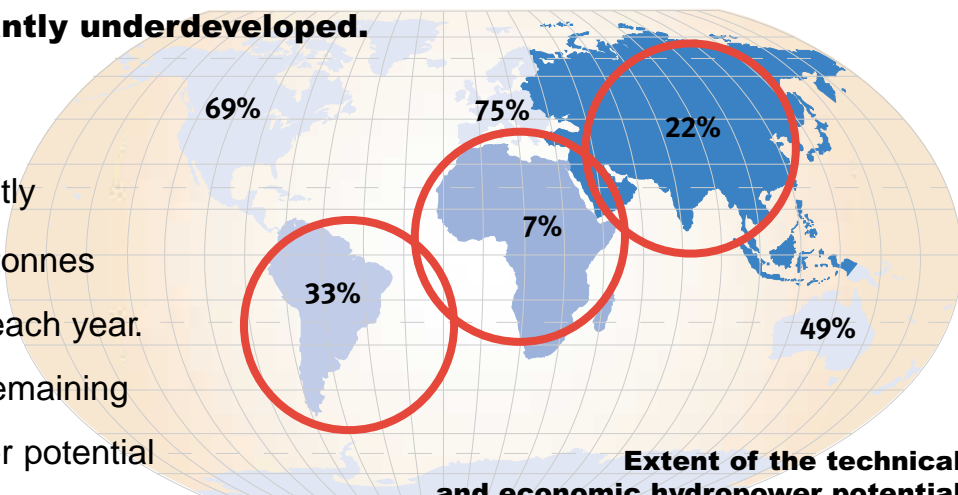


Hydropower: Making a Significant Contribution Worldwide



Its potential is widespread and available where further development of water and energy are most needed. Globally, hydropower resources are still significantly underdeveloped.

Hydropower currently offsets 2.1* billion tonnes of CO₂ emissions each year. If developed, the remaining realistic hydropower potential would offset a further 7 billion tonnes.



Extent of the technical and economic hydropower potential that has been developed

Data source: World Atlas of Hydropower & Dams, 2002

Year after year, this would be equivalent to saving:

- **some 37% of current total world emissions, or**
- **three times the annual emissions of all cars on the planet.**

*2.1 billion tonnes = 2,744 TWh/year x 778 ktCO₂-e assuming energy mix: coal = 65%, gas = 27%, oil = 8%; realistic development potential = 80% of the remaining technical and economic hydropower potential.

Hoover dam and Lake Mead, USA

- 18 million people supplied with fresh water (ARIZONA, NEVADA, CALIFORNIA)
- 4 billion kWh/year of clean power
- 6,000 km² of irrigated agricultural land
- 12 million visitors each year

Despite these benefits, this dam has been depicted as a tombstone in an advertising campaign by the World Wide Fund for Nature.



“Johannesburg’s WSSD identified all hydro as a renewable source of energy to be supported by the international community.”*

Hydropower:

Offers a High Level of Service

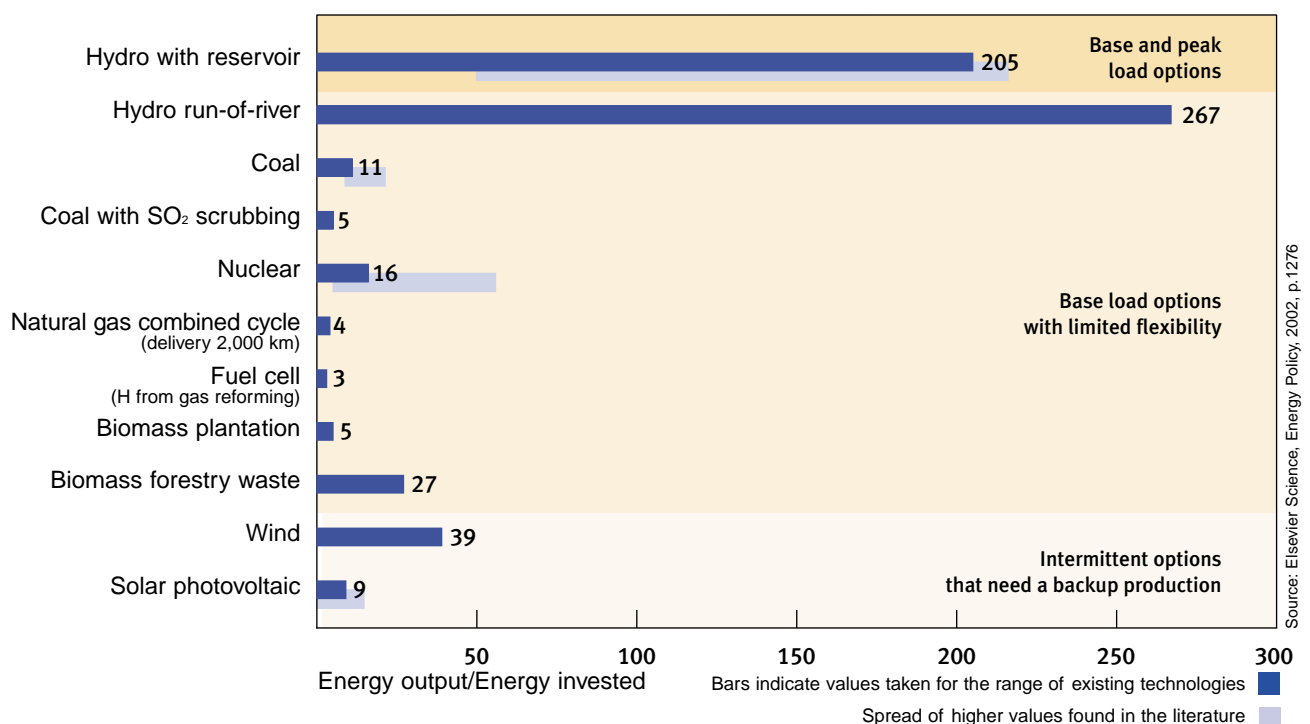
supporting the better performance of other energy technologies

EFFICIENCY

Hydropower shows the:

- best conversion rate (~90%) due to the direct transformation of hydraulic forces to electricity
- most favourable energy payback ratio considering the amount of energy required to build, maintain and fuel a powerplant compared with the energy it produces during its normal life span

Energy Payback Ratio of Energy Options



FLEXIBILITY

Thanks to the storage of potential electricity in reservoirs, hydropower:

- has the capacity to provide base and peak-load
- is the ideal back-up source for intermittent electricity sources such as wind and solar
- optimises efficiency of less flexible fossil or nuclear generating options
- has the capacity to follow demand fluctuations almost instantly
- offers a quick response to failings in power grids

RELIABILITY

Hydropower is:

- a proven and well-advanced technology based on more than a century of experience
- the backbone of an integrated renewable grid
- a clean source of renewable energy with the capacity to make a significant contribution to the world's ever-growing need for electricity

Please consult the IHA White Paper "The Role of Hydropower in Sustainable Development", February 2003, for more details.



www.hydropower.org