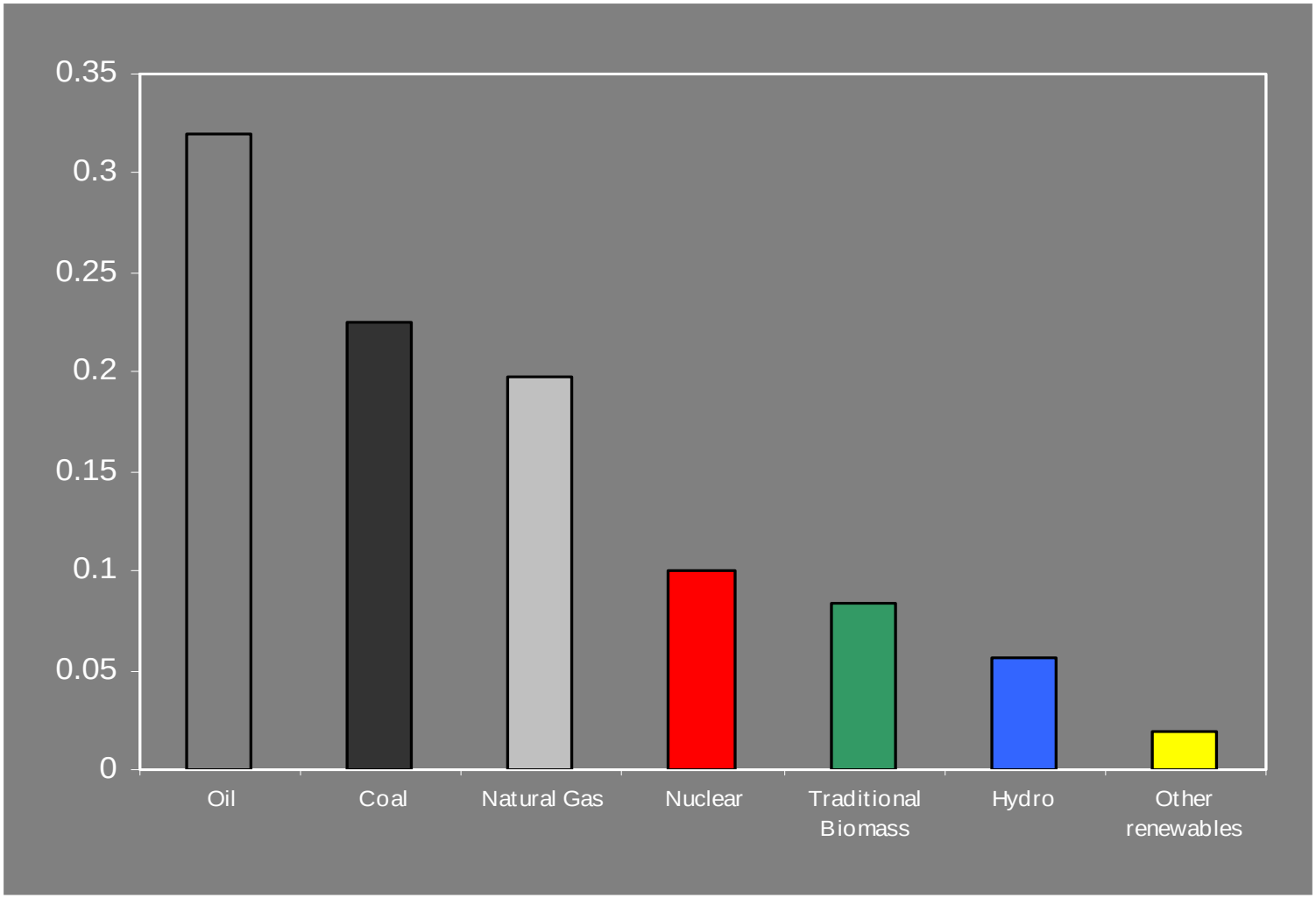
Parlamentarians and the Energy Conflict

How to create majorities
in a hostile environment

Rudolf Rechsteiner
Economist Ph.D., MP Switzerland

Downloads:
http://www.rechsteiner-basel.ch/publikationen.cfm

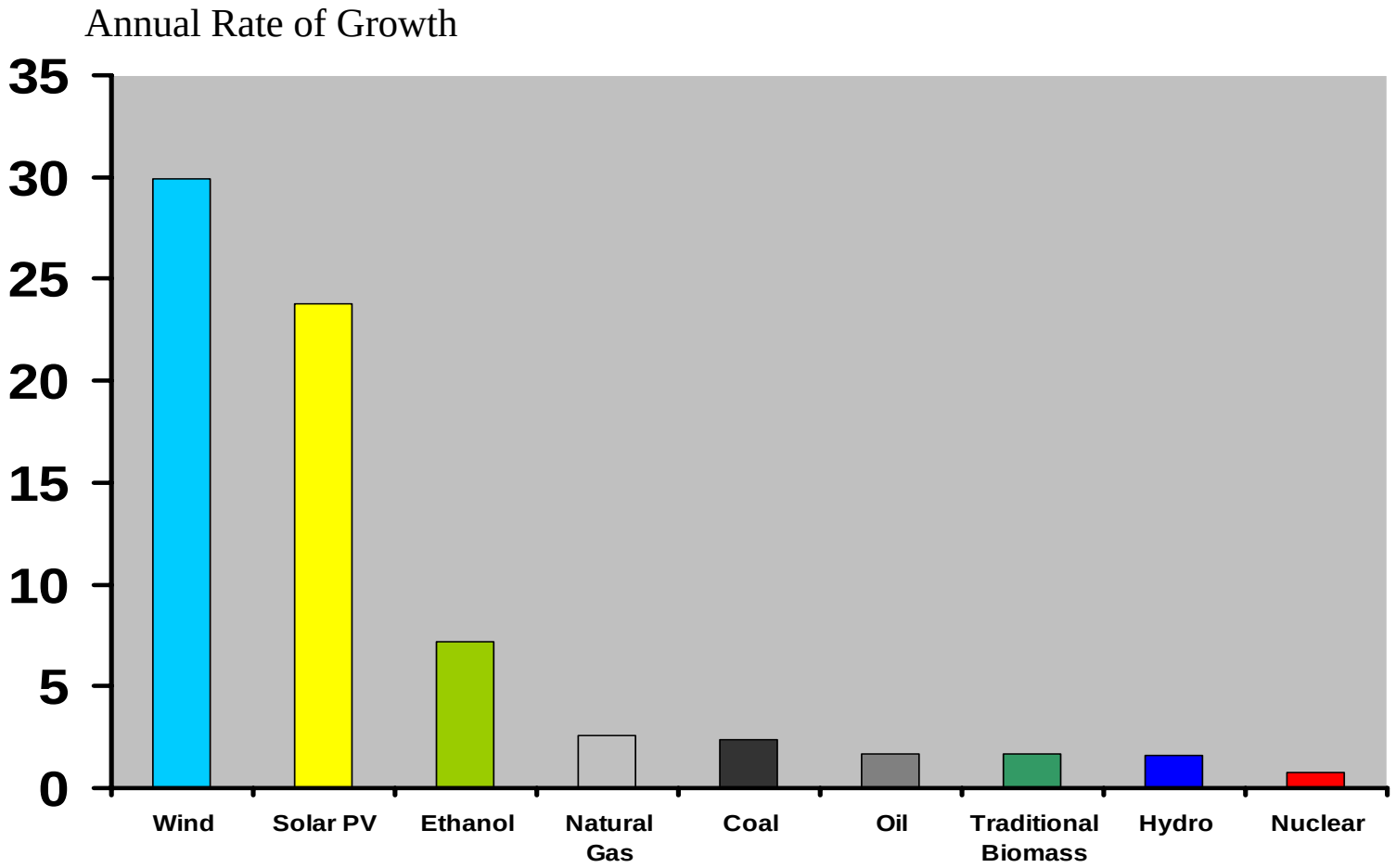
World Energy Use
(%) 2003



Source: IEA, Martinot / Worldwatch

World Energy Growth

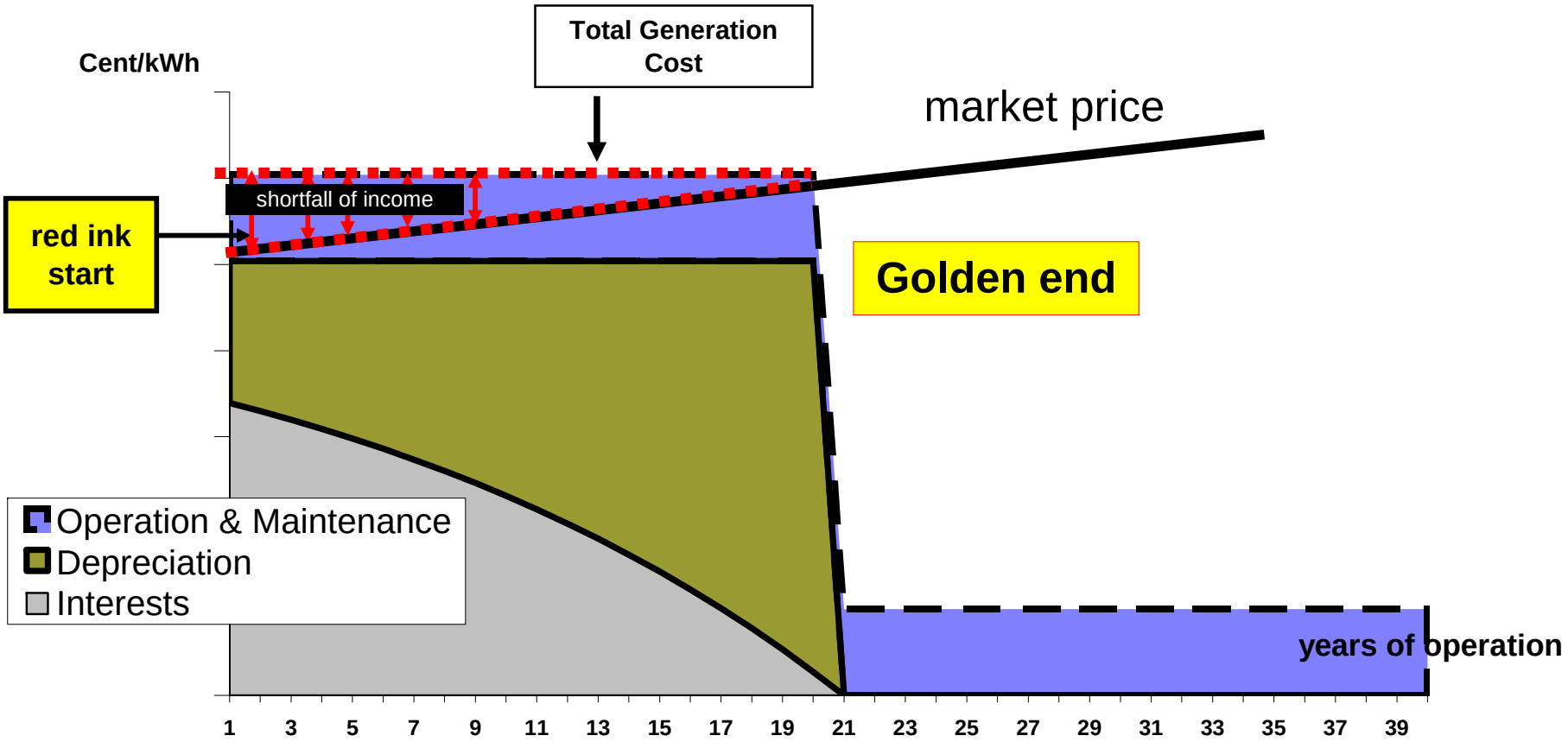
1994-2004



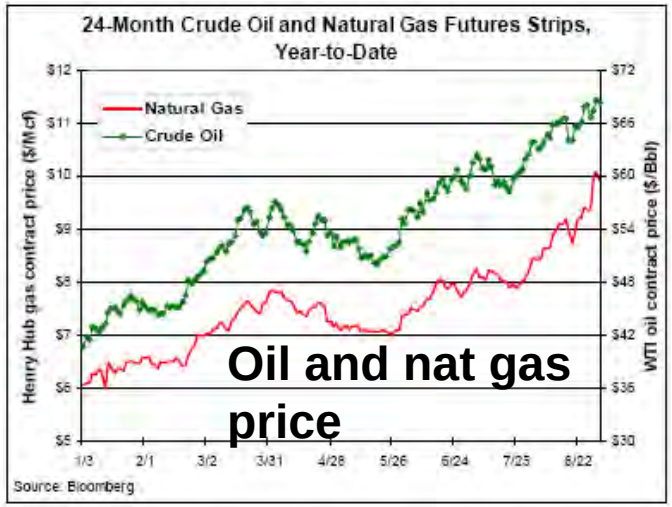
Source: Worldwatch Institute

Cost- and pay-back-structure of renewables

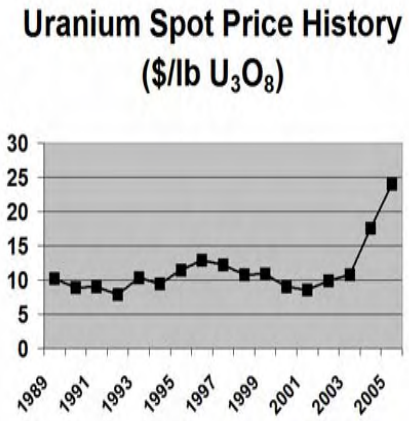
High initial capital cost, low fuel,O&M-costs bring inital income shortfall and golden end



The turning point: all energies more expensive – except renewables!

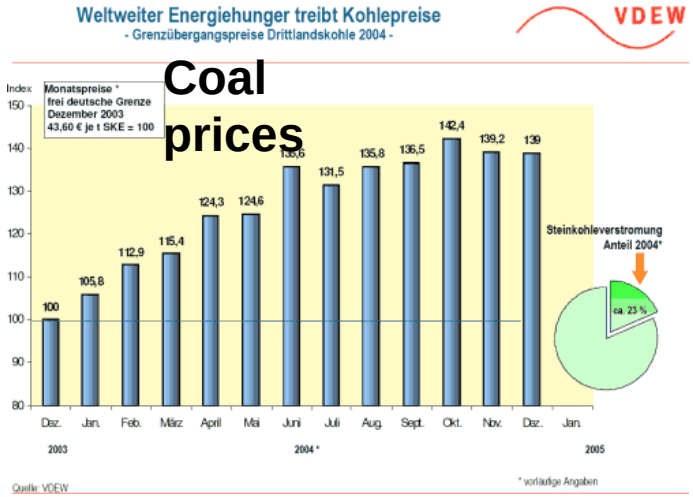


Oil and nat gas price



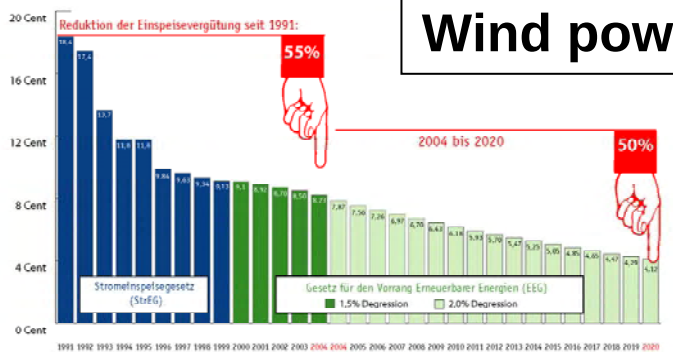
Uranium

U_3O_3



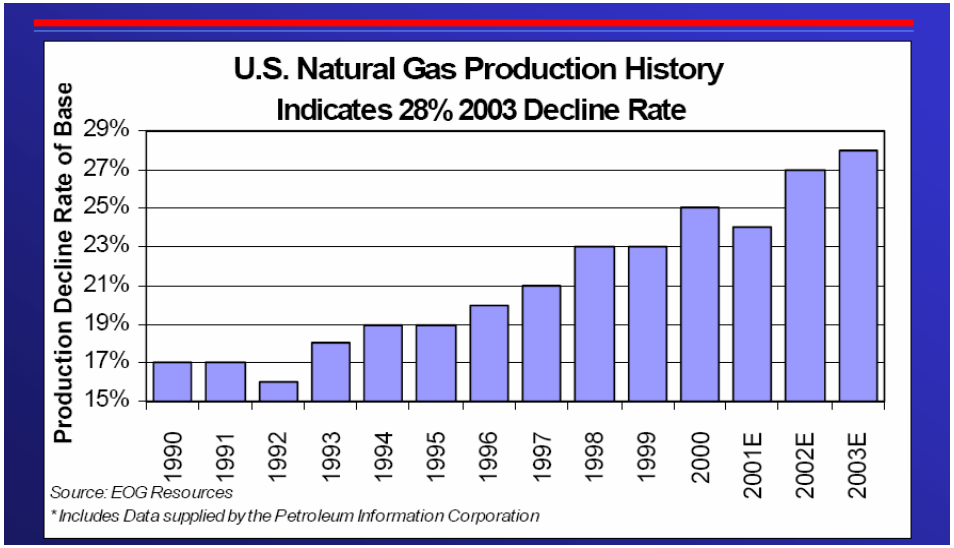
Coal prices

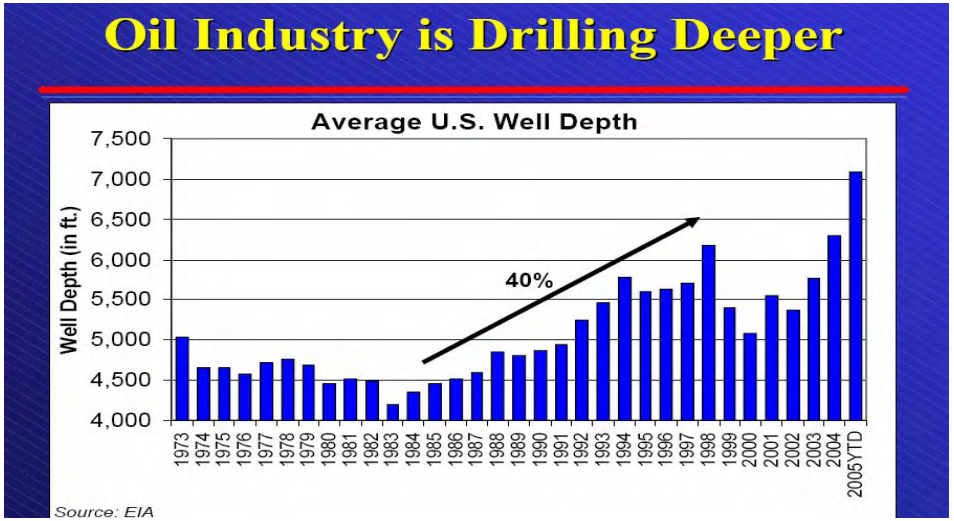
Wind Power feed-in tariffs:
55%-reduction and another 50% expected

