Energy Subsidies in Developing Countries: Can we make it for those whom it is intended?

Joint UNEP and UNECE Expert Meeting on Energy Subsidies

15-16 November 2007

International Environment House

Châtelaine-Geneva, Switzerland

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Redirect 'business-as-usual' energy subsidies to invest in 'Capacity Development'

Facts & Figures:

Energy Subsidies in Developing Countries

Energy Subsidies in the World

Estimates of Annual Energy Subsidies (US$ Billion)

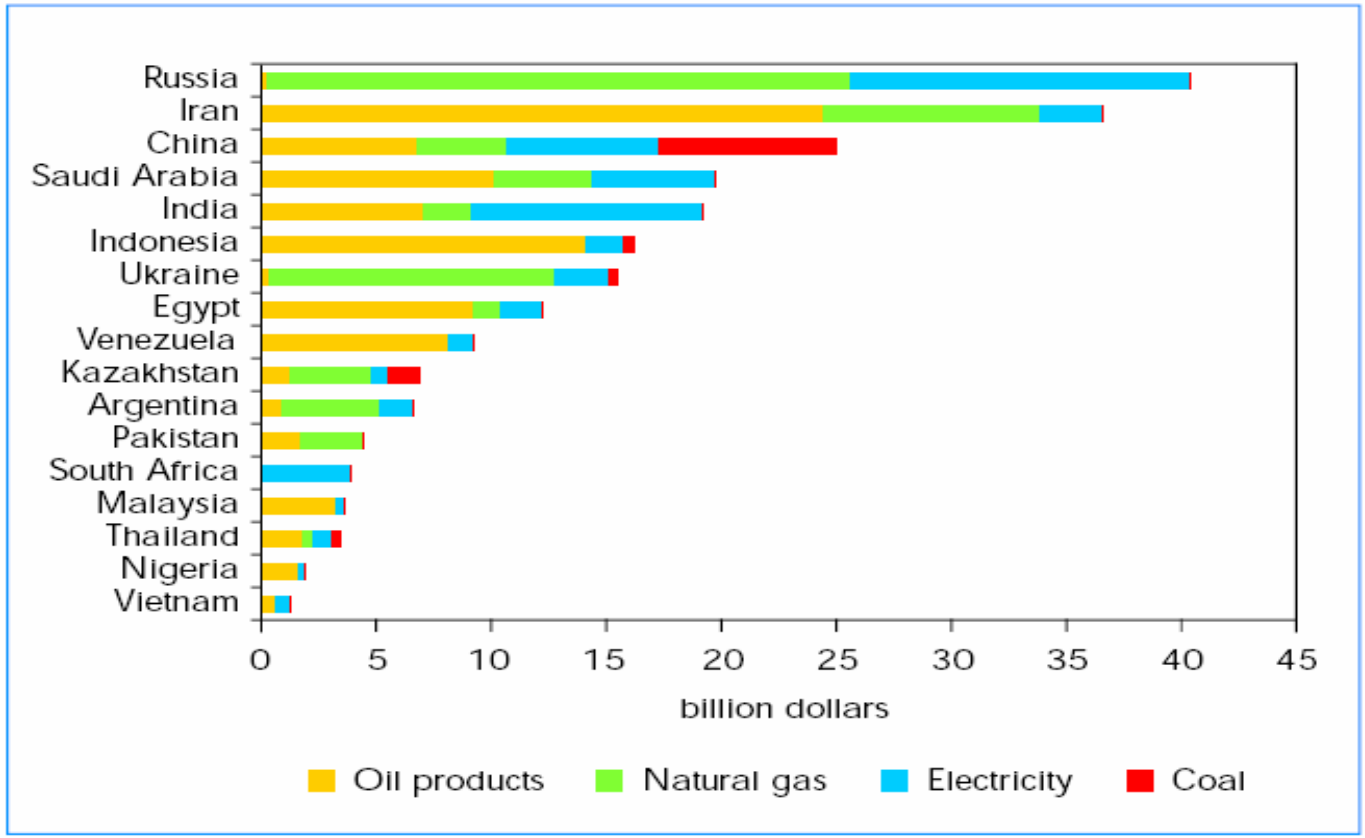
	OECD Countries	Non-OECD Countries	Total
Coal	5.8[c]	10-13[c]	16-23[c]
Oil	19[d]	90[a]	90-130[c]
Gas	8[d]	70-90[c]	n.a.
All fossil fuels	*57*[d]	*170-215*	*151*[b]
Electricity	n.a.	55-70[c]	n.a.
Nuclear	16[d]	n.a.	16[b]
Renewable Energies	9[d]	n.a.	16[c]
Total	**20-30[a]**	**250[a]**	**300**

a: IEA, 2006; b. Van Beers & De Moore, 2001; c. Morgan, 2007;
d. UNDP, UNDESA, and WEC, 2004 (Energy subsidies 1995-1998)

