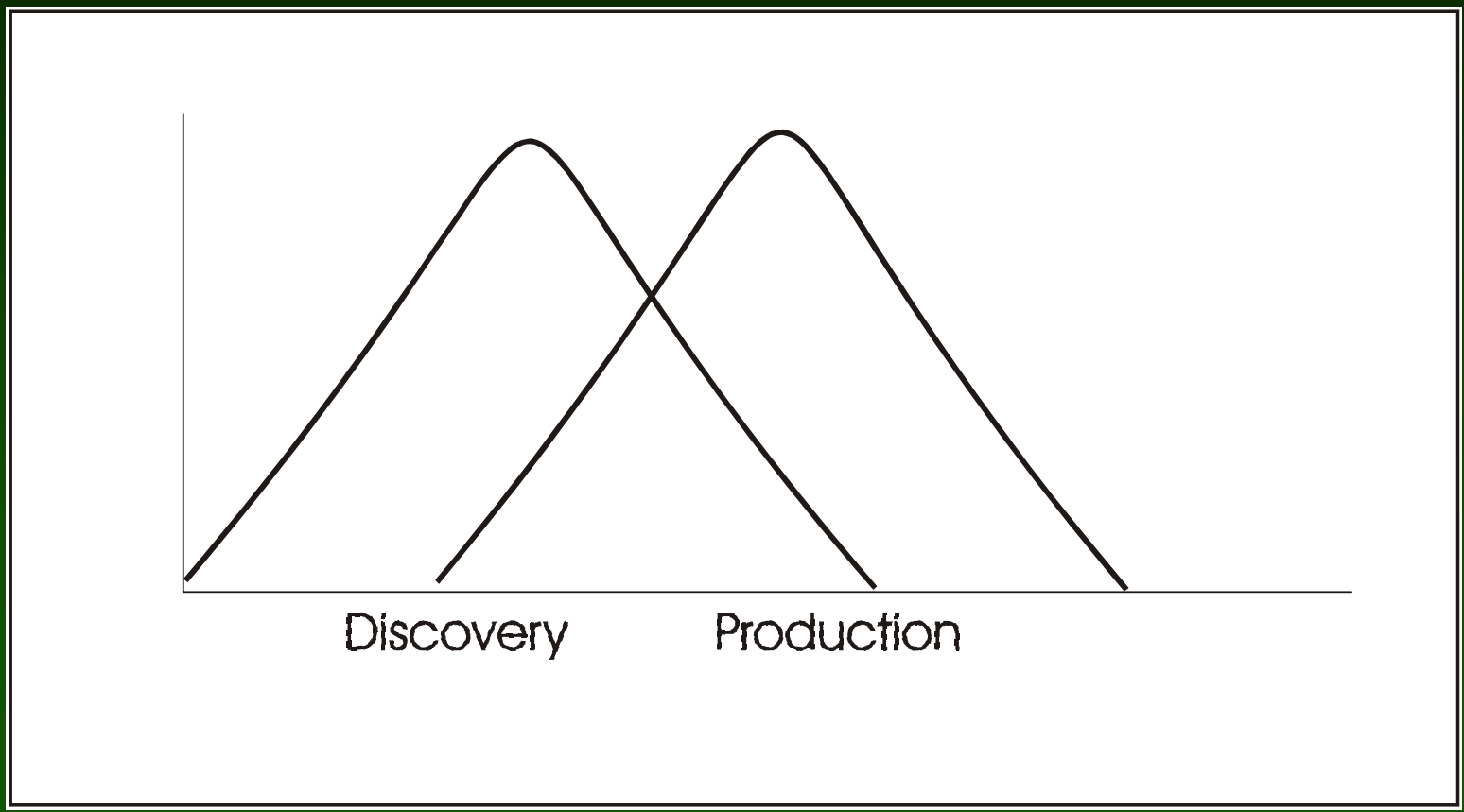
The Lean Economy

A closer look at energy

Elm Farm Research