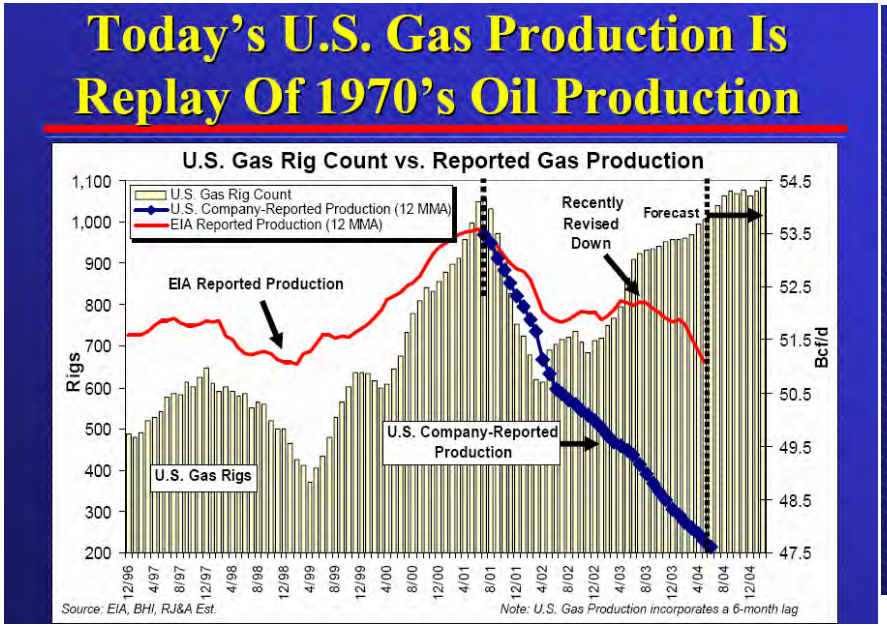


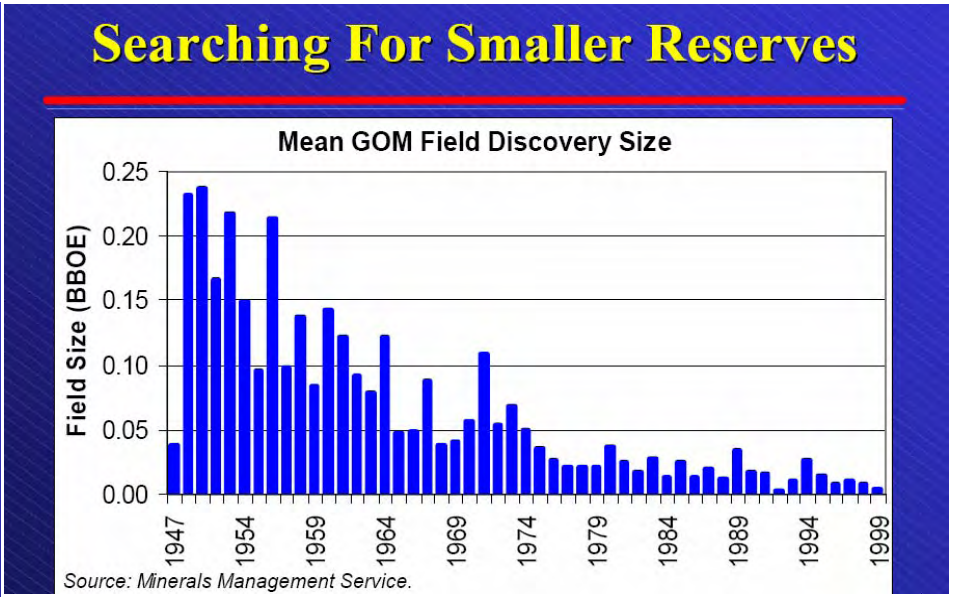
Wind power

US in the Oil and Gas Trap

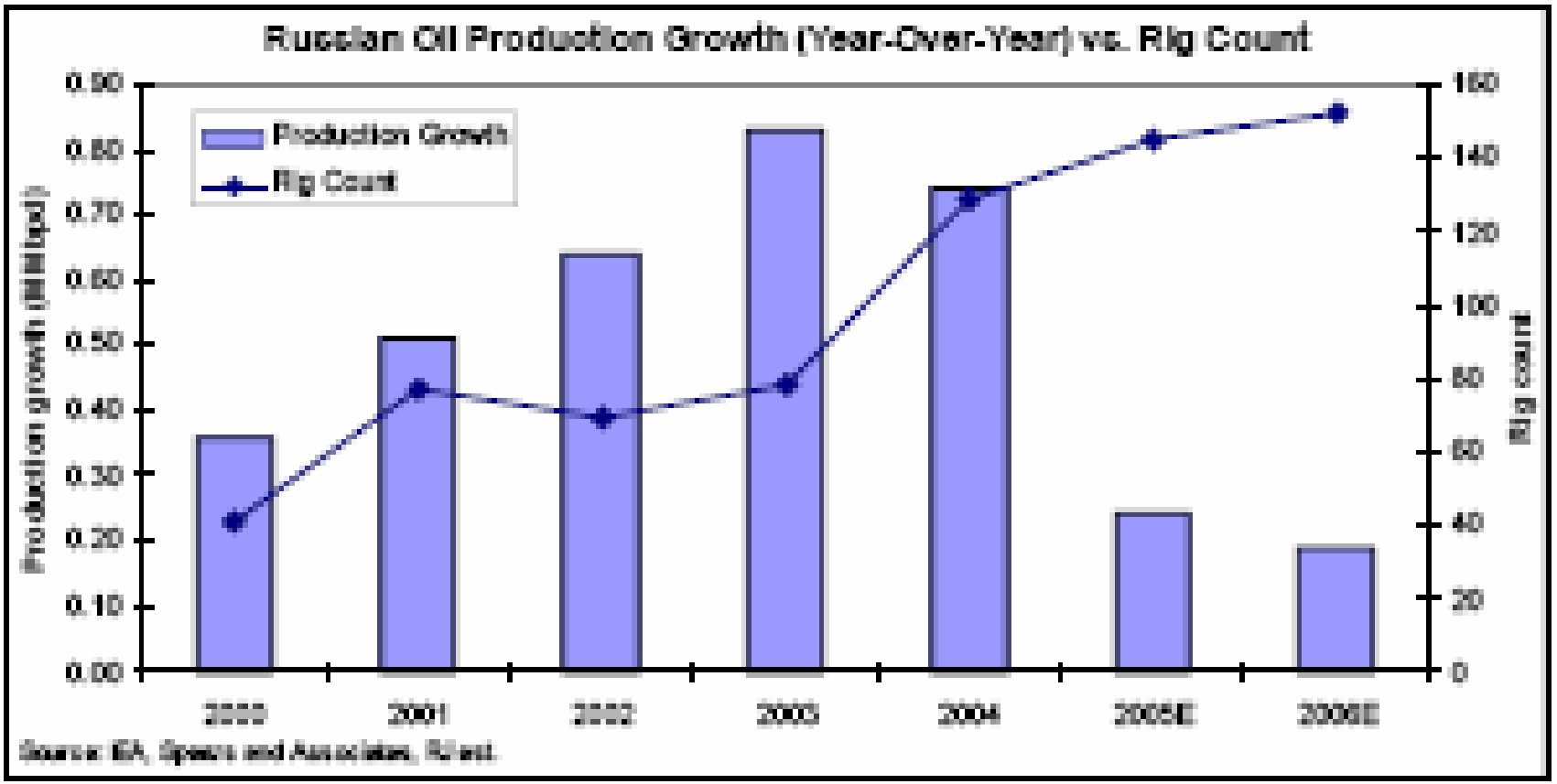






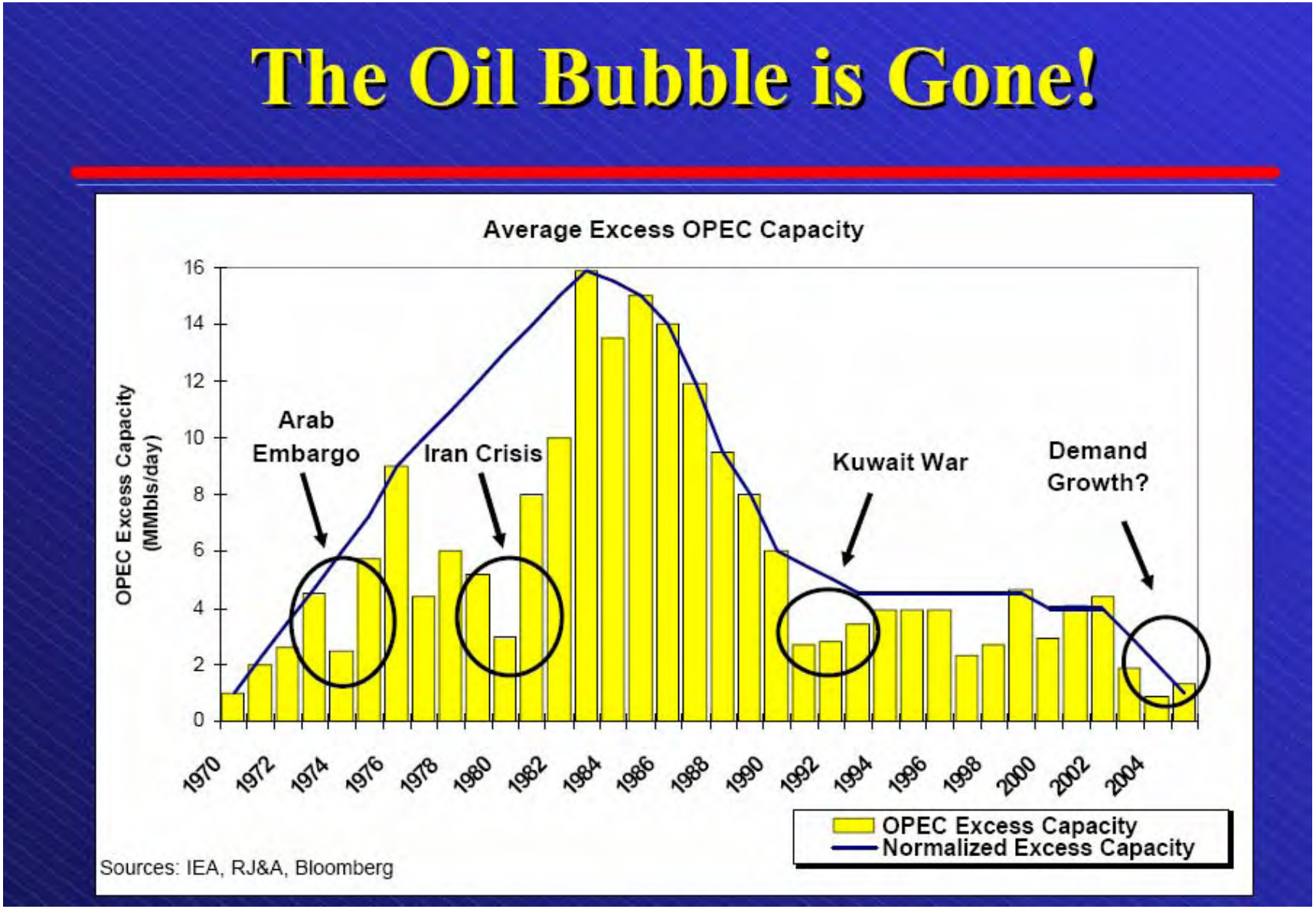


The Case of Russia



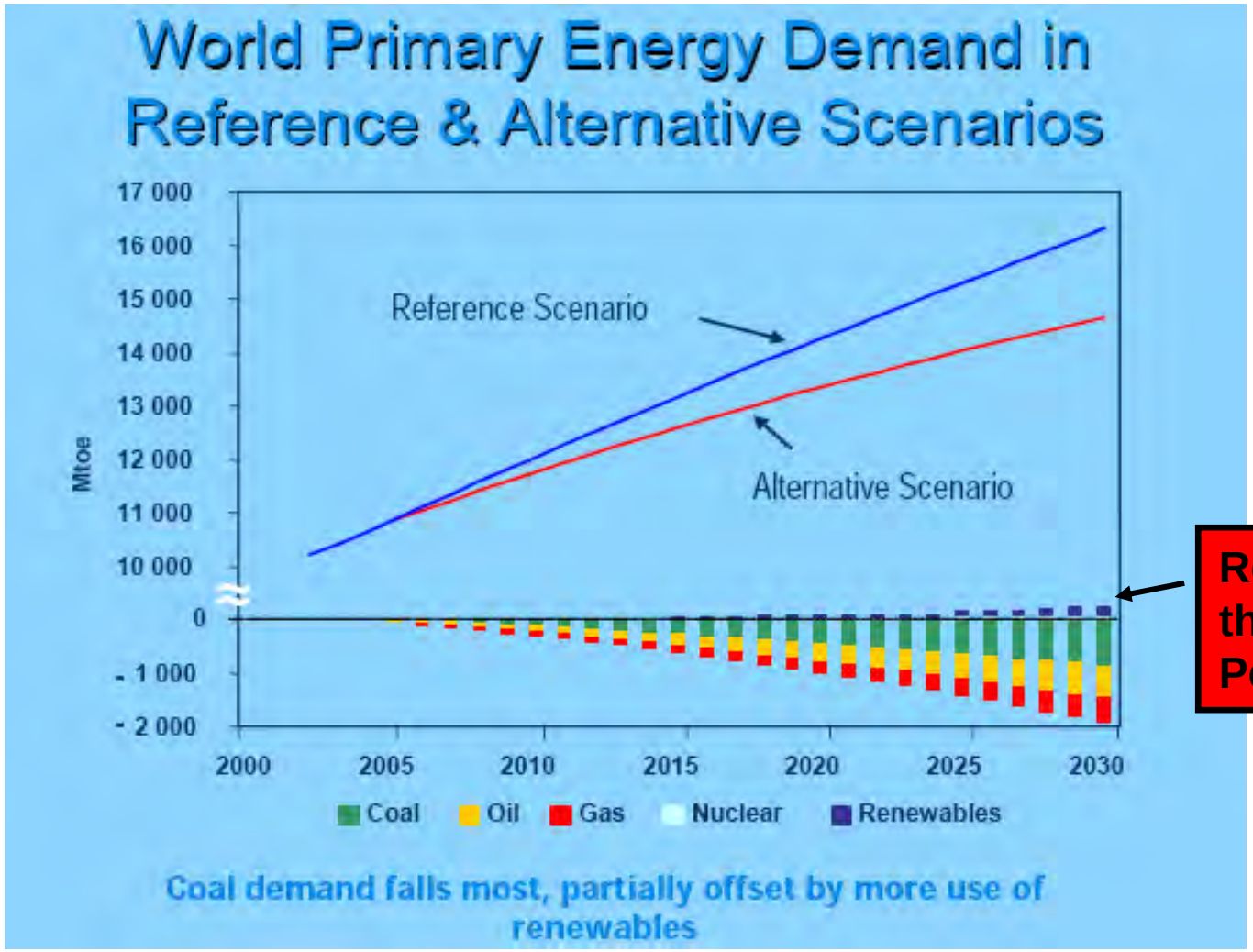
Source: Raymond James

Opec Spare Capacity 1970-2005



The perception of International Energy Agency IEA

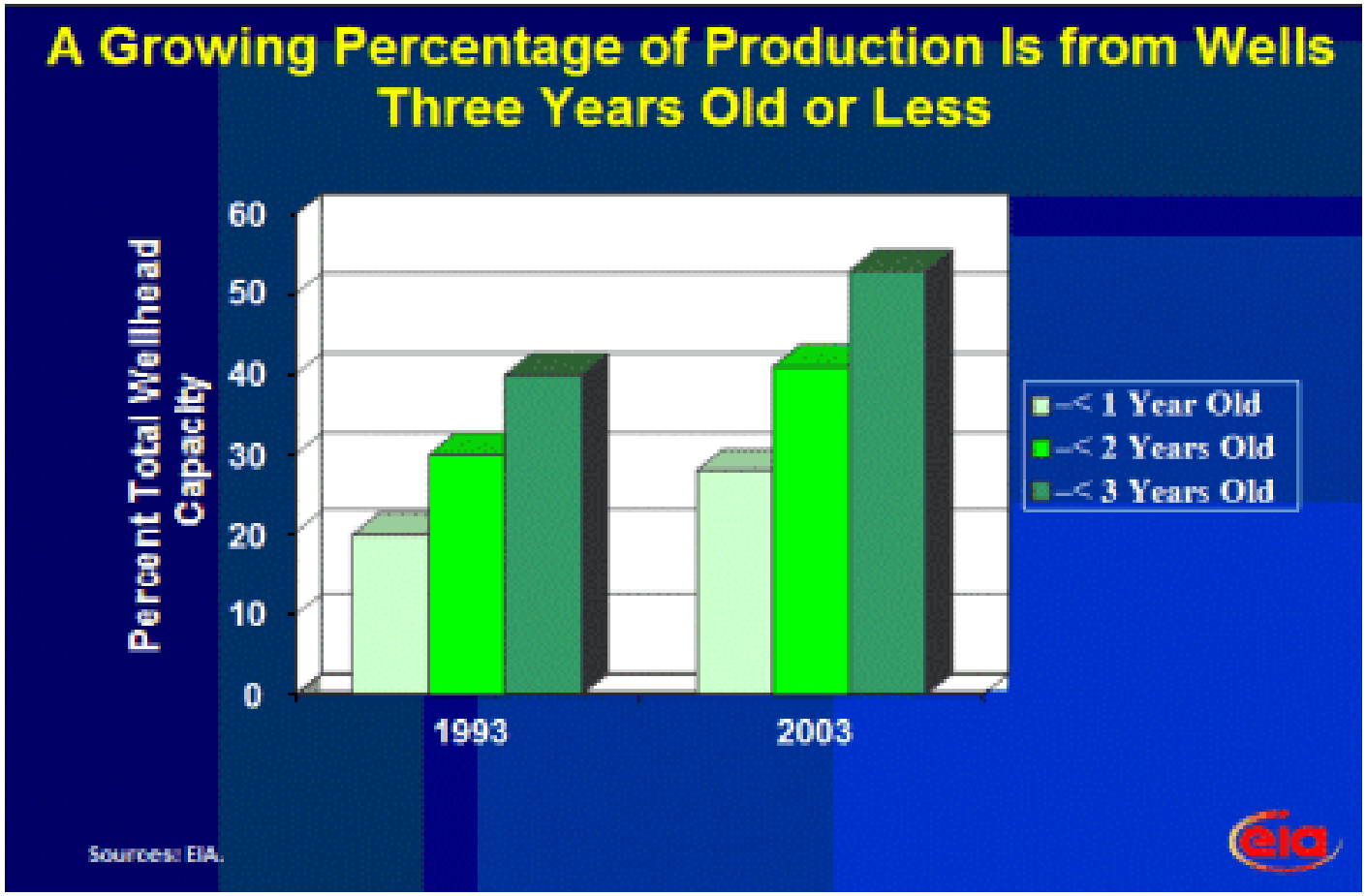
source: IEA (Noé van Hulst), Security of Supply and Climate Change
Challenges for National and International Energy Policy, Bern presentation 29.9.2005



Renewables in the IEA Perspective

The Looming Crisis

Figure 6

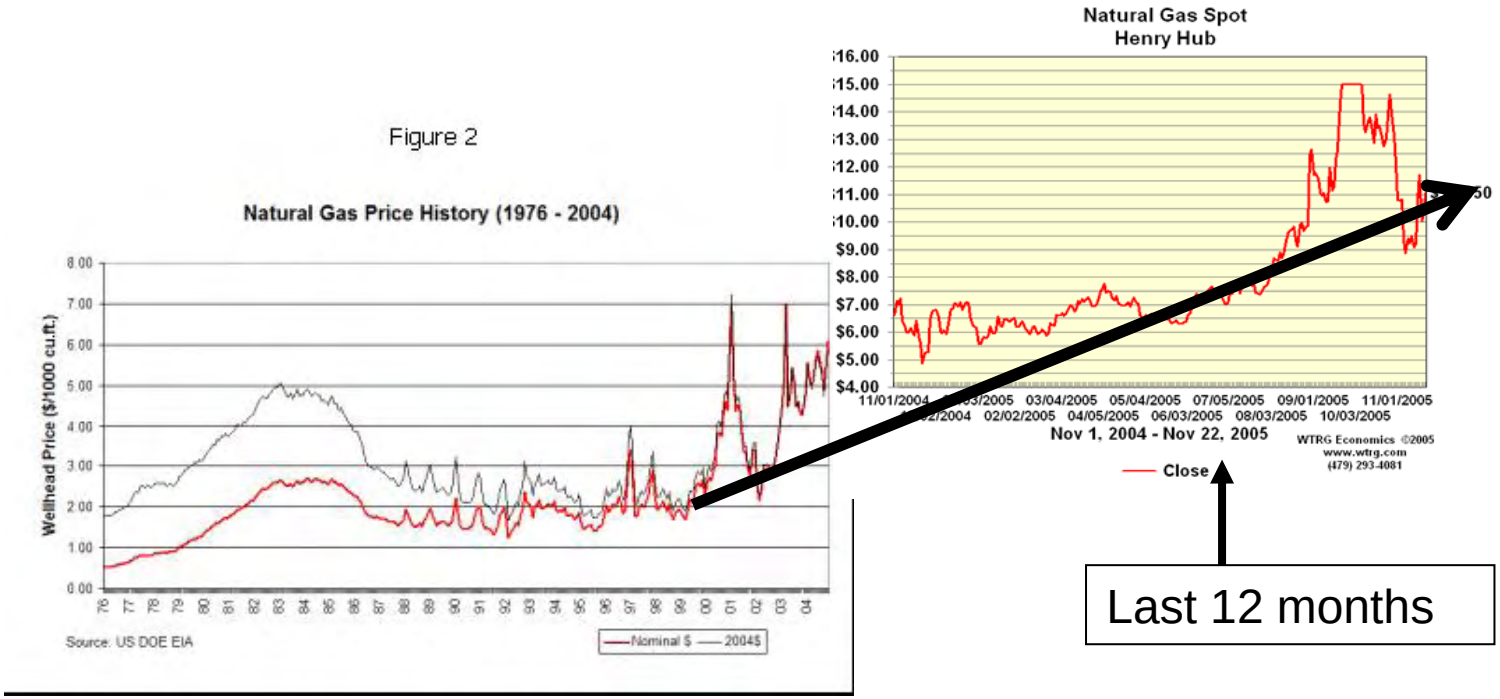


No joke any more: impact on prices

US natural gas prices

Last 6 years

+ 500 percent!

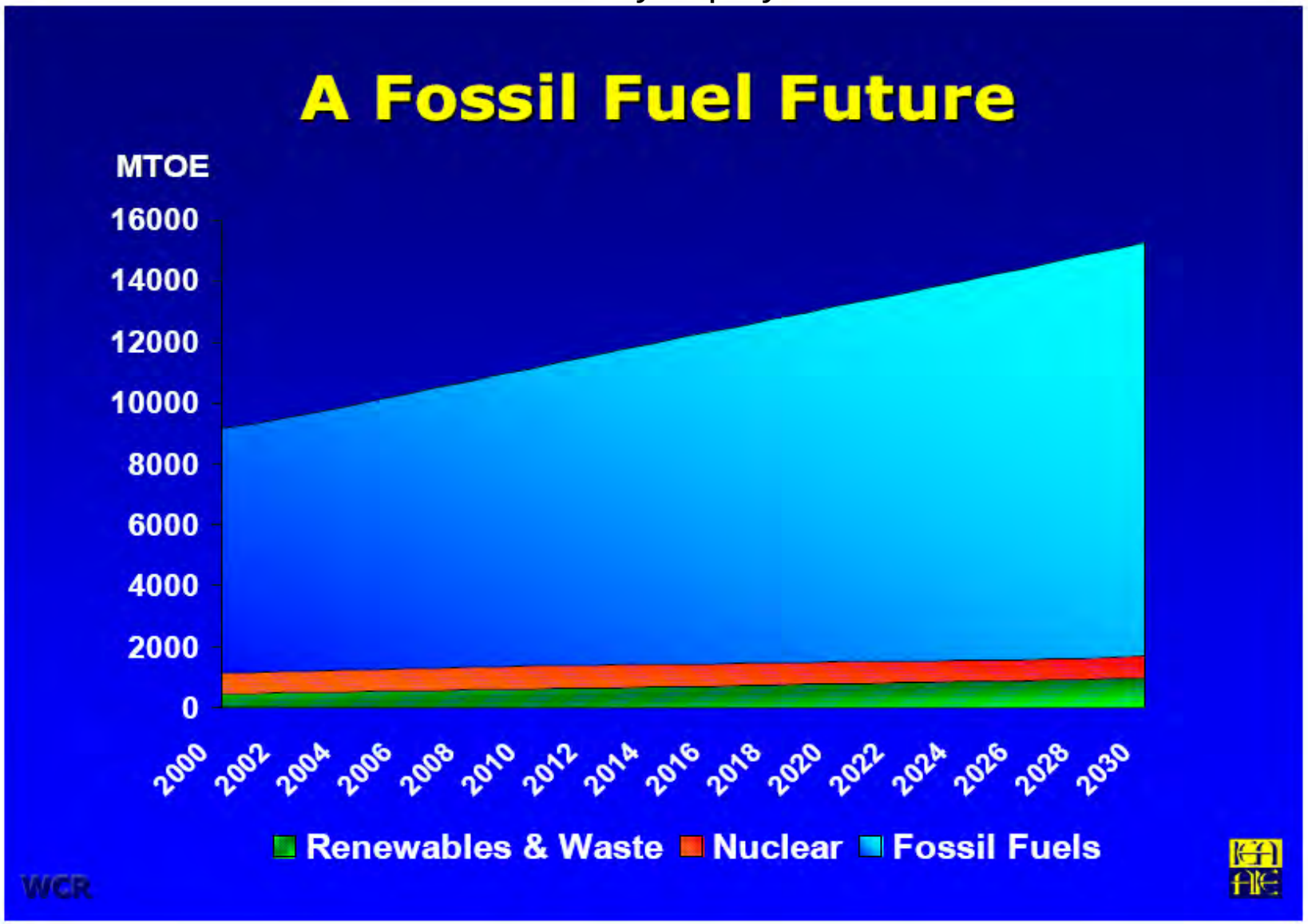


Wrong advice from these international advisers:

- IEA International Energy Agency (IEA)
