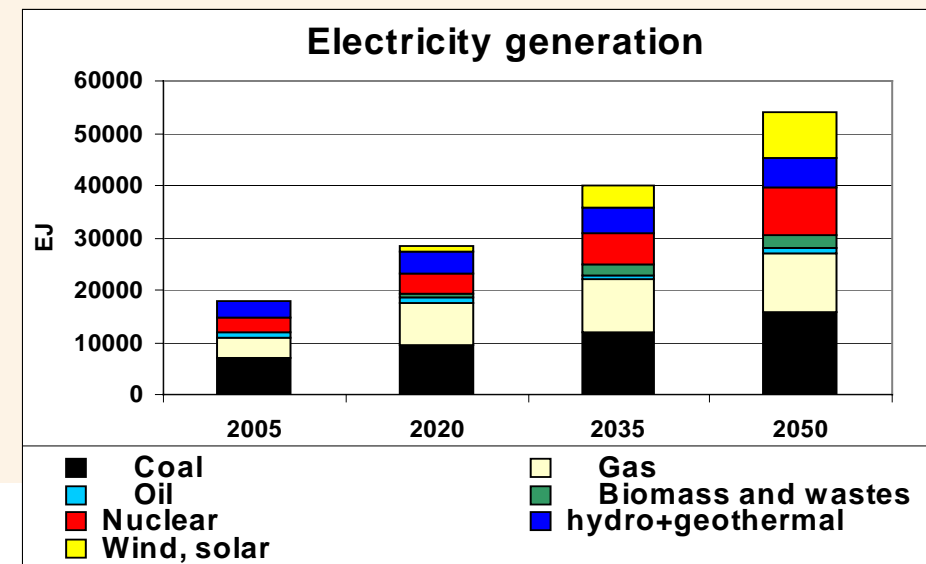
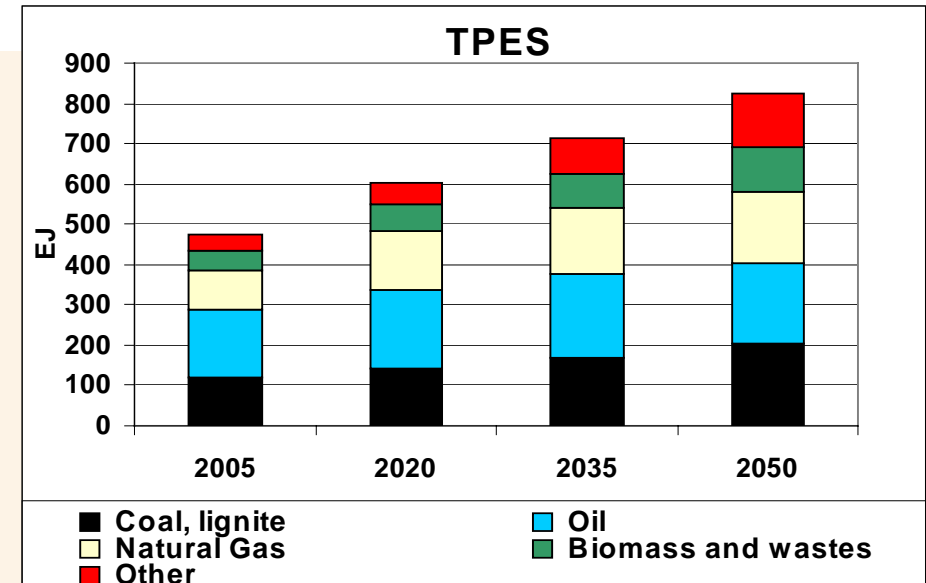
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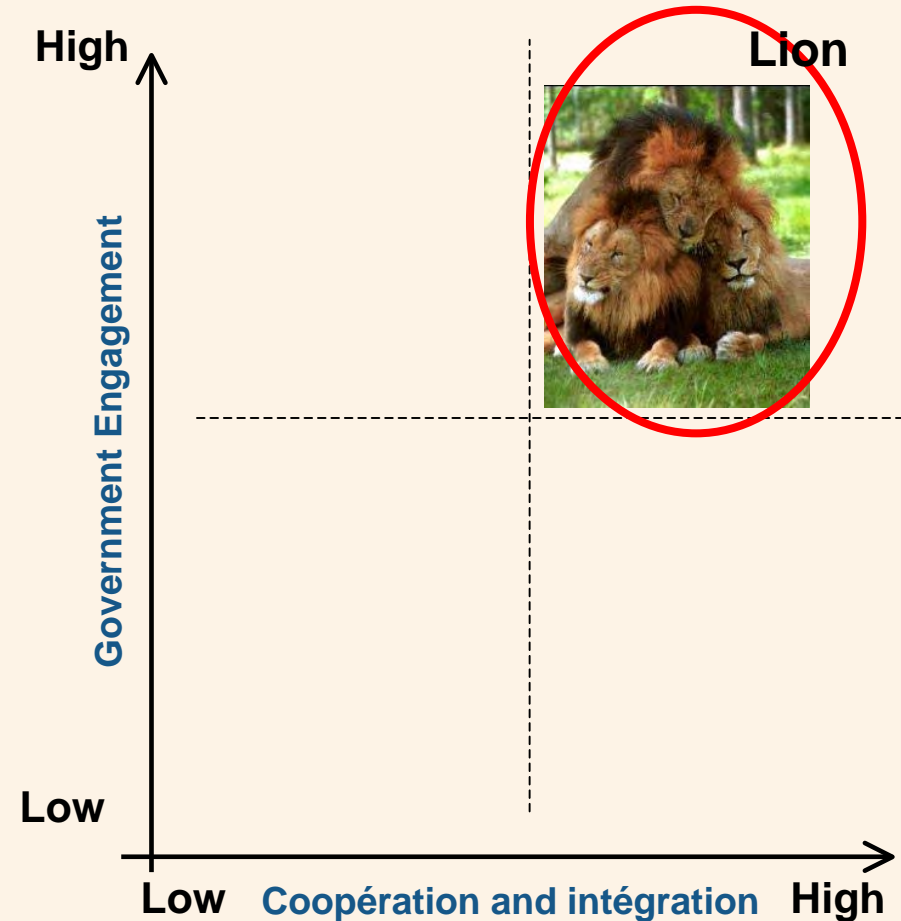
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Peak oil (conventional)
around 2020, 86 Mb/d



Lion (High Government – High Cooperation)

- National policies provide protection of property and commercial rights promoting international alliances.
- Governments and businesses actively share their experience and expertise.
- Public Private Partnerships ensure a focus on delivery of policy intent.
- Accessibility and Acceptability are global concerns.
- All 3A's make strong progress through powerful international agreements and programmes.
- This is the best scenario for developing regions.