Centre, 8 July 2002

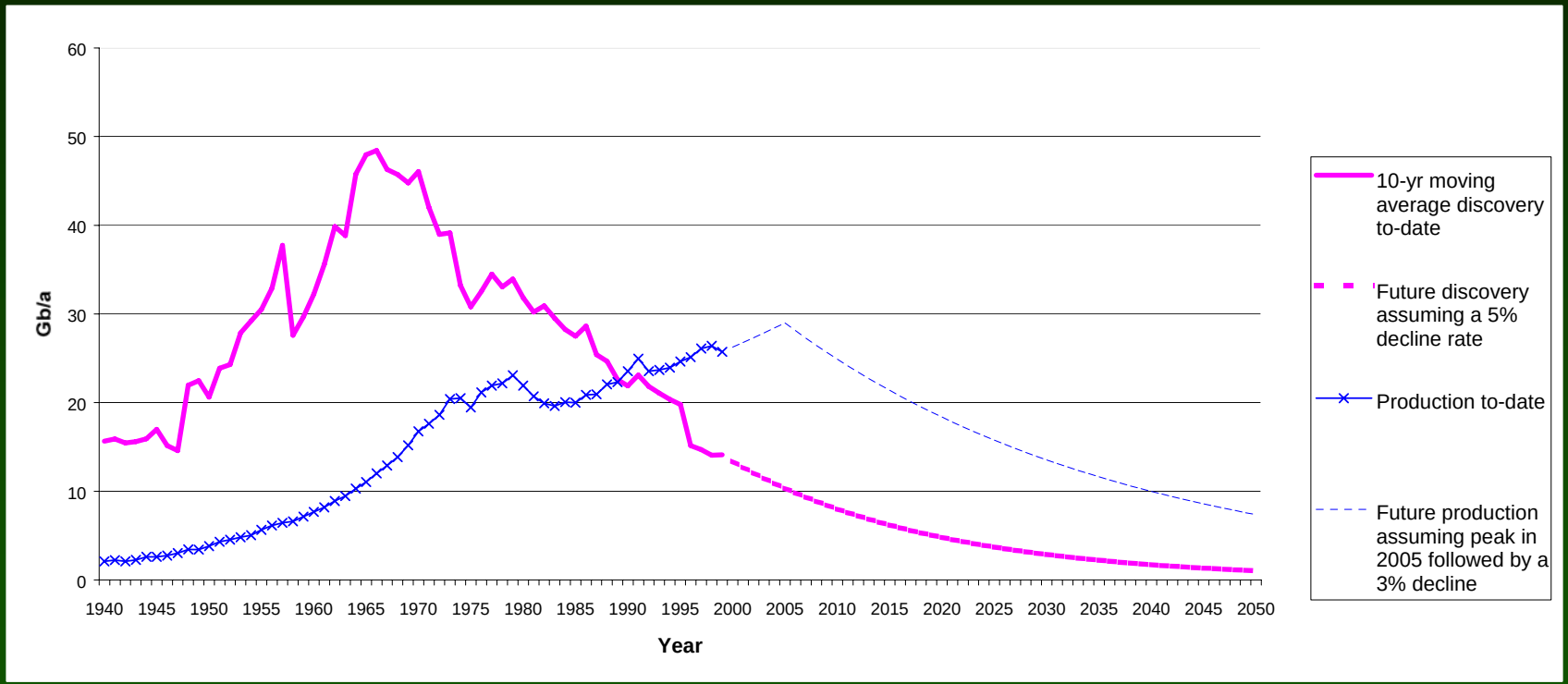
Production follows discovery: I
In principle

