

Inter-American Meeting of National Authorities and Experts on Energy for Sustainable Development in the Americas

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Expansion and diversification of the energy matrix to ensure access to energy and its availability

**Cholb'al Q'ij / 8 No'j
Year 5124
(2008 AD)**

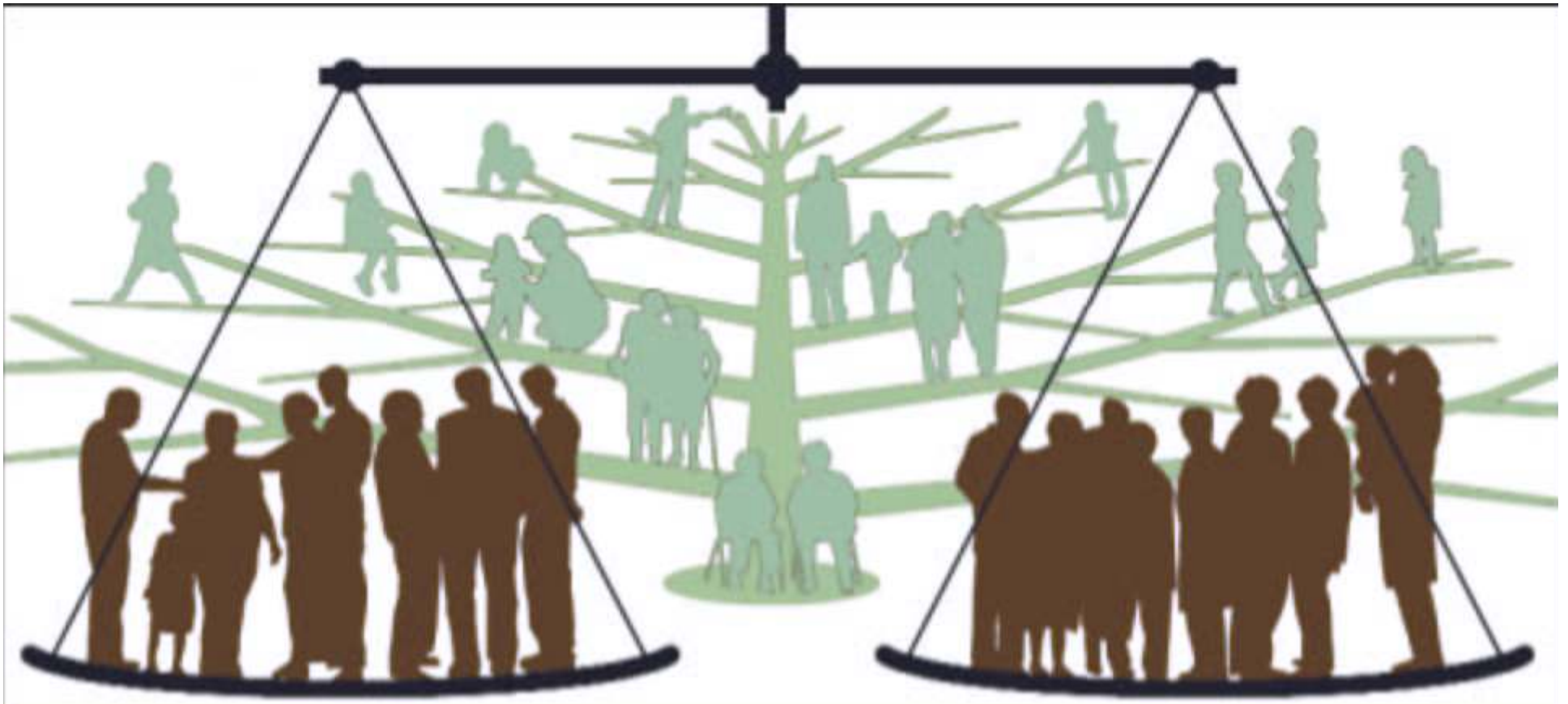


Topics

- The utopia: sustainable human development.
- The challenge of less developed countries. Shared but differentiated responsibilities.
- New paradigm.
- New instrumentation.
- Some food for thought.



Utopia: Sustainable Human Development



The reality:
Sustained growth



The Economist

Economic recovery, fact or fiction?