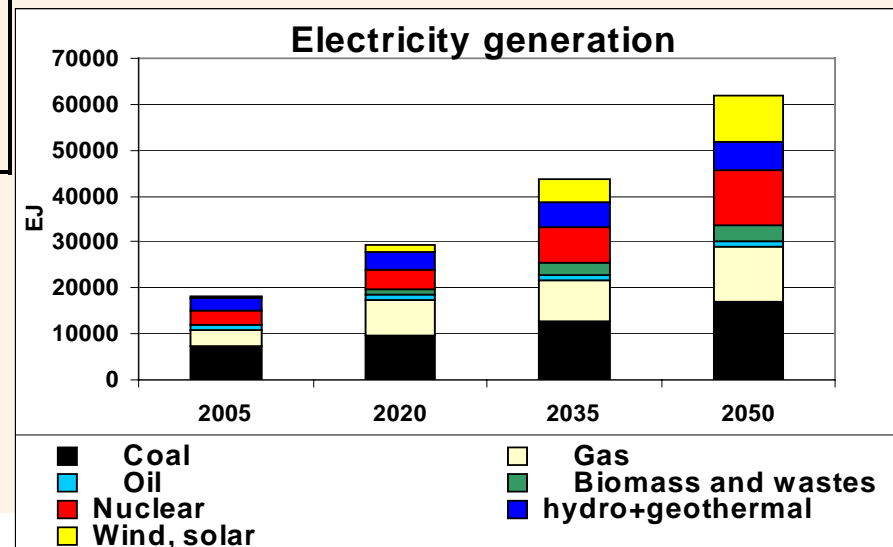
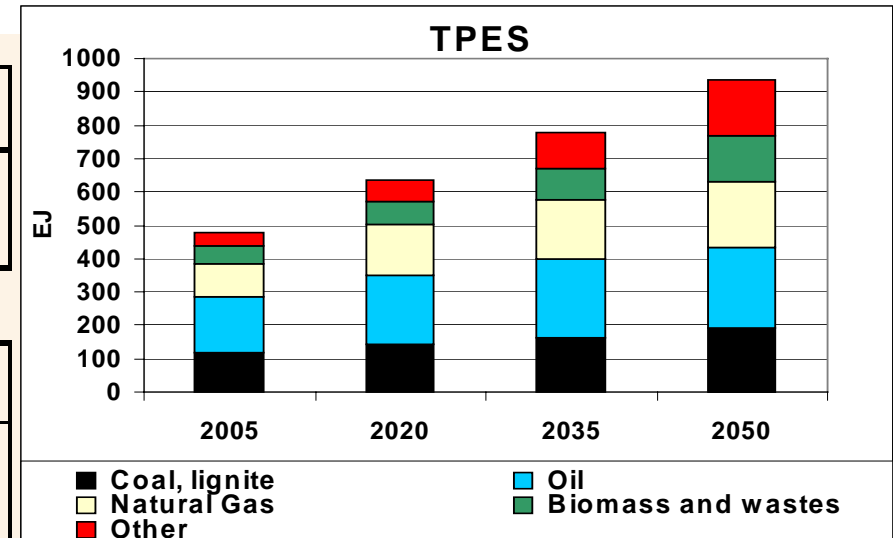


Lion (High Government – High Cooperation)

International energy prices	2005	2020	2035	2050
Oil (\$/bl)*	54	54	70	92
Gas (\$/Mbtu)* European market	5,4	6,8	8,9	12,4
Coal (\$/t)* European market	72	91	112	138

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Oil & gas production	2005	2020	2035	2050
World oil production (Mbl/d), of which :	80	101	115	115
Conventional, of which :	78	90	97	91
Gulf countries	21	29	44	46
Non-conventional	2	12	18	24
World gas production (Gm3), of which :	2829	4351	5043	5727
Gulf countries	255	599	1003	1497
CIS	731	946	1232	1393



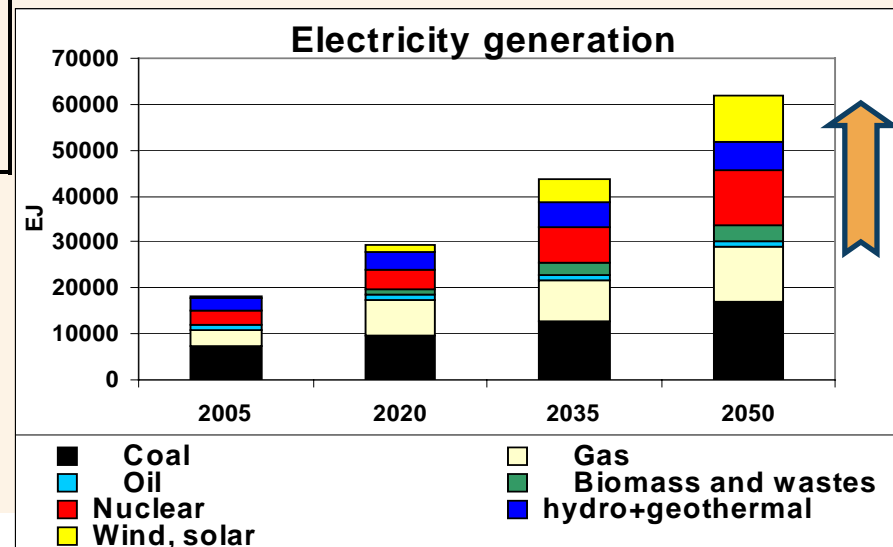
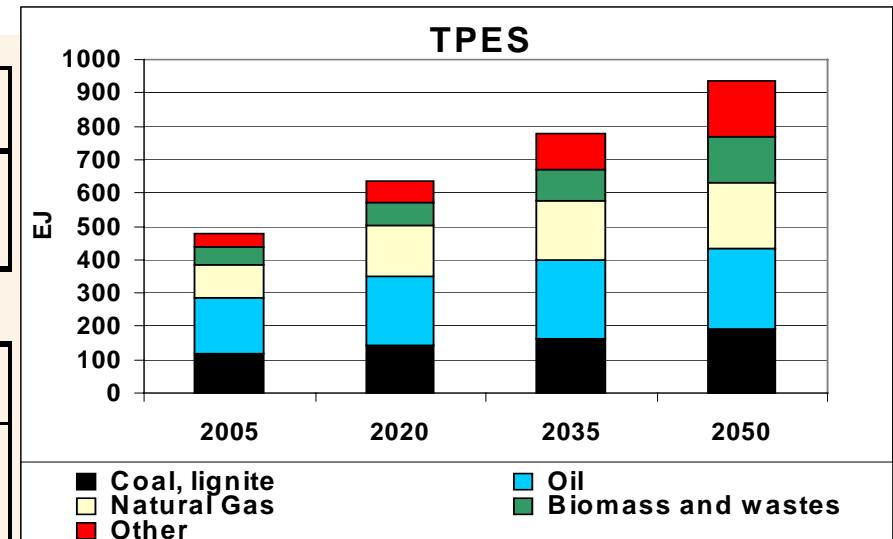
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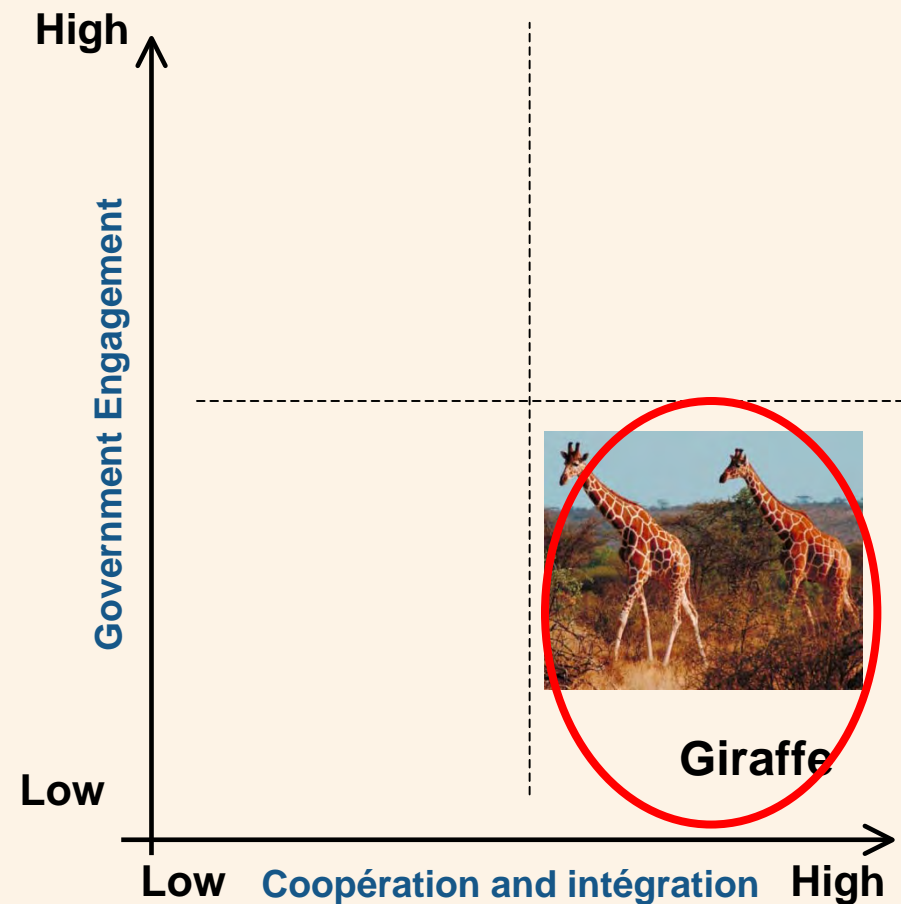
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Power generation in 2050: 55% non fossil