Energy Subsidies in Developing Countries

Estimated annual energy subsidies in developing countries:
US$ 250-275 billion

Economic Value of Energy Subsidies in Developing Countries, 2005



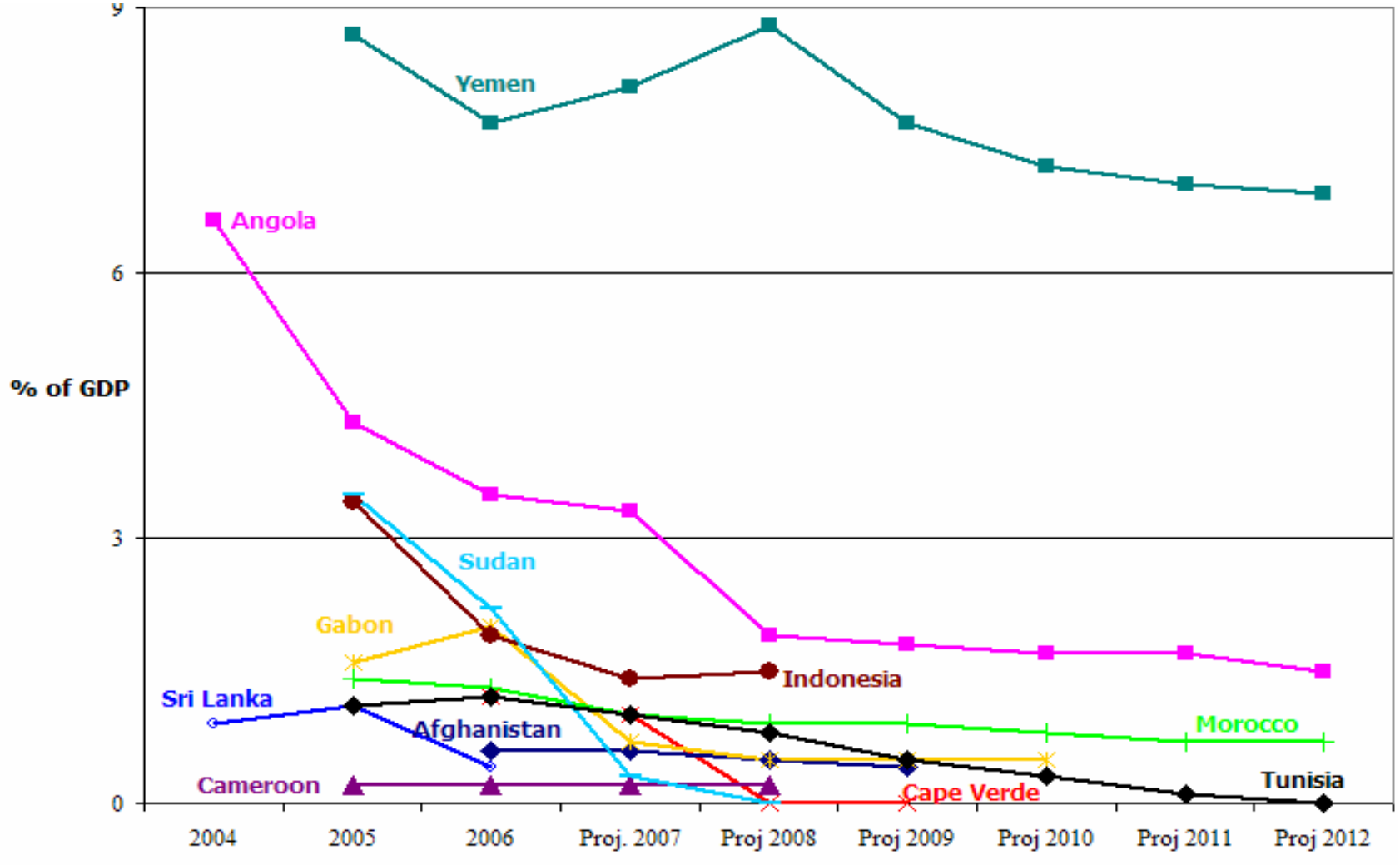
Note: Subsidies in Brazil, the Philippines and Chinese Taipei are not shown, as they amount to less than $1 billion in each case.

