Tools for Success:
Best Practices in Emerging Markets

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Partnership International

- Formed in 1990, Partnership International Inc. is an international consulting firm that provides regulatory, institutional, technical, commercial & financial consulting advice.

- Recognized for delivering
  - ✓ Pragmatic,
  - ✓ Market-driven,
  - ✓ Expert solutions

- Our Senior Partners and Technical Advisors have hands-on experience covering more than 50 countries.

Partnership International – Typical Renewable Energy Projects

PAKISTAN:

NEPRA seeks to develop suitable modifications/changes in the **tariff determination** process to promote a 10% increase in RE by 2015. **Partnership International, Inc** has been asked to provide technical assistance to help the government of Pakistan to enhance **renewable energy sector strategies**, **tariffs-setting, industry standards**, and **legal and regulatory regimes**, which in turn will help create a favorable business and trade environment for renewable energy development to better utilize **indigenous renewable energy sources such as solar, wind, hydro, biomass and geothermal.**

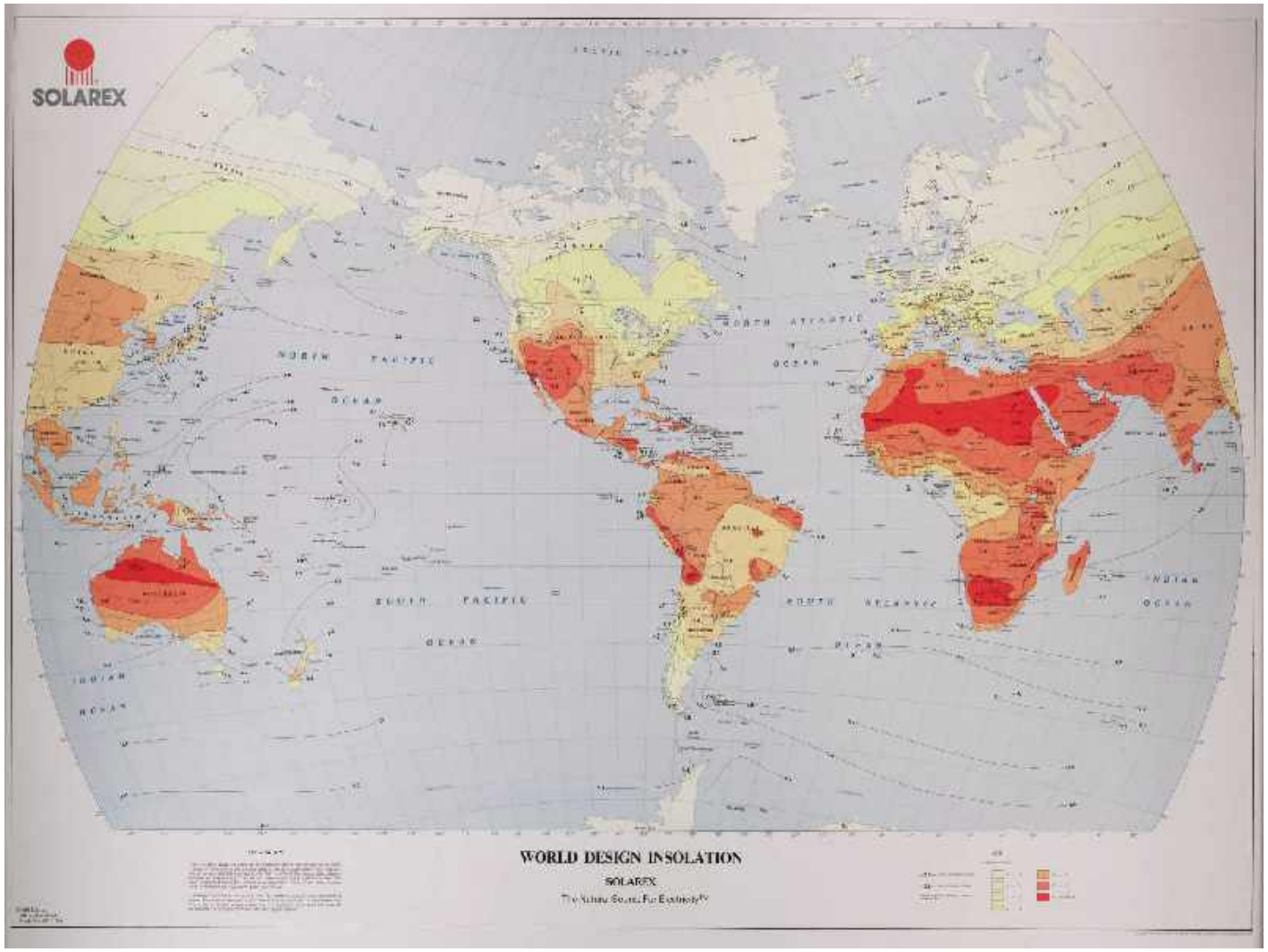
Renewable Energy Policy Network for the 21 Century:

