



***for The People***

世の為、人の為、善き事を



**Wonderful Smiles !**

**ワット ア ワンダフル ジョブ !**





THE NEW VALUE FRONTIER



for The People

# **G8-UNESCO World Forum**

**'Education, Research and Innovation'**



## **Solar Sustainable Development**

***for The People · for The Earth***

**At Trieste, Italy  
May. 11<sup>th</sup>, 2007**

**Adviser and Past-President  
Kyocera Solar Group  
ISAO YUKAWA**



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**BASIC HUMAN NEEDS**



# 1. About KYOCERA

Kyoto Ceramic Co., Ltd. is founded as a company specializing in fine ceramics with a capital of 3 million yen and 28 staff members.

**Established : April 1959**

**after 39yr** →

Founder and Chairman Emeritus: K. Inamori

Chairman : N. Nakamura

President : M. Kawamura

Capital : JP¥ 115,703,000,000

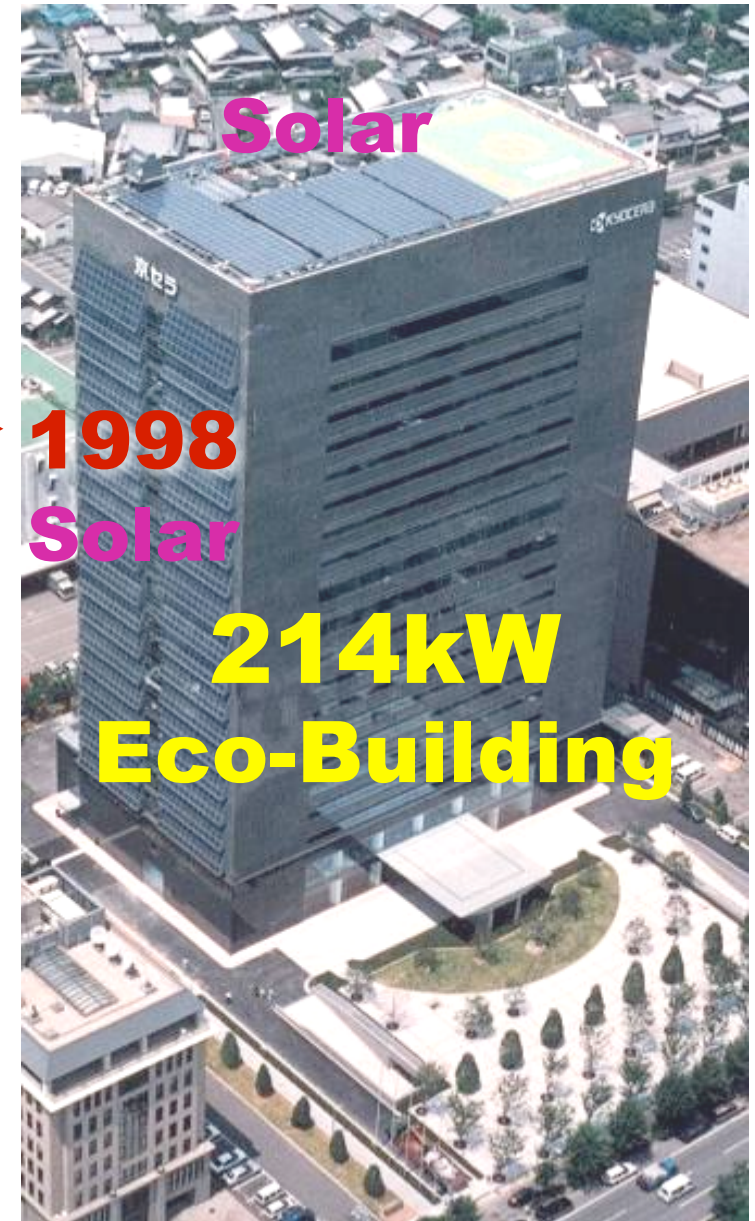
Employees : 12,457

**KYOCERA Group**

**Sales : US\$ 11,814,890,000**

**Employees : 61,468**

(Mar.2006)





# KYOCERA Philosophy

## Motto

Respect the Divine **敬天愛人** Love People



*Kazuo Inamori*

Kazuo Inamori  
Founder and  
Chairman Emeritus

**Preserve the spirit to work fairly and honorably  
respecting people, our work, our company and our global community.**

