

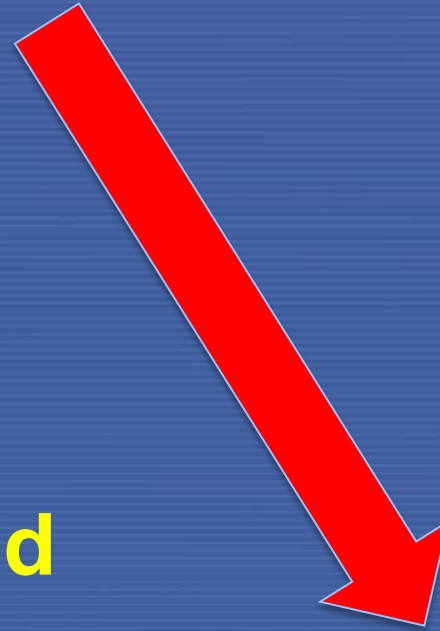
Energy challenge



population

life style

energy demand



Anthropogenic
Climate Change

Energy 2013

A world map with a dark blue background, showing city lights in yellow and white. The map is used to illustrate global energy poverty statistics.

2.6 B people
rely on biomass

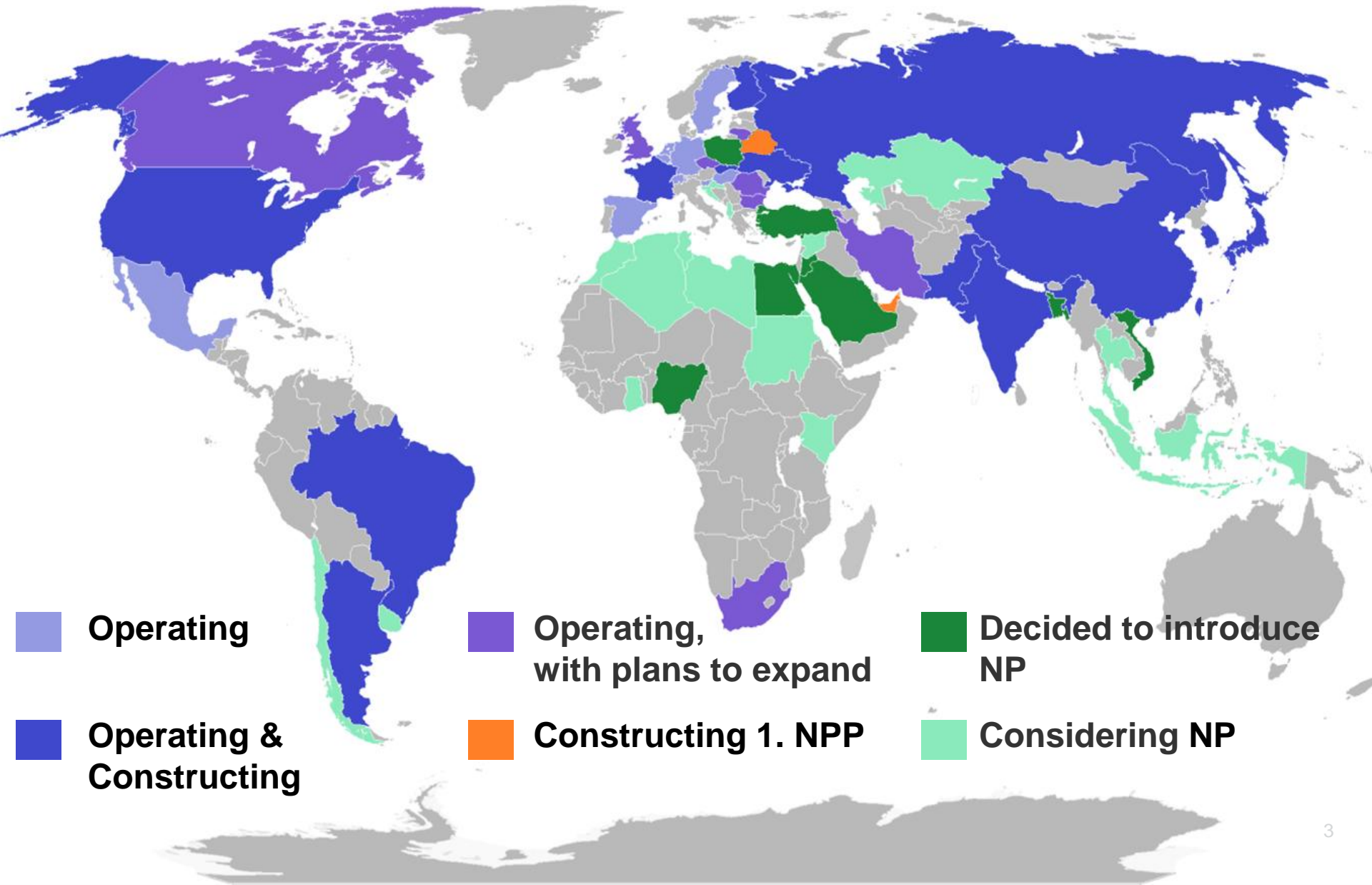
1.3 B people
no access to energy

1 B people
no health care
due to energy poverty

Earth at Night
More information available at:
<http://antwrp.gsfc.nasa.gov/apod/ap001127.html>