Partnership International is creating a "**Best Practice for Solar Renewable Energy**" manual to help promote the development of Solar (PV and CSP) energy in North and Sub Saharan Africa. Partnership International is studying countries Solar energy infrastructure to determine existing best practice for renewable Solar energy. The manual will give a compressive overview of these best practices to help promote the development of Solar power -- such as, sound regulatory, institutional, technical, commercial and financial structures which can be replicated in other African countries. Our goal is that these RE success story can have a ripple effect throughout Africa by helping accelerate the uptake of Solar renewable energy and enable other countries developing Solar technologies to go beyond their targeted energy goals

Wind Energy Auto-producer Contracts – Morocco:

Our team of Legal & Contract Specialists developed a regulatory and contractual framework for the Office National de l'Electricité (Morocco's state-owned electricity utility) to launch a national 300 MW program for wind energy production by industrial users. Responsibilities included assessing the tariff structure and preparing implementation decrees and drafting contract models to allow the ONE to transport electricity for third-parties and to purchase surplus wind-generated electricity for Independent Auto-producers.

Overview of worldwide solar power average Peak Sun Hours (Red = highest)



Three Key Factors to Solar Development

Key Factor #1 – Appropriate Policy

Policy

	Feed-in Tariffs	Renewable Portfolio Standard/Quota	Tendering Policies
Key characteristics	• Govt mandates tariffs • Take or pay obligation for utilities • Focus on new and emerging technologies • More compatible with regulated markets	• Govt mandates share of RE energy • Requirement placed on producer or distributor • More compatible with deregulated markets	• Govt sponsors competitive bidding process • Award to lowest cost bid • Govt pays increment. cost of RE
Success factors	• Long term contracts (15-20 years) • Guaranteed buyer • Tariffs that provide reasonable ROR • Flexibility to capture cost efficiencies	• Policy design • Output-based targets that increase over time • Effective enforcement • Creation of certified trading platform	• Long term contracts to reduce investor risk • Economies of scale • Annual process • Effective penalty system • Stable funding
Pros	• Must successful in increasing adoption of RE in Europe	• Good at cost and price minimization in developing countries	• Best at price minimization
Cons	• May be more expensive in the short run	• Favors incumbent operators and established technologies • More complex	• Requires govt subsidies (rather than passing on increment. cost to buyers
Comparative Advantage (++ very strong; + strong; - disadvantage)			
Price reduction		+	++
Diversity of technologies	+		
Sustainability of approach	+	+	
Local industry development	+		
Investor risk mitigation	++	+	–
Simplicity of design	+	–	

