Germany 2003

Biomass: the oil of the poor

José Goldemberg

Secretary of State for the Environment , São Paulo, Brazil

World Consumption of Primary Energy and Renewables, by Energy Type, 1998

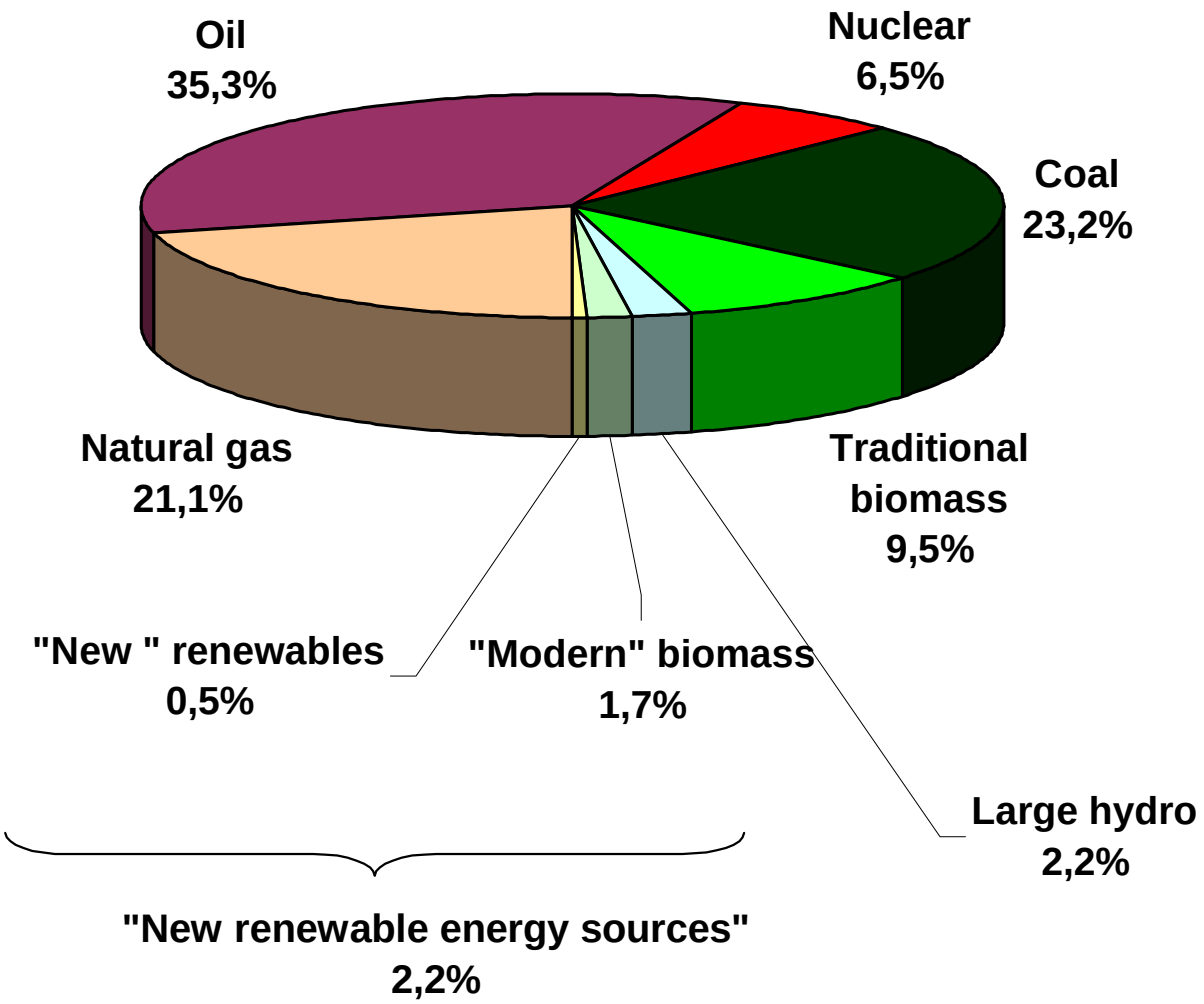
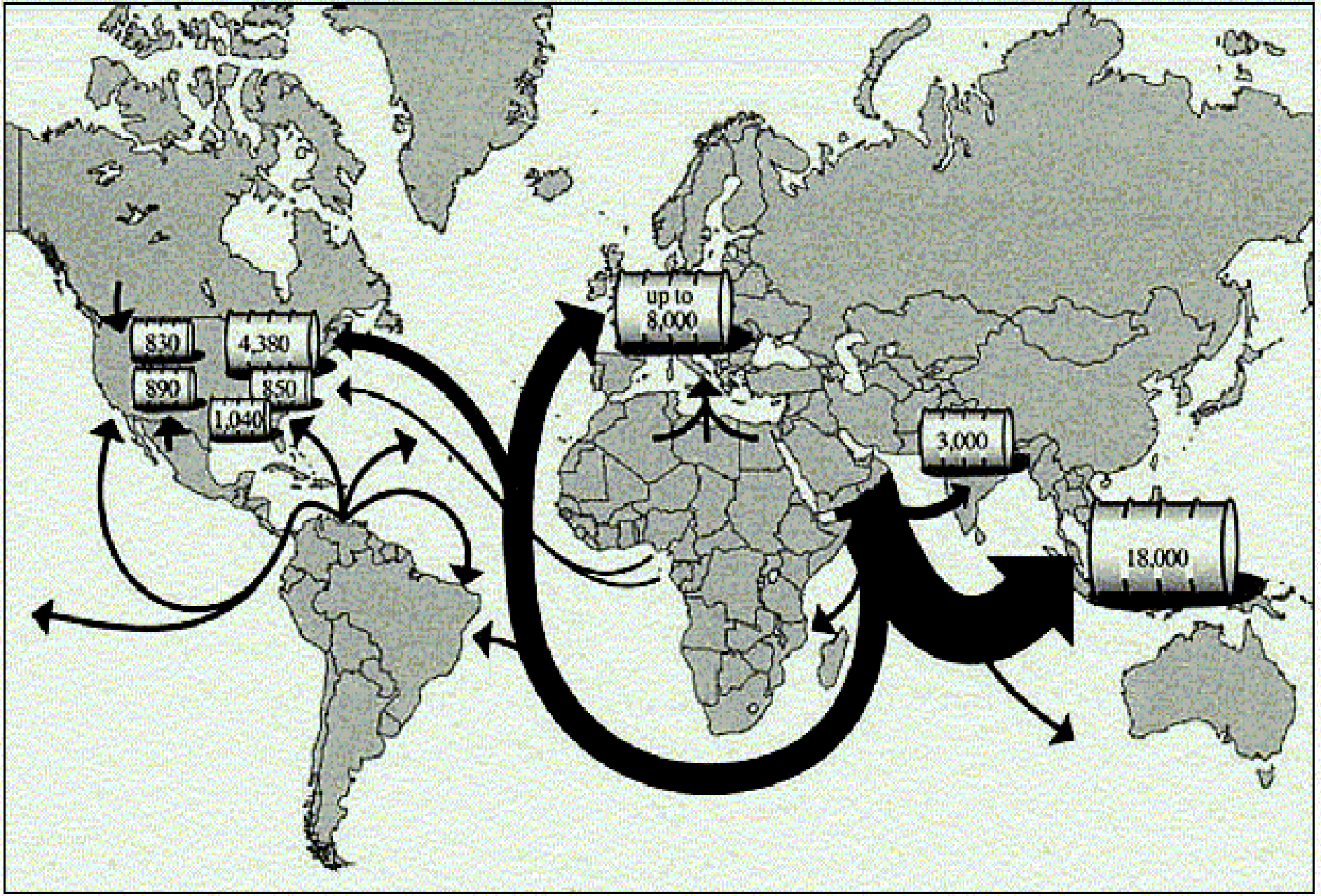
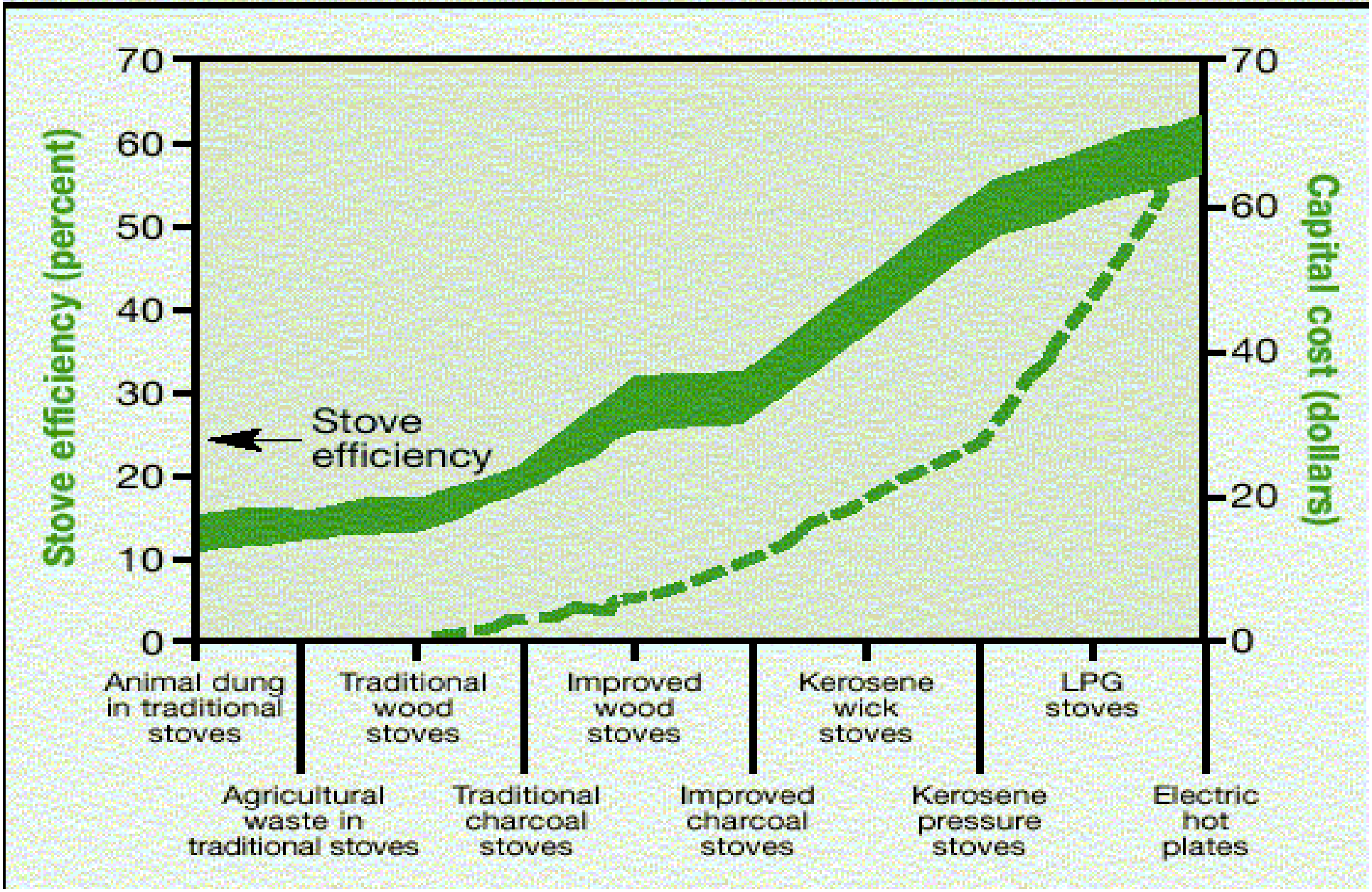