Astronomy Picture of the Day
2000 November 27
<http://antwrp.gsfc.nasa.gov/apod/astropix.html>

Nuclear Energy 2013

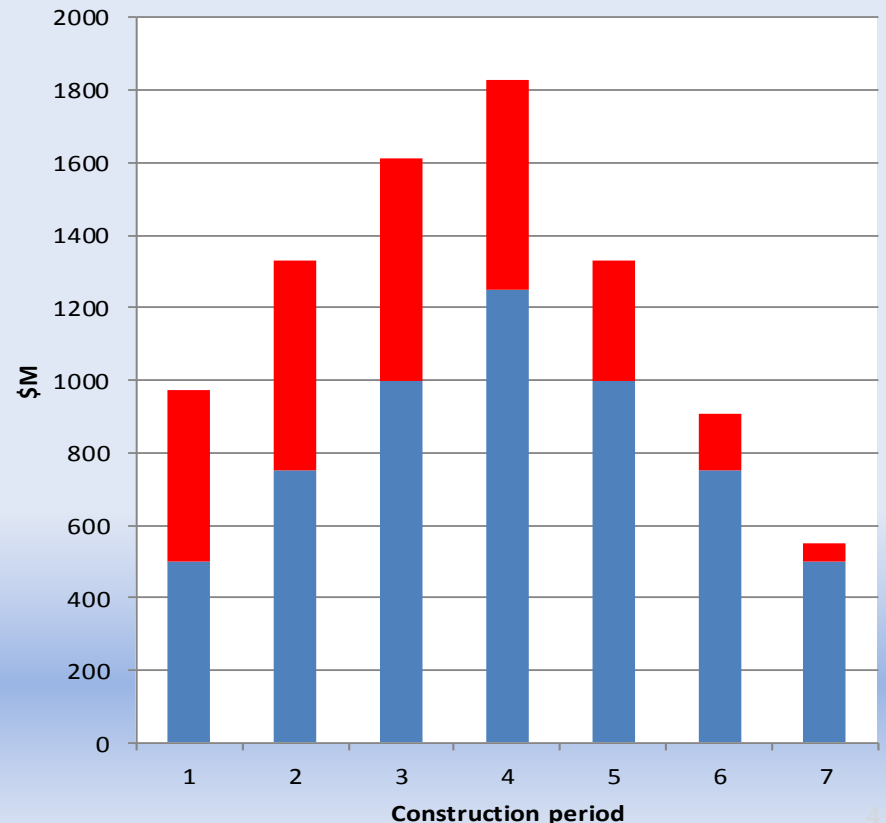


Finance is crucial to NPP economics

e.g. 1650 MWe NPP; 10% interest rate;
7 year construction period;
Overnight Cost of \$5,750M;
Result: IDC of \$2780M (33%)

Costs sensitive to:

- Size of investment
- Construction duration
- Interest rates
- Debt/equity shares



Options to improve financial landscape?

- **Build-Own-Operate (BOO)** model
- New finance source from **Export Credit Agencies**
- **Contracts for differences (CfDs)** reduce uncertainty regarding developer's returns
- **Vendor Equity** gives vendors a share in future project incomes
- **Waste Contracts** reduce liability of back-end costs

Host Government Guaranteed PPA

Generic features

1. A guaranteed *price* – not a guaranteed *return*
2. Take-or-pay (*subject to plant availability*)
3. Model based “strike price”
4. Contingent price adjustment mechanism
5. Host government backed counterparty

Rationale

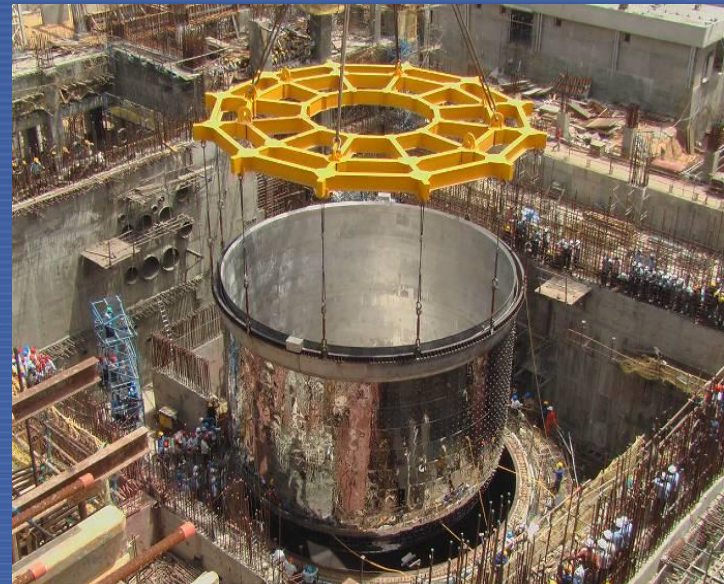
1. Maintains pressure to minimize *costs*
2. Maintains pressure to maximise availability
3. Minimize cost of inducement to build
4. Impossible to hard-wire future tariff escalation
5. Guarantee only as good as the guarantor’s credit