  - Intergovernmental organization for fossil fuels
- EIA Energy Information Agency (EIA)
  - Part of the US-Department of Energy (DOE)
- USGS U.S. Geological Survey
  - Scientific information on resources/geology
- IAEA International Atomic Energy Agency
  - Founded in 1957 Promotion of Nuclear Power

The IEA view

source: William Ramsay deputy director IEA 2003



IEA method of supply prediction: ***predict demand!***

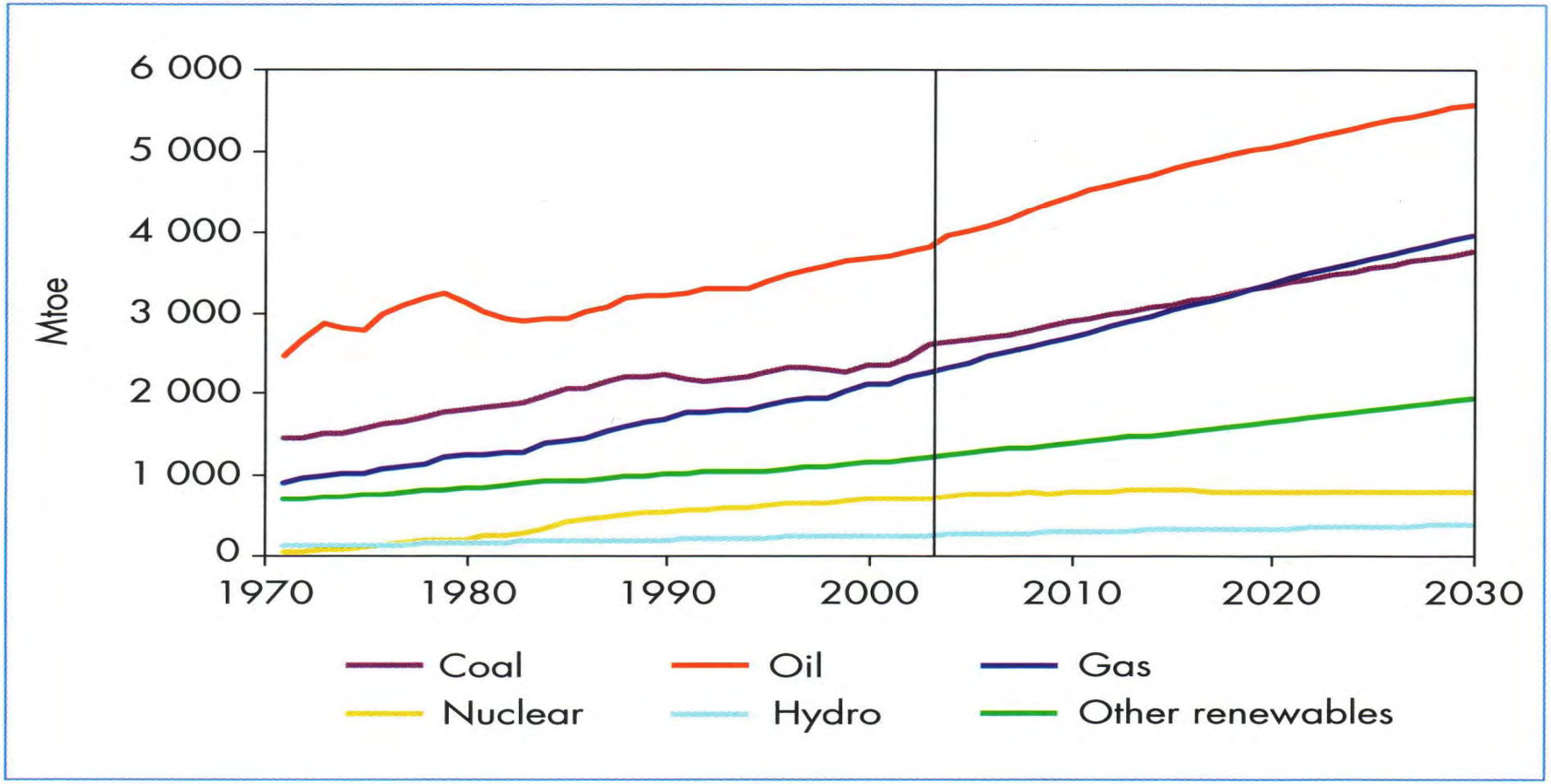
*„The **oil supply projections** of this Outlook are **derived from aggregated projections of oil demand**…. Opec conventional oil production is assumed to fill the gap.“*

World Energy Outlook 2005 p. 95

IEA World Energy Outlook 2005: demand = supply

fossil fuel as an andless, renewable energy

Figure 2.1: **World Primary Energy Demand by Fuel in the Reference Scenario**



….at low prices for ever: oil at 40 $ and natural gas at 5-6 $ MBtu !!