PAGE 23

America's problem with treason

LEXINGTON, PAGE 28

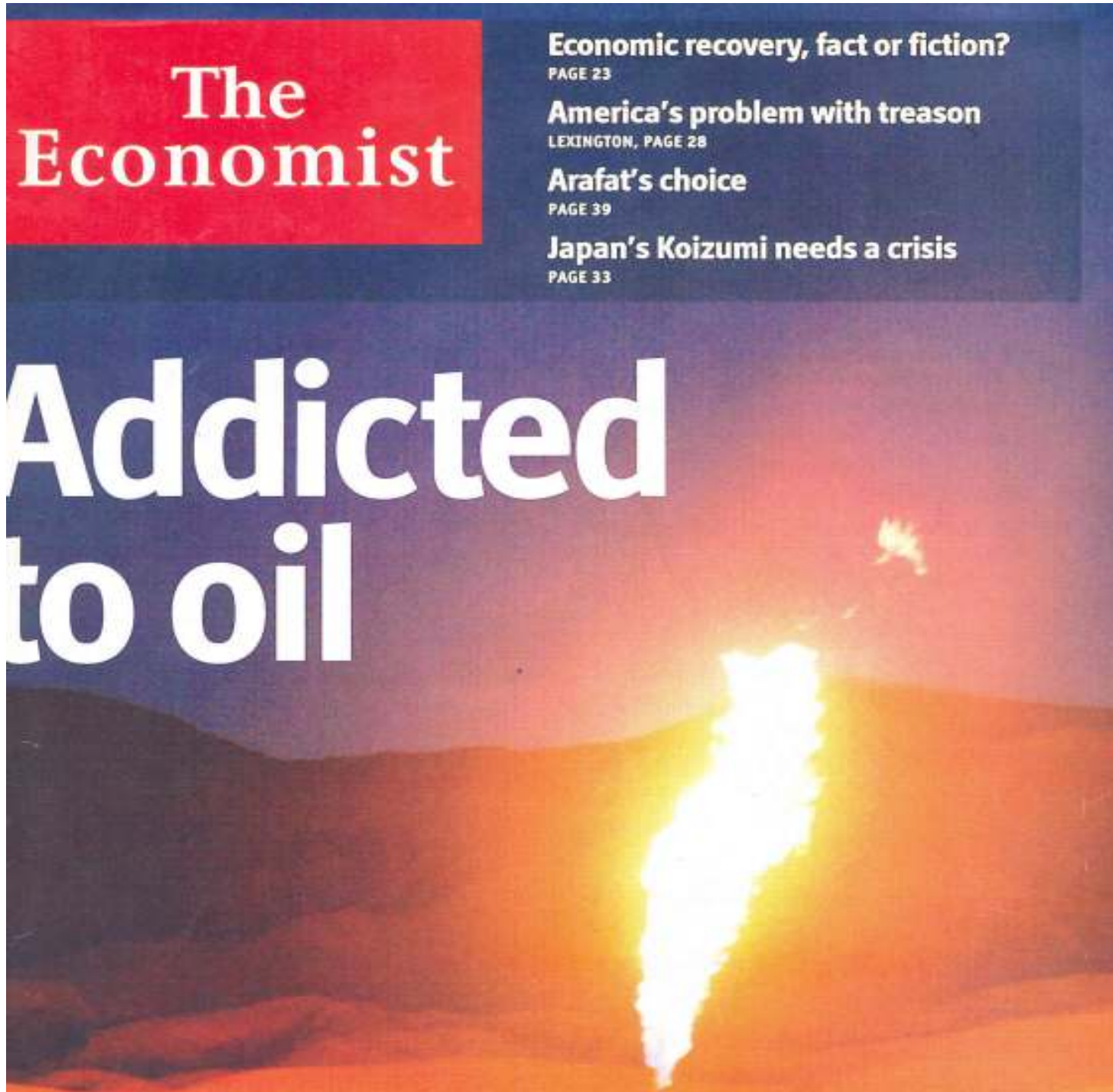
Arafat's choice

PAGE 39

Japan's Koizumi needs a crisis

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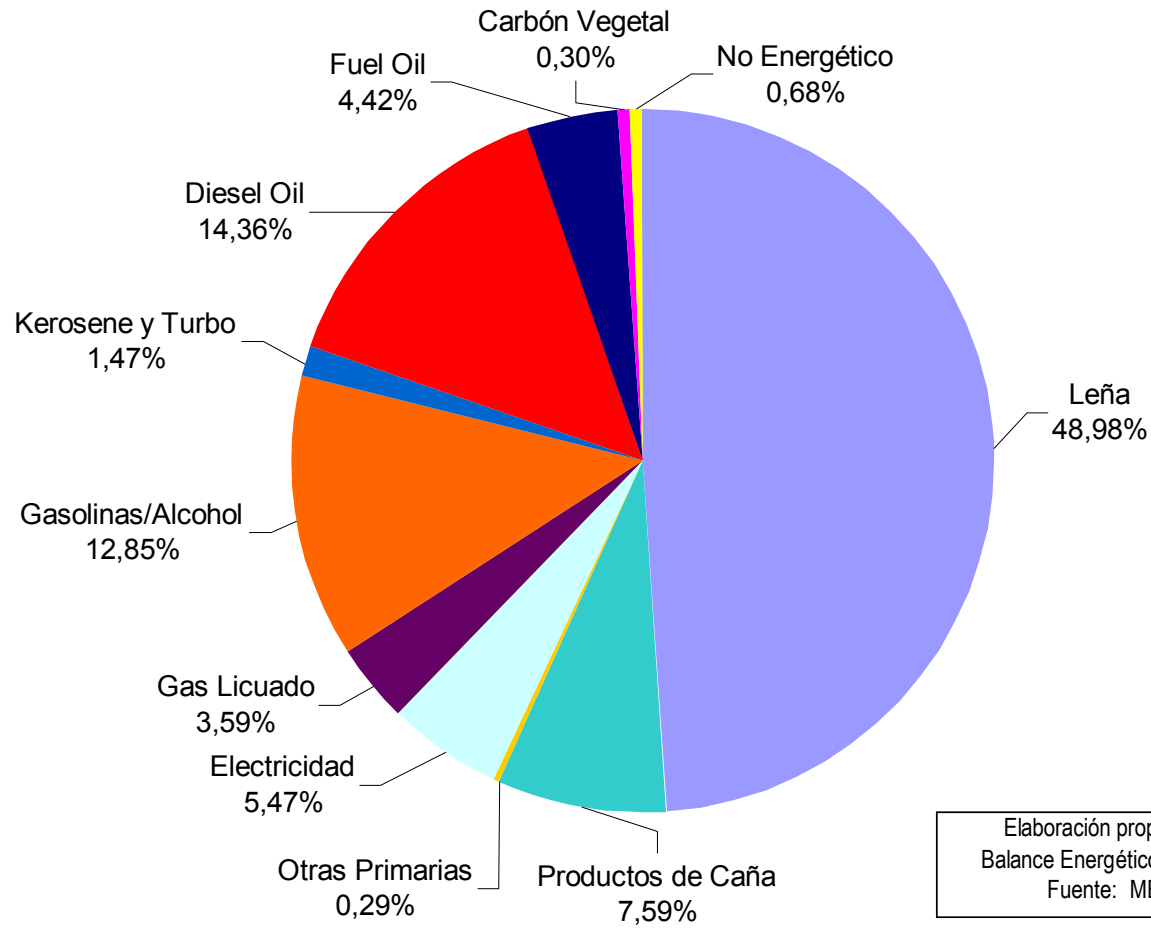
Addicted to oil



Final Consumption

Guatemala 2002

Total 47,343.23



Elaboración propia, en base a Balance Energético de Guatemala. Fuente: MEM, 2002



The challenge: climate change



Developing countries need to address mitigation, but focusing on adaptation and reduction of vulnerability.







"It is impossible to solve
a problem with the same
methods that caused
this problem"

Albert Einstein



New Paradigm



From practice to conceptualization.

Looking back at Fundación Solar experience



In order to develop the instrumentality proposed by technological syncretism we were advised by the National Council of Elders and Spiritual Guides of the Mayan Culture.



Adaptative resilience:

A new paradigm based on complex systems approach that allows human kind to overcome adversity by integrating values and tools that come from different ways of being in the world (cosmovision and metaphysics).

Fundación Solar, 2008.



Technological syncretism

A new instrumentality for nature transformation based on the blending of scaled down high tech options with scaled up traditional techniques.

Fundación Solar, 2008.



Features:

High tech renewable energy technologies (RETs) developed by Western metaphysical thinking integrated with traditional Mayan knowledge & techniques for natural resources transformation.