Nuclear power reactors

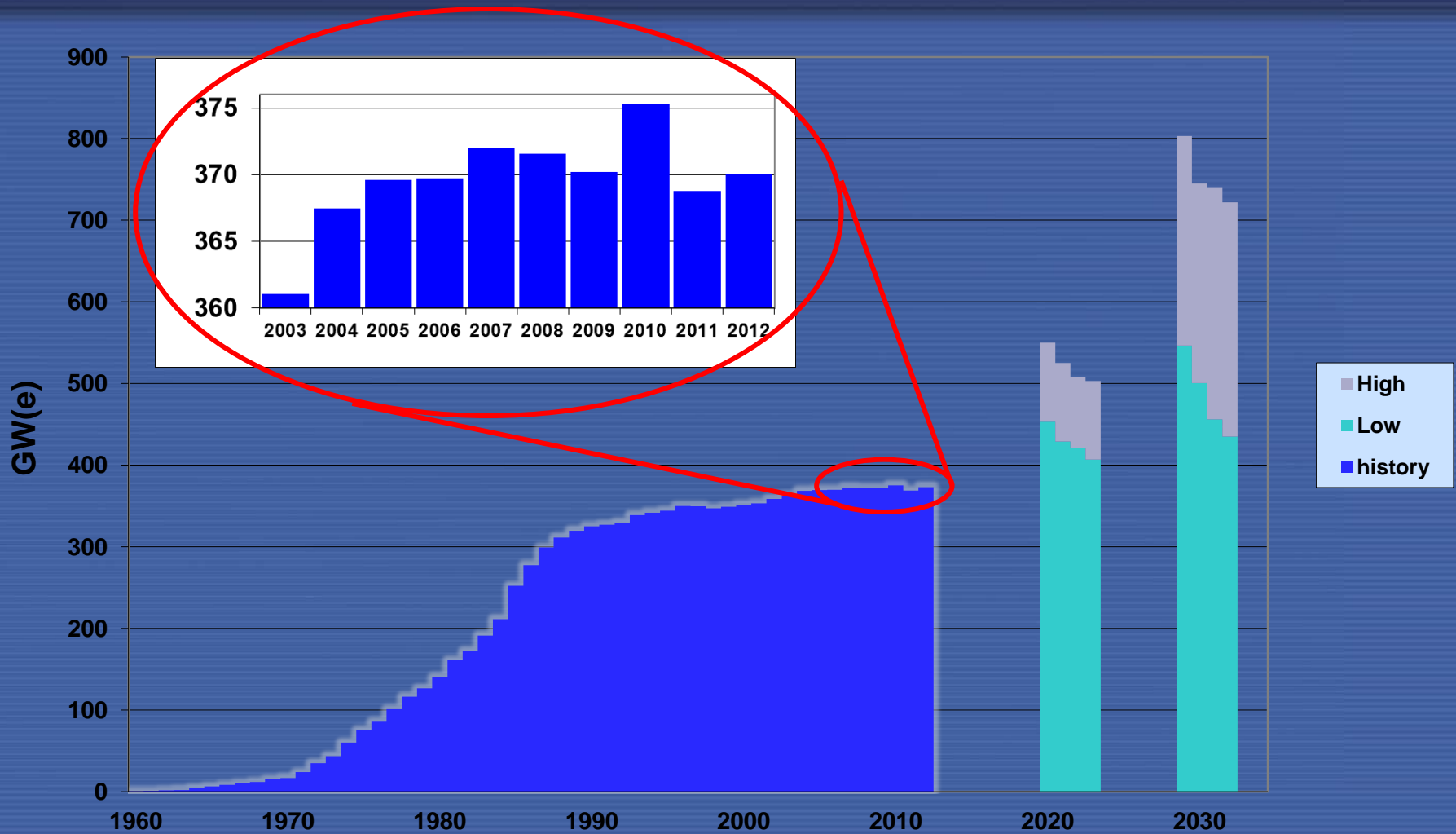
(6 June 2014)

435 in operation



72 under construction

Nuclear Energy 2030: projections



International Ministerial Conference: Nuclear Power in the 21st Century



- Despite Fukushima, NP still an important option (energy security, fossil fuel prices, climate change)
- NP complements other sources, incl. renewables
- Interest in launching or expanding NP programmes

What next?

- **5+5: 5 countries constructing their 1st reactors in 5 years**
- **Europe & N.America not investing in same way as Asia**
- **New technologies on horizon**
- **Many countries interested in SMRs & new financing**

Integrated Services for developing Nuclear Power Programmes

**Energy planning:
optimizes the mix**



**Decide: Nuclear
power an option?**

**Milestones: supports
1st NPP project**



**Comprehensive,
phased planning**

**Nuclear Energy
Systems Assessment**



**Sustainable
in long term?**

SE4ALL

