What others have done to make it a financial and/or economic success for **most** stakeholders?

International Conference on Institutionalization of Energy Efficiency

26-27 November 2015
Kathmandu Nepal

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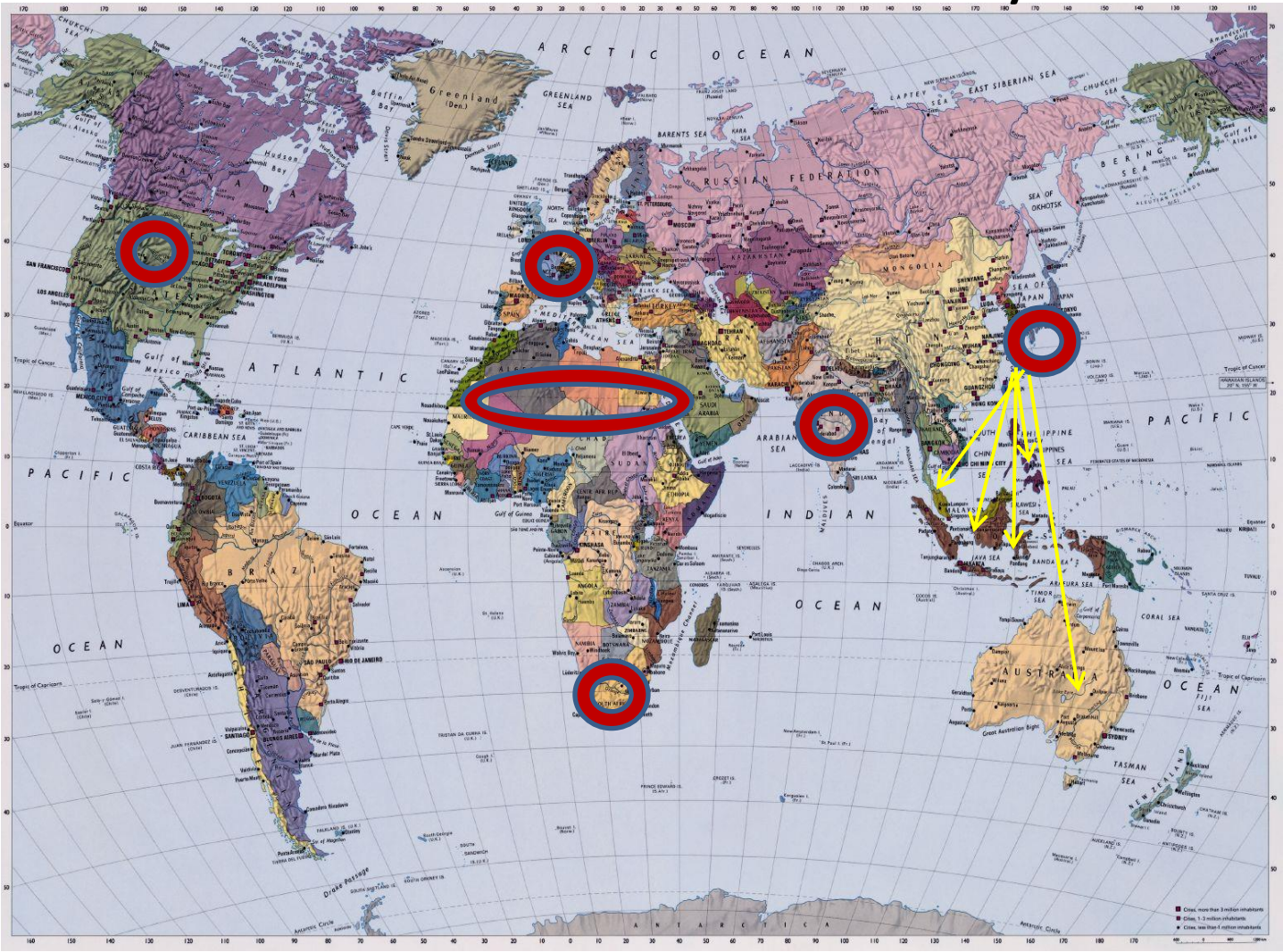
What others have done FIRST is to struggle with preparation of lots of papers about

- ✓ **<u>Why</u>** they should consider Energy Efficiency of national importance ?
- ✓ **<u>What</u>** to do about the subject area ?
- ✓ **<u>How</u>** to implement and finance it ?