FIGURE 4.3. FLOW OF GULF OIL SUPPLIES, 2010



Source: Kemp and Harkavy, 1997.

FIGURE 10.1. EFFICIENCY OF STOVES WITH COMMERCIAL AND NON-COMMERCIAL FUELS



WSSD 2002

- 28 Aug - 4 Sept
- assessment of results of the Agenda 21 implementation (Rio 1992)
- more than 170 countries
- addressing the Millenium Goals
  - social exclusion eradication
  - poverty reduction and
  - environmental sustainability

The Brazilian Energy Initiative proposed at the WSSD

To increase the global share of renewable energy to 10% by 2010

A new policy paradigm: targets and timeframes

aiming at governmental commitments to incentive the demand in order to increase the supply

Benefits of RE technologies

- diversifying energy carriers for the production of heat, fuels and electricity
- improving access to clean energy sources
- balancing the use of fossil fuels, saving them for other applications and the future generations
- increasing the flexibility of power systems as electricity demands changes
- reducing pollution and emissions from conventional energy systems
- reducing dependency and minimizing spending on imported fuels

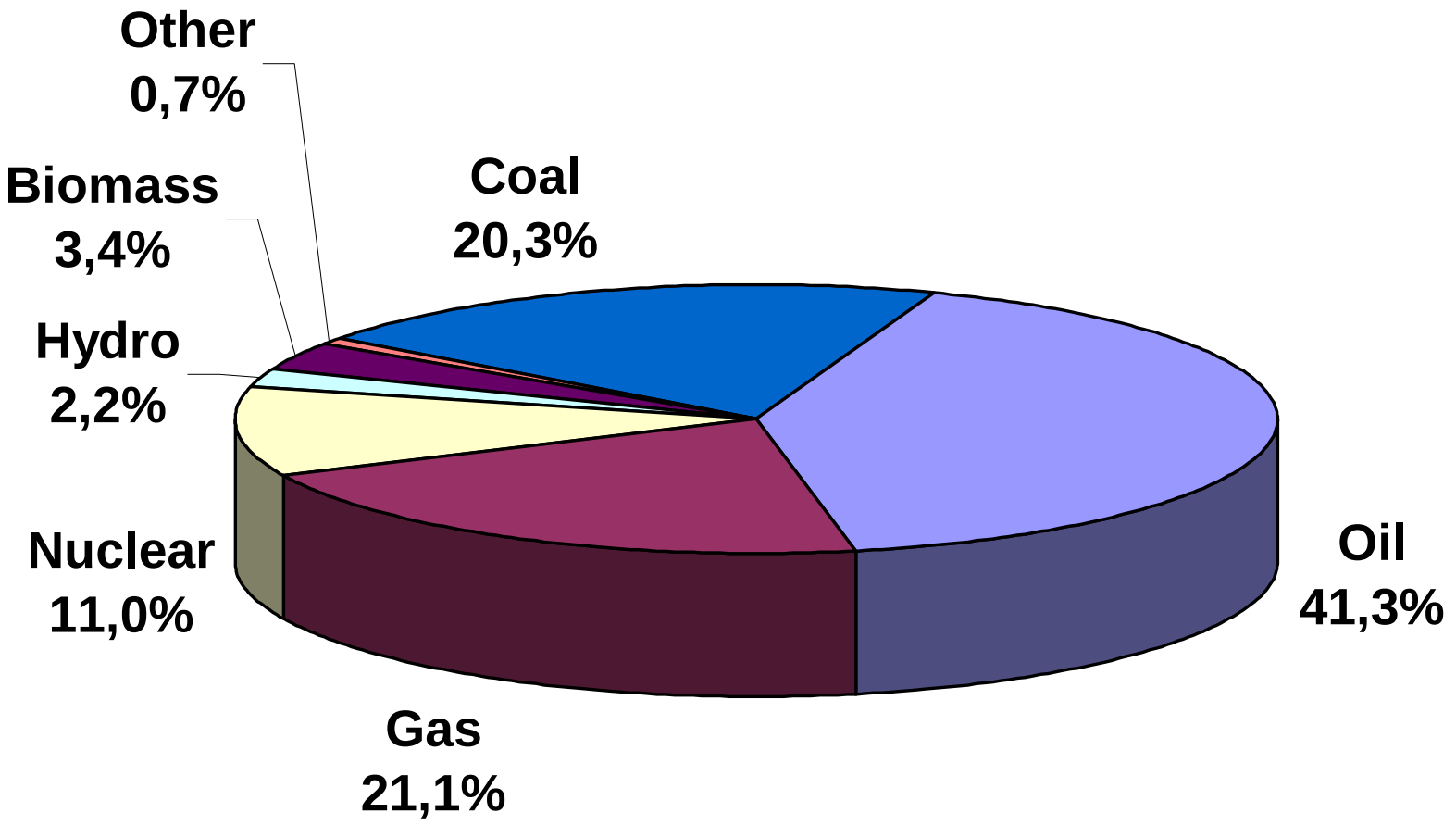
Direct jobs in energy production

Sector	Jobs (person-years/ Terawatt-hour)
Petroleum	260
Offshore oil	265
Natural gas	250
Coal	370
Nuclear	75
Wood energy	1000
Hydro	250
Minihydro	120
Wind	918
Photovoltaics	76,000
Ethanol (from sugarcane)	4,000