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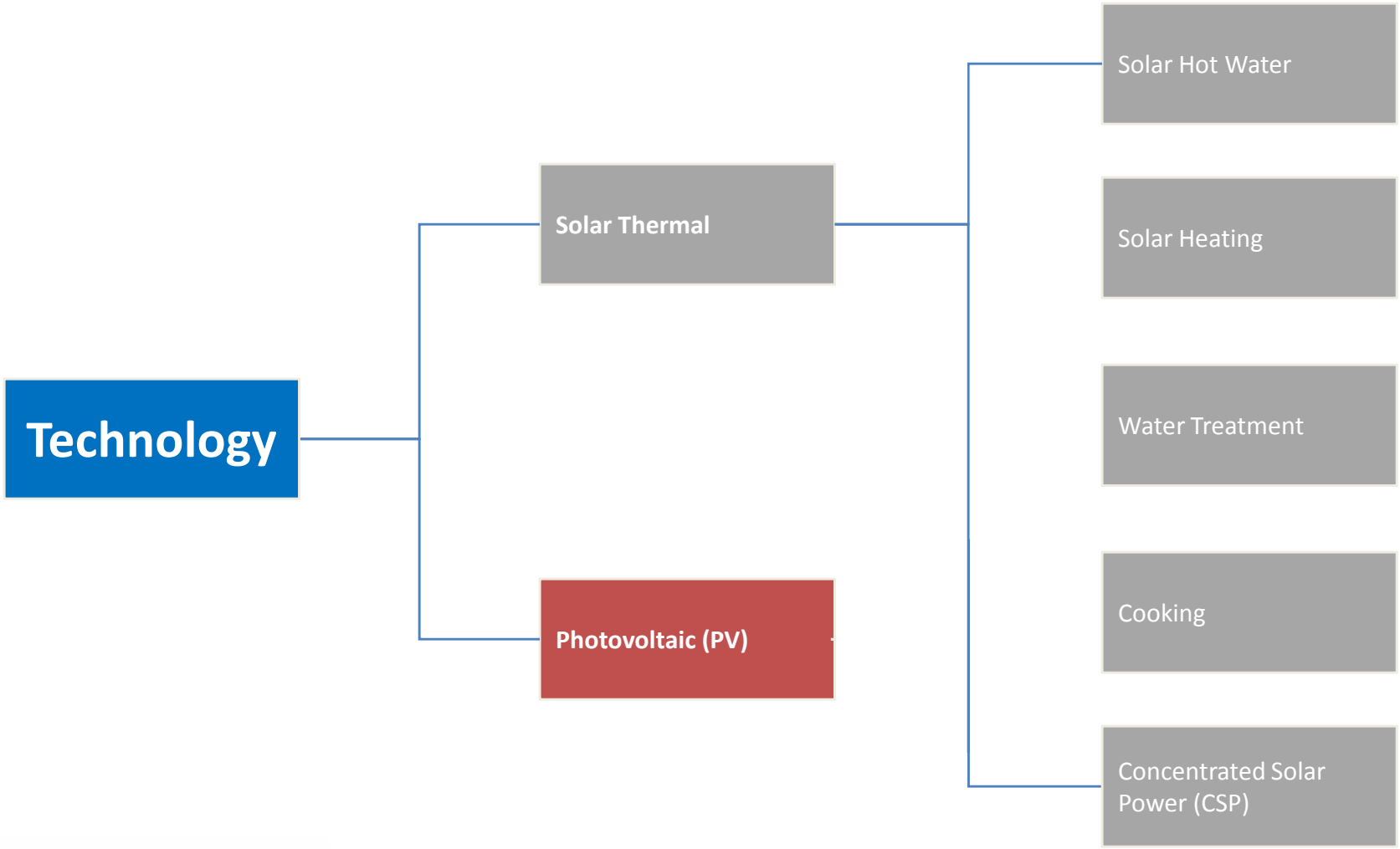
Sustainable Development

Key Factor #2 - Appropriate Technology



Key Factor #3 – Available Financing

Multilateral Development Banks

- World Bank, IFC, GEF, EIB, EBRD,IADB, ADB

Microfinance

- Grameen Bank

Bilateral / Regional Agreements

- EU Super Grid, OAS, etc

Commercial and Investment Banks

- ICICI Bank, Yapi Kredi, Man Eco, West LB, etc

National Governments

- Feed-in Tariffs, Subsides, Tax incentives, etc.

Private Sector Investment

- TATA BP Solar India Ltd.

Best Practices by Geographical Regions

Africa

Africa

Solar technologies provide sustainable and life-changing improvements.

Background and Market Potential:

- African countries have significant potential for solar power
  - ⇒ Africa has 25% of the world's highest quality insolation on its territory
  - ⇒ Utilities are becoming involved in CSP and PV developments
  - ⇒ Private companies such as Total & Shell are getting involved in Solar development.
- Desertec Consortium are bringing solar investments in North Africa and are infusing over $400bn over 50 year to develop European Union's Super Grid (connecting EU with North Africa) and develop CSP throughout Northern Africa.
- China funding a study to evaluate Kenya's potential for solar hot water heaters and solar PV; thus far they have found that virtually no solar energy production in East Africa.
- The Global Environmental Fund (GEF) is providing millions of dollars of financial capital to help spur development in Africa financing through Multilateral & Bilateral agencies.
- Government incentives are already in place in countries like South Africa and Morocco
  - ⇒ South Africa: $0.269/kWh feed-in tariff for CSP
  - ⇒ Morocco: plans to double share of RES to 19%