Six regions, six vastly different EE strategies. Each one in its own way successful



1. Japan 1974
2. USA 1976/2006
3. India 1998
4. EU-27 2006
5. RSA 2008
6. MENA 2008

1. Oil price shock
2. DSM under IRP
3. Shortages
4. Climate Policy
5. Shortages
6. Shortages+Policy

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India

(1) The nucleus was an UNDP sponsored energy conservation center 1995-1999. Fixed assets were taken over by BEE

(2) The Law has been written by one Indian administration service expert because it requires a very special language.

(3) 32 rules and regulation are referenced in the Law (nopro)

(4) Getting the law through parliament took 4 years mostly due to lobbying of the industry against it.

(5) Writing and vetting the R&R took three years (nopro). Again it has been written by a retired administration specialist. All technical input and review was done by a group of 4 engineers.

Mongolia

(1) First draft Bill was written by GIZ staff. MoE formed a Mongolian group (1 Lawyer, 2 Power utilities, 1 Economist, and 1 Regulator staff) to finalize the document over a 2 year period with the writer. Serious problems to translate into local language

(2) The Bill never reached Parliament over 3 years due to poor sponsoring by the concerned Ministry

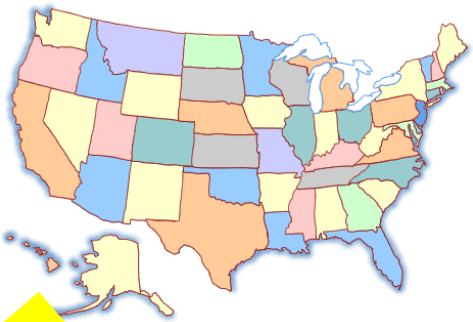
(3) The law follows to 80% the Indian Act in its structure.

(4) Change of tactic (direct lobbying) with members of parliament and involving Treasury yielded results. Law passed two days ago

(5) The Cabinet requested a national cost/benefit analysis of the Impact of the Law (“Gesetzesfolgeabschätzung).

(6) A very rudimentary version of the 5 California tests of 1997/2003 including the societal test was applied