Renewable Energy Technologies

- Biomass
- Country Reports
- Distributed Energy
- Energy Education
- Gender and Energy
- Geothermal Technology
- Hydrogen Fuel Cells
- Hydropower
- Low Energy Architecture
- Marine Energy
- Photovoltaic Technology
- Renewable Energy and Water
- Renewable Energy Policies and Impacts
- Resource Assessment
- Rural Energy Applications and Deployment
- Solar Buildings
- Solar Cooking
- Solar Materials
- Solar Thermal
- Sustainable Urban Design
- Wind Energy



The future of energy in the world

Renewable energy sources

	Theoretical global potential	Technically feasible potential	Installed capacity (2003)
Hydro	4.6 TW	0.7 TW	0.3 TW
Biomass	7 a 10 TW	5 TW	1.4 TW
Geotherma	12 TW	0.6 TW	0.054 TW
Wind	50 TW	2 to 4 TW	0.0063 TW
Solar	600 TW	60 TW	0.0051 TW
Total	Aprox. 676 TW	Aprox. 70 TW	1.73 TW
Nuclear	17.5 TW	10 TW	0.845 TW

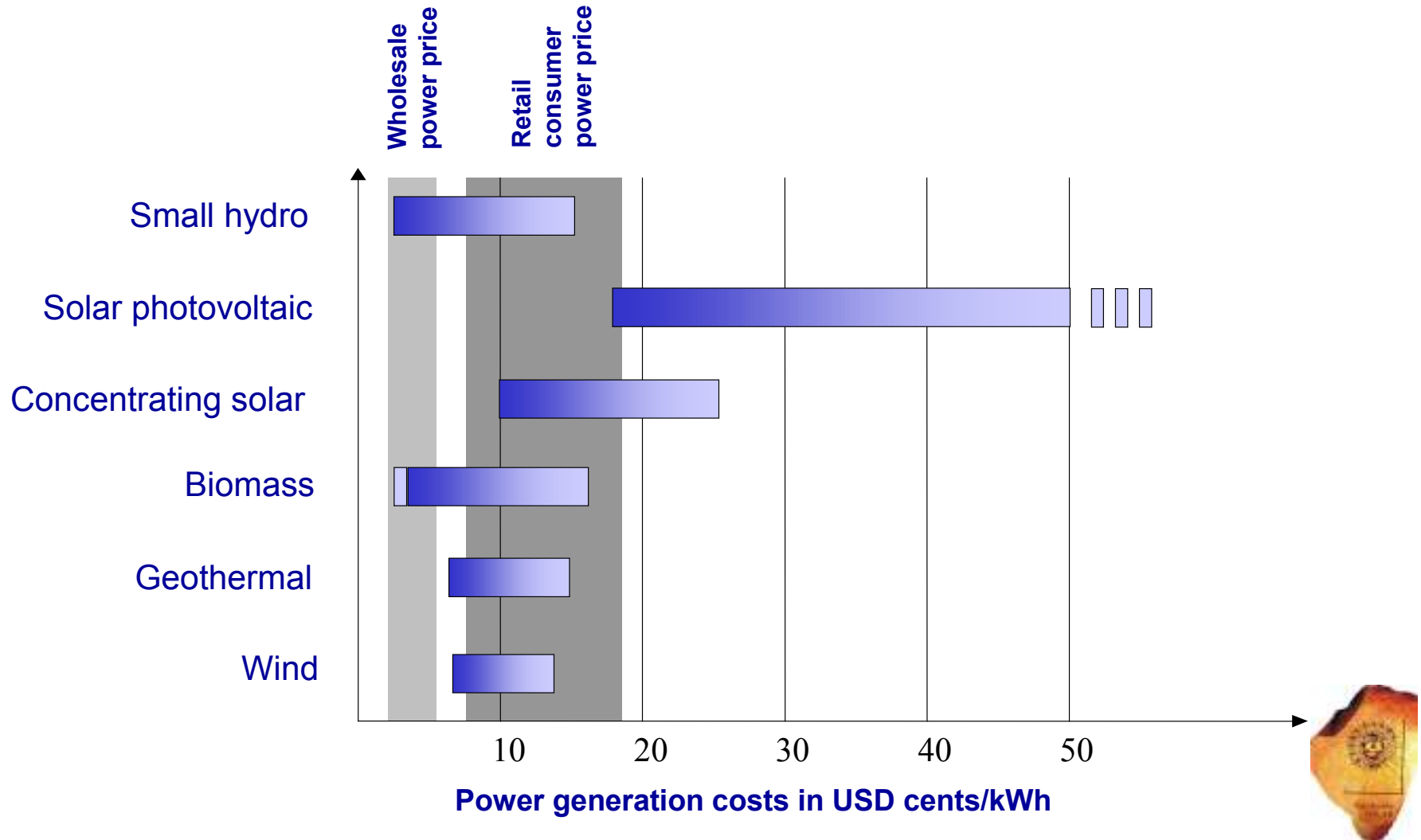
1 TW = 10¹² W : 1,000 EPG Complexes of 1,000 MW each