## Rationale

**To provide opportunities for the material and  
intellectual growth of all our employees, and through our  
joint effort, contribute to the advancement of society and humankind.**

## Management Philosophy

**To coexist harmoniously with nature and society.**

**Harmonious coexistence is the underlying foundation of all our business activities as we  
work to create a world of abundance and peace.**

**Kyocera's  
Corporate Motto**





## 2. Climate Change: Global Warming-Green House Effect

**IPCC:** “Very likely” Global Warming by **Human Activity**

**Stern Review:**

**Sense of Urgency**

- 1°C**
  - Small glaciers in the Andes disappear completely
  - Threatening water supplies for 50 million people
  - 80% bleaching of coral reefs
  
- 3°C**
  - Onset of Amazon forest collapse
  - 170 million people **affected by** coastal flooding
  - In Southern Europe, serious droughts occur once every 10 years
  
- 5°C**
  - Decrease water availability one-quarter of China's population
  - Disappear large amount of glaciers in Himalayas
  - Continued increase in ocean acidity
  - Sea level rise **threatens** NY, Tokyo, Florida

**EU G8:** **German Chancellor Merkel committed RE use 20% by 2020.**



## 2. Climate Change: Low-lying Island

### Sea Level Rise

Submerging Land

88cm up

130 Million km<sup>2</sup>

Disappear

Eco-Refugee

Hawaii

Maldives

Kiribati  
Tuvalu

# Tuvalu

(C) Shuuichi Endou

Source: NHK

Company Confidential Property

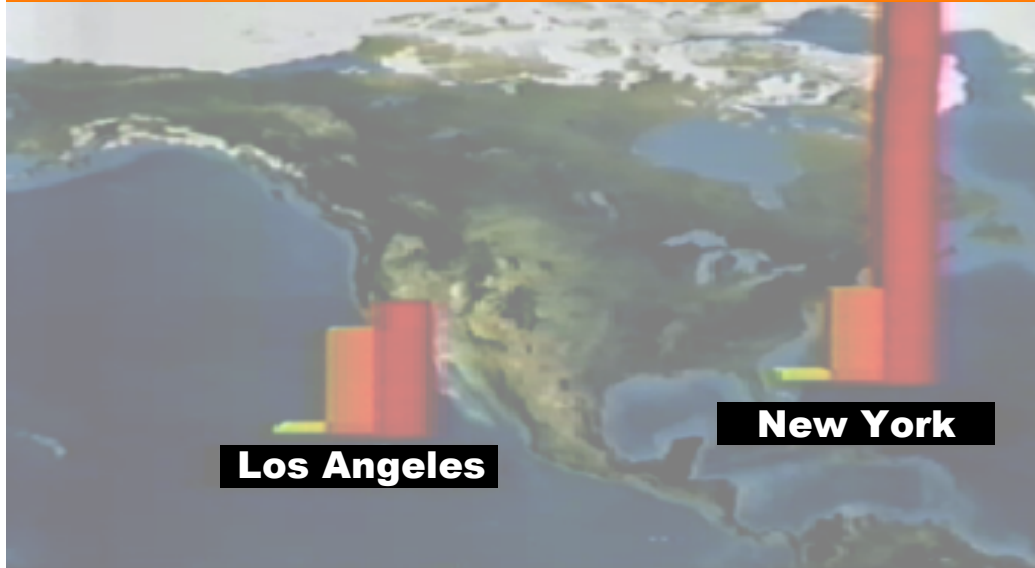
KYOCERA

7



## 2. Climate Change: Disasters

### Heat Wave



### Hurricane



### Water Shortage



### Flood



## 2. Climate Change: no debate but action now

# an inconvenient truth

待った無し!

Act Now!