USA



System improvement charge

(1) Energy Utilities manage / ement most DSM

(2) Rebate and fiscal in ves driven DSM programs

(3) DSM financed b y on electricity bill of ratepayer

(4) Regulator charge asking for IRP based DSM

(5) Excell rocedures to appraise stakeholders B/C

(6) http://www.dsireusa.org/ Policy and Incentives

(7) http://aceee.org/state-policy/scorecard

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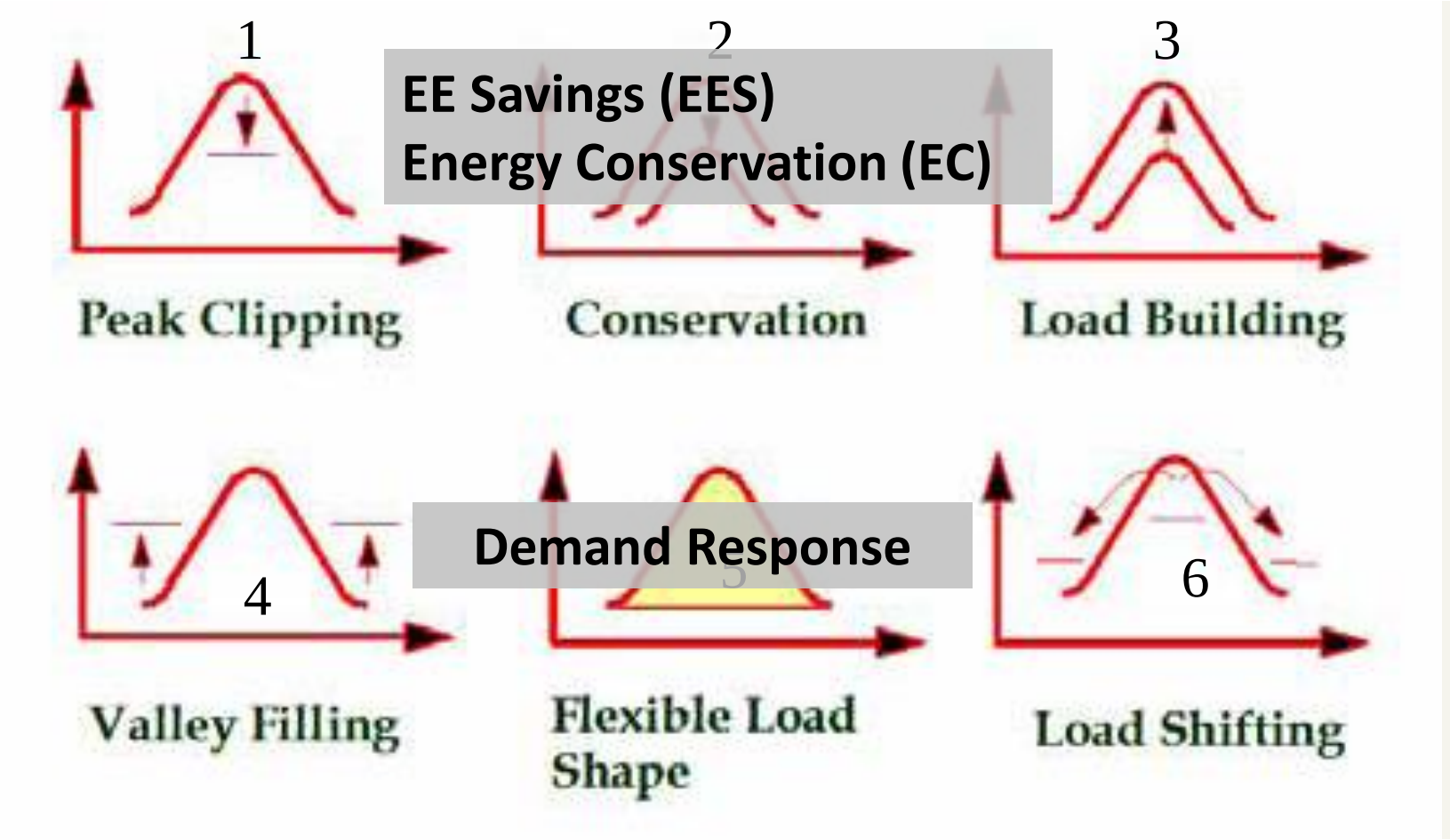
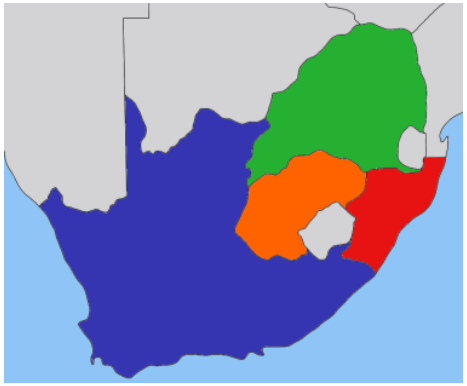
The original DSM pictograms of the American Utility driven DSM of 1974 until Today



Republic of South Africa



(1) Mostly fiscal and financial incentives driven. Over-subsidizing is attracting “cheery pickers” + “free riders”

(2) Financing by regulated levy on electricity bill (stopped 2012) and recently 12-L tax allocation scheme of IRS.

(3) No Law or regulated EM and EA program;

(4) Ministry of Energy and Treasury (lead) are the drivers

(5) Unique (expensive, mandatory) M&V services (SANS 500**10**) because subsidies for verified EE savings only

Regulator approved tariff (real case)

Objective: Defer new 400 MW block in 2016

Avoided cost structure	US$Cents/kWh
Avoided capital cost due to deferment	4.57
Avoided operating cost	2.28
Avoided primary energy cost	2.54
Proxy plant sum of avoided costs	**9.39**
Marketing costs of utility	- 2.80
Procurement price for kWh (saved) excluding M&V costs	**6.59**

12-L Regulation (Tax allowance)

- New procurement price for 1 kWh(saved) =0.9 Rand (10 cents)
- Applies to a kWh electricity saved as well as to a kWh of fossil fuel energy saved.
- Say 100,000 kWh verified savings results in a tax allocation of 100,000 x 0.1 x 0.32 = 3,200 USD
- A new profession was created: Accredited M&V professional
- A new national M&V standard was needed SANS 500**10**

A policy decision has been taken that incentives are given for EEDSM. Four practiced options are:

Option 2 had been recommended

Option 2:
The kWh(saved) tariff is paid over a capped time period of the EEDSM measure.

Pre-calculated "deemed savings"
Example: National SWH program

Option 1:
The kWh(saved) tariff is paid over the **life cycle** of the EEDSM measures.

M&V required

Option 3:
Buy-down of investment costs (rebates).

Option 4:
Buy-down of interest rate of bank loans.