Giraffe (Low Government – High Cooperation)

- Primary focus is economic growth, freeing up global markets to promote international trade.
- Heavy reliance on market mechanisms with limited regulation.
- Few levies and subsidies and few restrictions on global movement of goods and services.
- Availability improves dramatically as an essential enabler of economic growth.
- Accessibility and Acceptability are second order priorities in the absence of government engagement.
- Developing countries also progress due to high cooperation.

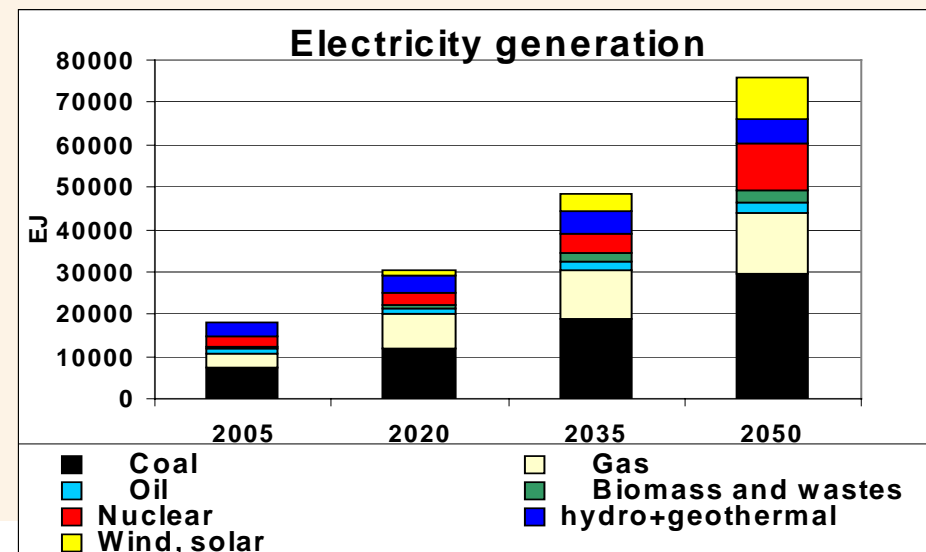
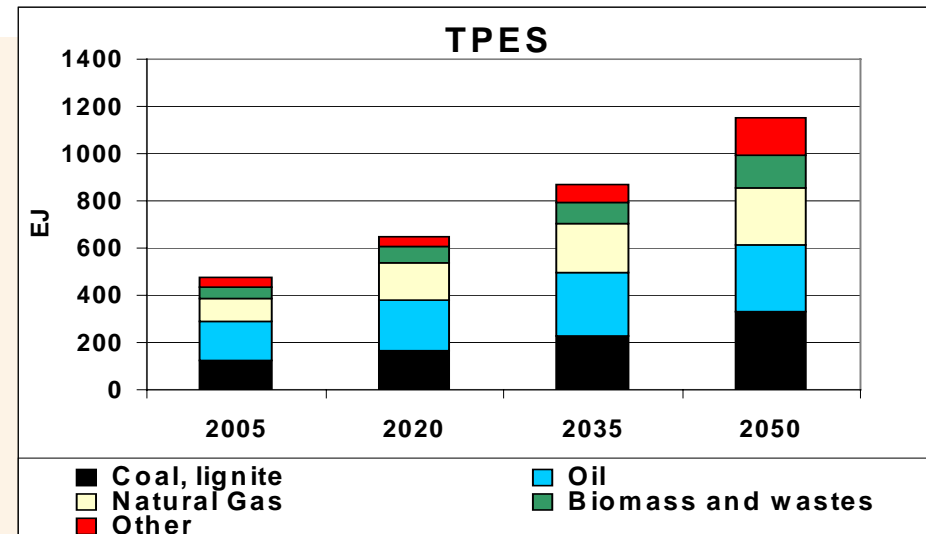