Mark Twain:

“What gets us into trouble is not what we don't know.  
It's what we know for sure that just ain't so.”

by far the most terrible  
you will ever

AL GORE



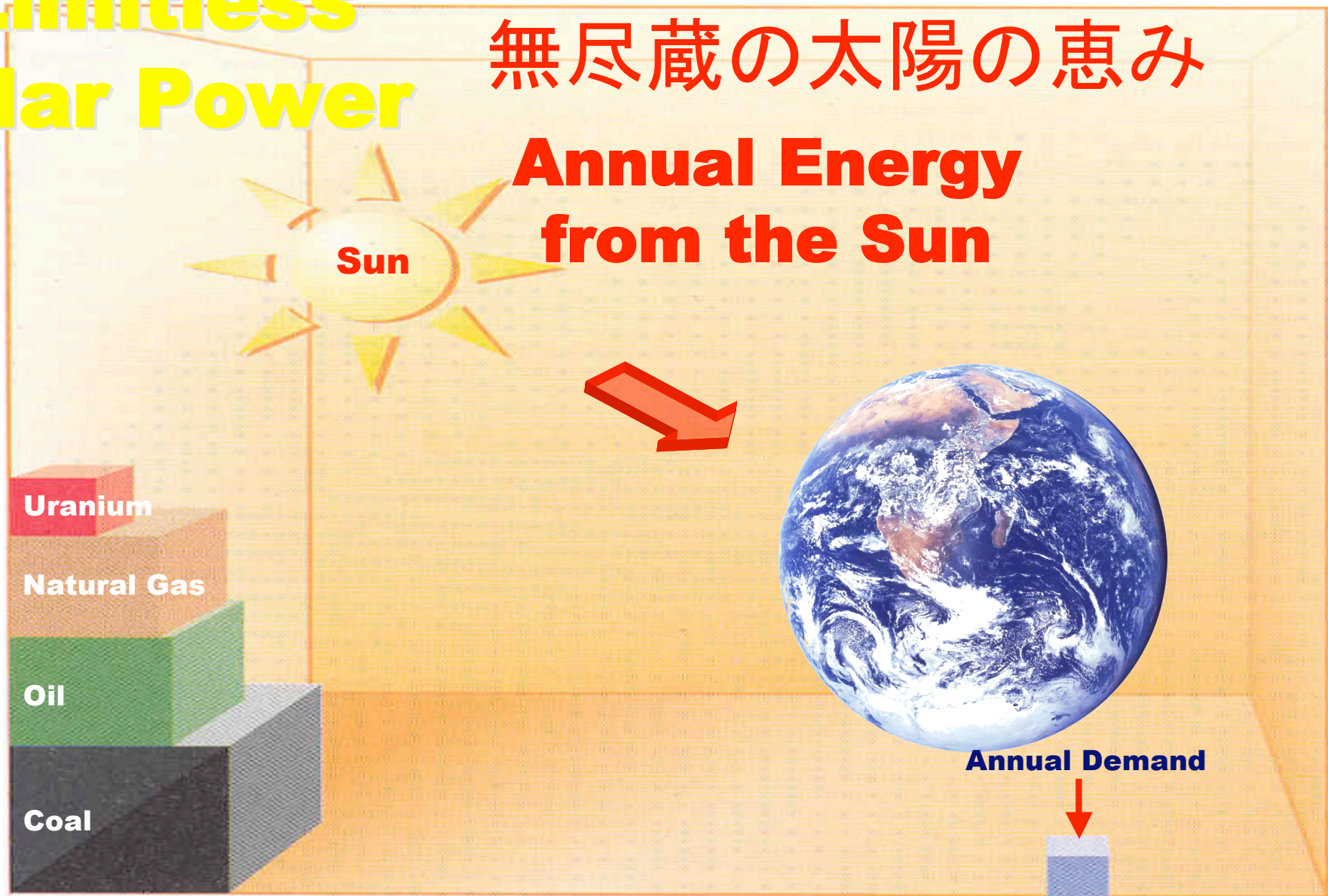
### 3. Research: WORLD ENERGY STOCK

**Limitless  
Solar Power**

無尽蔵の太陽の恵み

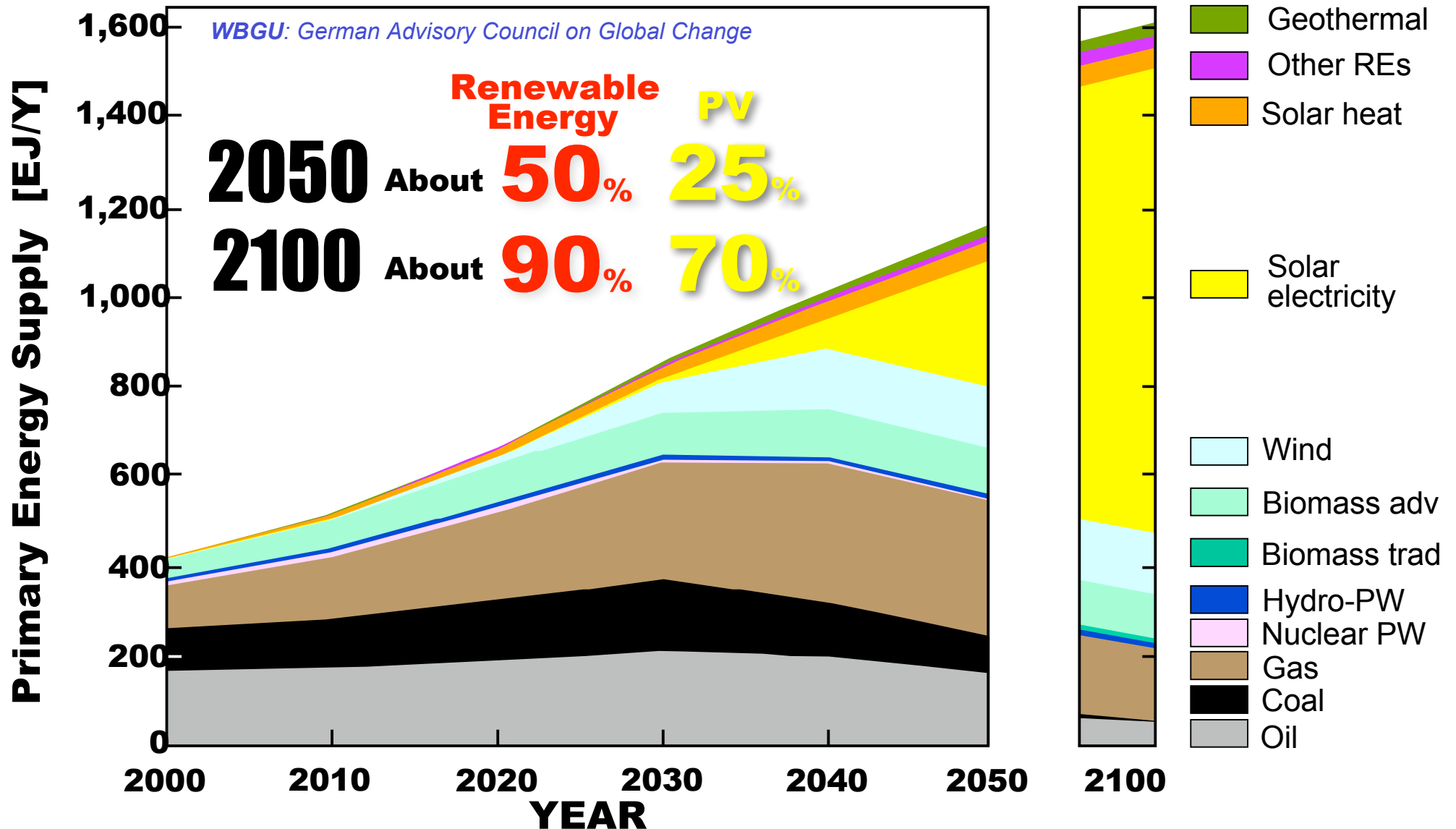
**Annual Energy  
from the Sun**