Africa

Some of Africa's Best Practices:

- Solar PV allows for decentralized electrification that penetrates rural areas with no prior access to electricity
- Initiatives such as Abengoa Water desalination is a bi-product of CSP in North Africa, creating potable water to this arid regions of Africa.
- Peace Corps and other development agencies initiatives have made solar water heaters and cookers widespread
- The World Bank's Lighting Africa Initiative - providing solar power as substitute for kerosene
- Success story: Morocco's rural electrification program

  ⇒ Goal: electrify 35,000 villages, giving power access to 12 million rural citizens via photovoltaic kits

  ⇒ As of July 2007: 30,255 villages had been electrified, touching 11,100,000 inhabitants

Asia

Asia

Asia's Population Growth Drives Solar Needs

Background and Market Potential:

- Vast solar potential, especially in arid areas of Central and South East Asia.

- The need for solar energy
  - ⇒ Rapidly developing countries struggle with significant population growth
  - ⇒ Many countries lack fossil fuel reserves and struggle to keep up with increasing energy demand
  - ⇒ Frequent power outrages disrupt economic activity (ex: Pakistan load shedding).

- Government incentives:
  - ❑ India – New National Solar Energy Plan drafted - -
    - Installed solar capacity now 3MW, aims for 200GW by 2050
    - Aims to achieve scaled-up CSP cost parity with conventional grid by 2020
    - Plans to place solar water heating systems in 1 million homes by 2012
    - Will deploy 5 million solar lanterns and 2 million solar home lighting systems
  - ❑ China
    - Already has a PV generation capacity of 15 MW
    - Government targets 10% share for solar energy by 2020
    - Accounts for 55% of global solar heating capacity
    - World's largest producer of solar heaters; 3rd largest producer of solar PV cells

Asia

Some of Asia's Best Practices:

Home Lighting Systems & Solar Lanterns

(40% annual growth forecasted between 2009 and 2012)

Asia is a leader in Solar technologies & development:

⇒ TATA BP Solar India Ltd.
⇒ Shangde Solar Energy Power Company (China)

Systems being deployed in massive numbers and market is growing rapidly

Off-Grid Solar Hospitals and Clinics.

Water Heating Systems & Solar Water Pumps

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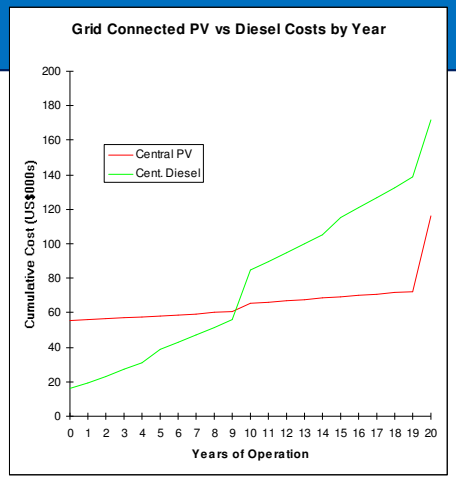
Sustainable Development

Small Islands
Caribbean & South Pacific

Caribbean & South Pacific Islands



Diesel cost makes PV solar systems competitive

Background and Market Potential:

- Tropical location in proximity of the equator offers ideal potential for solar power
- Electricity costs are among the highest in the world –
  - ⇒ Ex: About 12 % of Samoa's national budget is spent on fossil fuels for diesel generation of electricity.
- Frequent hurricanes pose threat to PV diffusion

Caribbean & Pacific Islands

Some of the Island's Best Practices:

- **Leading markets for solar power:**
  - ⇒ **Dominica:** 33% of electricity produced from RES
  - ⇒ **St. Lucia:** aims to reduce GHG emissions by 35% by 2010
  - ⇒ **Grenada:** fully integrated homes are being designed and built with combined Solar PV, hot water and cooking systems.
  - ⇒ **Barbados:** Government tax incentives resulted in the installation of more than 31,000 Solar Hot Water Heater Systems with payback of 2.5 years.
  - ⇒ **Guadeloupe**: Solar water heating systems are a success in Barbados; with a ripple effect for adjacent islands government incentives tax cuts with PV Solar for rural power supply – 2000 units
  - ⇒ **Maldives:** The government is dedicated to integrating many renewable energy technologies such as solar arrays on residential and commercial rooftops; aims to be carbon neutral by 2020