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Conventional, of which :	78	94	106	107
Gulf countries	21	33	49	55
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World gas production (Gm3), of which :	2832	4543	5893	6787
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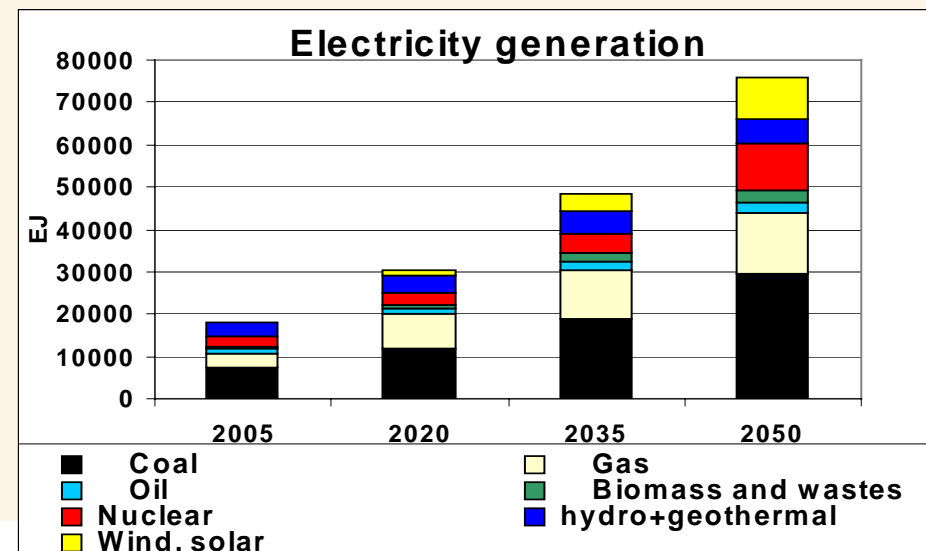
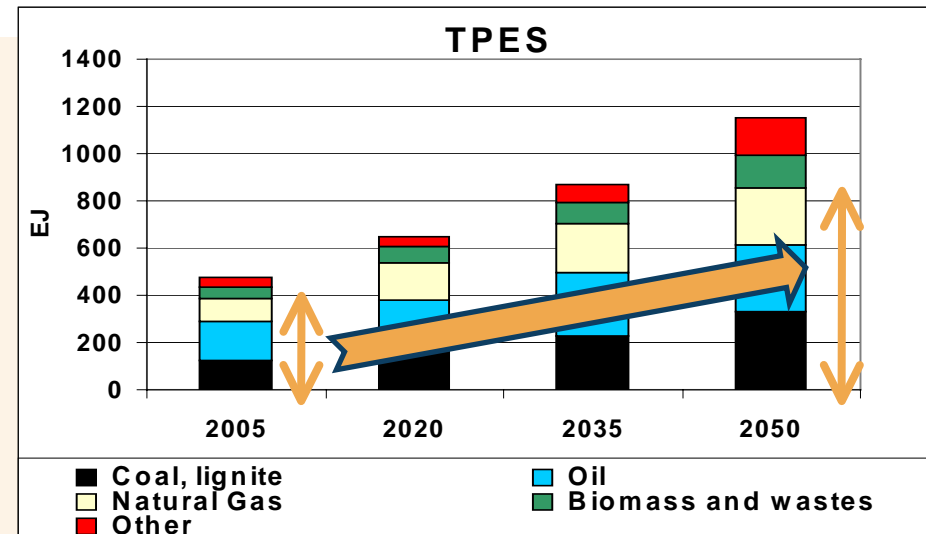
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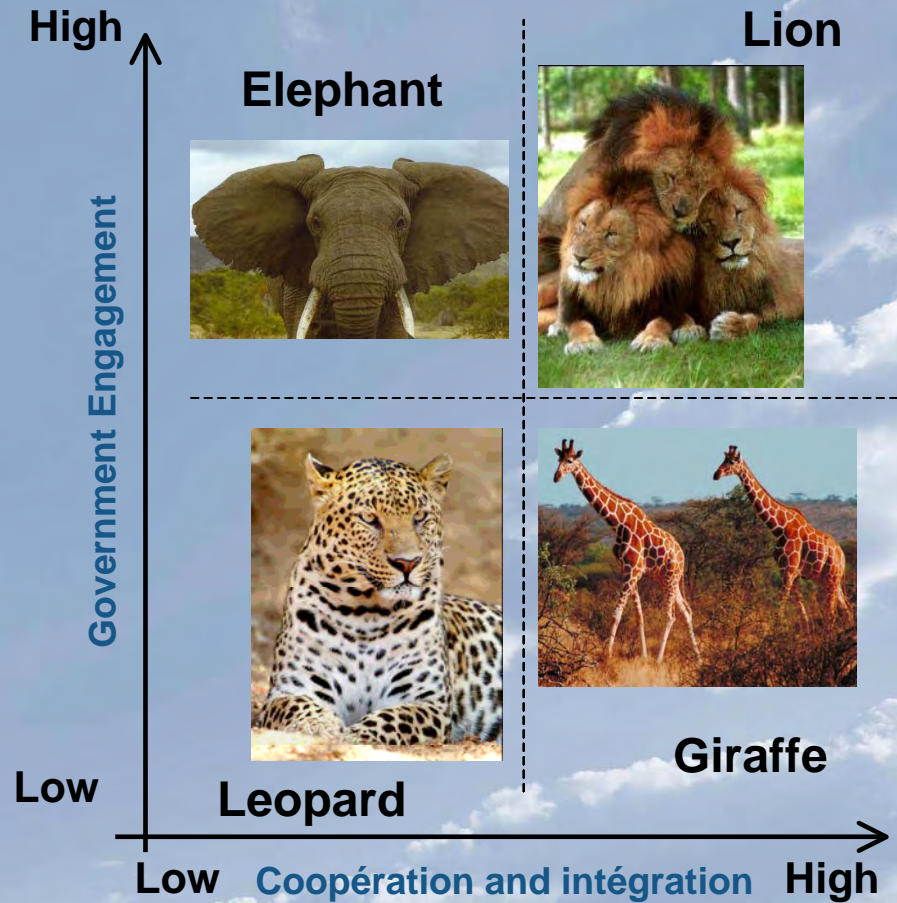
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Increase of fossil fuels:
+110%