Conventional crude oil

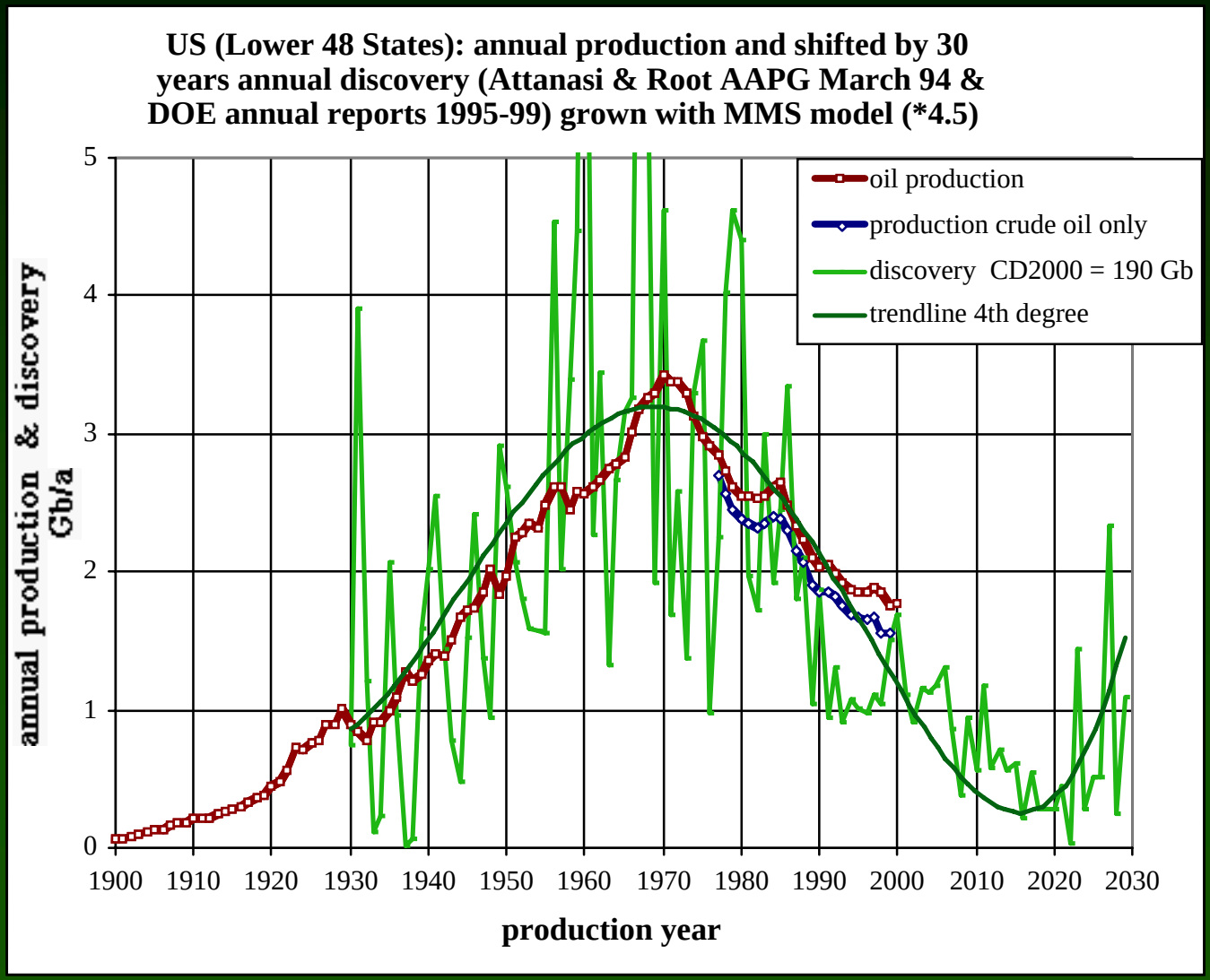


Production follows discovery: II
In practice

Conventional crude oil