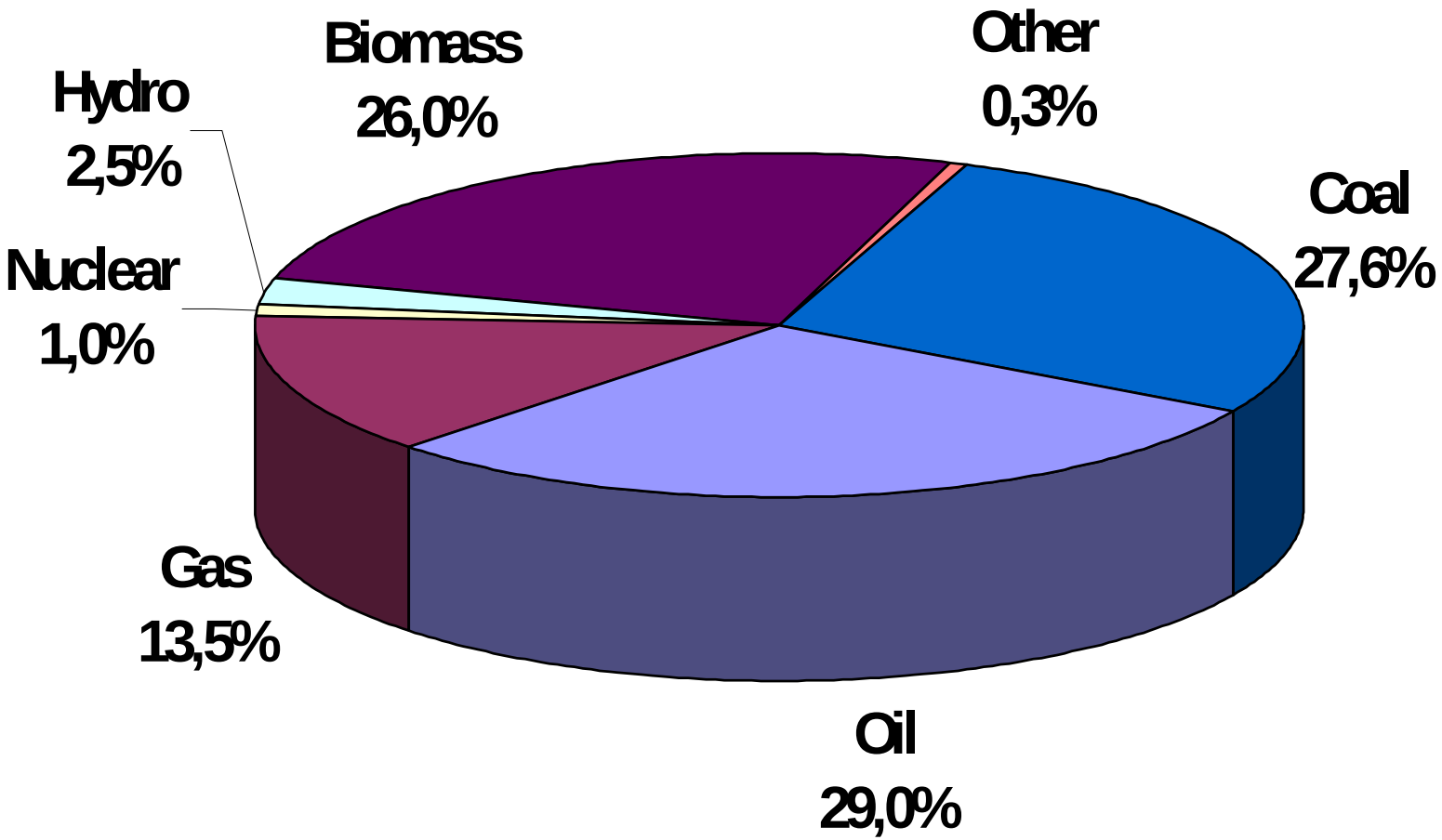
Biomass heat + electricity

- USA 4%
- Sweden 17%
- Finland 20%

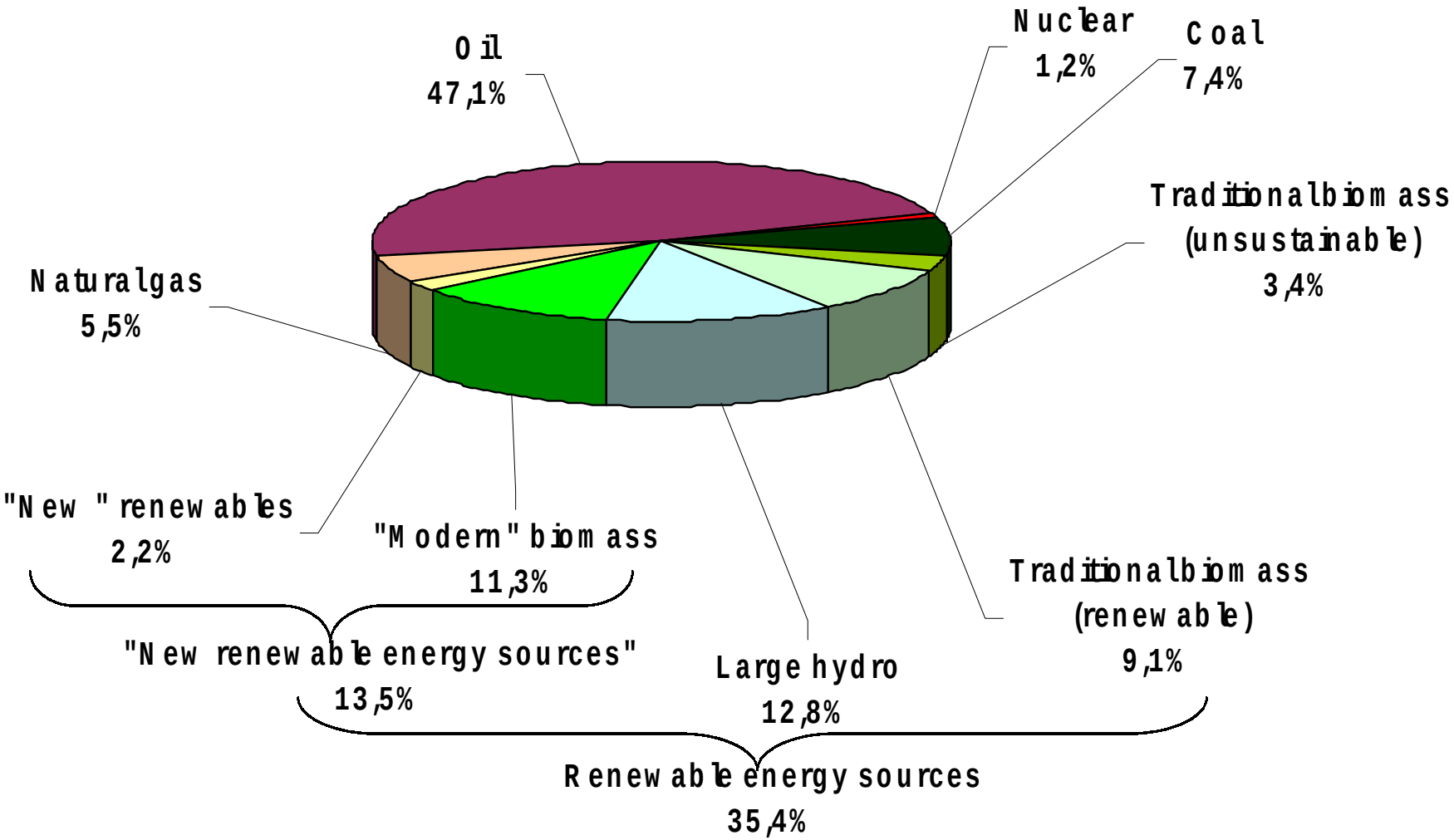
