



International Institute for Energy Conservation

Partners for Sustainable Energy and Environmental Solutions

IIEC

***Addressing Climate Change by
Implementation of Energy Efficiency
on a Massive Scale
- Role of Civil Society***



A Brief History

- Founded by Rob Pratt in 1984 as 501(c)(3)
- Developed international presence with strong US HQ and regional offices
- Conducted seminal energy efficiency projects in Thailand, South Africa, India, and China
- Re-organized in 2003 as a “distributed NGO” with minimal HQ (2 staff) in US and majority local staff in international offices

20+ Years of Persistent and Passionate Pursuit of Efficiency



A Persistent Pursuit of Efficiency...

Vision

Accelerate the implementation of energy efficiency programs on a massive scale in the developing world.

Mission

Apply global knowledge base and experience to customize local sustainable solutions that are replicable and adaptable, to make a global mainstream impact toward sustainable development and greenhouse gas emissions reduction.



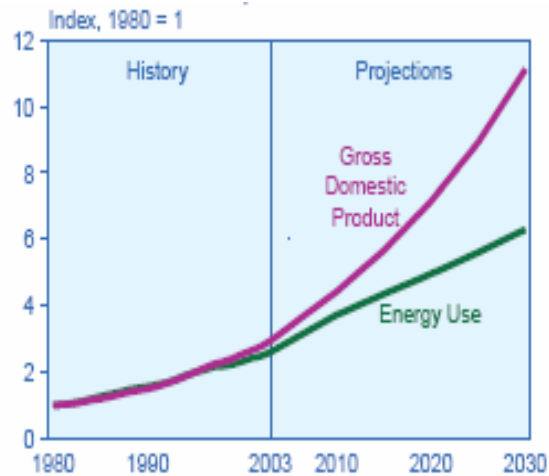
Global Presence by Local Implementation



Presence in several locations, with emphasis on Asia

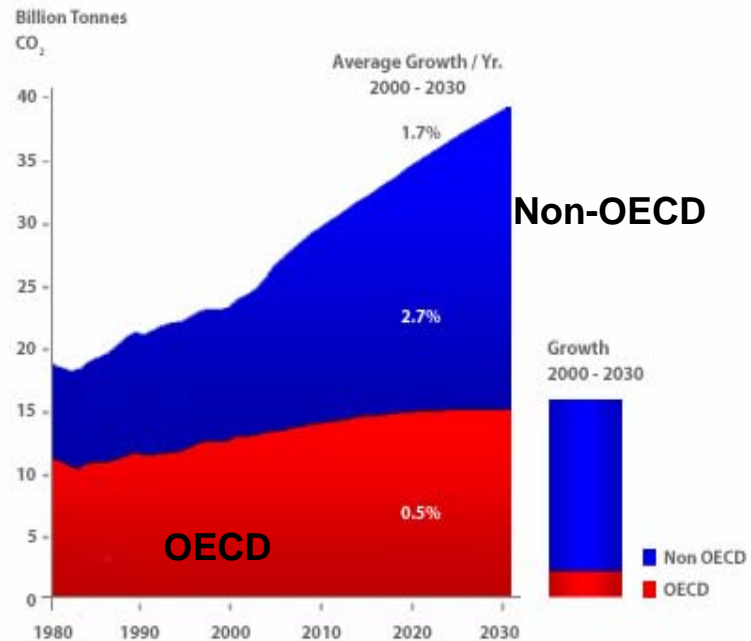


Focus on Developing Countries: The New Mainstream is Out There



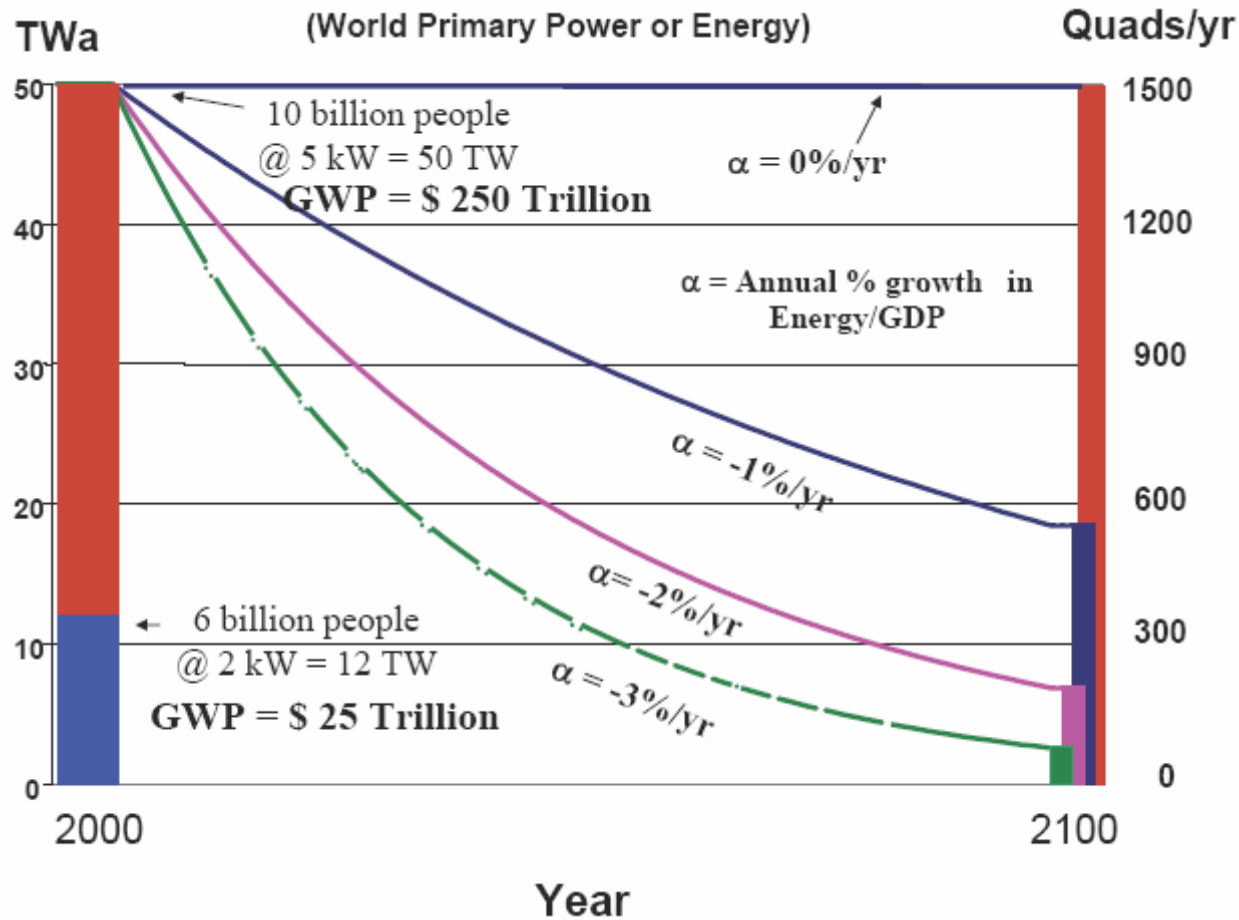
High economic growth and energy consumption in non-OECD countries.

CO₂ Growth - Primarily Non-OECD





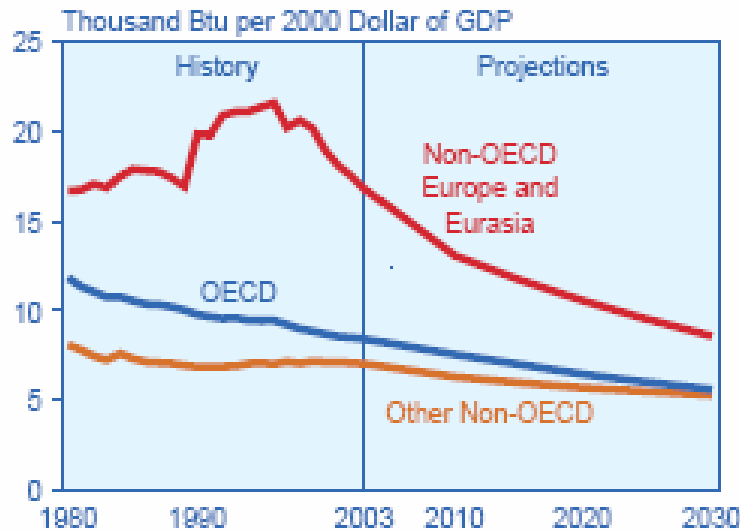
Rosenfeld's Conservation Bomb Shows the Massive Fiscal Impact of Energy Efficiency