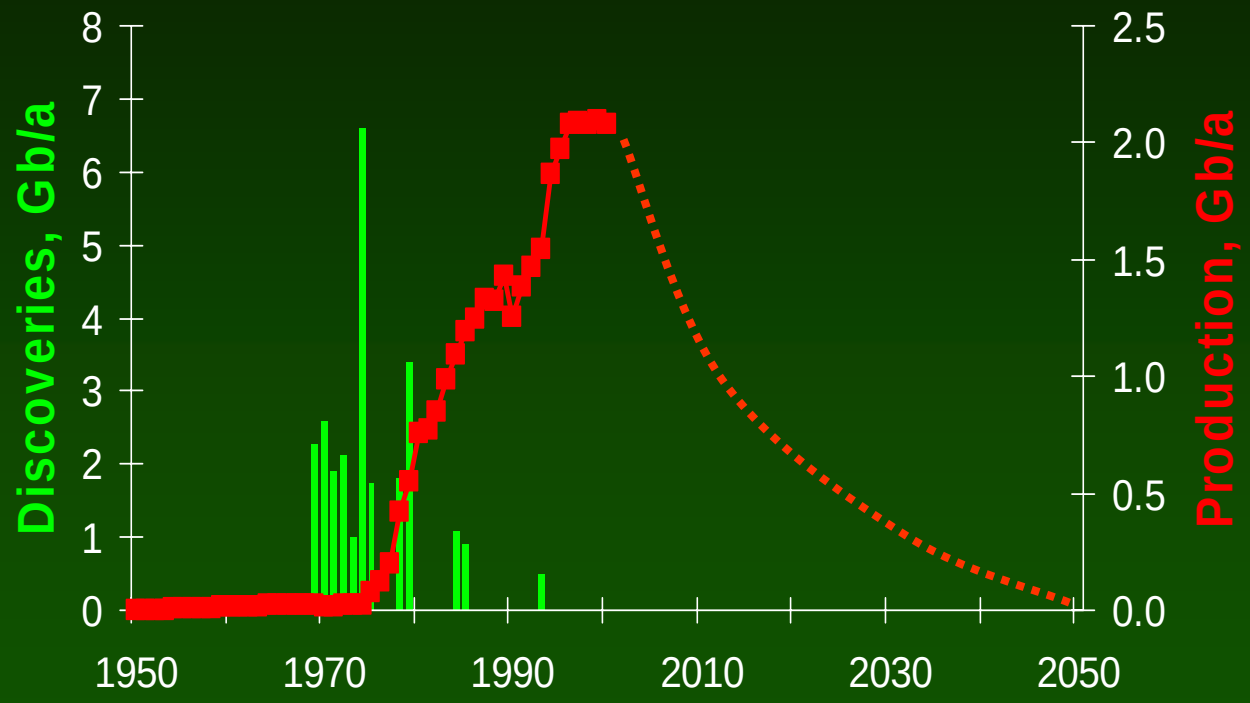


Production follows discovery III
In the US there was a lag of just 30 years