EU-28

(1) Driven by EU- Directives and National EE Action plans (NEEAP) Directives (2012/27/EU) and (2006/32/EC) https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive

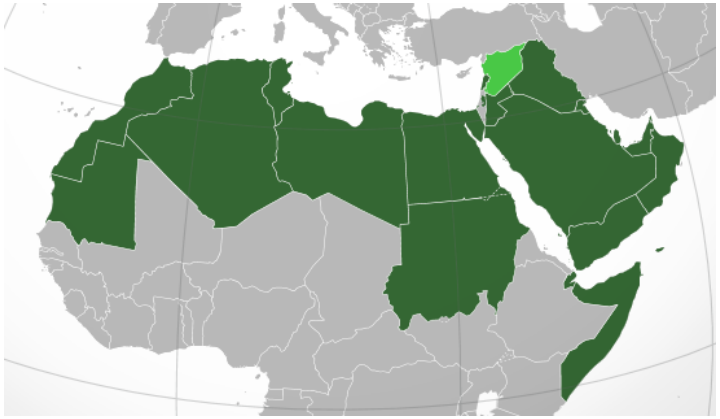
(2) Few fiscal and financial incentives

(3) No mandatory EM. EA commenced 1/2015. Designated industrial energy consumers (53 products) under Emission Trading System

(4) Strong EE in buildings strategies and lots of LRA actions in NEEAP

(5) Some levies on electricity bill to pay for EE such as cogeneration.

League of Arab States (LAS)



(1) Ministerial Council adapted a version of the EU Directives (2006/32/EC) as a Guideline for its members in 2010

(2) First edition of NEEAP'S 2012-2015

(3) Second edition of NEEAP's 2016 -2018 presently prepared

(4) Energy efficiency of high importance since the region has worldwide the highest energy growth and increasing energy intensities compared to GDP growth

(5) Some very unique strategies in marketing and acquisition of funds to implement the NEEAP

Lebanon

(1) Small war torn country

(2) Excellent example of intelligent institutionalization of EE with Lebanese Center for Energy Conservation (LCEC) as a national organization affiliated to the Lebanese Ministry of Energy and Water.

(3) National context is a "Policy paper for the electricity sector" as the basis of the NEEAP developed under the leadership of LCEC.

(4) The published NEEAP document is a "sales catalog" of 30 measures to attract national and international supporters.

(5) Good example that Energy Efficiency can be practiced without national Energy conservation acts , rules and regulations as long as marketing with stakeholders (Banks, industry, commerce) is centralized and focused

H 04: ESCO's Business development	N/A	0.80	Estimated at around 200,000 USD per year for a period of 4 years. Budget not available
H 05: Adoption of the Energy Conservation Law	N/A	0.225	Estimated at around 75,000 USD per year for three years (2016, 2017, and 2018). Budget to be made available by MEW.

Measure	Savings (kWh)	Funds needed (MUSD)	Source of Funds
Total	776,303,297	473.5	
P 01: Upgrading OCGT to CCGT	344,750,000	130	Covered through the budget allocated to implement the Policy Paper for the Electricity Sector
P 02: Increase of the Efficiency of EDL Transformers	18,892,692	20	Covered through the budget allocated to implement the Policy Paper for the Electricity Sector
P 03: Reduction of System Reactive Power	47,231,730	0.5	An estimation of the costs of the full study and analysis of the system. Funding not available.
		22	A rough estimation to be detailed in further documents. Funding not available.
P 04: Modification of the Voltage Level at the Distribution System	365,428,875	1	Covered through the budget allocated to implement the Policy Paper for the Electricity Sector
P 05: Installation of Automated Meter Reading (AMR)	N/A	300	Covered through the budget allocated to implement the Policy Paper for the Electricity Sector

Energy Modesty: A case of revers financial engineering?

Is this glass of water half full or half empty ?

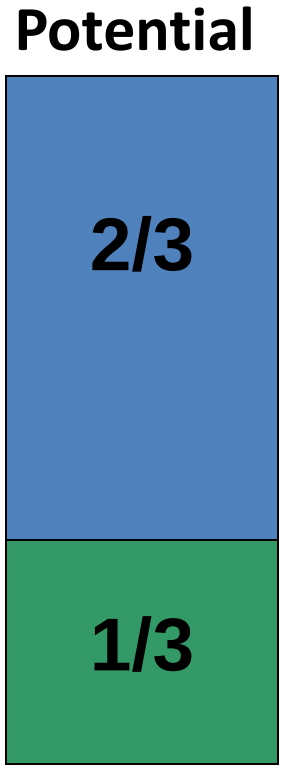
Wrong question. Have a second look at the glass.