Figure 1.4: **Natural Gas Price Assumptions**

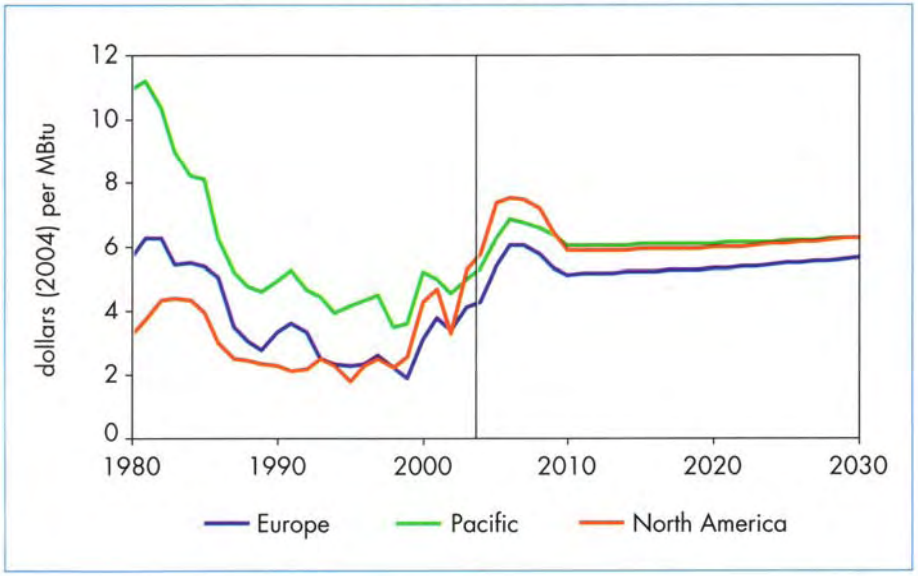
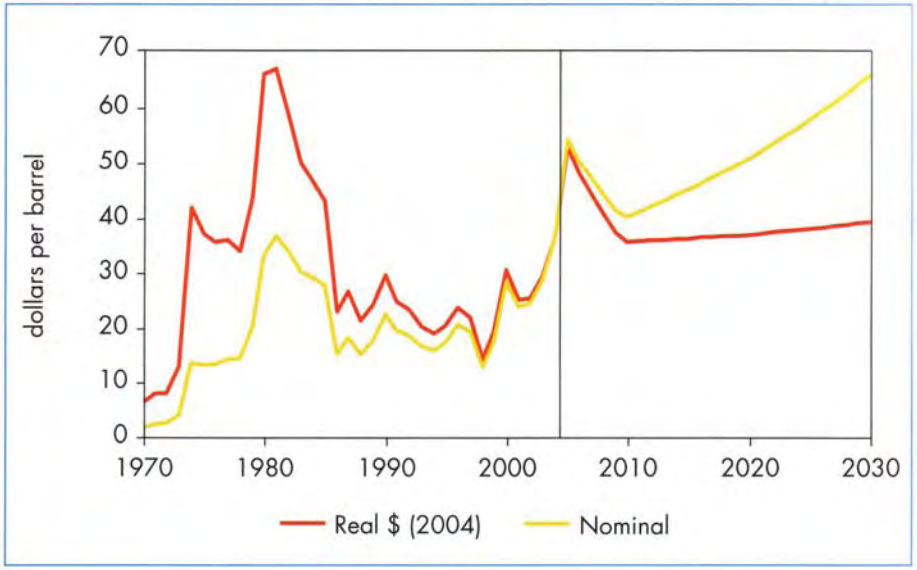


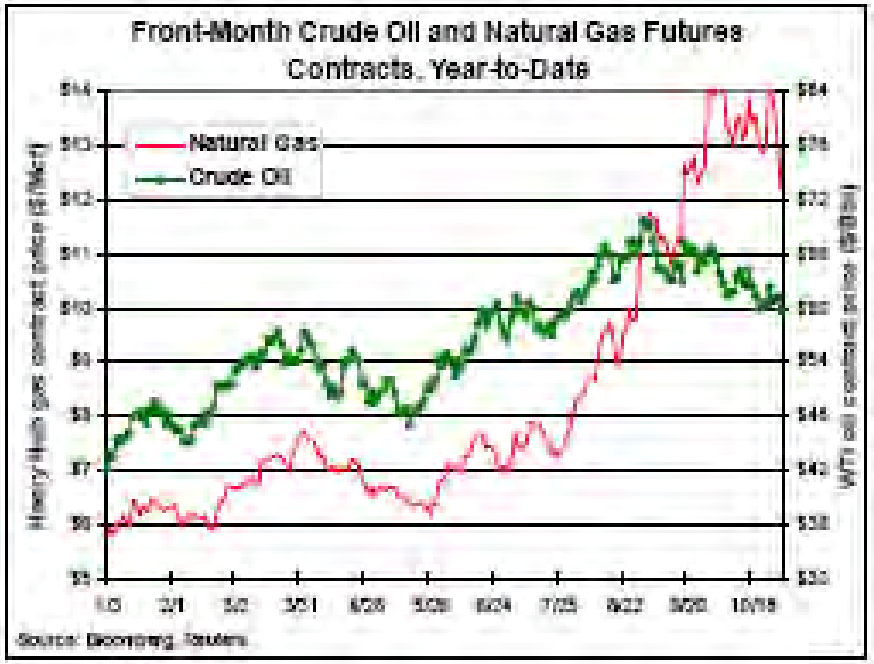
Figure 1.3: **Average IEA Crude Oil Import Price in the Reference Scenario**

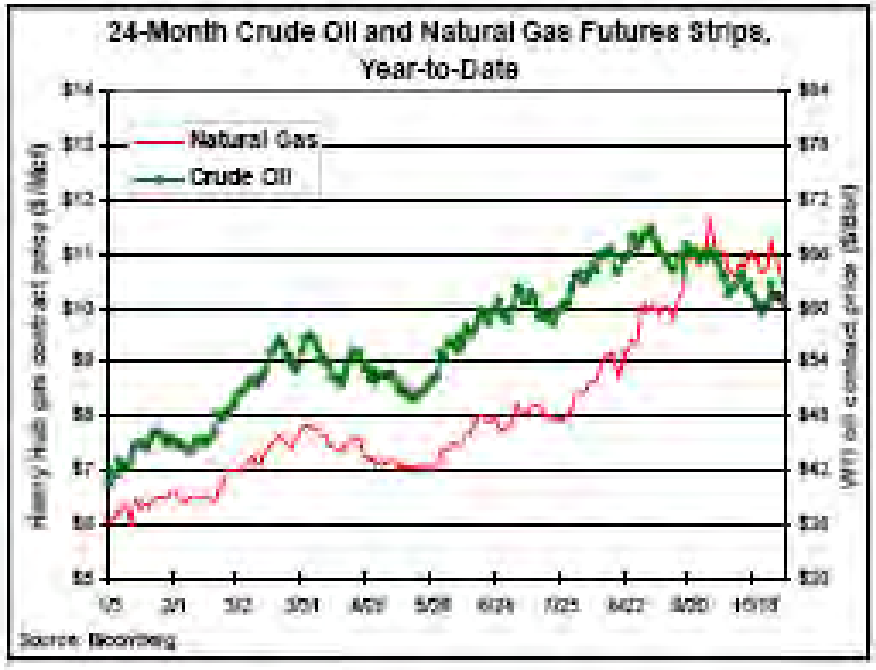


Source: IEA World Energy Outlook p.65 and p. 66

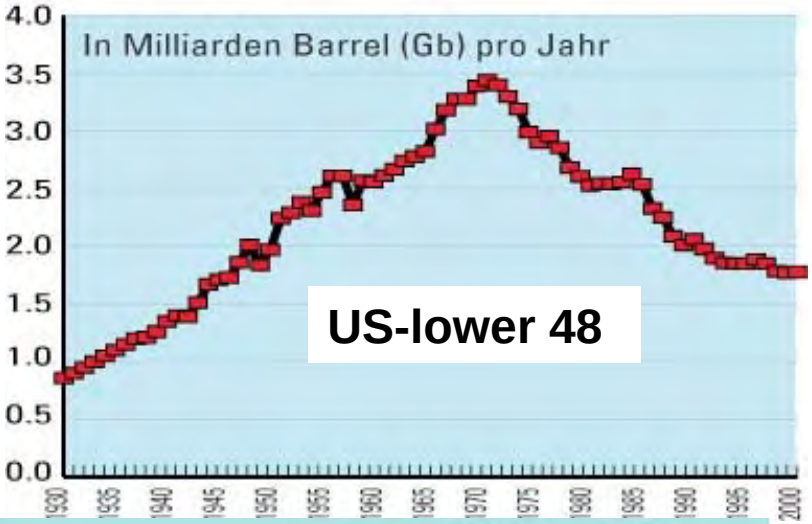
Reality is different !

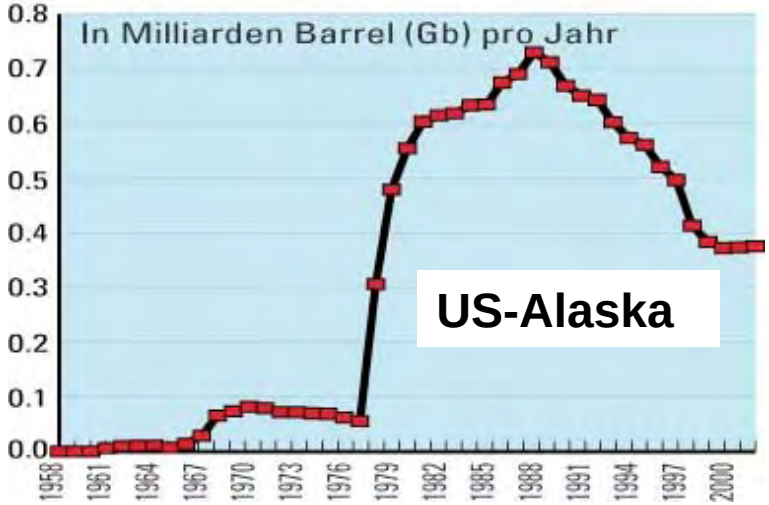
real prices (futures, 11/05): oil at 57-60$/b, natural gas at 10-11 $/MBtu

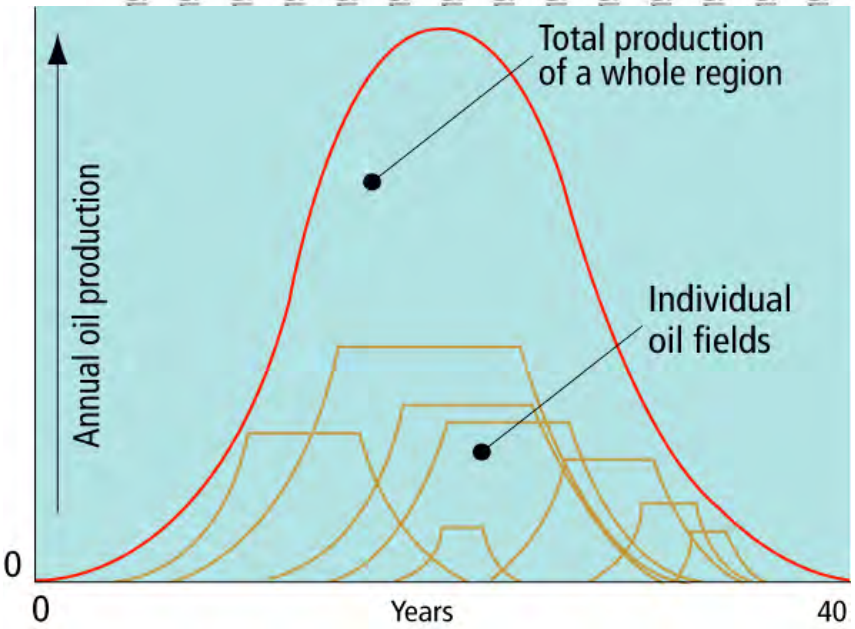


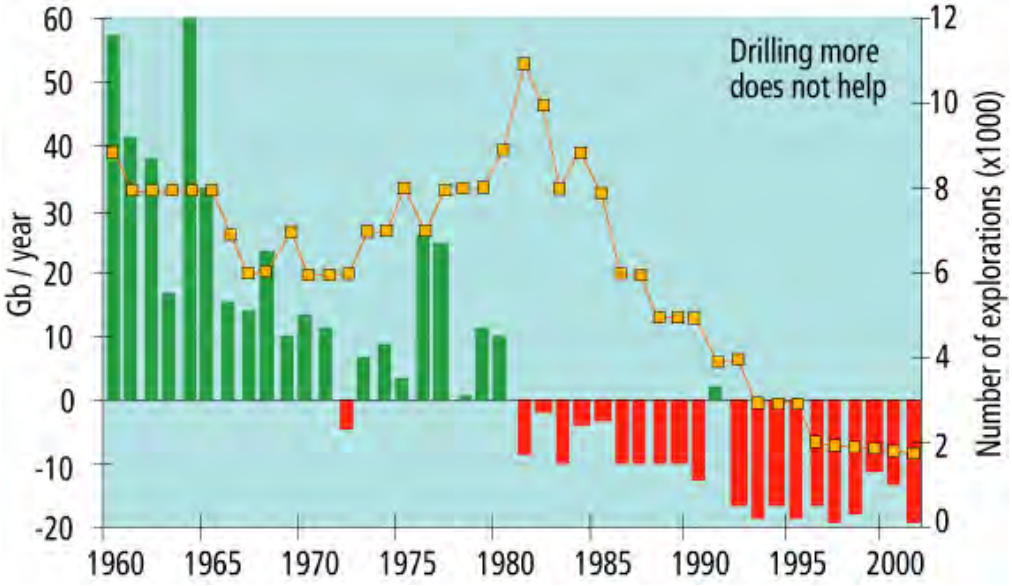


The Hubbert curve – a disliked reality









The mother of invention:
EIA: Energy information Agency, US-DOE

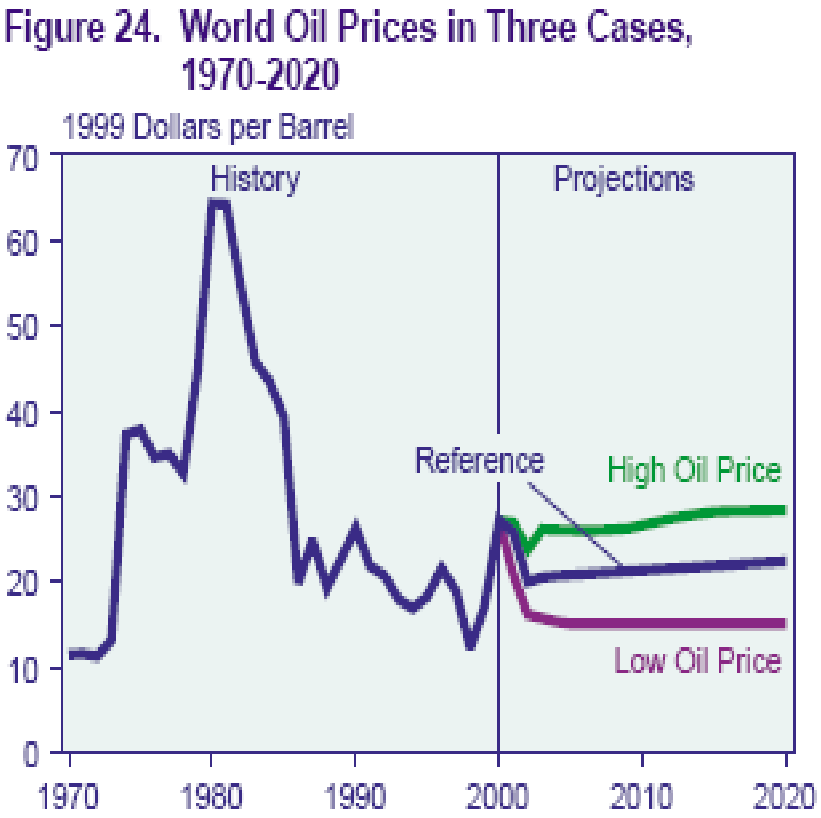
Source

“International Energy Outlook 2001

March 2001

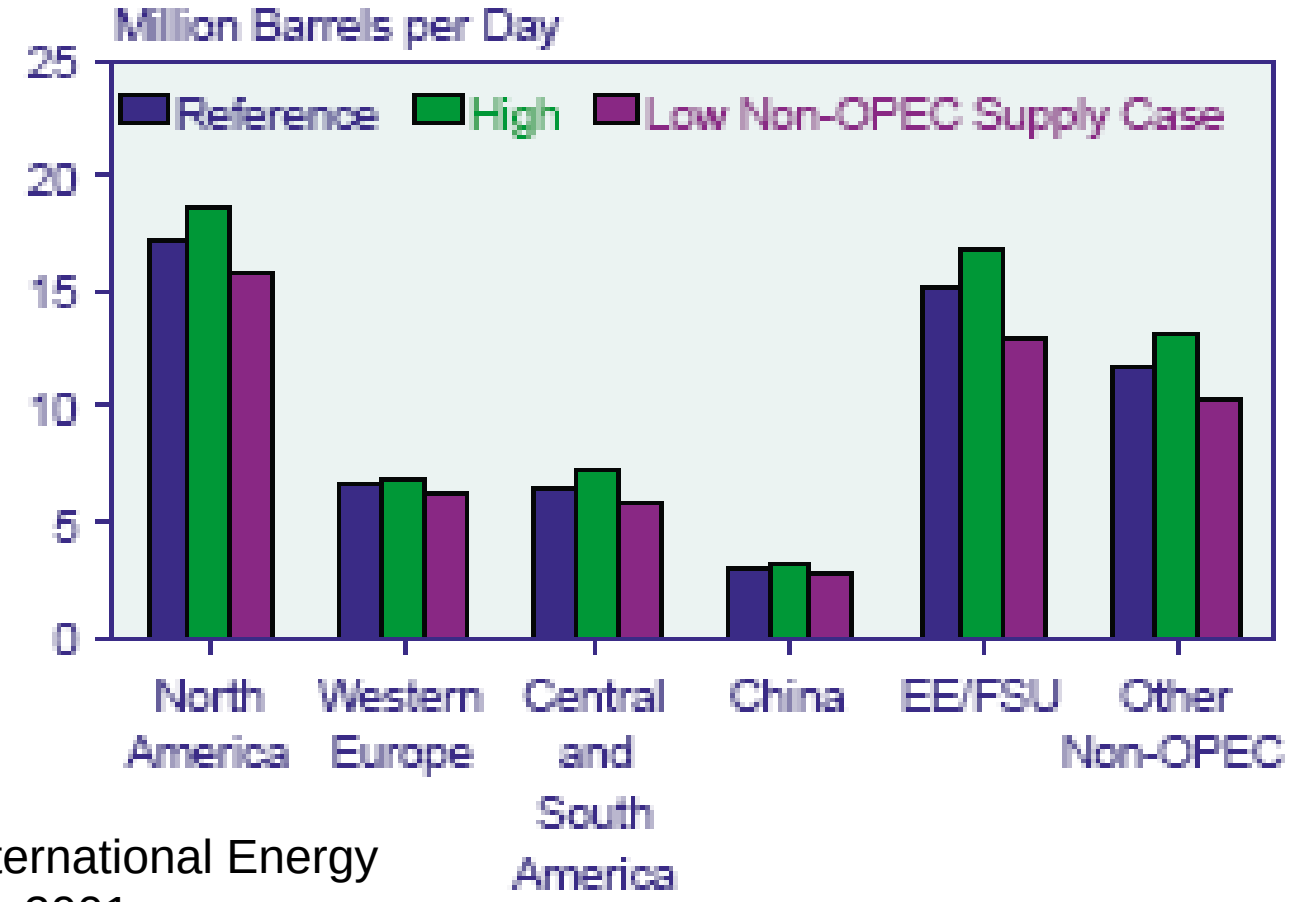
Energy Information Administration, Office of Integrated Analysis and Forecasting, U.S. Department of Energy Washington, DC 20585

This report was prepared by the Energy Information Administration, the independent statistical and analytical agency within the Department of Energy.”