The North Sea

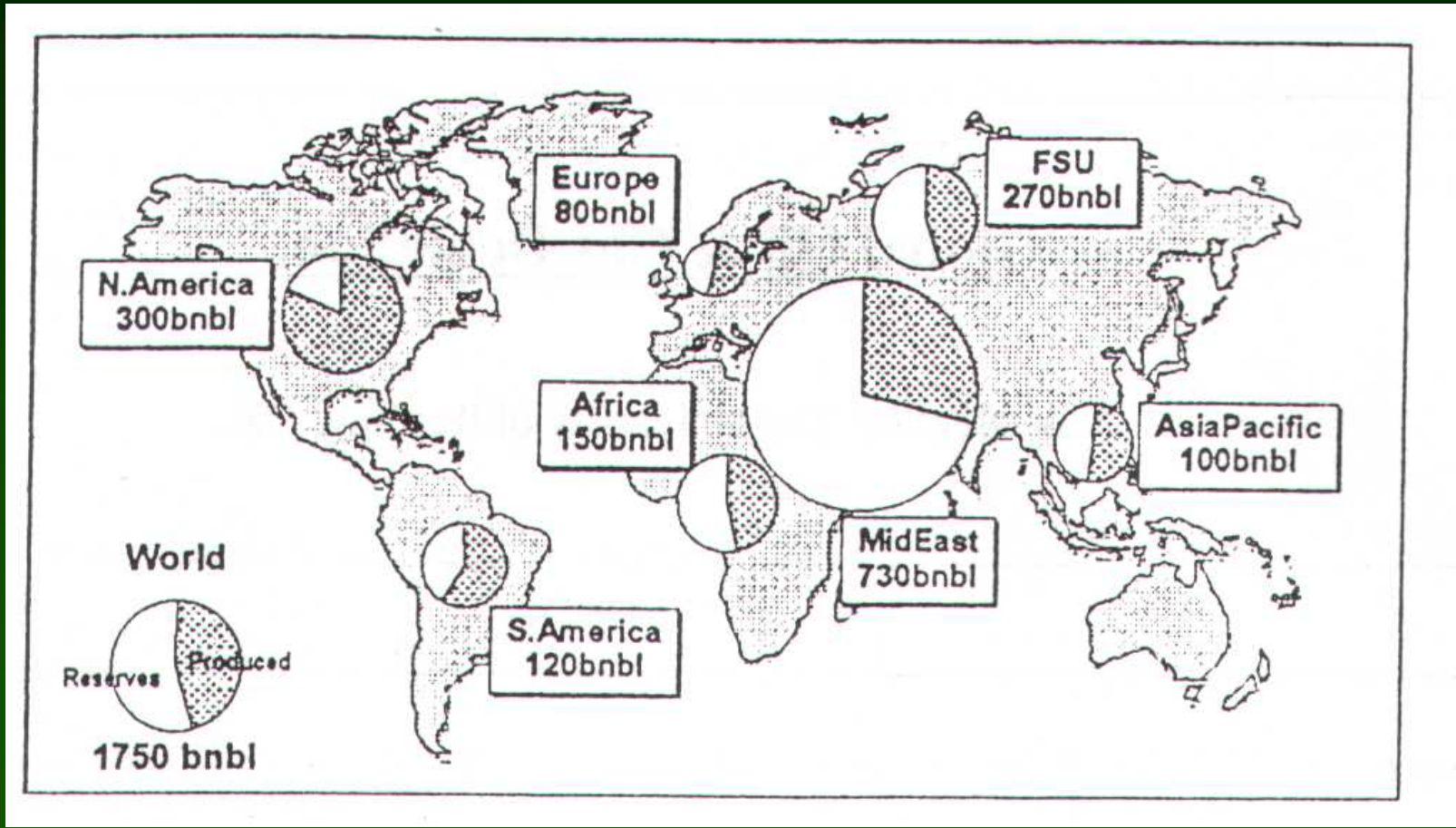
Midpoint year: 2000
Ultimate: 59 gigabarrels
To date: 30 gigabarrels