**Equivalent Stock of  
Energy Source**



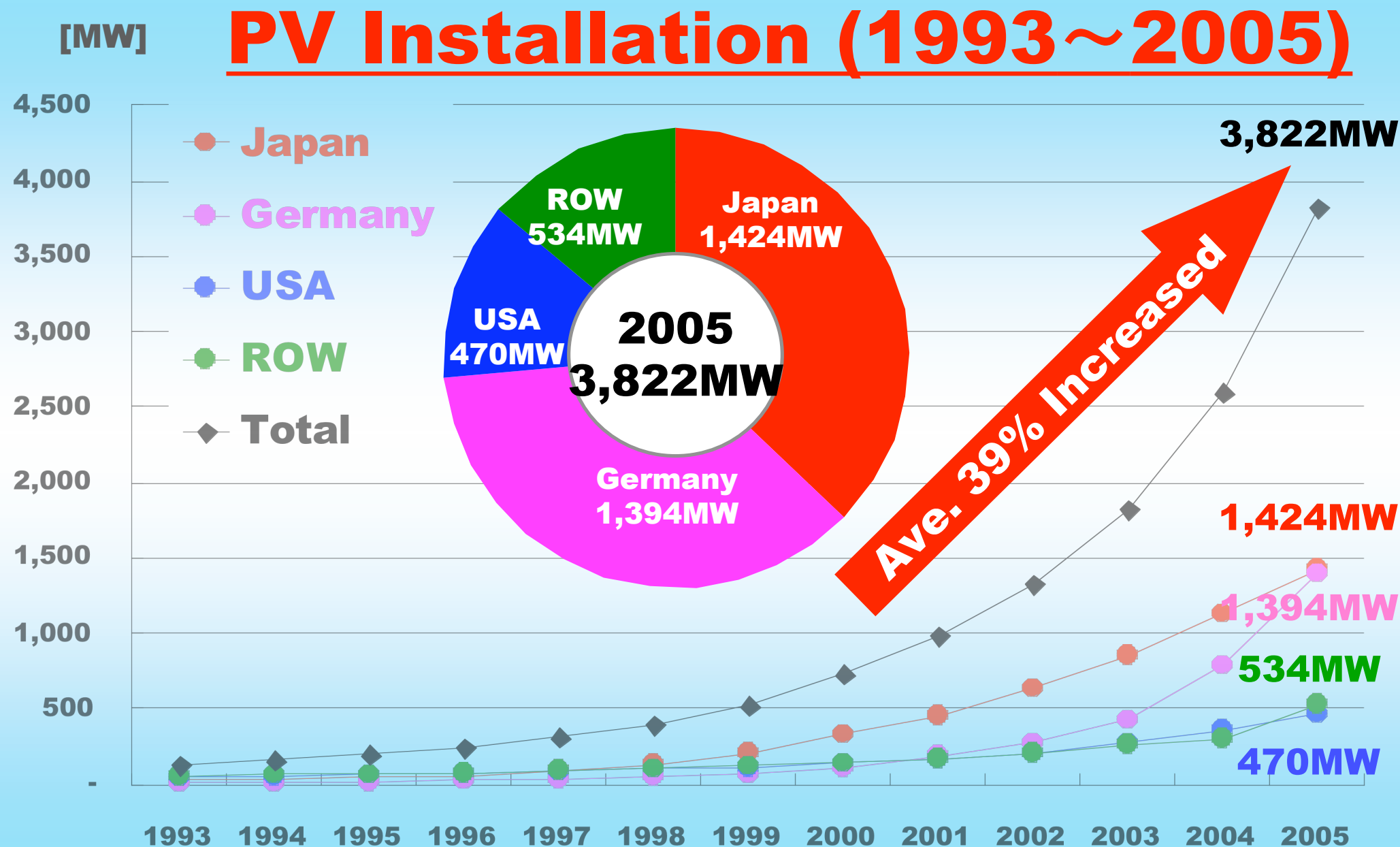
### 3. Research: WORLD ENERGY TREND

#### WBGU's World Energy Vision 