Key Messages



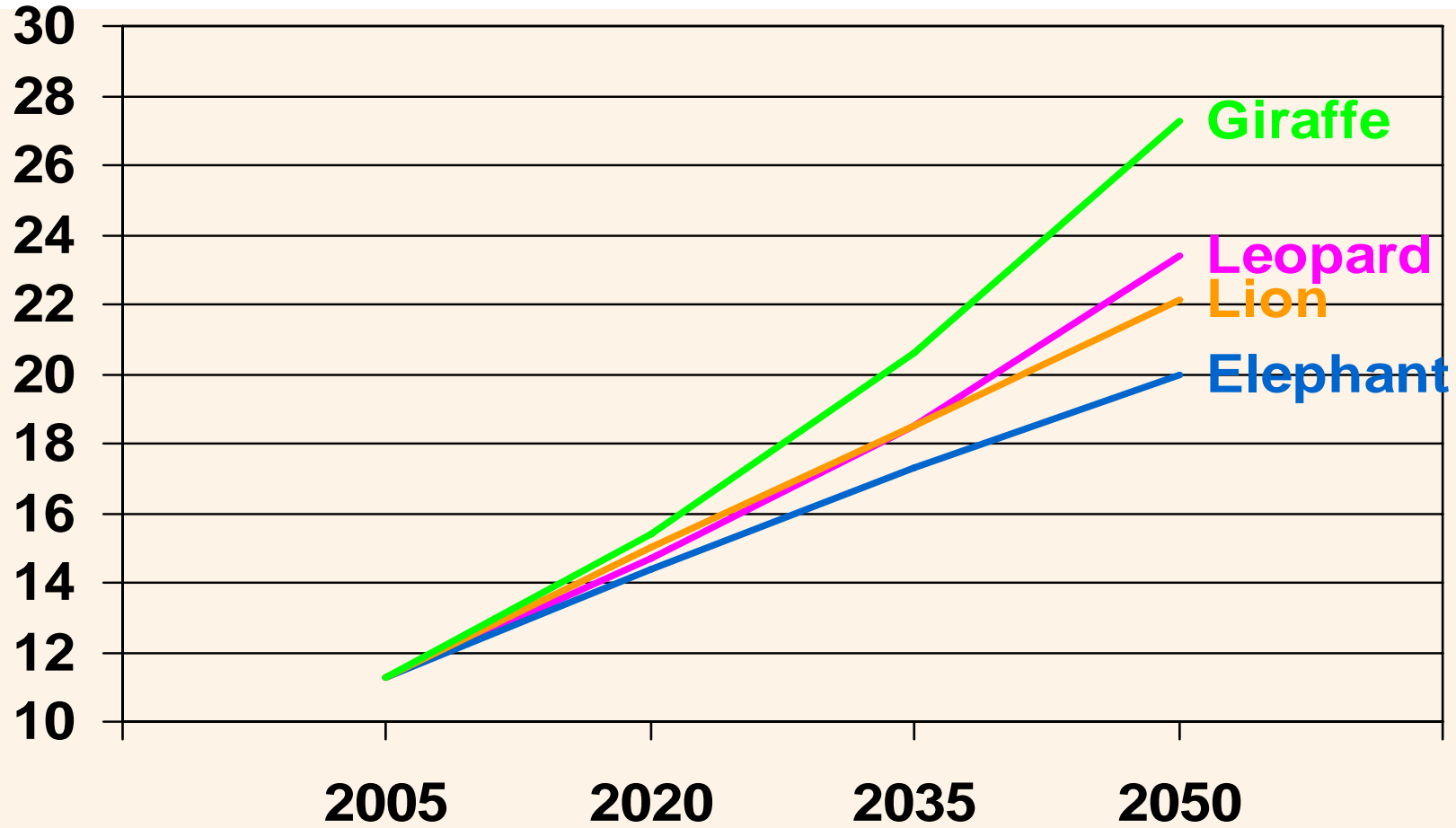


Key Message 1

To meet the energy needs of all the people in the world, global energy supplies will have to double before 2050.



TPES



Gtep

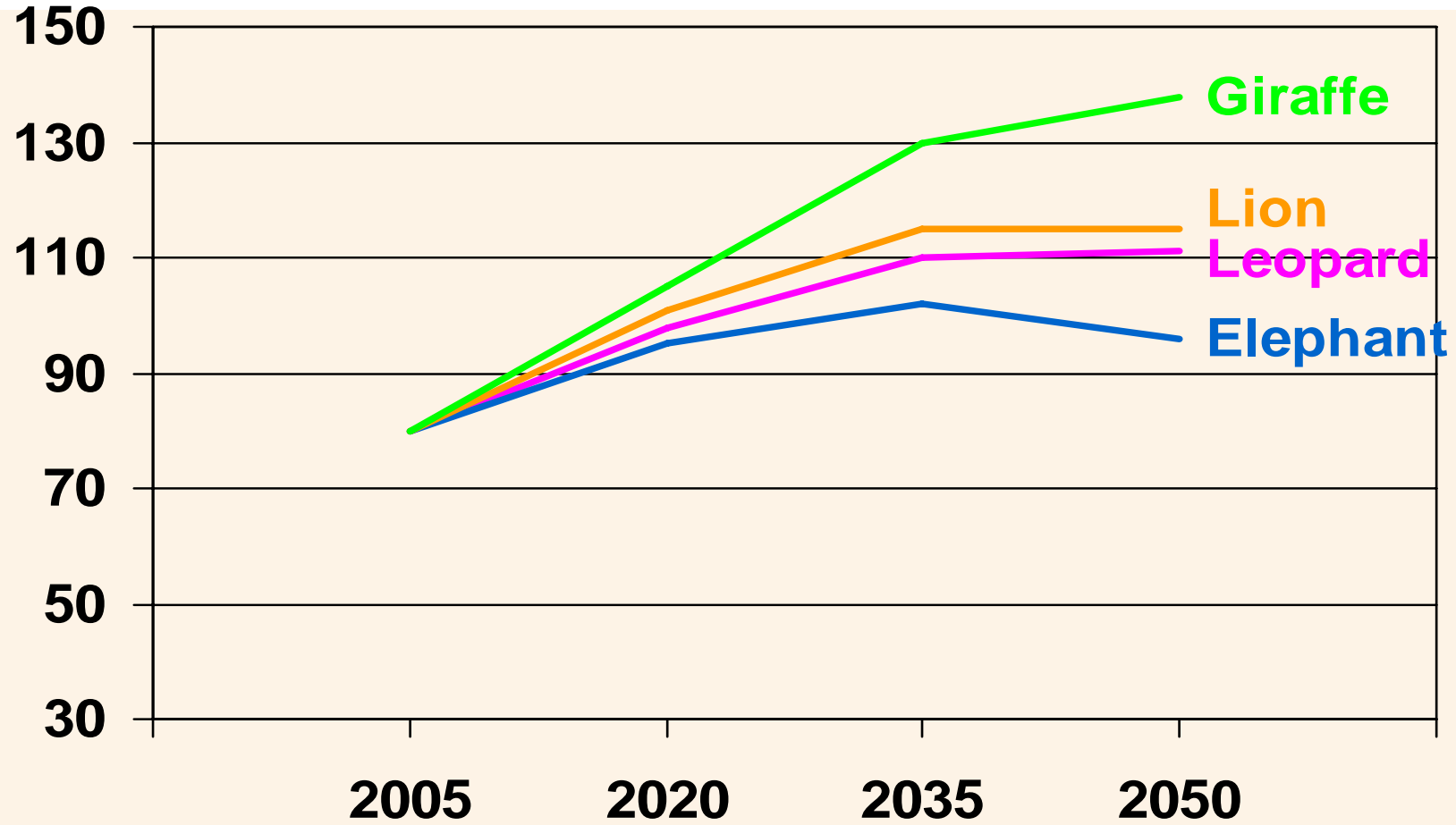


Key Message 2

The world has sufficient energy resources, knowledge, skills and capital to meet the supply needs; the challenge is to get them from where they are plentiful to where they are needed most.