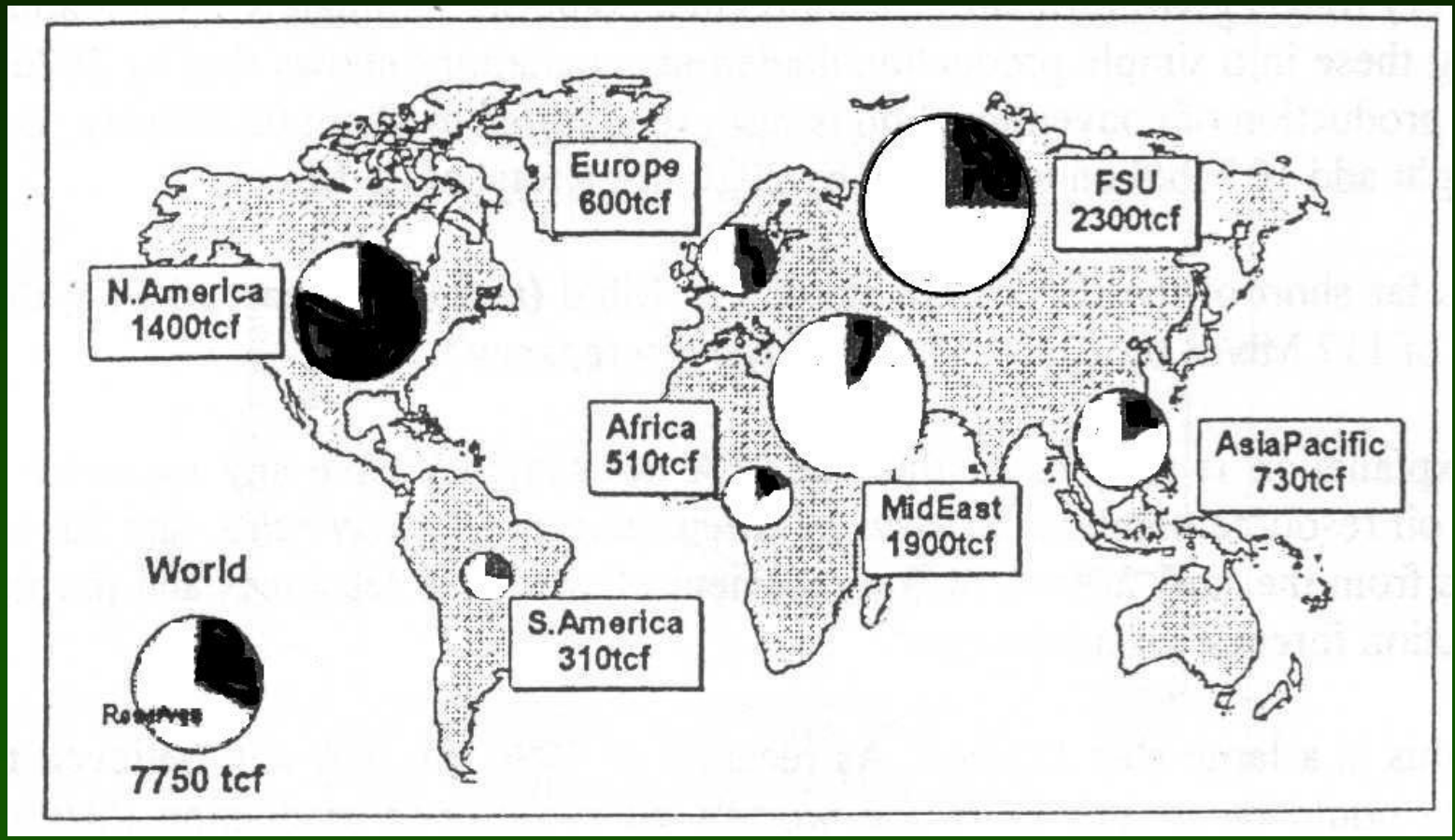
Peak discovery 1973
Peak production 2000
Time-lag 27 years