2100





### 3. Research: PV Cumulative

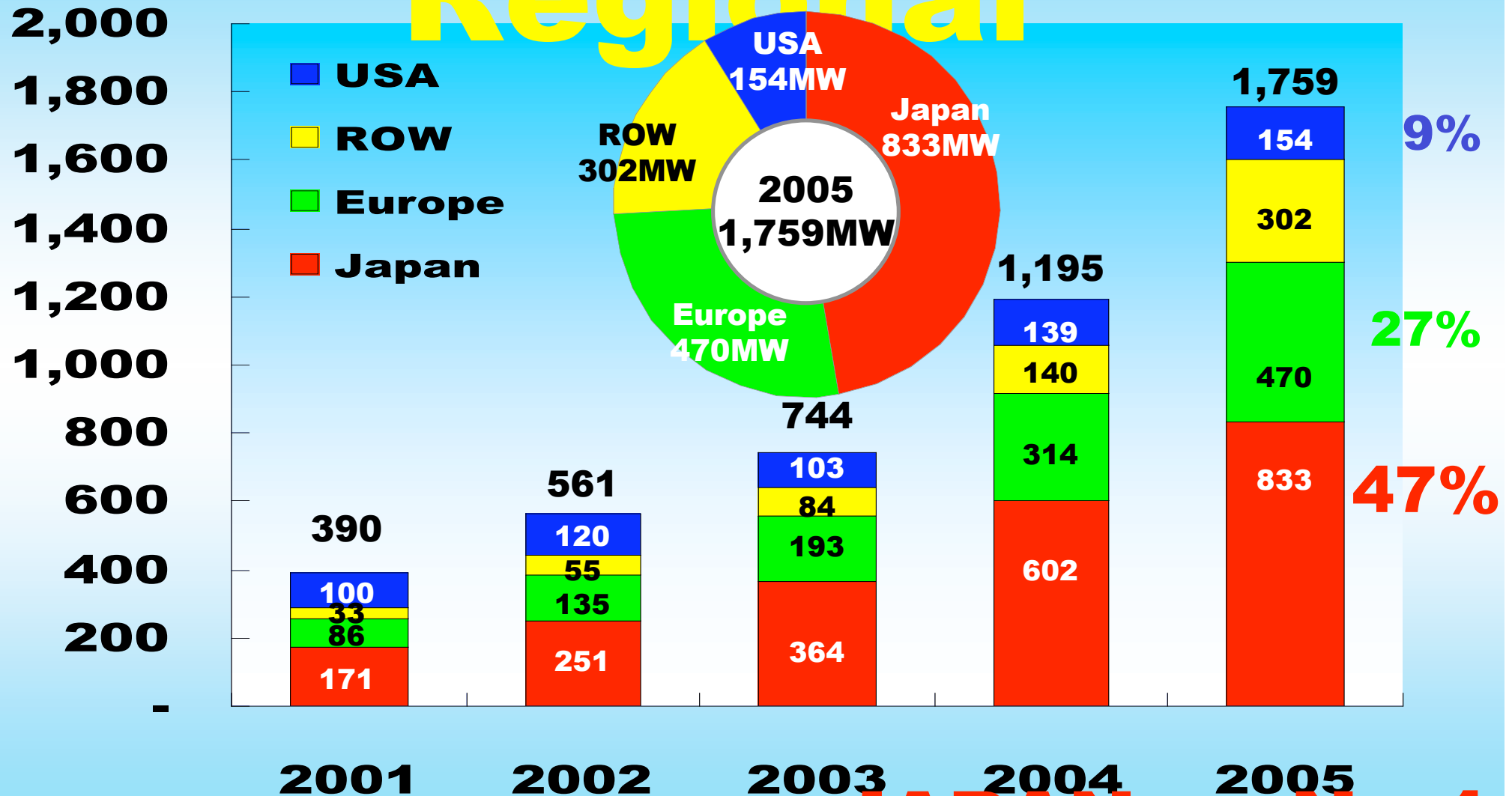


### 3. Research: Cell Production

## World Production of Solar Cell (Year 2001 – 2005)

[MW]