Southeastern Europe and Turkey

Southeastern Europe and Turkey

Renewable Energy incentive programs are required to qualify to join the Europe Union

Background and Market Potential:

- Solar potential is greater than other regions in Europe; EU integration prerequisites make it an attractive prospect.
- Bulgaria, Romania, Turkey and Croatia - regulatory structure makes them the most dynamic energy markets and they present good potential for solar power
- The Balkans Region is successfully adopting EU success stories through EU company expansions:

✓ Relatively cheap labor costs & well-educated workforce

✓ Geographical proximity to industry leaders in Germany & Spain looking to invest in other markets.

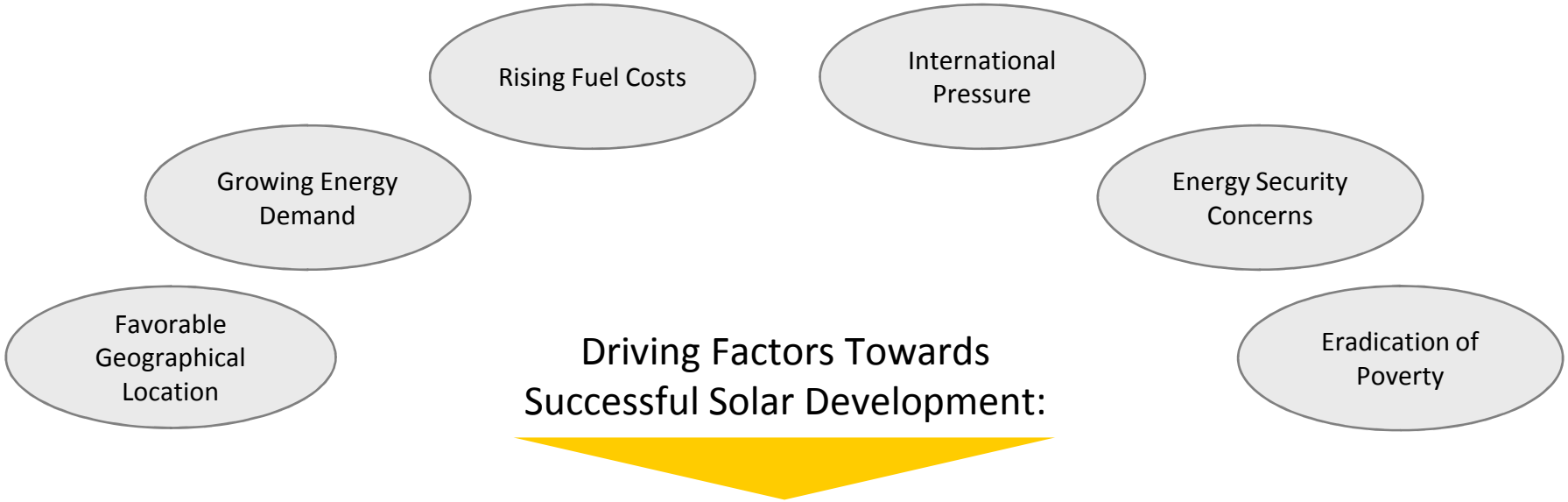
Southeastern Europe and Turkey

Some of SE Europe's Best Practices:

- **Turkey:** leading in solar developments with small-scale solar PV systems; and solar integrated houses & businesses.
- **Bulgaria and Turkey:** grid operators are obligated to open up to renewable energy producers
- Policies are in place, offering attractive incentives:
  - ✓ **Bulgaria:** feed-in tariffs
  - ✓ **Romania:** government guarantee of long term loans, green certificates, subsidies, tax incentives, net metering
  - ✓ **Turkey:** feed-in tariffs, discount on government land, discount on licensing fees
  - ✓ **Croatia:** feed-in tariffs

Summary

Summary



- **Regulations** - which are favorable for solar development
- **Technologies** - which are adaptable to the regions
- **Financing** – which can sustain development of solar technologies

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