Available Efficiency Measures can Reduce Energy Use per Capita and CO₂ Emissions

Potential Reduction in Energy Intensity



Potential Reductions in CO₂ Emissions

Unit: billion t-CO₂/year

Industry	Iron & Steel	.12
	Cement	.67
	Paper/Pulp	.14
EP	Coal	1.42
	Oil	.02
	Gas	.23
Transport	Personal Car	.54
Household	Refrigerator	.24
	Air-con	.15
	Lighting	.23
	Insulation	.07
Total		3.83



Efficiency is a “Win-Win” for Development and Climate: So what is the problem?

It has been difficult to scale up energy efficiency solutions because the private sector has not invested in the opportunity on a large scale because:

1. Economies of scale are not easily captured
 - Typical applications are too small to attract finance
 - Solutions have to be packaged to facilitate close interaction with and servicing of retail customers
2. Not as visible as supply side solutions, and therefore, not perceived to be as attractive for growth
3. Most responses are government policy driven and timid with very few real public-private partnerships with private sector investments



The Urgent Need for the Climate: Massive Energy Efficiency Implementation

- **Mobilize unprecedented *massive* investments in efficiency on the demand side and supply side:**
 - **Well-known traditional demand side measures that are readily available with the lowest risk and highest return**
 - **Distributed generation, CHP, co-generation, and renewables**
 - **Programs targeted at peak reduction, e.g., demand response**
- Partner with other organizations to assist in a large scale public awareness, dissemination, and global public relations campaign to accelerate a change in behavior and mindset toward efficiency



Role of Civil Society: A Question of Political Economy

	Single Users and Willing Payers	Many Users and Free Riders
Collection Easy by Labels/Brands; Curb Rent Seekers	<u>Private Goods</u> <i>Private Sector (Clinton)</i> EE Procurement	<u>Access (Toll) Goods</u> <i>Local Govt, Utility (E7)</i> DSM Programs
Collection Costly w/o Enforcement; Help Public Interest	<u>Community Goods</u> <i>Civil Society (IIEC)</i> Behavior Change	<u>Public Goods</u> <i>Government (UN, LBL)</i> Legal & Compliance Tools

Key question: How to mobilize investment in civil society actions?



Some Efficiency Programs Have Tried to Leverage Resources... in a Limited Way

- **By Leveraging Public Resources**
 - Guarantee mechanisms to facilitate the flow of private capital, e.g., IFC's fund in Eastern and Central Europe
 - Development banks' use of infrastructure funds for investments in efficiency, e.g., Brazil
 - Impose taxes (e.g., on oil revenues in Korea and Philippines) and incentives (e.g. ethanol subsidies in Brazil)
- **By Leveraging Private Resources**
 - Partnership with industry associations, e.g., ICA, WLPGA
 - Corporate Social Responsibility programs, e.g., AES
 - Utility-driven demand side management, e.g., BESCO