There is too much glass for the job to be done !

Energy Modesty-Financials

Traditional EE measures may result in project returns of 4%-30%

Energy modesty measures may easily yield returns of the order of 1000% percent



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Energy
use it wisely

Unsure about the difference between ADAPTATION and MITIGATION to manage Climate Change?

My past home June 17, 2007 - 3 PM
New Delhi, shady place and no wind
outside temperature 52°C

<u>ADAPTATION:</u>
Tell the thermometer manufacturer to extend the scale to 60° C.

<u>MITIGATION:</u>
Tell all your friends and the world to promote and practice energy efficiency to go back to normal 45 °C,

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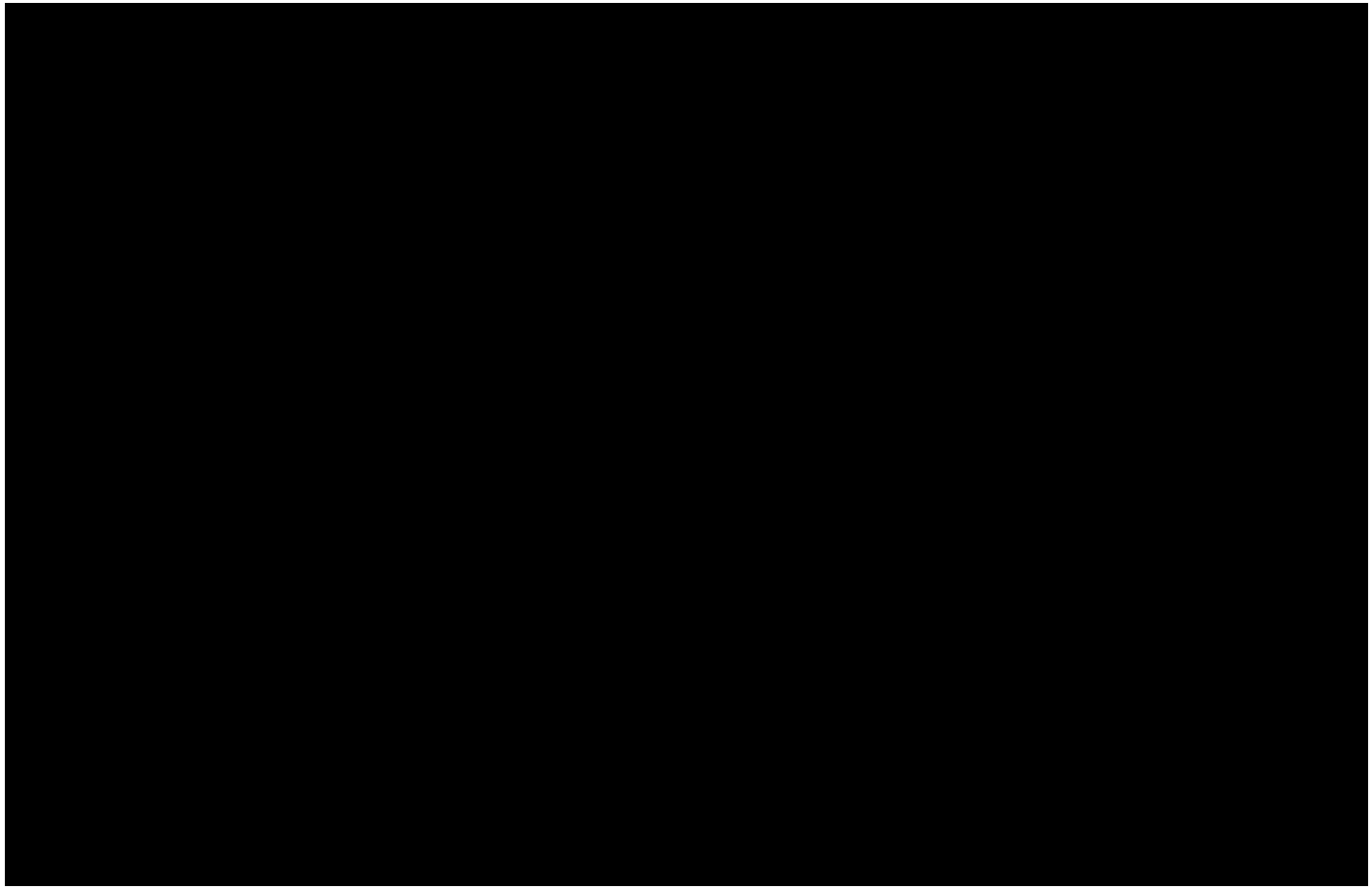
If all fails with energy efficiency as an important contribution to cap global temperature increases there are other drastic options to be considered