Source: Renewable in Global Energy Supply IEA 2004



The World Market of RE

Are the RE technologies competitive?



RENEWABLE ENERGY

Direct and Indirect Forms of Solar Energy

Renewable Resources will have to provide at least 50% of the world's energy by 2050



Traditional knowledge

Is a cumulative body of knowledge, know-how, practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment.

These sophisticated sets of understandings, interpretations and meanings are part and parcel of a cultural complex that encompasses language, naming and classification systems, resource use practices, ritual, spirituality and worldview.

ICSU, 2002.



Main goal



Local employment generation.

Some examples from the field



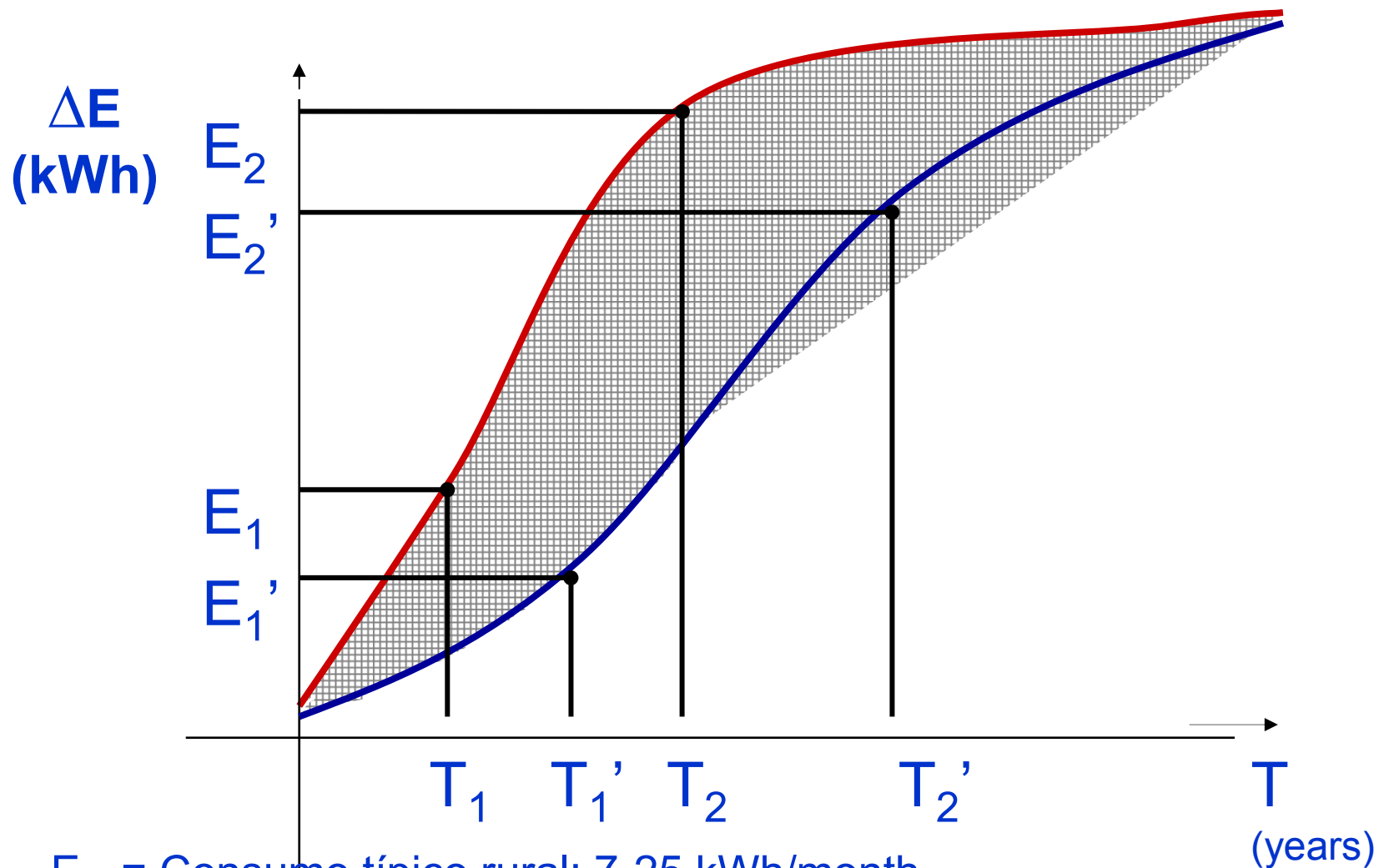
Renewable Energy Based Small Enterprise Development in the Quiché, Region of Guatemala