Oil production



Mbl/j

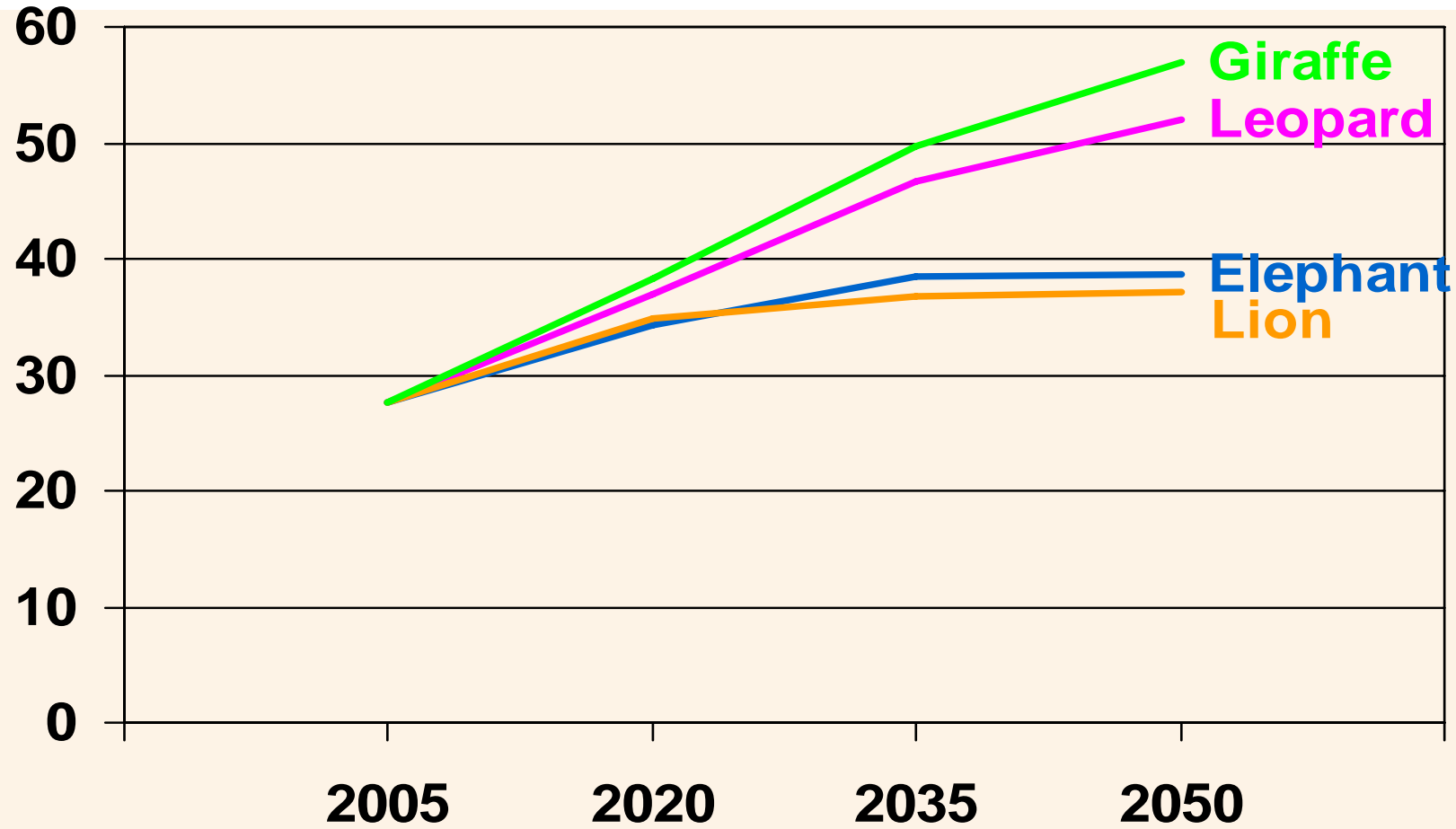


Key Message 3

We can address the world's accessibility needs in harmony with the effective management of acceptability, thereby mitigating against both social and environmental degradation.