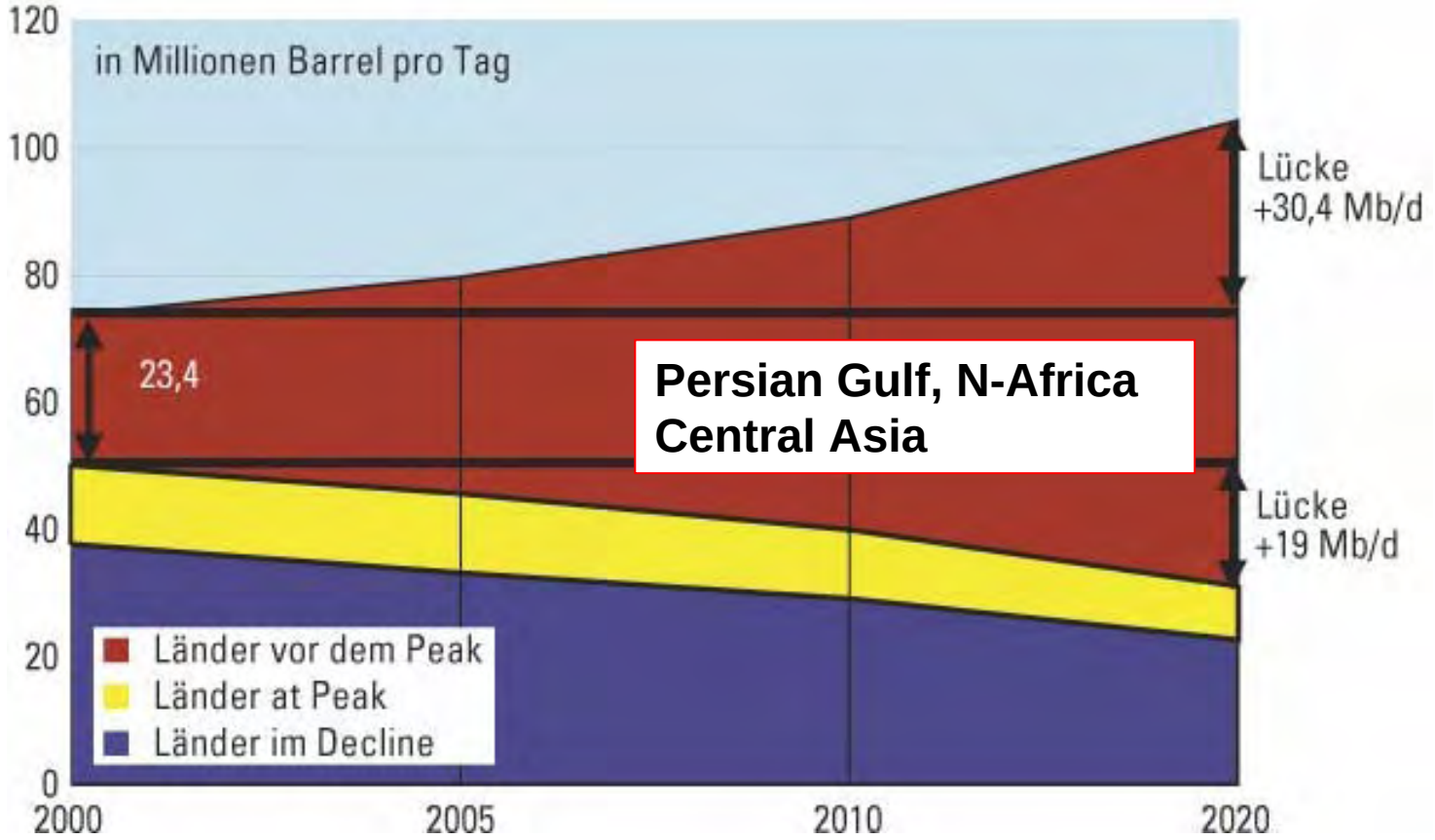
No depletion of oil visible at USGS oil as a renewable resource

Figure 36. Non-OPEC Oil Production by Region in Three Cases, 2020



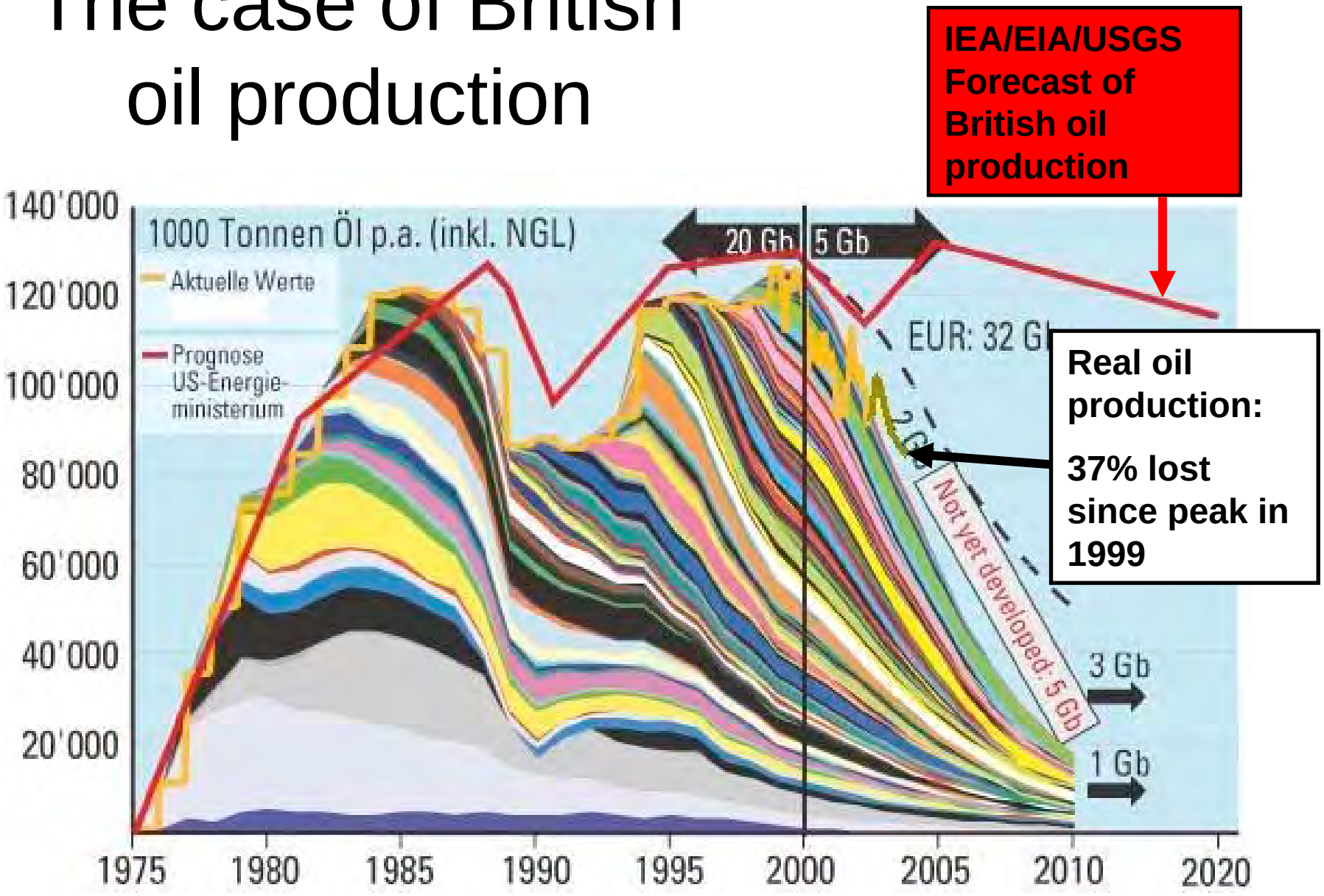
IEA: International Energy Outlook 2001

IEA-Predictions (WEO 98/00/02):
oil supply +1.3-1.6% /y until 2030 at 21-29$/barrel
where do you find six new Saudi-Arabias?



IEA-Price prediction per barrel: 21 $ in 2010,
25 $ in 2020, 29 $ in 2030

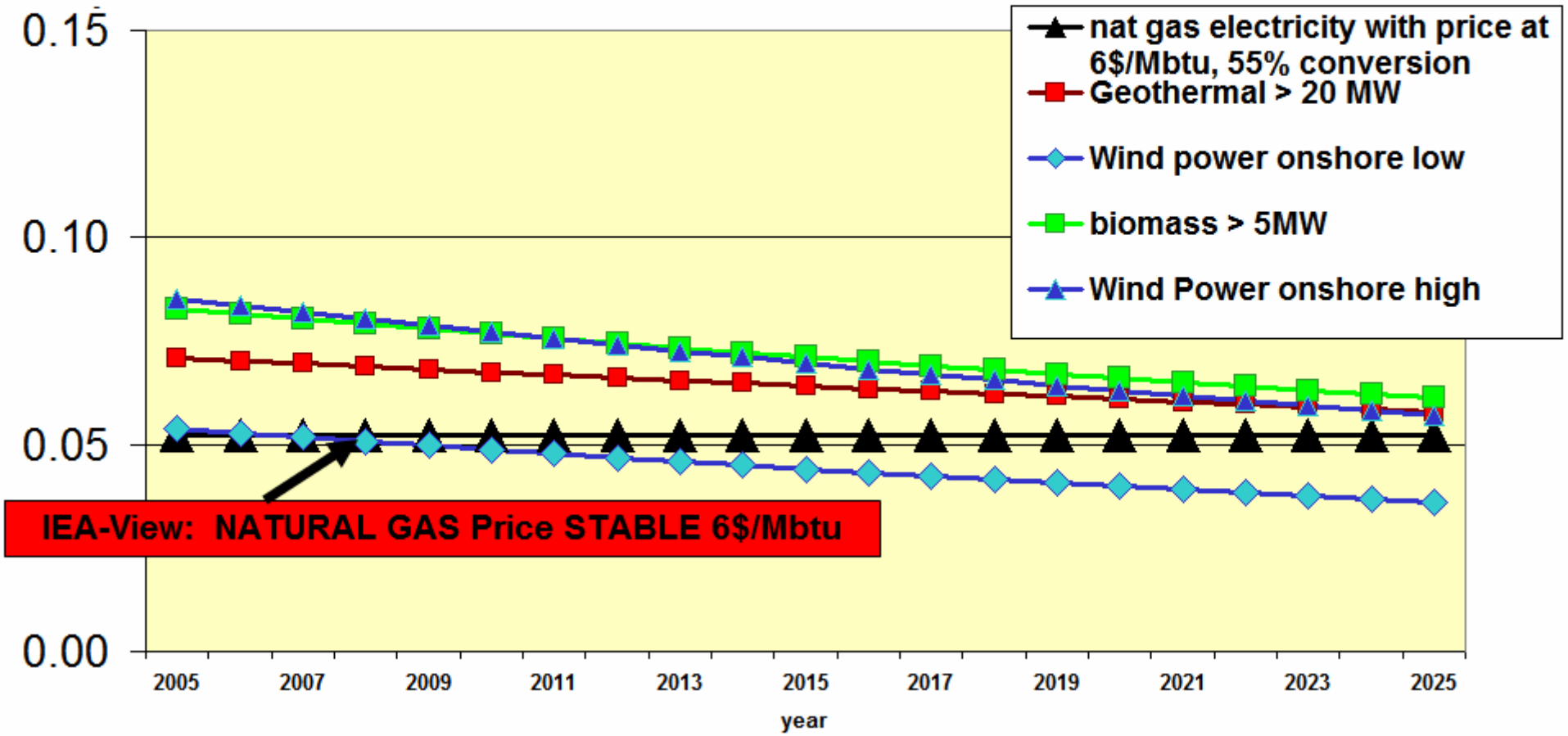
The case of British oil production



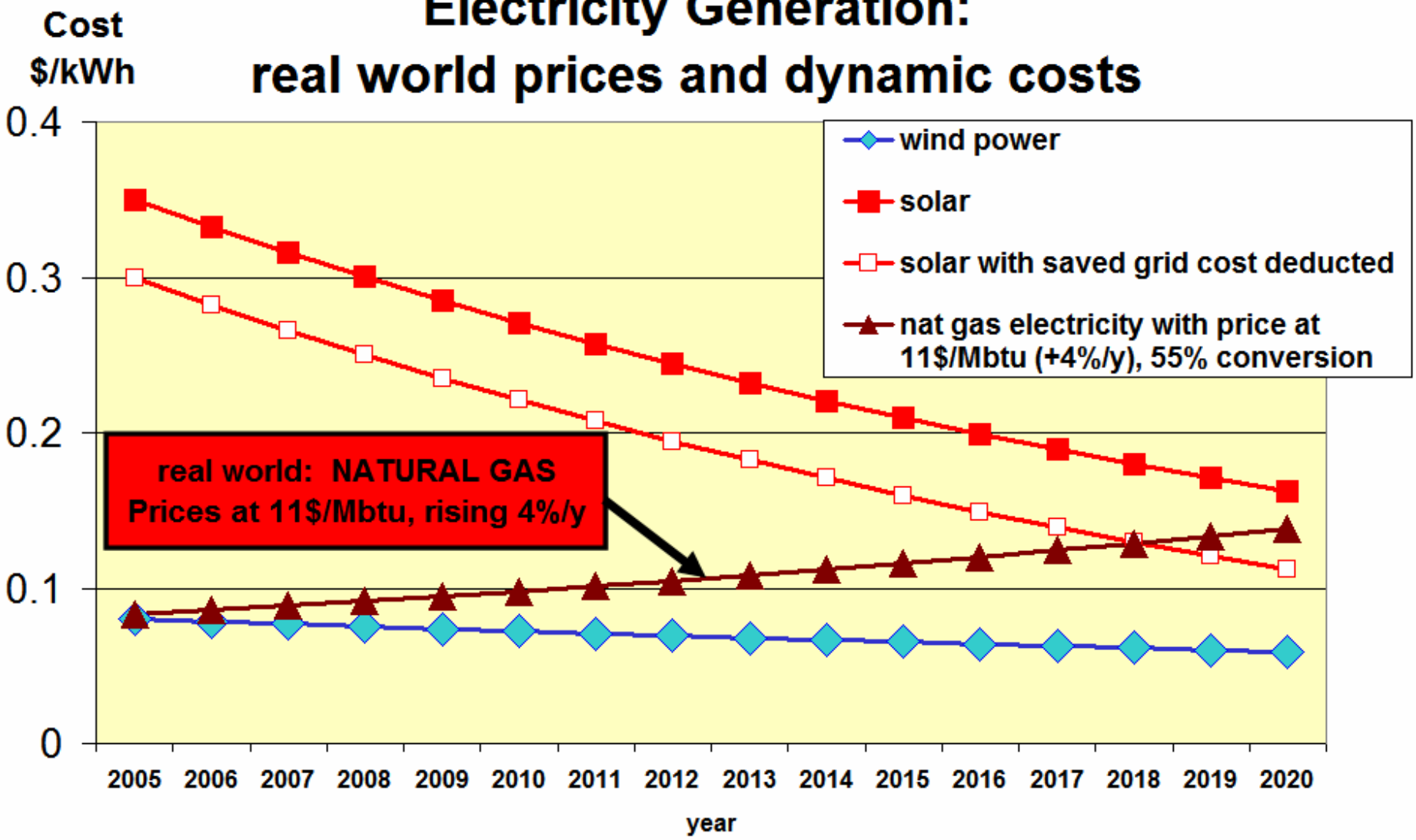
IEA view: Renewable Electricity as a permanent failure