Watershed Management



Productive uses of renewable energy, consumer surplus



E_1 = Consumo típico rural; 7-25 kWh/month.

E_1' = Consumo productivo; 35-70 kWh/month.





Local Autonomy



People's Participation



Women Participation

Community Services



Improved Cook Stoves



Blending of technologies





New product development





New product



development





Native germ plasm. Asociación Rupalaj Kistalin

ASOCIACIÓN Q'OMANEEL

Production and commercialization of medicinal plants.





Alcohol 70%
→ 165ml de agua her
vida

Ingredientes:
→ 1 libra vaselina
→ 1 onza ocote picado
→ 2 tazas de hojas de eucalipto picadas
→ 5 onzas alcanfor
→ 28 botes plásticos

Procedimiento:
1) Desinfectar...
2) Derretir vaselina en baño maría y agregar eucalipto y ocote. Dejar hasta que el alcanfor esté derretido.
3) Sacar del fuego y dejar enfriar.
4) Esperar a que enfrié en un vaso.
5) Embotellar en los botes plásticos.

Aplicar sobre el pecho, espalda o cabeza.
6 meses después.
alivia dolor de pecho y resaca de la gripe.

Escala de pH
Ácido → Neutro → Básico

Grados de Alcohol (%)

70% Alcohol Etilico

Alcohol etílico 70%

Caneeel





Creativity workshops







New products





Continuous innovation





**Trendy
market
products**





Incorporation of Gender Issues

Education Application



Health Vaccine Refrigeration



Productive Uses

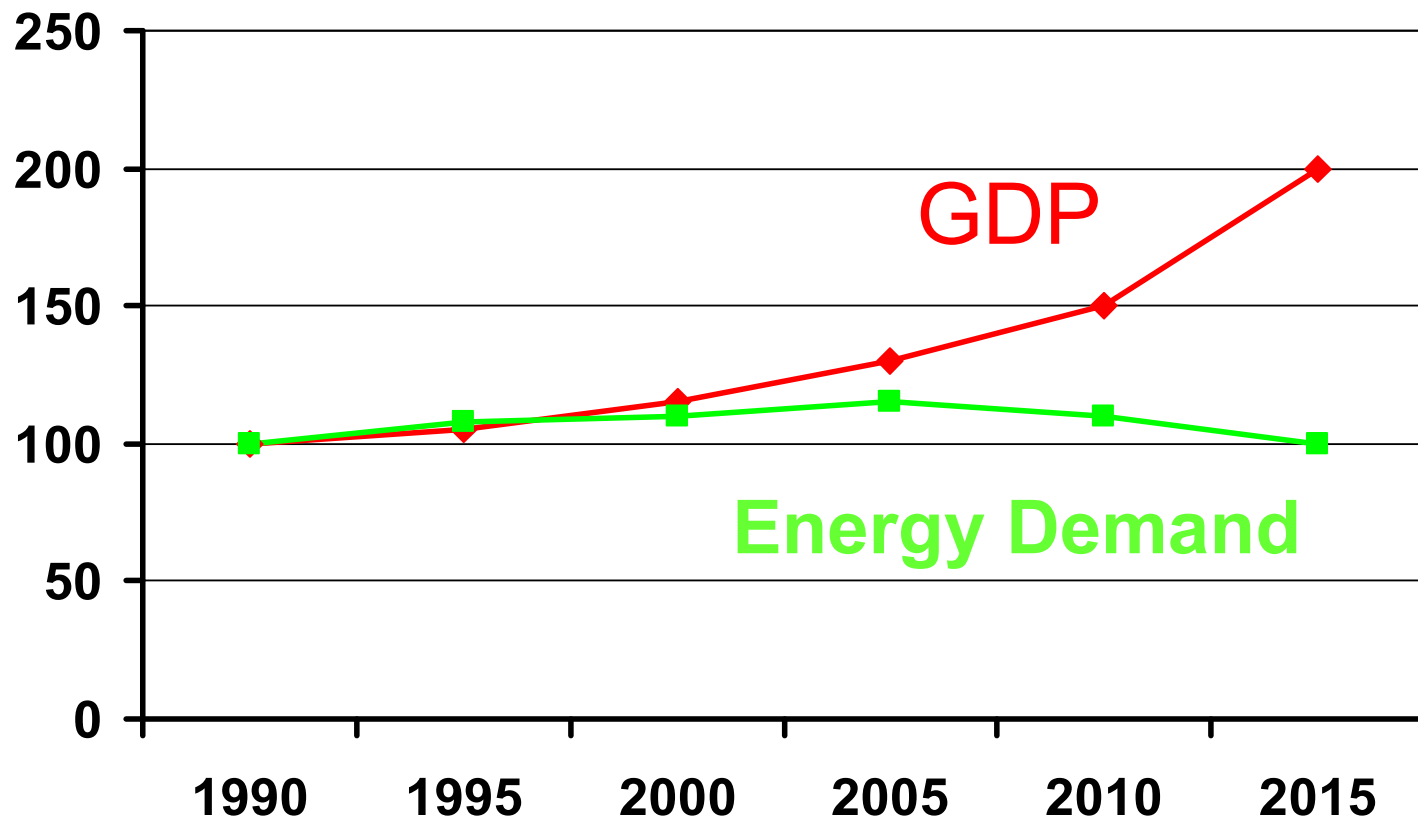


Technological syncretism

Co-creates options for nature transformation integrating traditional Mayan knowledge and high tech Western technologies based on energy efficiency and renewable energy technologies that mimic the natural rhythms of mother earth, decoupling economic growth from improved well being.



Technological syncretism aims to decouple energy demand & economic growth.



Energy efficiency help de-carbonize energy services