CO₂ emissions



Gt

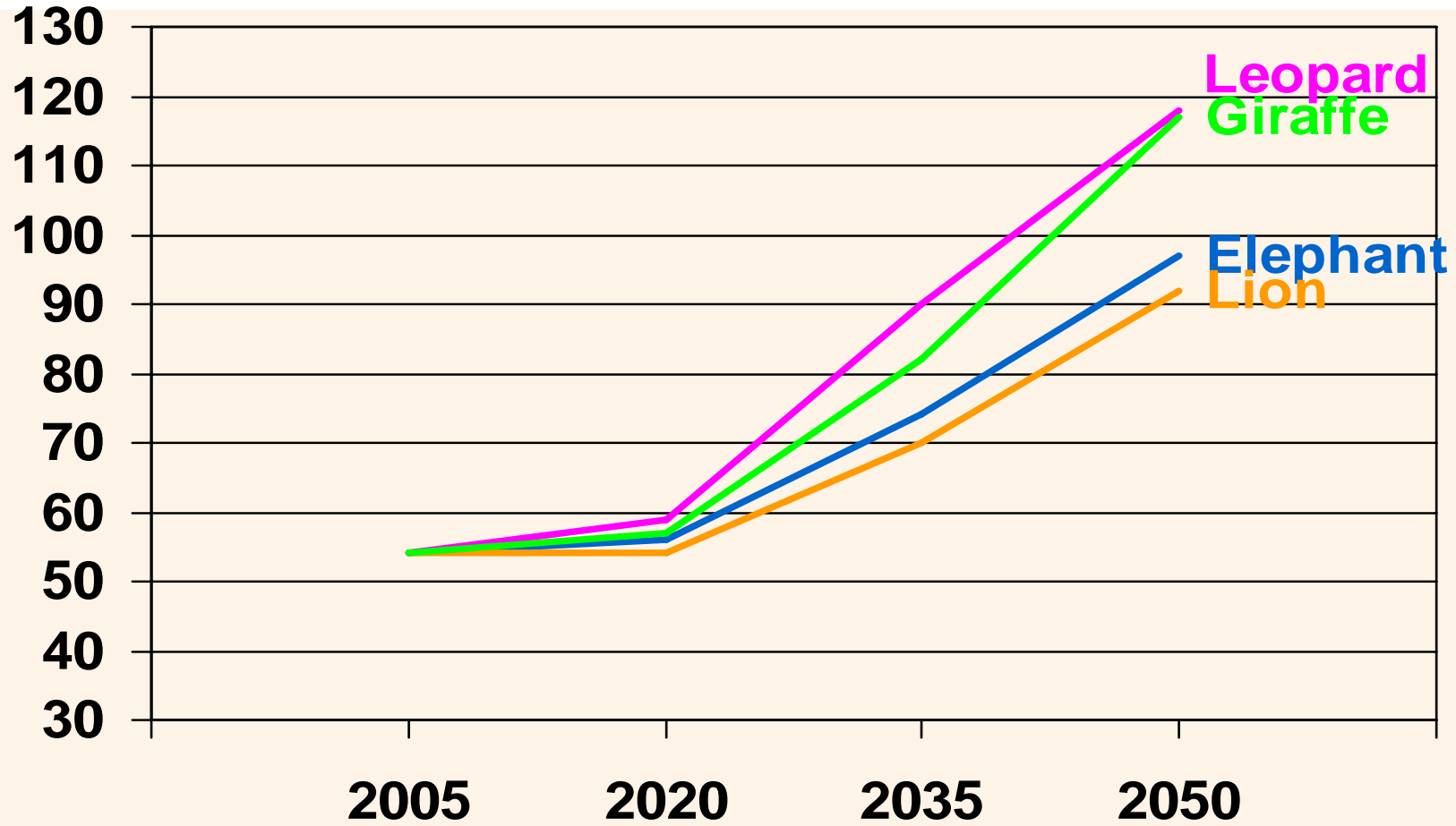


Key Message 4

Higher energy prices (or the specter of the same) will drive efficiency and attract capital investment in developed countries but robust international cooperation and integration is necessary to avoid unintended negative consequences and exacerbating energy poverty in developing countries.



Oil price



\$2005 ppa / bl



Key Message 5

Private sector engagement is essential – influencing national policy, driving business policy, and ensuring focus on sustained delivery of the policy intent.

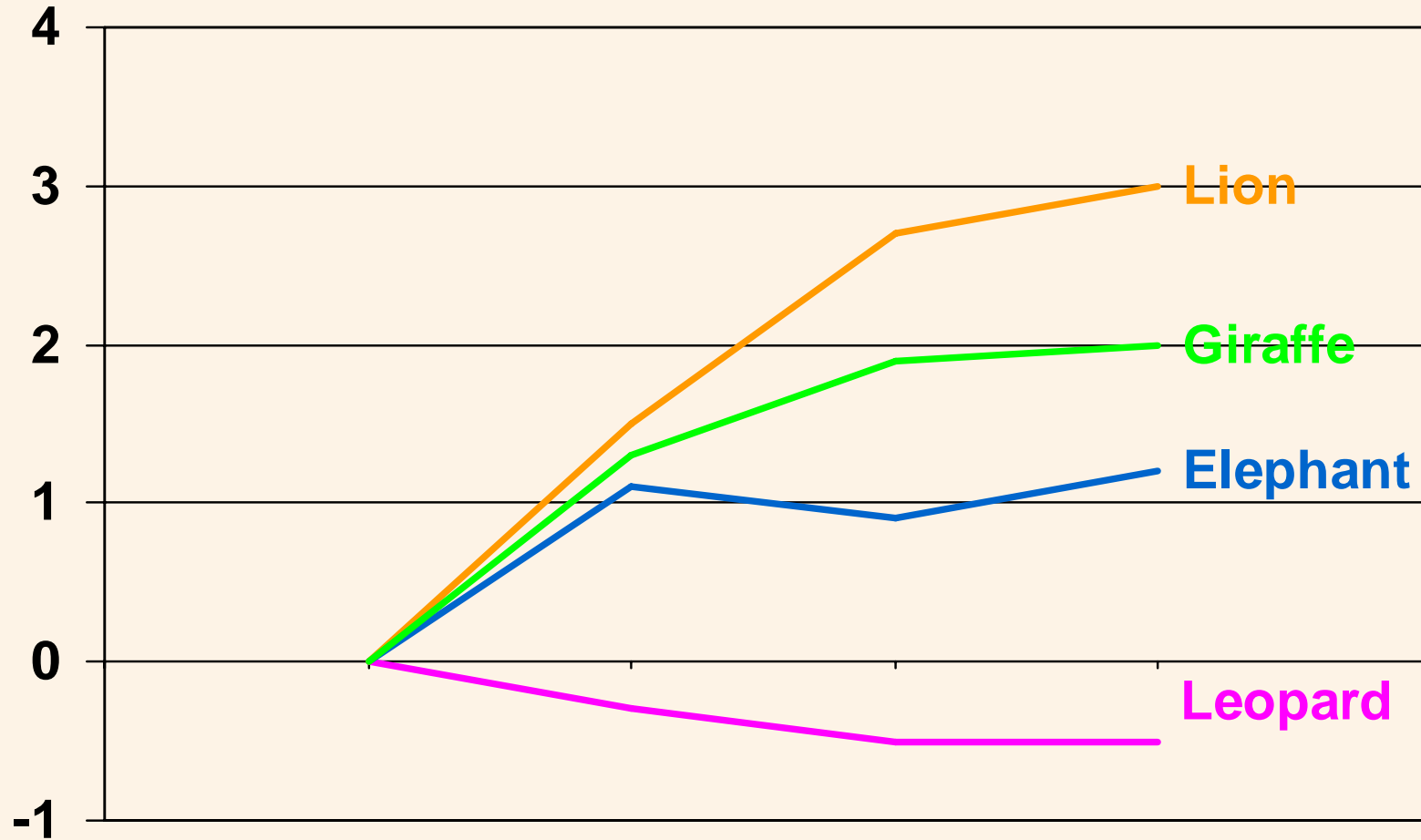


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What about WEC 3A ?