Static Cost predictions/Nat Gas Price Fantasy 6$/Mbtu until 2030

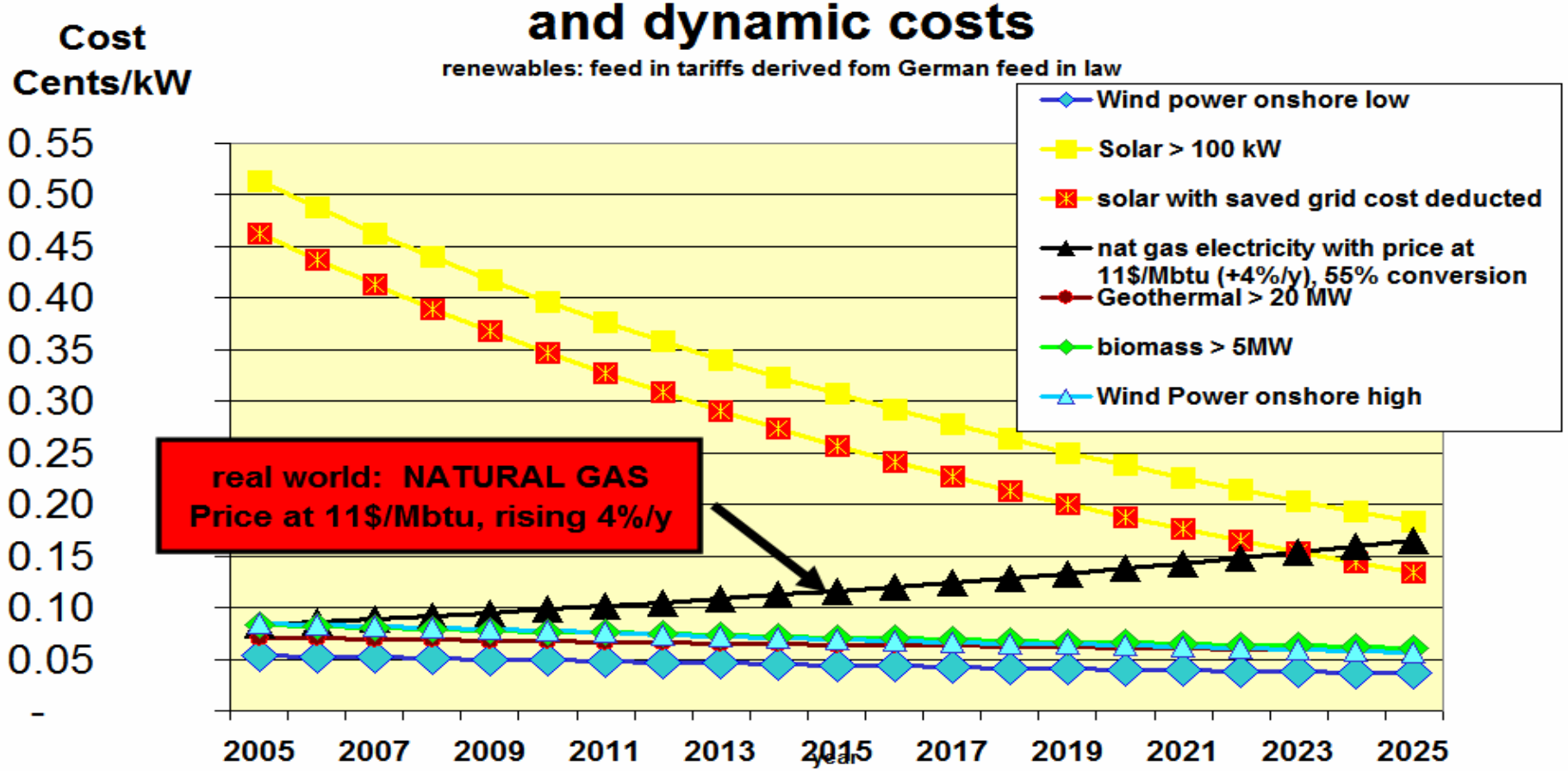
renewables: feed in tariffs derived fom German feed in law



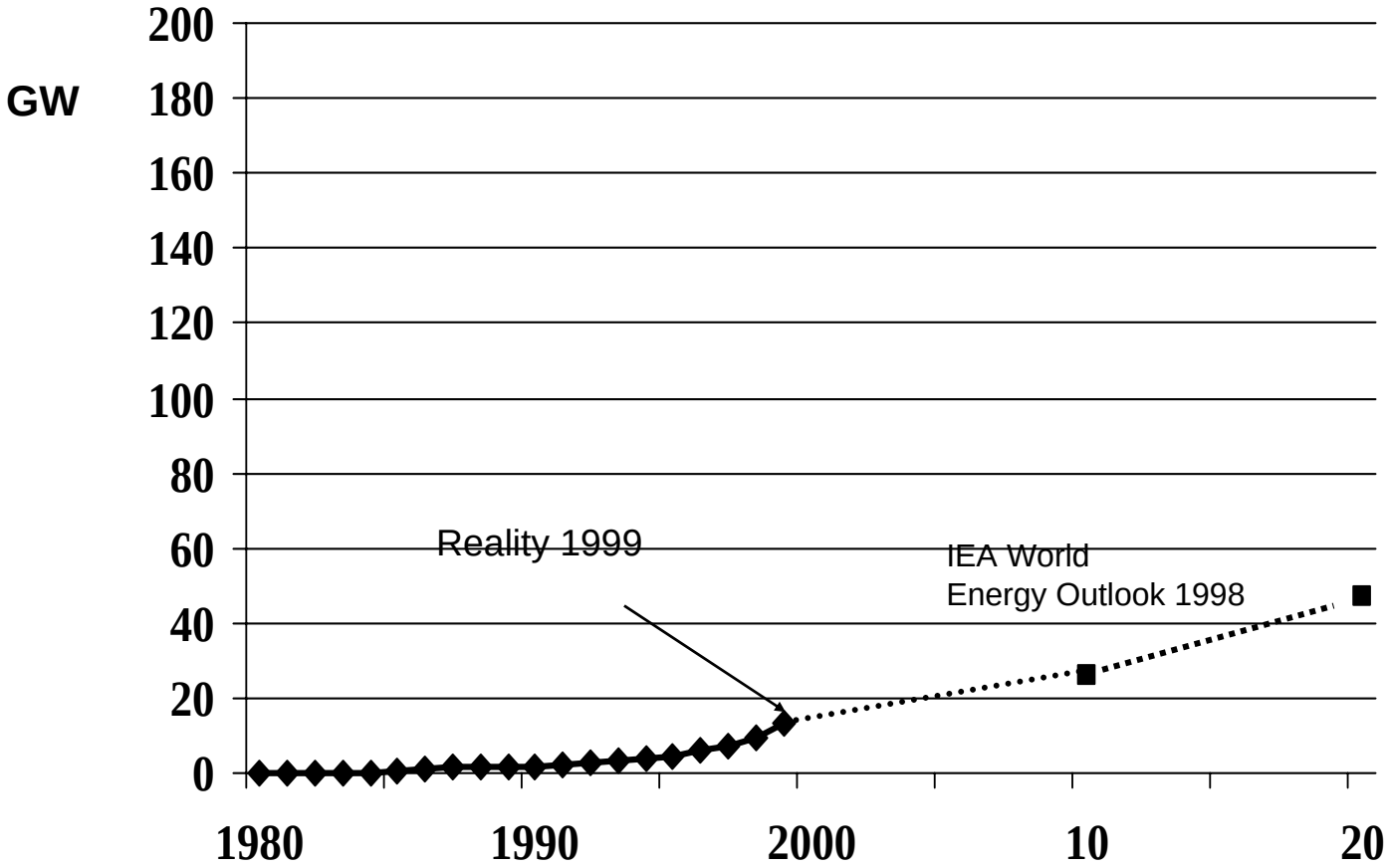
Electricity Generation:
real world prices and dynamic costs



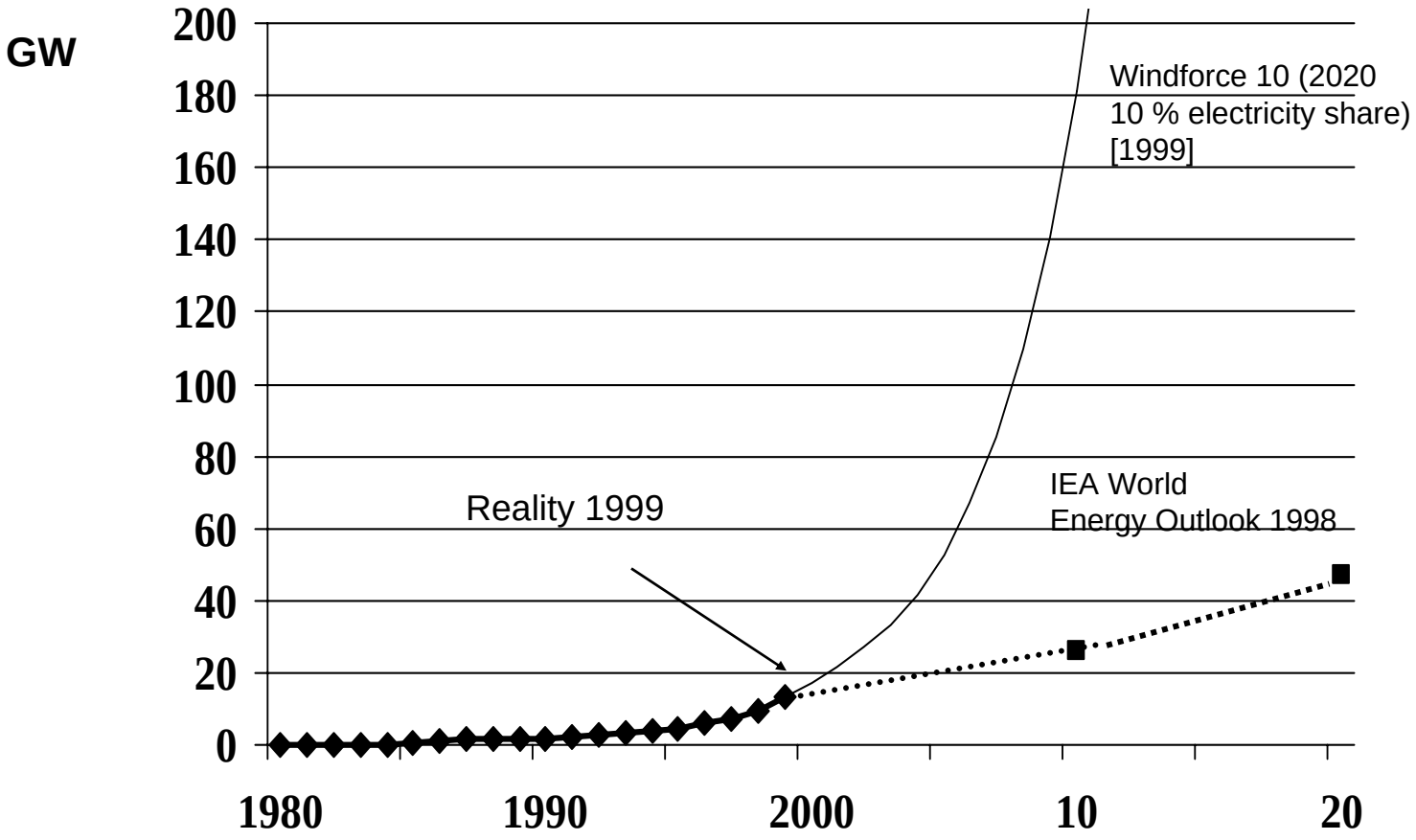
Electricity Generation: real world prices and dynamic costs