# Regional

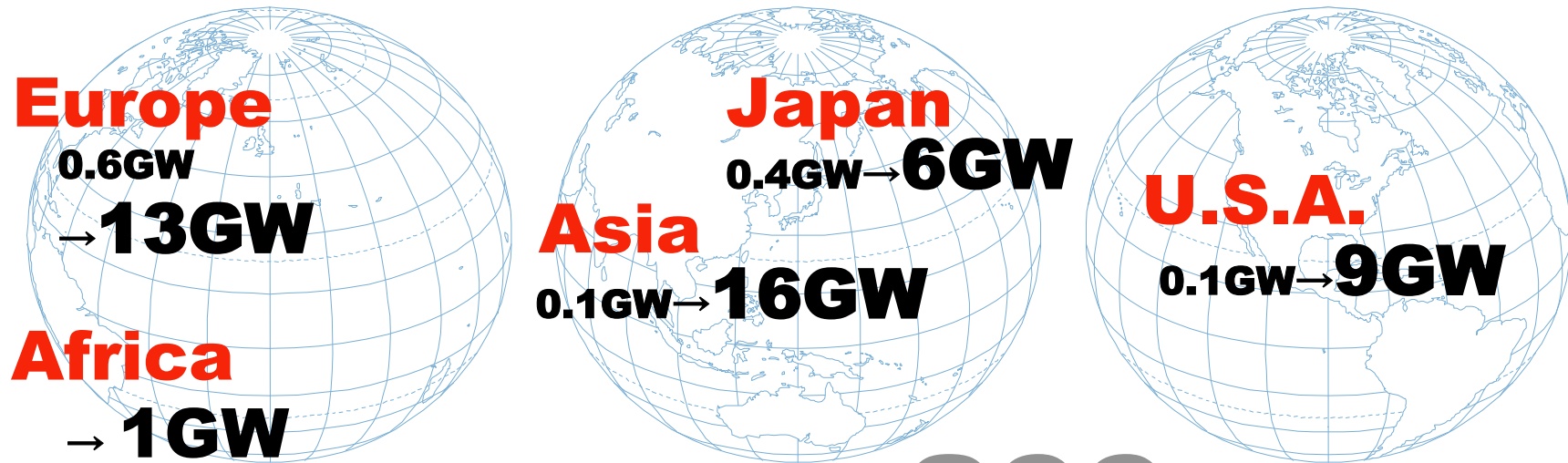


# JAPAN as No.1

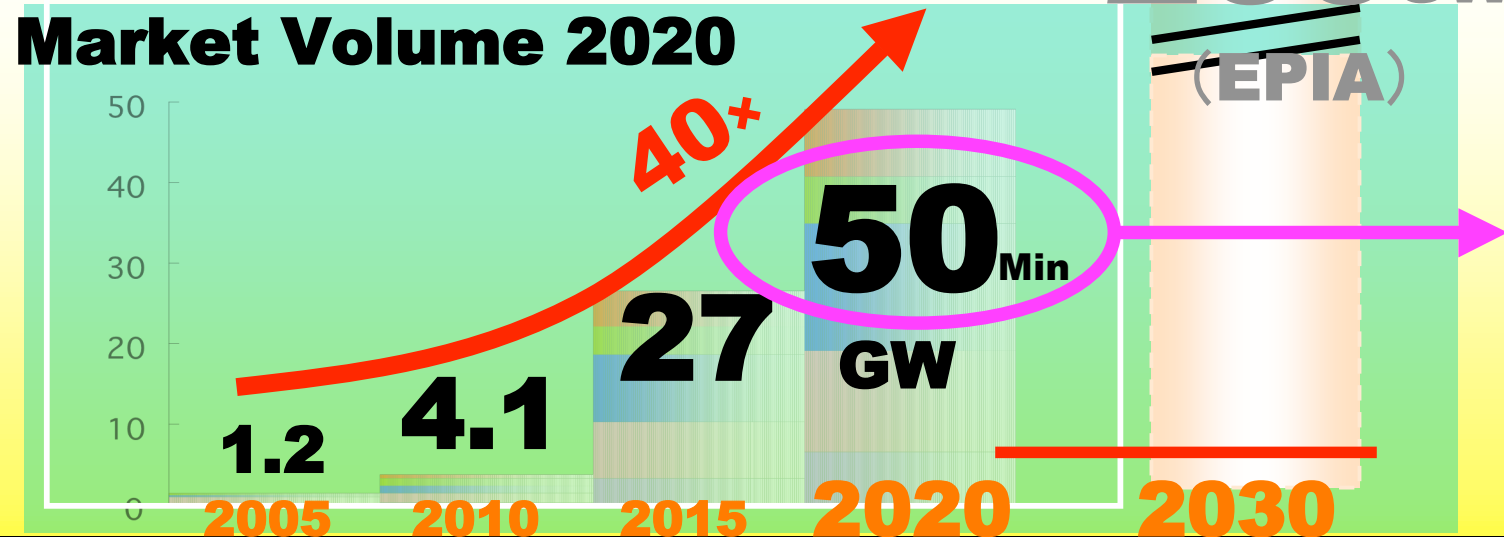


### 3. Research: PV Market Trend

#### PV Demand Forecast 2020



#### Market Volume 2020



same as  
current  
**Greece**

### 3. Research: Mission and Responsibility

# 1 Solar 3 Benefits *for The People*

1. Environment

2. Energy (PV)

3. Human Contribution



A child dies **every 3 seconds** from lack of water, electricity and vaccine.