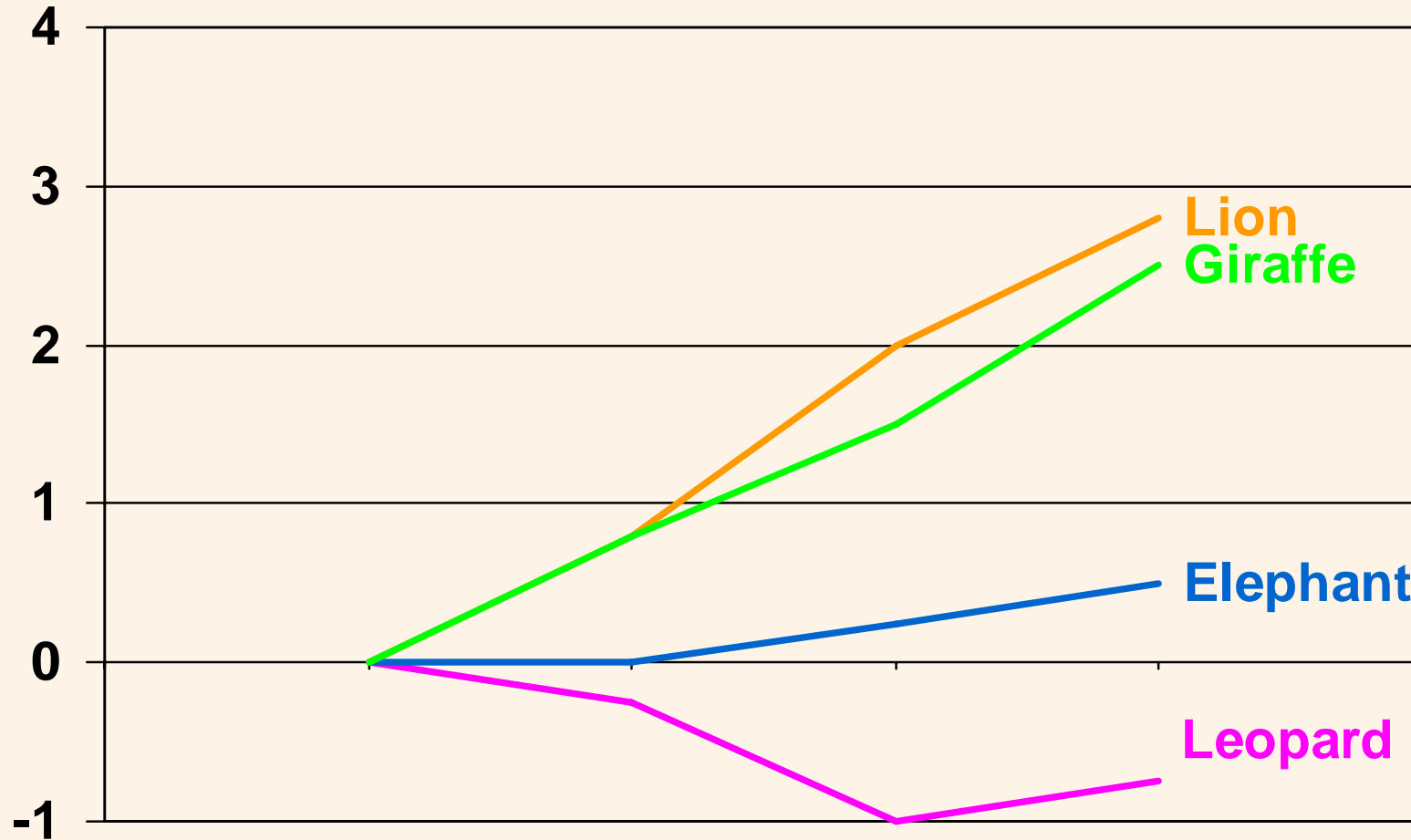


Accessibility



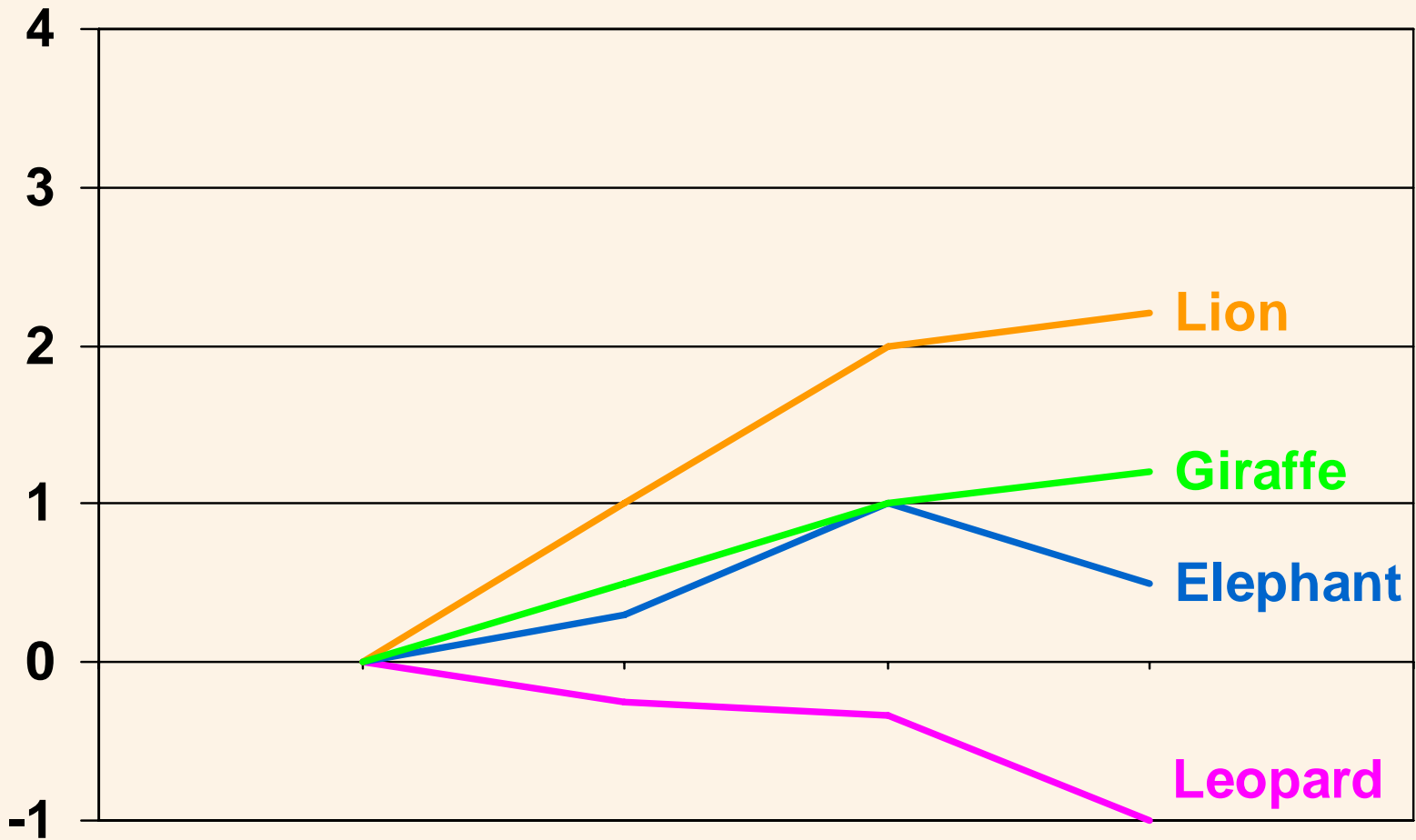


Availability





Acceptability





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Making it Happen



WEC policy recommendations

Promoting energy efficiency, both on supply and demand sides

Raising public awareness of important role of transport sector

Setting a global price for carbon, not too high and not too low

Closer integration of energy markets, regionally and globally

Creating a new international framework for technology transfer

Global dialogue on security of supply and demand

Taxation, legal and commercial frameworks

The Most Important Issue:



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What action will you be taking to secure our energy future?



Free download: www.worldenergy.org

French summary with tables and graphics: www.wec-france.org

moncomble@wec-france.org



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