Source: IEA, WEO, 2006

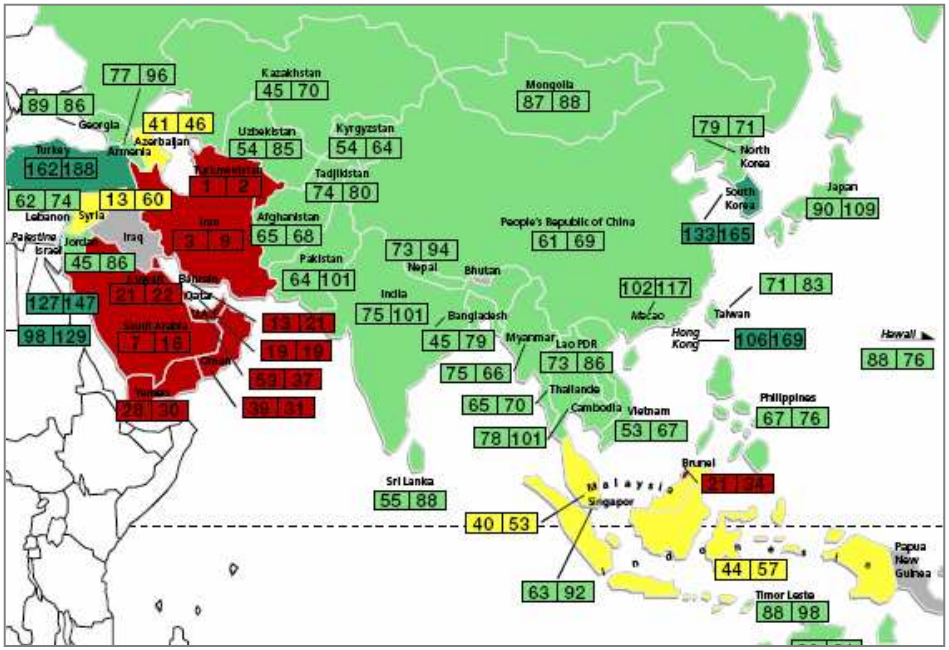
Fuel Subsidies in Developing Countries

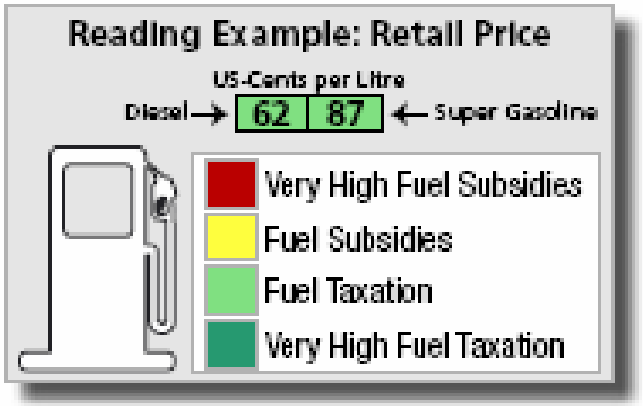
Estimated fuel subsidies in developing countries:
US$ 170-215 billion