From Prof. Kaya (IPCC, 1993)

$$\text{CO}_2 = \frac{\text{CO}_2}{\text{TPES}} \times \frac{\text{TPES}}{\text{GDP}} \times \frac{\text{GDP}}{\text{Pop}} \times \text{Pop}$$

$$\frac{\text{CO}_2}{\text{TPES}}$$

Carbon content ratio of the primary energy supply

$$\frac{\text{TPES}}{\text{GDP}}$$

Energy Intensity

$$\frac{\text{GDP}}{\text{Pop}}$$

Gross National Product per Capita



In order to reduce by 50% the World-wide CO₂ Emissions before 2100...

From Prof. Kaya (IPCC, 1993)

$$\begin{array}{ccccccc} \text{CO}_2 & = & \frac{\text{CO}_2}{\text{TPES}} & \times & \frac{\text{TPES}}{\text{GDP}} & \times & \frac{\text{GDP}}{\text{Pop}} & \times & \text{Pop} \\ \updownarrow & & \updownarrow & & \updownarrow & & \updownarrow & & \updownarrow \\ 50\% & = & \frac{1}{4} & \times & \frac{1}{4} & \times & 4 & \times & 2 \end{array}$$

Energy Efficiency is likely to play a major role



**Technological syncretism
an opportunity for
adaptation and reduction of
the vulnerability imposed
by climate change.**



Some food for thought



Technological syncretism

Fusions two paradigmatic
ways of being in the world:

cosmovision-Maya
metaphysical-Western



Science might be complemented
by **traditional knowledge**,
both can be verified or
falsified by experience.



Leapfrogging to:

Expanded energy services that are environmentally sound, as well as safe, affordable, convenient, reliable, and equitable, that also include traditional knowledge and techniques for vulnerability reduction and general well-being.



Capacity Development

Capacity co-creation is a continuous process. This is one of many reasons that development assistance should move away from short-term projects to longer-term programmatic support, where the Western methods are open and willing to **listen to traditional people knowledge.**