The ticking clock I
Oil depletion worldwide

Conventional crude oil

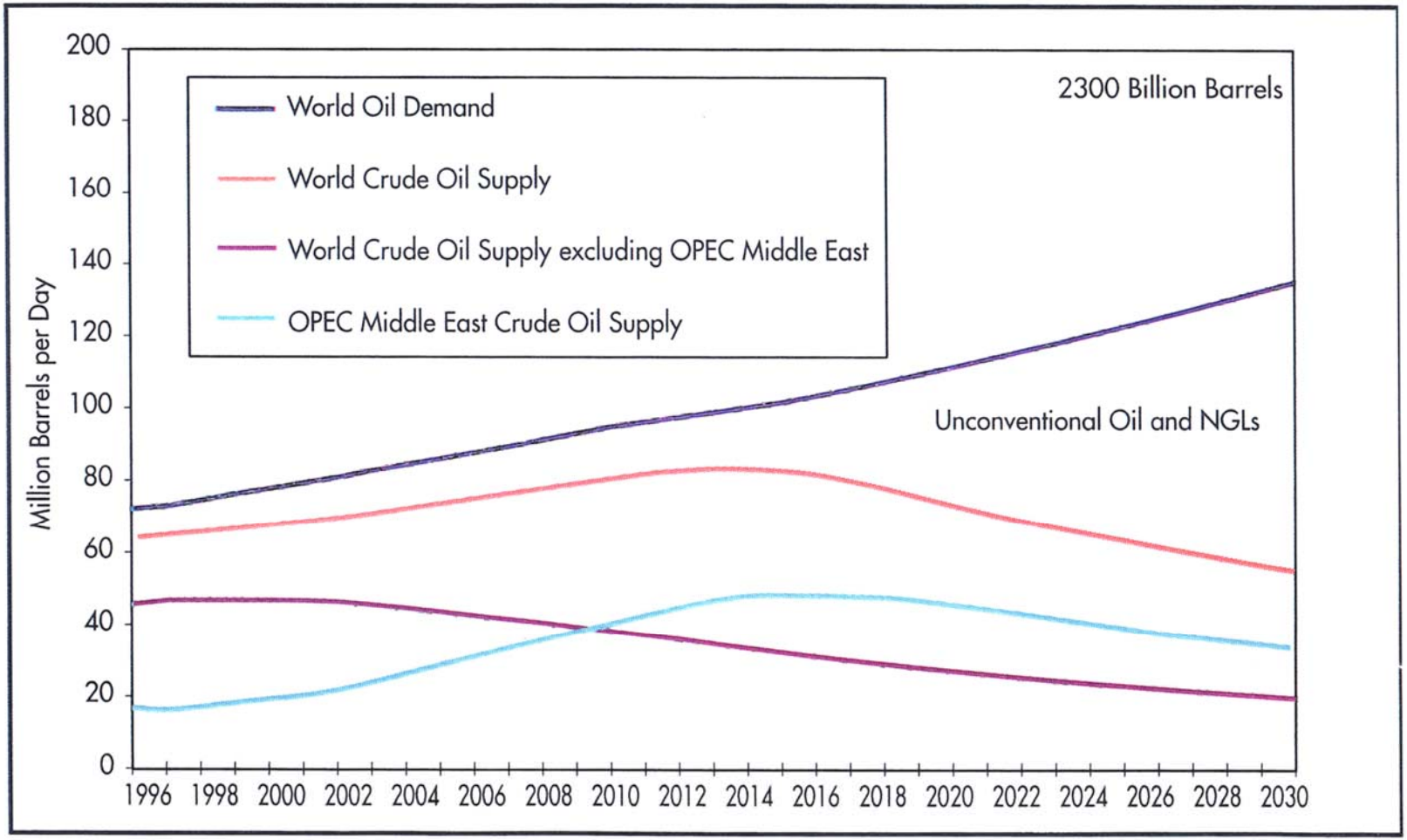


The ticking clock II:
Gas depletion worldwide



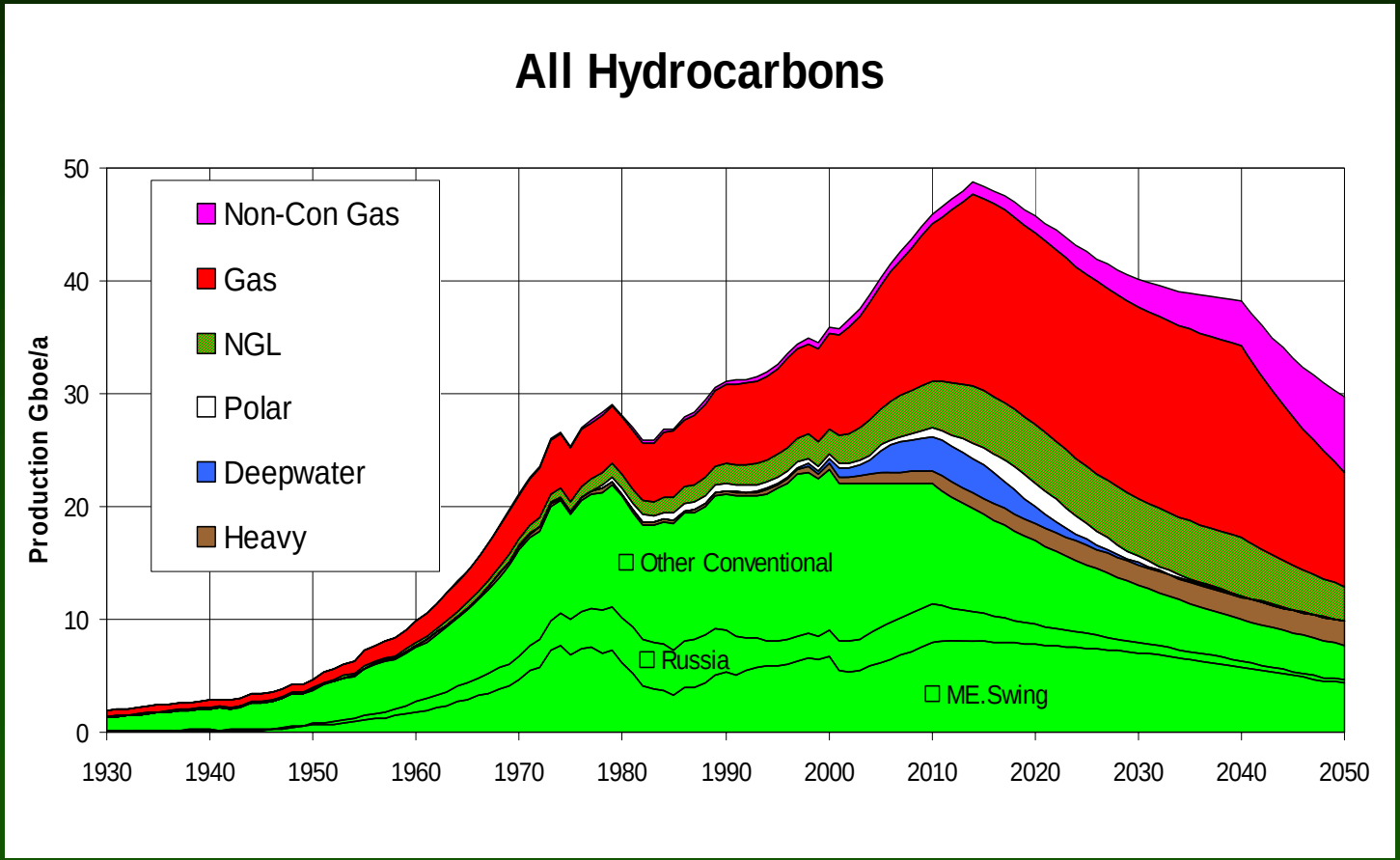
The code that almost no one cracked

Figure 7.7: **Oil Supply Profiles 1996-2030**
Ultimate Conventional Oil Reserves of 2300 Billion Barrels



Four oil shocks

1. About 2005: conventional oil peaks.
2. About 2010: all oil peaks.
3. About 2015: all hydrocarbons peak.
4. About 2040: gas peaks



It’s not just oil

Water and food

Climate change

Disengagement

Consequences

WARNING! TIME TRAPS

1. Slippage

   The shocks could prove to be later than we may think. And their consequences could be delayed.

2. New energy solutions

   They exist but they could take 50 years to implement. Have they missed their chance?

Consequences I
Post-2005, conventional oil peaks

DIRECT:

- The end of denial: the start of five years of intensive preparation for the oil famine.
- Profound economic and political consequences for America which must now import almost all oil and gas.
- High fuel prices moderated by the effects of recession.

INDIRECT

- Stock market losses.
- Intensive conflict on nuclear power.
- Shift of emphasis from climate change.

Consequences II
Post-2010, all oils peak

PROBABLE:

- Fuel insecurity; increasing disruption in transport.
- New demand for gas as substitute for oil.
- Collapse of American influence.
- Worldwide economic depression.

UNPREDICTABLE

- Deep decline of global food trade, especially of America as exporter (due to transport disruptions, gas dependency and water shortages).
- Intensive effort to improve energy-efficiency of food production and distribution.
- Social instability in most-affected countries.

Consequences III
Post-2015, all hydrocarbons peak

PROBABLE:

- Intensive competition for access to fuel.
- Rising unemployment, offset to some extent by jobs in renewable energy; industry focuses on survival strategy in deepening depression.
- The empty government stall.

UNPREDICTABLE

- Foreshortened vision: it is your own family and connections that matter. Intensive concern for energy-efficiency of food production.
- Shift to renewables-based economy may be handicapped by disruption to transport and the economy.

The Lean Economy

Recognise the extreme extent of the coming change

Reinvent everything:

Production

Society

Consumption

Culture