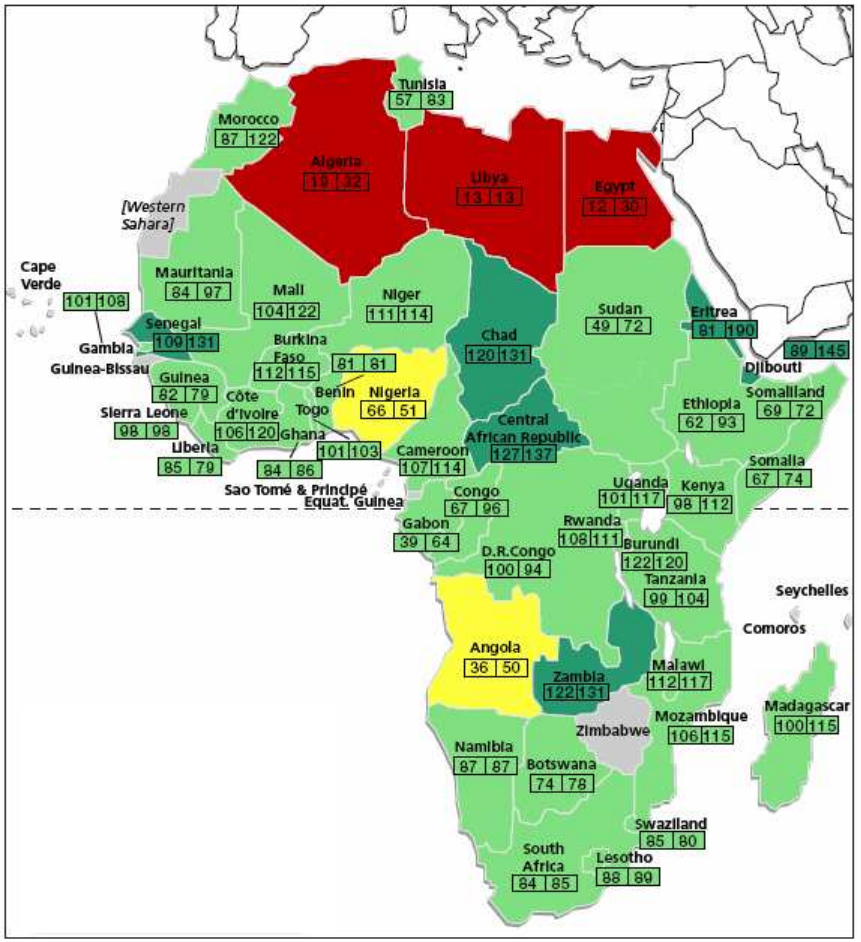
Fuel subsidies in selected countries, as % of GDP



Retail fuel prices in 2006







Source: GTZ, International Fuel Prices 2007, Federal Energy Ministry for Economic Cooperation and Development

Examples of different types of 'fuel subsidies' in developing countries of Asia

	Subsidies	Tax adjustment	Price restraint	Compensation schemes
Bangladesh		✓		
China	✓	✓	✓	✓
India	✓		✓	
Indonesia	✓	✓	✓	✓
Lao PDR		✓		
Malaysia	✓	✓		
Pakistan	✓	✓	✓	✓
Philippines		✓	✓	
Sri Lanka	✓	✓	✓	
Thailand		✓	✓	✓
Viet Nam	✓			✓

Source: UNDP 2007

Most often fuel subsidies do not reach the targeted beneficiaries ….

- In **Bolivia**, the poorest 40% of households receive 15% of the total benefits from fuel subsidies; the richest 60% of households get 85%.
- In **Gabon**, it is estimated that the richest 10% of households capture 33% of the subsidy, while the poorest 30% below the poverty line, receive. merely 13%
- In **Ghana**, the poorest 40% of households get 23% and the richest 60% capture 77% of the benefits of fuel subsidies.
- In **Ethiopia**, the highest income 20% of the population capture 44% of the subsidy, while the lowest-income 20% get less than 9% of it.

Electricity Subsidies in Developing Countries

Estimated annual electricity subsidies in Developing countries:
US$ 55-70 billion

Electricity subsidies in selected countries

Country	Rate of subsidy (% of reference price)	Energy Saved by Subsidy Removal (%)	Economic-Efficiency Cost (million USD)	Economic cost in % of GDP
Venezuela	63	40.8	390	0.44
South Africa	20.3	10.8	76	0.06
Iran	48.1	28.0	138	0.09
Indonesia	0	0	0	0
India	24.2	0	703	0.18
Russia	42.0	24.3	1500	0.34
China	38.2	21.4	2347	0.24

Source, IEA, WEO, 1999

Most often electricity subsidies do not reach the targeted beneficiaries...

- In **Guatemala**, after a price reform in 1998, the government introduced a lifeline tariff at 500 kWh per household per month. In 2001, it was reduced to 300 kWh. However, an average household consumes about 100kWh per month: 2/3 of beneficiaries are not poor, and because the non-poor consume more electricity, 90% of the funds go to the better-off.