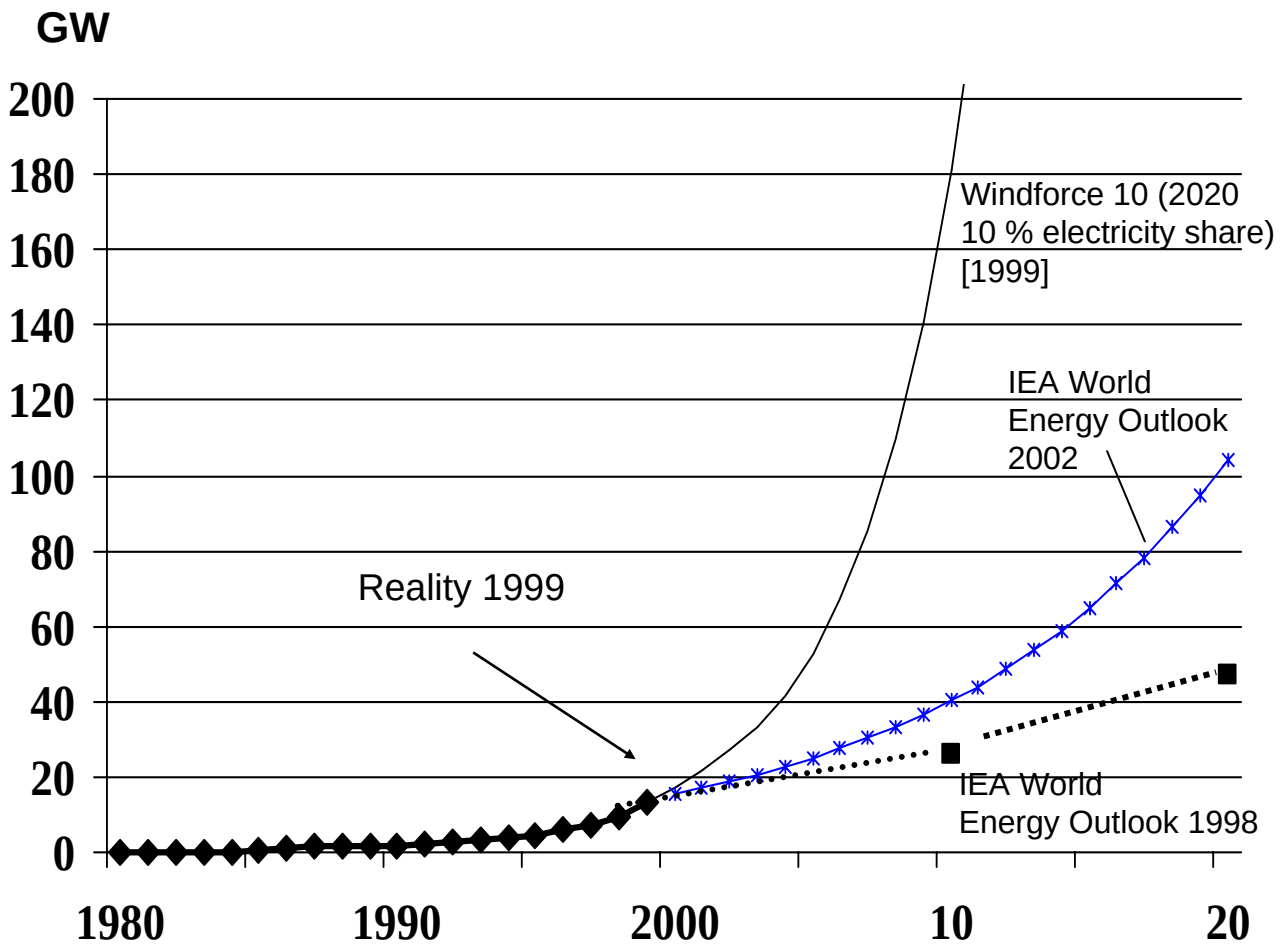


Wind Energy: IEA Predictions and reality

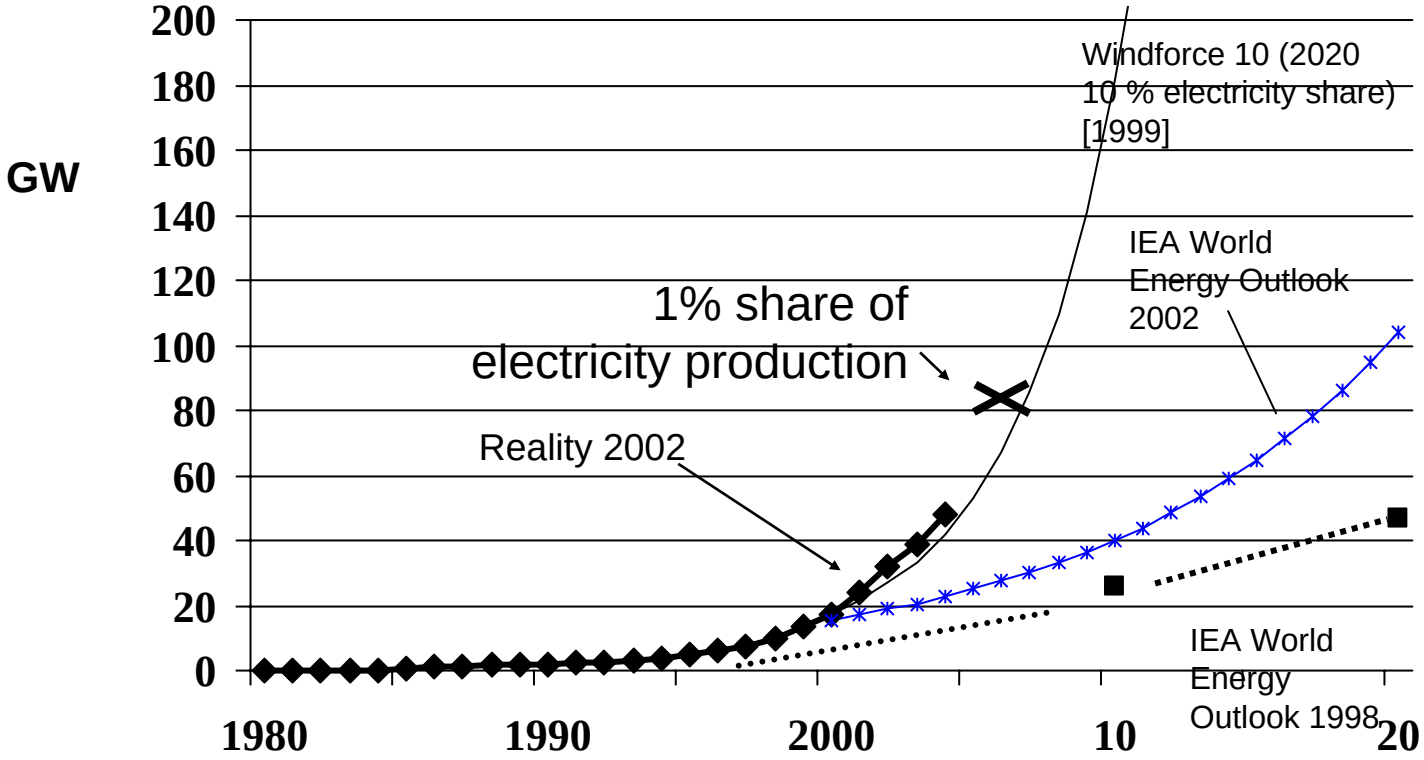


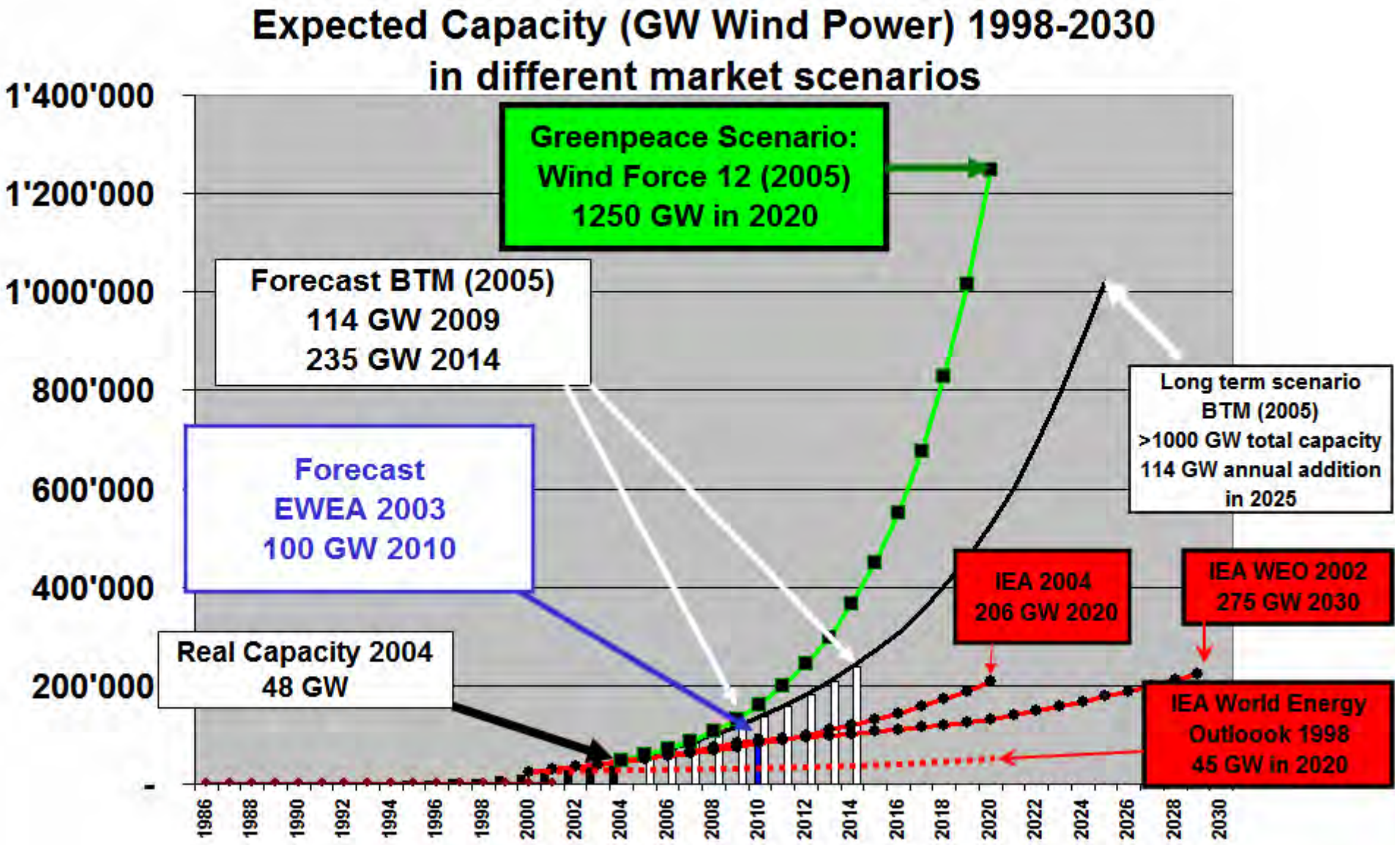
IEA-Prognosen und Wirklichkeit




GW
200
180
160
140
120
100
80
60
40
20
0
1980
1990
2000
10
20
Windforce 10 (2020
10 % electricity share)
[1999]
IEA World
Energy Outlook
2002
Reality 1999
IEA World
Energy Outlook 1998

IEA-Prognosen und Wirklichkeit



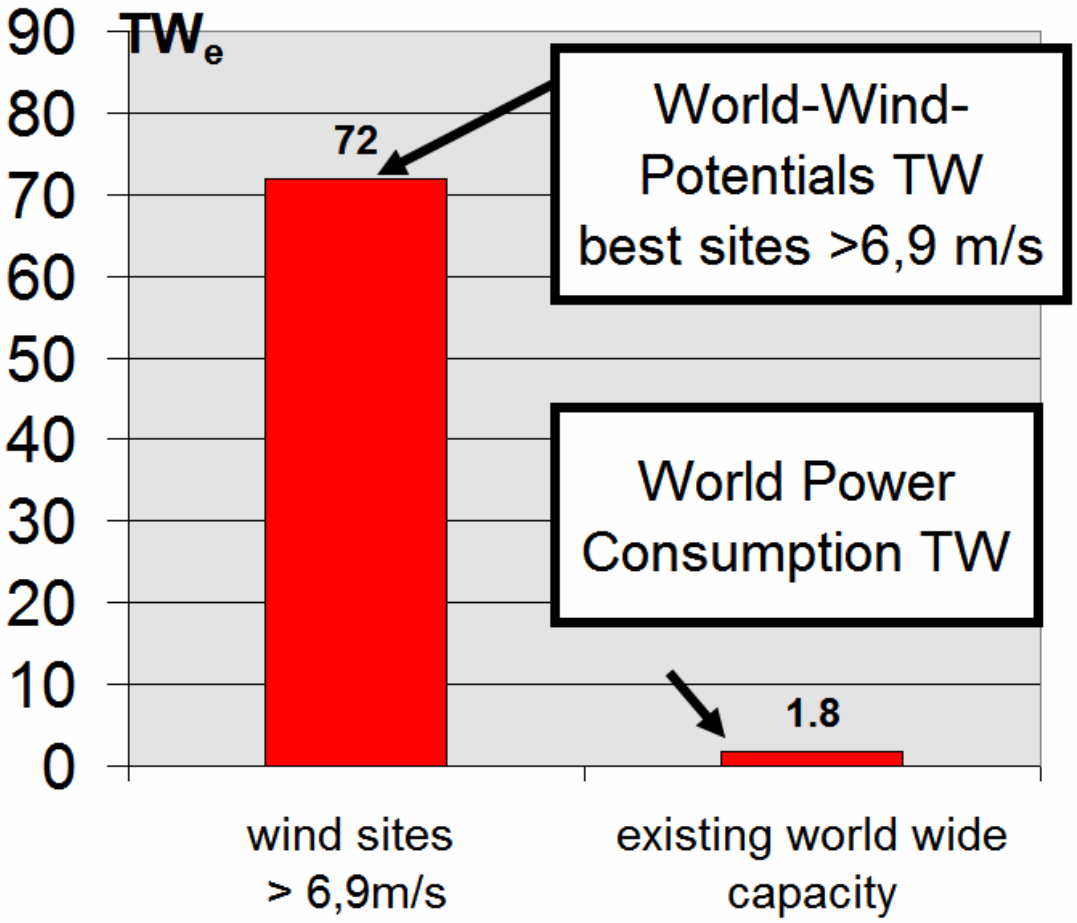

Expected Capacity (GW Wind Power) 1998-2030
in different market scenarios
1'400'000
1'200'000
1'000'000
800'000
600'000
400'000
200'000
-
Greenpeace Scenario:
Wind Force 12 (2005)
1250 GW in 2020
Forecast BTM (2005)
114 GW 2009
235 GW 2014
Long term scenario
BTM (2005)
>1000 GW total capacity
114 GW annual addition
in 2025
Forecast
EWEA 2003
100 GW 2010
IEA 2004
206 GW 2020
IEA WEO 2002
275 GW 2030
Real Capacity 2004
48 GW
IEA World Energy
Outloook 1998
45 GW in 2020
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026
2028
2030

IRENA duties

1. reliable data on reserves of non-renewables
2. Develop market structures for renwables which work
   - Feed in tariffs
   - Tranmission tariffs
3. Measuring potentials of renewables.

Wind Potential: sufficient for 40-100 times of global electricity demand

Source: Cristina Archer, Mark Jacobson/Stanford 2005




Gütsch, Andermatt

Utgrunden Schweden


US-Windfarm

IRENA duties

3. Redirect funding for research

There is enough money in the system!

- **Stop funding nuclear and fossil research**
- **Stop subsidies for non renewable infrastructure**
- **Internalize costs of conventional energy**

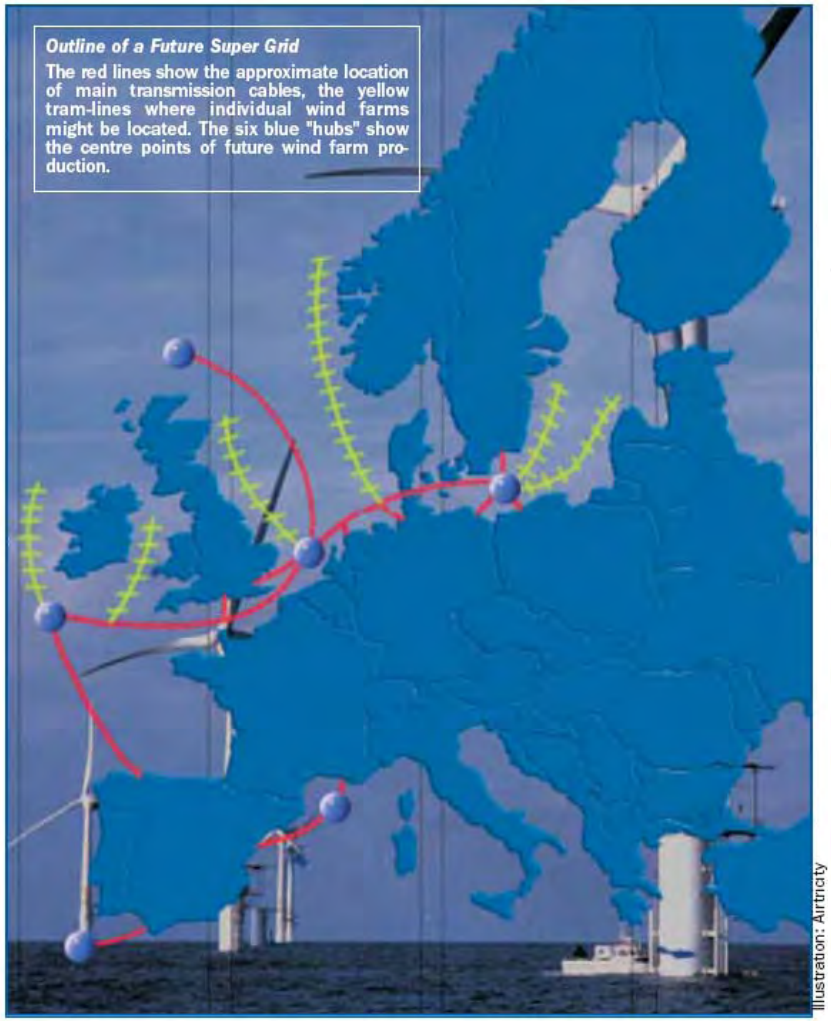
4. we have to know more on renewables

- **Technology transfer**
- **Local assessments**

5. We need a better grid

1000-km-Leitungen à 3 GW
= Stand der Technik

Quelle:



IRENA duties

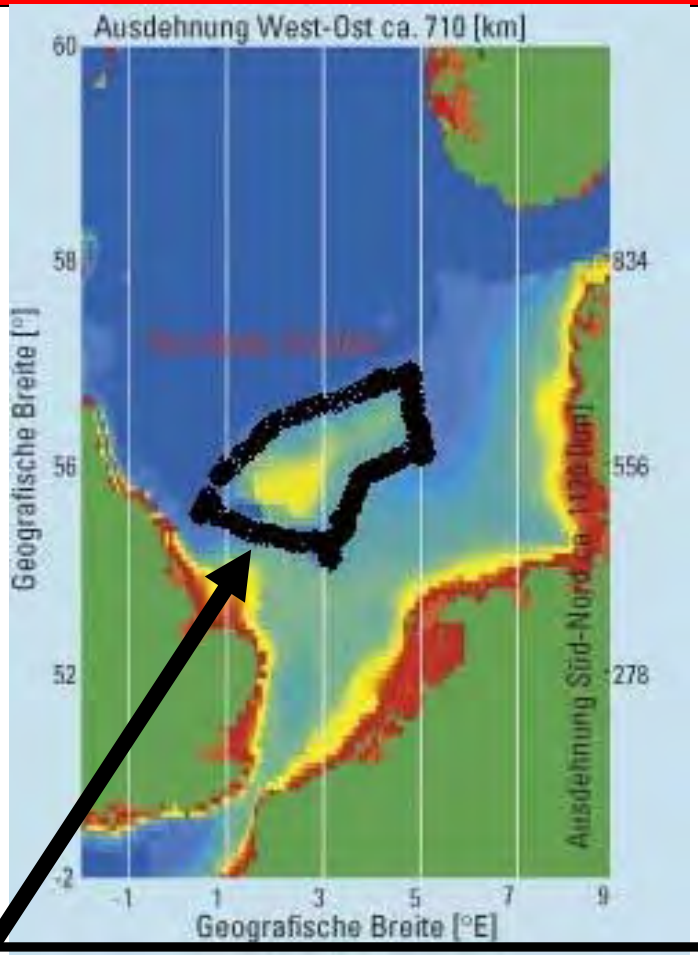
6. Diversity for security

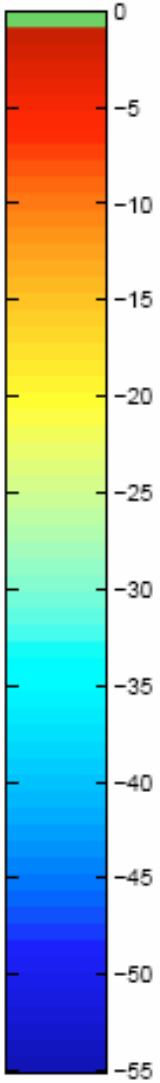
- **We need all renewables**
- **We need offshore too!**

- **The potentials are immense!**

Southern North sea:

250‘000 km^2< 45m = ~ 13 Mbd = 7500 TWh





Area int this Polygon with two turbines /square km is enough to cover EU-electricity consumption

Wind Power now at 20-60 €/Barrel

- Wind power on good onshore site is now at 4-5 €C/kWh
- This corresponds to 21 € per „barrel oil for electrity“ with a 33% conversion efficiency
- Wind is at 60 € per barrel on a purely thermal comparison
  - Off-shore wind is not that cheap yet, but cost reductions are expected
- Renewable electricity reduces overall energy consumption:
  - Electric Motors are more efficient
  - Plug-in hybrid vehicles available soon
  - Heat pumps and solar for space heat

Parliaments and the energy conflict

How to Create Majorities in a Hostile Environment

Rudolf Rechsteiner, Member of the Swiss Parliament
www.rechsteiner-basel.ch
rechsteiner@rechsteiner-basel.ch

Content

Graph 1

1. Introduction

When Parliaments decide on energy policy, they normally start with proposals from the government. Governments like to swim in the mainstream – and they get information and advice from so called experts of organizations such as the International Energy Agency or the IAEA.

But up to now you barely find an international body who is in favour of renewables. Why is this so?