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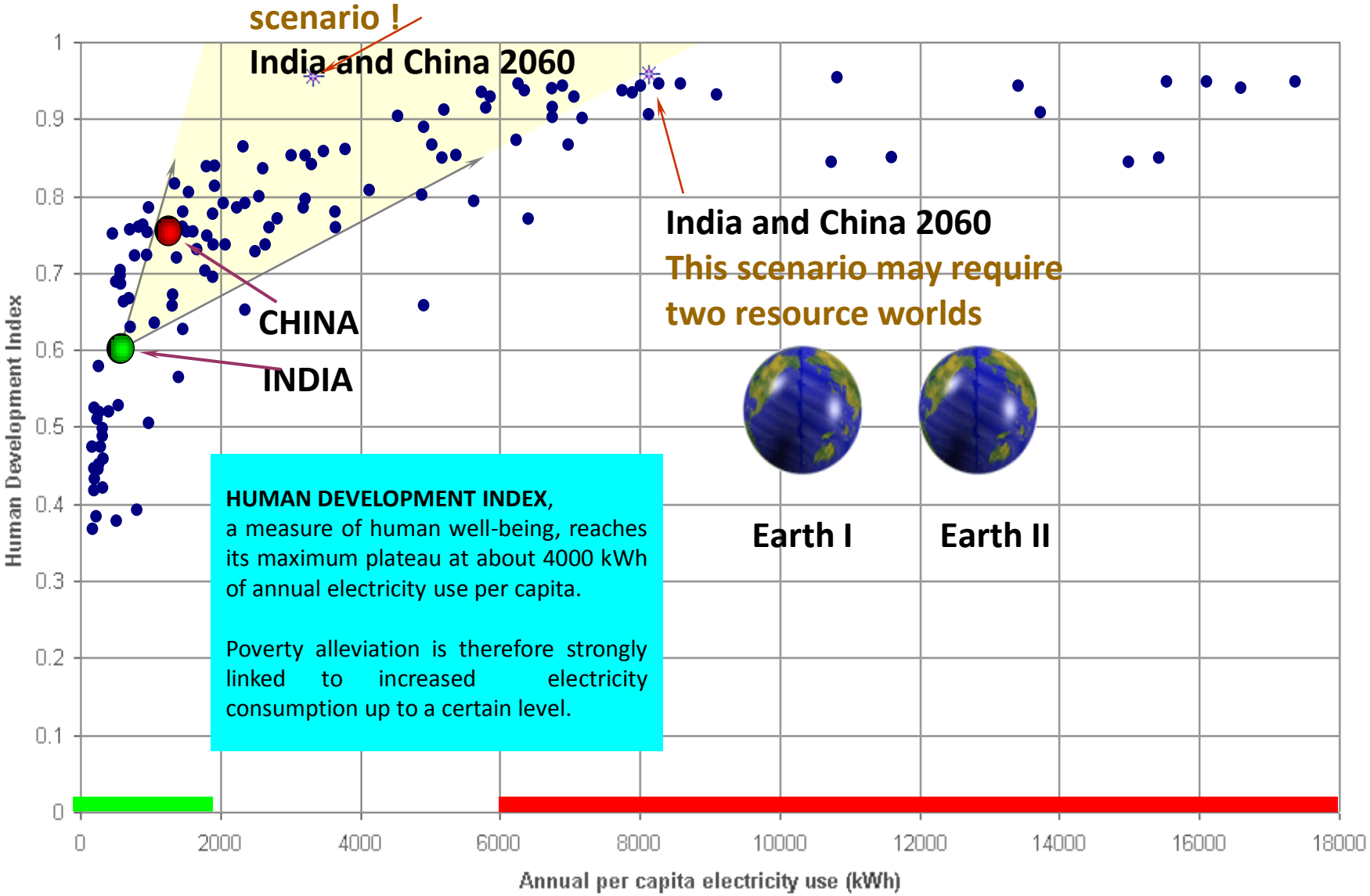
Energy modesty as inconvenient truth

G-8+2 Heiligendamm 2006



Convergence and Contraction by ALL