- In **Colombia**, dwelling and neighborhood characteristics are used to classify households. The ones belonging to the lower strata get a reduction in their energy bills. Because eligibility rules are not stringent, up to 80% of beneficiaries are non-poor households.

- In **Honduras**, the public utility offers electricity at greatly subsidized rates for households with monthly consumption below 300 kWh. Because the lifeline threshold is set so high, 83% of the utility's residential clients benefit from the subsidy, and 82% of the subsidy might be spent on non-poor households.

Case Studies:

Energy Subsidies in Least Developed Countries

Case example of Mali

Energy subsidies: A case of business-as-usual

- Budgetary subsidy: 2% of GDP in 2004 (primarily lost revenues from tax preferences)
- Subsidized prices for LPG, kerosene, gasoline: 34%
- Richest households receive the highest share of oil subsidies, 40%, compare to the poorest quintile of the population, 12%.
- Total welfare effect: 1.7% of total household consumption

Targeted 'smart subsidy' for expanding energy access for the poor:

A case example of rural energy services agency in Mali (1)

To accelerate access to electricity in rural areas, the government of Mali developed institutional framework and invested in capacity development to attract private investors-operators.

Rural energy services agency (AMADER) was created in 2003 and aims at:

- Increasing access to modern energies in rural and peri-urban areas;
  Promoting further community-based woodland management;
  Strengthening energy sector reform processes and related institutions;

- Bringing technical and financial assistance to develop rural electrification via a public/private partnership;

A case example of rural energy services agency in Mali (2)

- Managing Rural Energy Fund by puling together all project funds (grants, credits or loans) and subsidy schemes.
- Funding for the first 5 years exceed US$ 53 millions
- The subsidy can go up to 80% of the investment costs for small rural electrification projects
- Payment of subsidies are linked to outputs
- For each connection, the average investment is US$ 837 and average subsidy US$650.

Case Example of Senegal

Energy subsidies: A case of business-as-usual

- Subsidies to the electricity company and the oil refinery account for 2% of GDP in 2006
- Senegal Government's subsidies and transfer (US$ Million)

	2003	2004	2005	Est.2006
Oil refinery and other LPG producers	0	17	27	134
SENELEC	0	0	42	65

Source, IMF, 2007

- The authorities agreed to consider phasing out butane gas subsidies by end-2007

Targeted 'smart subsidy' for expanding energy access for the poor:

Output-based energy subsidies in Senegal (1)

- In 2003, Rural Electrification Priority Program was established. It selects private agency through international competitive bidding to provide electricity services to the rural consumers.
- Winning bidder provide the most connections in the first three years given the predetermined output-based subsidy.
- Bidders are free to choose any technological options.
- The agreement gives right to private companies to generate and distribute electricity throughout the area for 25 years; This right is exclusive when they choose grid extension technology, but not otherwise.

Output-based energy subsidies in Senegal (2)

- The first winning bidder proposed a number of connection much higher than the minimum required in the tender (21,800 instead of 8,500), and private financing larger than required (US$9.6 million, i.e. about 60% of the financing instead of the minimum 20%).

- Customers' monthly payments will cover the costs of operation and maintenance, service delivery, system replacement, and at least 20% of initial investment costs.

- The average cost for a connection is estimated at US$725, and the average subsidy at around US$286 (39%).

Case Example of Bangladesh

Energy subsidies: A case of business-as-usual

- Direct subsidies to the sector are used not only to finance capital investments, but also to service debt.
- In FY03 US$399 million, or about 0.9% of GDP, were allocated to the sector.
- Power supplied to agriculture was subsidized at a level of 48% of LRMC, and domestic power consumption at 36%.
- Subsidies from the government budget amount to more than US$100 million a year, more than expenditure on health.
- The beneficiaries of the subsidies are the 16 % of households that have access to electricity, mainly urban middle and upper-income households.
- Restricted pricing structure discourages private entry into the sector.

Innovative institutional approach for expanding energy access for the poor:

Village electricity cooperatives in Bangladesh (1)

- The rural electricity program is operated by independent consumer-owned cooperatives, under the umbrella of the Rural Electric Board (REB).
- Over the past 24 years, REB received more than US$1.1 billion in financing from donors and the government.
- Cooperatives had extended electricity to over 37,000 villages and established almost 4 million connections (2003). In 2004, 57 cooperatives are operational and proceed to an average of 390,000 new connections annually.
- Investment in distribution infrastructures is subsidized, but tariffs are higher than in urban areas (40-60% higher than average tariffs in urban areas).
- Cooperatives have a performance target agreement with REB.
- Virtually all consumers are metered, line losses are low (<15%) and bill collection is high (>95%).