Many Mechanisms Exist to Direct Financial Flows for Development

Box 7-1. A Plethora of Ideas and Proposals

Global taxes (e.g., for air tickets)	Global Development Bonds
International Finance Facility	Long-term sustainable investing (generation)
Advance Purchase Commitments	Private equity investing with enhancements
Targeted Exclusions from Patent Rights	Angel/patient equity investing (SMEs or GBOs)
Tax Relief for Donating Key Medicines	Tripartite venture capital firms (Rotberg)
Market Interventions for Key Medicines	Microfinance (and tiers of support to it)
Debt Buydowns (e.g., as in the polio campaign)	Microenterprise development
Results-based sequences of loans/grants	Blended value investing (e.g., Domini)
Local currency lending	Social investment partnerships (from GEXSI)
Guarantees from bilaterals or IFIs	Enhanced management of voluntary giving
Infrastructure Guarantee Facility	Electronic-billing-based fundraising
Risk insurance for natural disasters	Remittances (and derivatives from them)
Other risk insurance (e.g., crop prices)	“Use your balance sheet more” (for IFIs)
Debt relief (HIPCs; G-8 2005; and beyond)	“Use your endowment more” (for philanthropy)

Note: SME = small and medium-size enterprises; GBOs = grassroots business organizations; IFIs = international financial institutions; HIPCs = highly indebted poor countries; G-8 = Group of Eight.

David de Ferranti (2005)



Working Models Needed for Private Massive Financial Investments in Energy Efficiency

- Cultivate Public Sector Support... Governments
 - Tax Relief and Subsidies (South Africa)
 - Tap Future Aid Flows Today (International Finance Facility)
- Modernize Multi-lateral Mechanisms... MDBs
 - Project Finance with Infrastructure Funds (IBRD)
 - Risk Management: Local Currency Lending, Guarantees (IFC)
- Promote Social Entrepreneurship... Donor funds
 - Micro-finance (Grameen)
 - Micro-Enterprise Development (Ashoka, E&Co)
- **Develop Models of Public-Private Partnerships**
 - **Global Development Bonds as Collateralized Debt Obligations**
 - **Carbon Offsets for Project Finance**
 - **Performance Based Debt Buy-downs**

Current Private Participation is Minimal



Exemplary Application of Public-Private Partnerships



Example

Efficiency in Maharashtra State, India

The New York of India

Capital: Mumbai (Population 20 Million),
the commercial capital of India

State Population nearing 100 Million

Urban Population about 40%

Gross State Domestic Product US\$ 100B

Power Generation Capacity 11,000 MW

Per Capita Income: US\$ 250

Temperature 16°C – 30°C; summer
average maximum 40°C

Rainfall to 100 cm in 4 month monsoon





Maharashtra's Energy Conservation Action Plan Yields Multiple Benefits Scenarios

Impacts from Efficiency	Low	Moderate	Aggressive
No. of Programs Implemented	3	5	11
Energy Savings (GWH)	7,054	20,299	40,597
Customer Benefits (M US\$)	345	1,023	2,046
Utility Costs (M US\$)	12	142	285
Capacity Savings (MW)	708	1,117	2,234
Capital Savings, Gen (M US\$)	1,049	1,655	3,310
Capital Savings, T&D (M US\$)	262	414	828
Total Capital Savings (M US\$)	1,331	2,069	4,139
Increased Revenue from Other Sectors (M US\$)	258	395	791
Reduced Subsidies (M US\$)	3	59	118



Carbon Offsets: GHG Reductions to Finance Projects

- GHG reduction potential is massive
 - Up to 40 million MWhr saving potential over 10 years
 - Approximately 40 million tonnes of CO₂ over 10 years
- Programmatic CDM provides a mechanism
 - 70% energy efficiency potential can be captured with feeder-based demand acquisition by utilities
 - 30% energy efficiency potential can be through statewide programs, e.g., efficient lighting, appliances
 - Distributed generation and captive power can offset more GHG emissions
- Sectoral CDM also has potential



Conclusions

- Energy efficiency is the “low hanging fruit” solution for addressing for cost-effectively addressing both economic development and climate change.
- IIEC has the global platform and two decades of local experience to focus on the implementation and scale-up of energy efficiency based programs.
- Financing for **massive scale implementation** has to be mobilized through formal public-private partnerships to overcome the economies of scale, specifically via:
 - **Global Development Bonds**
 - **Carbon Finance**
 - **Debt-for-Efficiency Swaps**



For More Information...

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