Graph 2 Energy shares

To rely on a purely renewable approach for energy policy, even in governments with strong green participation, a mi-

nority position up to now. Why are international agencies overwhelmingly **against renewables**, teaching governments and Parliaments all over the world?

Indeed it is a fact that so called renewables or the interesting part of it – the "other renewables" – have only a small share of commercial energy consumption now.

Graph 3 Energy growth

But – and that's the good news – renewables are emerging in an explosive way and they have a high energy-return-on energy-invested compared to fossil and nuclear primary energy, where more than two thirds is lost in the user chain as waste heat.

In spite of this strong growth – there remains a mainstream perception in many Parliaments that renewables and energy efficiency

- are expensive,
- have small potentials only,
- might be environmentally good but at a high cost
- and with negative economic impacts.

Why is there only a low media coverage on industries which – like wind and photovoltaics – grow at double digit numbers like mobile phones or electronics?

Why is there a strong contempt toward renewables, a deep rooted negative attitude in international Agencies like the IEA or World Finance Institutions like IMF or World Bank?

2. The Economic Misperception of Renewables

Let's first talk on some structural disadvantages in the perception of renewables.

Externalities

First and foremost there is an economic misperception of renewables.

It is the difference of market prices and real cost, known as externalities.

Investment decisions in renewable energy and efficiency is decentralized and takes place on the micro level, based on prices.

This is done by millions of consumers who buy gas, oil, electricity or hot water, and with products such as cars, houses or electrical appliances.

Well managed renewables do have no or very minor externalities. The hidden costs are on the side of fossil and nuclear energy: destruction of nature, health and climate, radioactive waste and incidents.

After 100 years discussing externalities, main stream economists still are unwilling and unable to internalize external costs in market prices.

Since Kyoto, Parliaments were unable to do so in a harmonized way, and it would be wrong to wait for that.[1]

Graph 4 cost and pay-back-structure of renewables

High upfront costs

Then there is a second economic misperception of renewables and efficiency.

These investments regularly have a high initial capital expenditure, only later you enjoy lower or no fuel, operation and maintenance expenditures.

You need deep pockets and access to capital and banks.

[1] As a typical way to think about this question, a speech of former IEA-Director Helga Steeg from 1991 is usefull because IEA did not change its attitude much since: "[*Energy-]Prices that have been artificially set high through taxation to lower consumption can cause significant economic distress. Too high prices can increase unemployment, lower tax revenue, drain industrial investment and reduce overall quality of life and make it more difficult for society to meet environmental standards. They could also lower a nation's ability to invest in new technology and to create wealth - strengths essential to achieving sustainable development.*"… "*Although great technological strides have been made in developing alternative energy resources, there is no question that fossil fuels will continue to dominate the world's energy mix through most of the 21st century.*" …"To be effective in reducing atmospheric greenhouse gas concentrations, a carbon tax would have to be significant and be applied to a base which is broader than the OECD countries. Even then, such a tax involves large macroeconomic costs and could distort trade. In addition, any system of taxes would have to be internationally harmonized. Even then it could change the competitive position of nations and thus lead to a less efficient use of the worlds resources." Regarding CO_2-problems, Steeg declared: "A significant contribution comes today from the use of nuclear power." The IEA never since changed its attitude. Cf. International Energy Agency (IEA) Briefing Notes on Carbon Taxes (by Helga Steeg) World Energy Forum Davos, Typoscript 1991

Even if you find capital you must expect an initial shortfall of income in the first years of heat or electricity generation.

The life expectancy of energy infrastructure such as solar, wind, hydro or geothermal normally goes far beyond the payback terms of tree to seven years that you normally find in private companies and households.

Some investments such as hydro dams or foundations for wind turbines might work for up to 40 or even 100 years.

But after ten to twenty years or so, when depreciation has progressed and interest burdens are reduced, most investments in renewables turn out to be cash cows, and some of them, like the hydro plants in Switzerland, are phantastic cash cows after 30, 40 or 60 years, with a generation cost of less than 2 Euro-Cents/kWh.

These installations then turn out to be real gold mines.

At the time of investment though, this is not reflected in payback-plans. And there always remains investment insecurity, in terms of market prices, costs and life expectancies of new technologies.

3. 2004 – The Crucial Price Switch

Graph 5 the turning point – prices!

Now let's take a look at what happened those last two years. We have seen a turning point in energy prices.

All the conventionals suddenly turned out to get more expensive.

This could be seen in all primary energies: oil, gas, coal and uranium.

Construction of renewable appliances might remain, in a market framework, still a difficult task; the initial profitability is critical and the profits many times comes for the next generation only, in economic and environmental terms. But since 2004 and 2005, renewables look a lot better than ever before.

Every body in the energy business knows that, but not the mainstream media.

The main stream media is talking about the “China factor”. Demand went up, sharp price increases followed.

But this explanation is shortsighted. And it suggests a wait-and-see attitude to consumers. Wait a year or so, and everything will be as ever, we are told by the oil industry, with renewables still called “too expensive”.

Graph 6 US in the oil and gas trap

But the China factor was only one factor within a fundamental shift.

What we see today, and where International Bodies are extremely hideous in reporting, is a fundamental shift. It is the peak in oil and gas production in many parts of the world.

Take the US Natural gas and oil case: It has nothing at all to do with China demand.

We clearly can identify:

- Steeper decline rates in new gas and oil fields
- Declining overall natural gas and oil output
- strong growth in drilling with ever deeper holes at higher costs, but
- Ever smaller fields found and ever smaller returns of energy per Dollar invested.

Graph 7 Russia

Energy productivity of the fossil sector is diminishing, and for the first time in history and unlike in 1973, this is showing up in higher prices.

And this is not a US-story.

You find the same trend in Russia, more drilling and less return.

Graph 8 Opec Spare capacity

And OPEC nations have no spare capacity, they produce flat out, and the quality of additional production is worsening, leading to a call for additional refineries.

4. IEA, IAEA : stupid, manipulative or corrupt?

But what do Parliaments learn from that?

As a matter of fact, renewables are progressing fast, due to feed in tariffs or new standards in many countries. Photovoltaics, wind turbines, wood pellets and heat pumps are sold out for some time.

And higher prices create new majorities in Parliaments and in elections like in Germany, where a conservative victory seemed to be for sure, six months ago.

Graph 9 Hulst, IEA Scenarios

But what did the advisers of IEA or elsewhere learn from that experience?

The message of IEA is: oil prices will come down and renewables won't make it.[2]

Renewables barely exist in the official agenda of IEA, you will not find the word wind power in the new World Energy Outlook 2005, and you find no reliable data on renewables.

Even in the so called alternative case of the International Energy Agency renewables have no clear significance.[3]

Graph 10 The looming crisis

But for consumers, the perspective of continued dependency on fossil fuels is getting expensive and dangerous in many ways.

A growing share of consumption for the coming years is unfound yet, the infrastructure and the imperial conflicts to

[2] This for example was exactly the message of IEA Expert Noé von Hulst in his September speech in Bern/Switzerland.

[3] cf. IEA: World Energy Outlook WEO 2005

expand fossil fuel delivery from far away are expensive in terms of money, human lives and nature.

Graph 11 no joke any more

Prices are hurting private consumers and industries, and in the US a process of de-industrialization takes place.

The blind belief that there is enough conventional energy is plain wrong and soon it could bring cold winter nights.

Graph 12 IEA, EIA, IAEA, and USGS

Despite rising prices for fossil fuels, there is absolutely no willingness in the IEA or international bodies to understand renewables and the expectable advantages in this field.

As a member of the Swiss Parliament I would like to give you an example.

On 8 September 2003, the deputy director or the International Energy Agency, (IEA), Mr. William Ramsay was a guest in the Energy Committee in our capital.

Graph 13 The IEA view

The IEA-Country-Review for Switzerland denounced renewables as being expensive, it praised nuclear as the cheapest option, which evidently was not true, because the long term cost of radioactive waste are neglected and hydro is much cheaper in Switzerland anyway.

Ramsay criticized that “renewables still get 40% of the Swiss Energy Budget” and he counseled Switzerland to reduce these contributions – (they are quite low though compared to our neighbors).

Insiders will not be surprised about this attitude. Mr. Ramsay (of US origin) and the IEA boss of French origin, Mr. Claude Mandil, are the perfect couple for fossil and nuclear promotion, a main issue of IEA.

A World record in wrong predictions

Graph 14 IEA methods to predict supply

There is no place for renewables in Paris.

The good news about it is: the IEA is a world champion in wrong previews, and their scenarios do not fit reality.

Let's take a closer look at the 2005 World Energy Outlook: The method of IEA oil and oil price prediction is revealed on page 95 of WEO:

"The oil supply projections of this Outlook are derived from aggregated projections of oil *demand*….
Opec conventional oil production is assumed to fill the gap."[4]

Graph 15 WEO 2005: quantities

The idea of IEA is that you find any amount of oil in the Middle East, dependent only on investment cost, which will rise to 31 trillion $ though...

This means that unconventional reserves are developed, the more pollution the better, one could think.[5]

Graph 16 IEA low prices for ever

But even with these investments oil prices will come down and stay low for decades, so we are told in the 2005 outlook: Oil at 40 $ a barrrel and gas at 6$ MBtu.

You find everything and nothing in the foggy IEA report, you might even find some renewables. But the report is are confusing and contradictory.

The IEA omits the crucial questions:

- **How much will the prices rise in case that oil has peaked and you will not find more than now or maybe less?**
- **How much must they rise to stabilize or destruct demand?**

[4] World Energy Outlook 2005 p. 95

[5] Cf. Robert Priddle and Fatih Birol(IEA): "IEA chief says energy security favors unconventional resources", Oil & Gas Journal, Nov. 26 2002

- **How much and what effiency technologies will emerge if oil rises above 100 $ as predicted in a Goldman Sachs report?**
- **And what renewable technology will be a good bargain with such prices?**

Graph 17 oil and gas prices - reality

Prices are different from what IEA reports.

The IEA report are similar to the Sowjet planning fulfillment reports, and this reminds me the famous sentence by Michail Gorbatchev:

“The numbers were always good”.

Yes IEA numbers sound good, but it is fantasy!

IEA is making up things which do not exist and like in the Sowjet Union, people might starve if they do not invest in renewables.

Graph 18 the Hubbert curve

It is difficult for IEA to accept the obvious, that most of the World’s oil has been found. IEA tries instead to blame the oil companies and producing countries with large reserves to for not trying hard enough.

But the real source of the IEA phantasy is not in Paris, it is in Washington.

There is a long history of overestimation of fossil resources which started with the Hubbert/Zapp debate in 1948. Zapp from USGS estimated total US oil reserves of about 590 billion bbl when in reality it is something like 230 billion bbl.

They developed the idea of oil found per foot of drilling, and this was the basis for all estimates until the mid-1970s when US production deteriorated.[6]

[6] Cf. ENERGY AND RESOURCE QUALITY, by Charles A.S. Hall, Cutler J. Cleveland, Robert Kaufmann, Univ Pr Colorado, 1992; http://dieoff.com/page197.htm; **http://www.amazon.com/exec/obidos/ASIN/0471087904**

Graph 19 the mother of invention

Today the predictions again are plain wrong, but in the Bush Cabinet, every minister is an oil minister, and renewables do not exist except for fun or image.

If you go back only three years and look at their price predictions, you can see how wrong they are. The high price scenario in 2001 was at 25 to 29 $/barrel, but meanwhile we are at 58-70$.

Graph 20 no depletion visible

In the EIA perspective there is no decline visible – in no region of the world.

In contrary IEA is predicting ever growing consumption and supply thanks to OPEC and the Persian Gulf.

Graph 21 IEA predictions

Bu to compensate the declining regions and to grow supply like predicted, you need six new Saudi Arabias to satisfy demand!

Where will you find these six Saudi Arabias??

Meanwhile the fantasy of these Paris based oil reserves is contested by renown analysts such as Colin Campbell from ASPO, Kenneth Deffeyes (Princeton) or Matthew Simmons (Houston).[7] They all correspond with IEA since 1998.[8]

Graph 22 British oil - the perception of IEA

But still IEA is unwilling to learn. Take the case of British Oil production since. [9]

In 2001 the US-Energy Information Agency projected a peak in North Sea Production at 6 Million barrel a day.

[7] **http://www.peakoil.net/**

[8] Since the famous contribution by Colin J. Campbell and Jean H. Laherrère: The end of cheap oil", Scientific American March 1998

[9] The US Energy Information Agency wrote in its International Energy Outlook 2001 (p. 36)
"In the IEO2001 forecast, North Sea production reaches a peak in 2006, at almost 6.6 million barrels per day. Production from Norway, Western Europe's largest producer, is expected to peak at about 3.7 million barrels per day in 2004 and then gradually decline to about 3.1 million barrels per day by the end of the forecast period with the maturing of some of its larger and older fields. The United Kingdom is expected to produce about 3.1 million barrels per day by the middle of this decade, followed by a decline to 2.7 million barrels per day by 2020." In August 2005, British production stood at 1.392 MBd and Norwegian production stood at 2.643, which results in a combined 4.03 MBd, This is some 33% less than the peak number, predicted in the IEO2001 by EIA.

But since 1999 the British oil production is falling, and meanwhile the reduction stands at a minus 37% since the 1999 peak.

It is evident that wind power in Britain could make up for half of the energy consumption in Britain, when you have a well done development and planning process, including grid connection and grid management.

But this is not the thinking of IEA. Their main recipe for the British seems to be war in Iraq and else (the Mid-East oil reserve is exactly the subject of WEO 2005), drilling more or nuclear power, an issue recommended by the IEA for Spain also and to other nations like Switzerland.

Graph 23

The objective of such wrong reserve and price prediction is obvious.

Parliaments and investor should be distracted from renewables as long as possible.

The supposed low and stable oil and gas prices, and no externalities corrected, renewables should stay in the cost trap for ever, they cannot advance and will not get cheaper than conventional energies.

Only wind power in some best sites might eventually be competitive.

Graph 24

But watch this graph, that shows just the German feed in tariffs and the gas based generation, with two changes of assumptions:

- Take the real natural gas price
- Suppose it will rise, following the oil price, as they do now and

You find out that almost all renewables are competitive.

Graph 25

Even Photovoltaics are economic by 2025, compared to gas with net metering.

5. The case of global wind power

Fortunately – and this is the good news – IEA is not only plain wrong on fossil fuel prices, but on renewables too.

Let me show this for the case of wind power.[10]

Graph 26

In 1998 wind power stood at 10.2 GW after strong double digit growth for ten years.

At that time the prediction of IEA world energy outlook was for some 42 GW in 2020.

Then Greenpeace published its wind force 10 with 10% share of wind power in 2020.

Graph 27

In 1999 and 2000 wind power expanded at more than 30%.

Graph 28

Then the IEA adopted a more favorable vision of wind energy with 100 GW in 2020.

Graph 29

But meanwhile the real development of wind power exceeded the one predicted by Greenpeace wind force 10.

Wind power will reach 80 GW or one percent of electricty generation in 2007 most probably.

Graph 30

IEA again adjusted the wind power assessment.

In 2002 they predicted wind power growth up to 275 GW in 2030 and in 2004 they predicted 206 GW in 2020.

But meanwhile more and well known consulting firms have raised their predictions:

[10] My thanks go to Werner Zittel, LBST, for these graphs and sources

- BTM consult predicts 114 GW by 2010, 275 GW by 2014 and more than 1000 GW by 2025
- Greenpeace too has adjusted its prediction to 1250 GW in 2020. and Greenpeace has the best record in wind power predictions of all.
- The 45 GW predicted by IEA for 2020 were passed last year. Turbines this year are practically sold out until 2008.

Looking back, the 1998 forecast of IEA was wrong by a factor of twenty.

But also insiders like BTM were normally wrong by 40-45%, they estimated wind power far too small.

We have to ask for the reasons and the conclusion of this:

Renewable costs today are competitive in many aspects. Investment costs of wind power are lower than nuclear and there is no cost risk, for the primary energy – wind – is free, and the same with solar and geothermal.

Insiders in the industry start to realize this and invest. And IEA will adapts behind, too little, too late.

The prospects of renewables look good.

But governments and Parliaments are fundamentally misguided by advice of IEA. The unwillingness and the foggy attitude of this organization is mafia like, and studying these reports, you ask the question, for whom they work – for the tax payers who pay them or for the oil and nuclear monomolies, like a criminal organization?

6. Conclusions

We need to do a range of things to change this.

Renewable technologies are moving forward.

Governments urgently need a framework within which they can work.

The new coalition wants IRENA to be founded at last, and Herrmann Scheer and SPD deserve a name in World history for that. What could be the task of IRENA?

Graph 31

IRENA duties

1. reliable data on reserves of non-renewables
2. Develop market structures for renwables which work
   - Feed in tariffs
   - Tranmission tariffs
3. Measuring potentials of renewables.

Graph 32

4. Redirect funding for research

- There is enough money in the system!
- Stop funding nuclear and fossil research
- Stop subsidies for non renewable infrastructure
- Internalize costs of conventional energy

5. Technology transfer

- Local assessments
- We need a better grid

6. Diversity for security

- We need all renewables
- We need offshore too!

And we have to speak out in a language that every one understands, in terms of energy.

Graph 33

Graph 34

Graph 35

Graph 36

Graph 37