Village electricity cooperatives in Bangladesh (2)

Targeted subsidies and financial mechanisms

- The cooperatives buy subsidized power from the national grid
- They receive subsidized finance through low-interest loans and long repayment periods
- During the start-up period (up to six years), loss-making cooperatives receive direct subsidies
- Cross-subsidies between (i) domestic and agricultural consumers and (ii) industrial and commercial consumers.
- Cross-subsidies for loss-making cooperatives from a common revolving fund

Redirecting energy subsidies to invest in capacity development helps promote multiple development objectives

The Biogas Support Program in Nepal (1)

Over the last 13 years, more than 140,000 biogas installations have been built and more than 90% are operational.

Subsidies for this program amounted to €10.83 million in 2003.

Key Success Factors:

Capacity Development: the program has played a key role in developing and strengthening the technical and institutional capacity of all partners.

Transparency: The uniform, transparent and careful administration of subsidies to ensured that all farmers were equally and fairly treated;

Flexibility: The initial subsidy was higher for large digesters, thus benefiting the wealthier. In 1999, the subsidy scheme was adjusted to improve access to lower income farmers. Moreover, subsidies are decreasing over time.

The Biogas Support Program in Nepal (2)

Social welfare and equity:

- Improve the quality of life, as it replaces fuelwoods for cooking: positive effects on health, welfare and safety, reduces drudgery of women and girl-child.
- Targeted to be more affordable for poor farmers: subsidies are linked to the plant size and remoteness geographical location. In average, the subsidy amounts to 35% of the total cost of the system.

Environmentally friendly:

- Reduce deforestation as far fewer trees are being felled;
- 162,000 biogas plants are being implemented to provide access to modern fuels to additional 800,000 people with 1 M tCO2 emission reduction (ERPA) thru WB's Community Development Carbon Fund (CDCF).

Successful market development:

- Encourage competition and innovation: In 2006, 41 private companies had entered the market to produce biogas systems
- Promote job creation and stimulate local market: 15 local manufacturers produce biogas appliances; 11,000 persons are directly involved in the sector; 400 masons are trained every year.

Key Lessons Learnt

- Energy subsidies intended for one group of people benefits the other groups and the poorest are most often disadvantaged.
- Subsidies drain government financial resources and can divert money from other socially valuable uses, such as health or education.
- Cross-subsidies discourage suppliers to provide services in high-cost regions or to the poor; By affecting the financial viability of local grids, it can slow down their development.
- Technology subsidies can distort markets and result in increased prices.
- Investment in institutional capacity development is to be found most effective way to sustain long-term benefits.
- Targeted smart subsidy matters.

The Way Foreward

Redirect 'business-as-usual' energy subsidies to invest in 'Capacity Development'

Targeted 'smart subsidies' to expand access to modern energy services for the poor

- Smart subsidies can enhance access to modern energy services for the poor in developing countries while providing incentives for efficient delivery and use and without a burden for the whole society.
- Investment in institutional capacity development can be particularly effective in facilitating the development and acceptance of a new technology without introducing price distortions.
- Market-support and educational subsidies are effective ways to reduce costs to the user and reduce risks to the investor. Incentives can be used effectively to build local expertise, user awareness, appropriate technology adaptation, quality standards, entrepreneurial activities…
- To be effective in the long run, capacity development efforts have to be integrated into national policies and plans.

Case example 1: Ceramic stoves dissemination by investing in capacity development of institutional actors in Kenya

Since 1982, the Kenya Energy and Environment Organization organized promotion and invested in capacity development of private entrepreneurs to encourage the use of the Ceramic Stoves.

NGOs and national development agencies played important roles in the evolution of the stove and its dissemination process, through a network of informal-sector stove entrepreneurs.

Expanded numbers and types of manufacturers and vendors increased competition, and spurred innovations in materials used and in production methods.

Without direct financial subsidies to stove production and dissemination, the price of a stove decrease from US$15 to US$1-3 in 1995.