OECD 2000


Other
0,7%
Biomass
3,4%
Coal
20,3%
Hydro
2,2%
Nuclear
11,0%
Oil
41,3%
Gas
21,1%

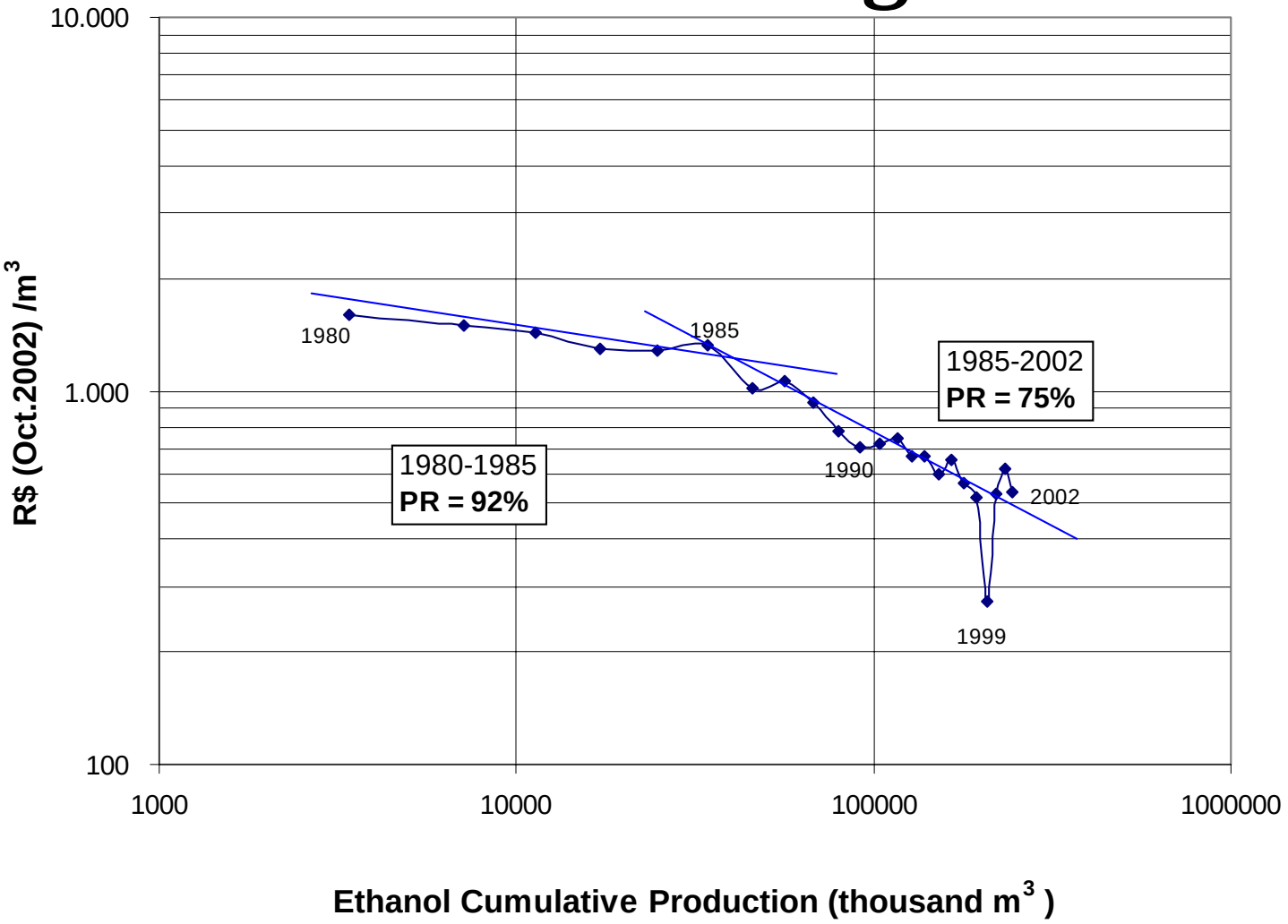
Developing countries 2000



Brazilian Total Primary Energy Supply, by Energy Type, 2000



Ethanol learning curve



Ethanol *vs* gasoline