By the year 2002, the national penetration rate for the stove had reached around 50%. The stoves reduce fuel use by 30 to 50%.

Case example 2: Micro-hydro power plant dissemination through subsidies in promotion and technical assistance in Peru

An integrated approach has been developed, including technology development, training, research on institutional issues and advocacy work.

Loans are subsidized through the Fund for Promotion of Micro-Hydroelectric Power Plants, along with technical support.

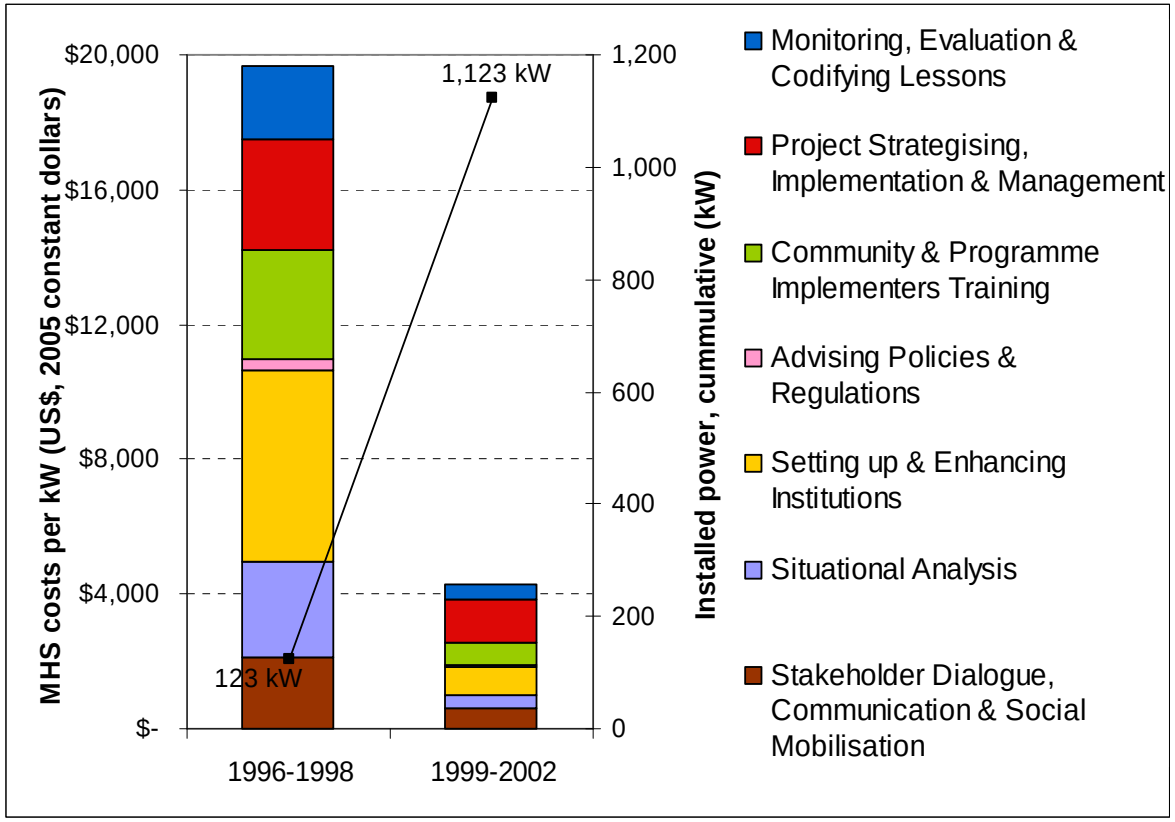
22 loans for a total of around US$0.8 million, levereging a further US$3 million have enabled an additional installed capacity of over 1.5 MW in remote areas, benefiting more than 15,000 rural inhabitants.

Case example 3: Micro hydropower plant dissemination by investing in capacity development in Nepal (1)

- To date, 185 micro hydro power plants were installed (2.47 MW capacity) by Rural Energy Development Programme (REDP) which provides electricity access to more than 120,000 people for lighting and mechanical power for agro-processing and other productive applications.
- The program supported capacity development of local authorities, CBOs and other stakeholders. Only 15% of the total investment (US$24 million) went on technology subsidies.
- Community-based program: more than 80% of the costs are incurred at the community level.
- Initial investment in institutional capacity development helps leverage additional funding: An initial grant of US$ 5 million allowed to mobilize additional US$50 million to expand access to electricity for the benefit of 1 million rural people in remote locations. Also leveraging 325,000 tCO2 emission reduction (ERPA) thru WB's CDCF.

Micro hydropower plant dissemination by investing in capacity development in Nepal (2)

Capacity development activities and their relative costs:



Capacity development costs decreased over time and as scaling up occurred:

- 80% reduction in total capacity development costs;

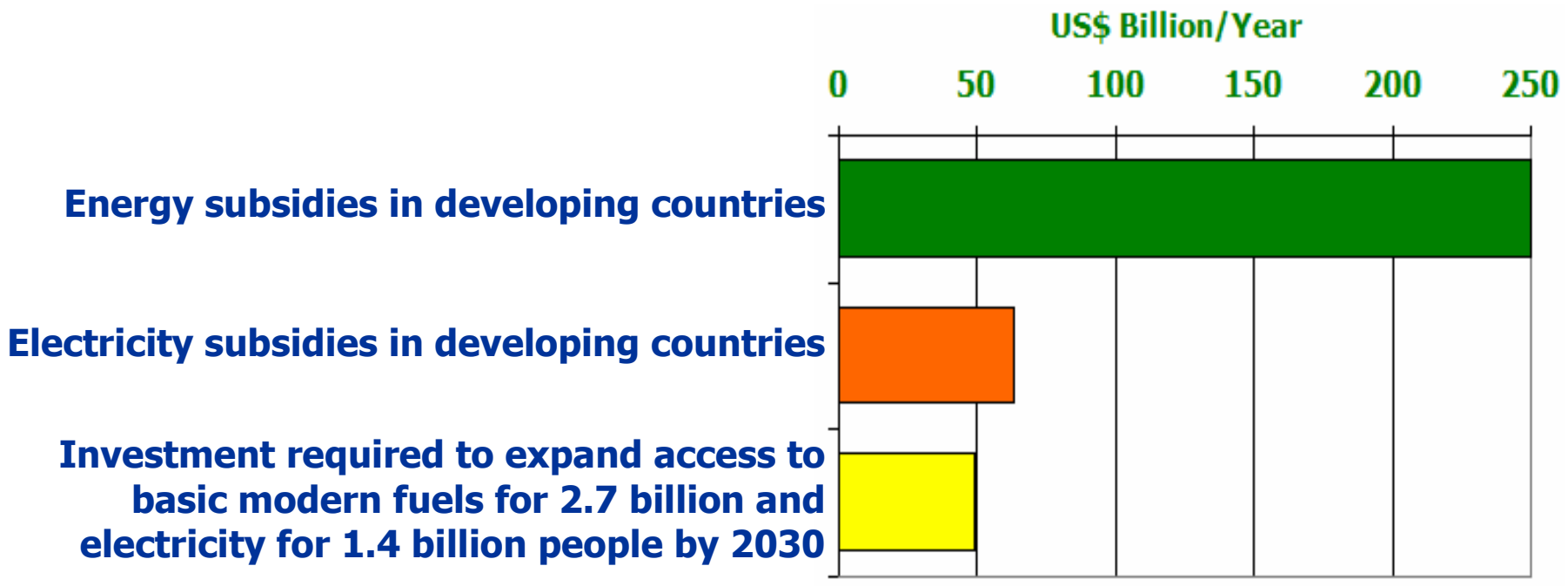
- 85% reduction in Setting up & Enhancing Institutions;

- 80% reduction in Situational Analysis.

With successful capacity development, subsidies can gradually phase-out without putting at risk the sustainability of the program. Activities and installations are transferred to competent community-based NGOs and local entrepreneurs.

Concluding Remarks ….

There is a need to redirect 'business-as-usual' energy subsidies to invest in 'capacity development' and to provide 'targeted smart-subsidy' to ensure universal access to modern energy services by 2030. What is however needed is strong political will and commitment to provide 'universal energy access to all'.



Three Key Questions?

- Who should be responsible to redirect 'business-as-usual' energy subsidies' to invest in 'capacity development'?
- Is there any role for UN Systems or International Development Community to influence redirecting 'energy subsidies'?
- What role UN Systems effectively can play given this scenario to help countries to address the potential threat to their political governance structure?

Thank you