1.6 billion people  
115 million children  
1 billion people  
1.2 billion people

**No Access**

to Modern Electricity  
to basic Education  
to clean Water  
to improved Sanitation



## 4. PV Technology Innovation: KYOCERA Solar History

1975

**Kyocera established Japan Solar Energy Corp. (JSEC)**

1982

**Mass Production of Polycrystalline Silicon Solar Cells. Japan**

1987

**Achieved our 10 cm<sup>2</sup> Polycrystalline Solar Cells 15.1%. (W.R)**

# 500MW Plant →

1996

**Achieved our 15 cm<sup>2</sup> Polycrystalline Solar Cells 17.1%. (W.R)**

2003

**Established Kyocera (Tianjin) Solar Energy Co., LTD. China**

2004

**Achieved our 225cm<sup>2</sup> Polycrystalline Solar Cells 17.7%. (W.R)**

**Established Kyocera Mexicana, SA de CV. Mexico**

2005

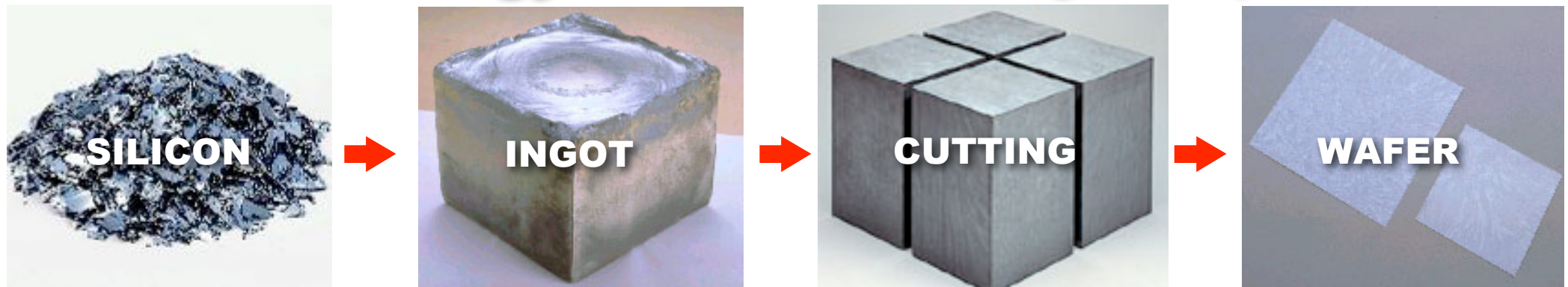
**Established Kyocera Solar Europe. Czech Republic**

**Poly-Crystalline Silicon: World Record Holder  
Module: Global Production (4 countries)**



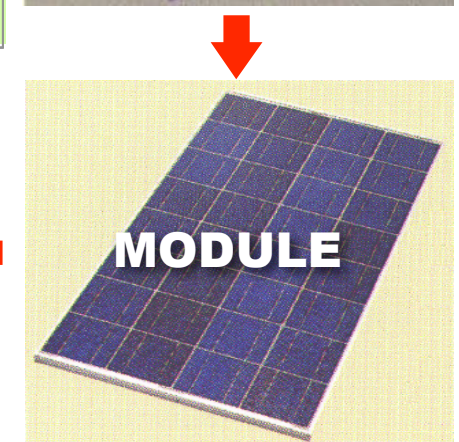
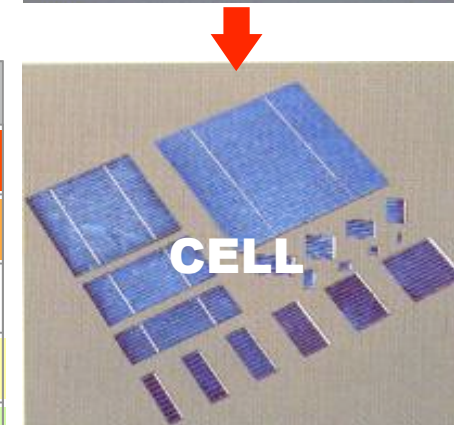


# 4. PV Technology Innovation: Integrated process



Main PV Business Sector Distribution

Ingot	→ Wafer	→ Cell	→ Module	→ System





## 4. PV Technology Innovation: Solar Center



**PUMP(AC)**



**PUMP(DC)**



**FOUNTAIN**



**PV Diesel**



**VILLAGE  
ELECTRIFICATION**

**KYOCERA SOLAR CENTER**  
*Sakura, Japan*



**Supports Basic Human Needs**



**SHS**



**TV, MONITOR**



**DC LIGHT**



**ICE MAKING**

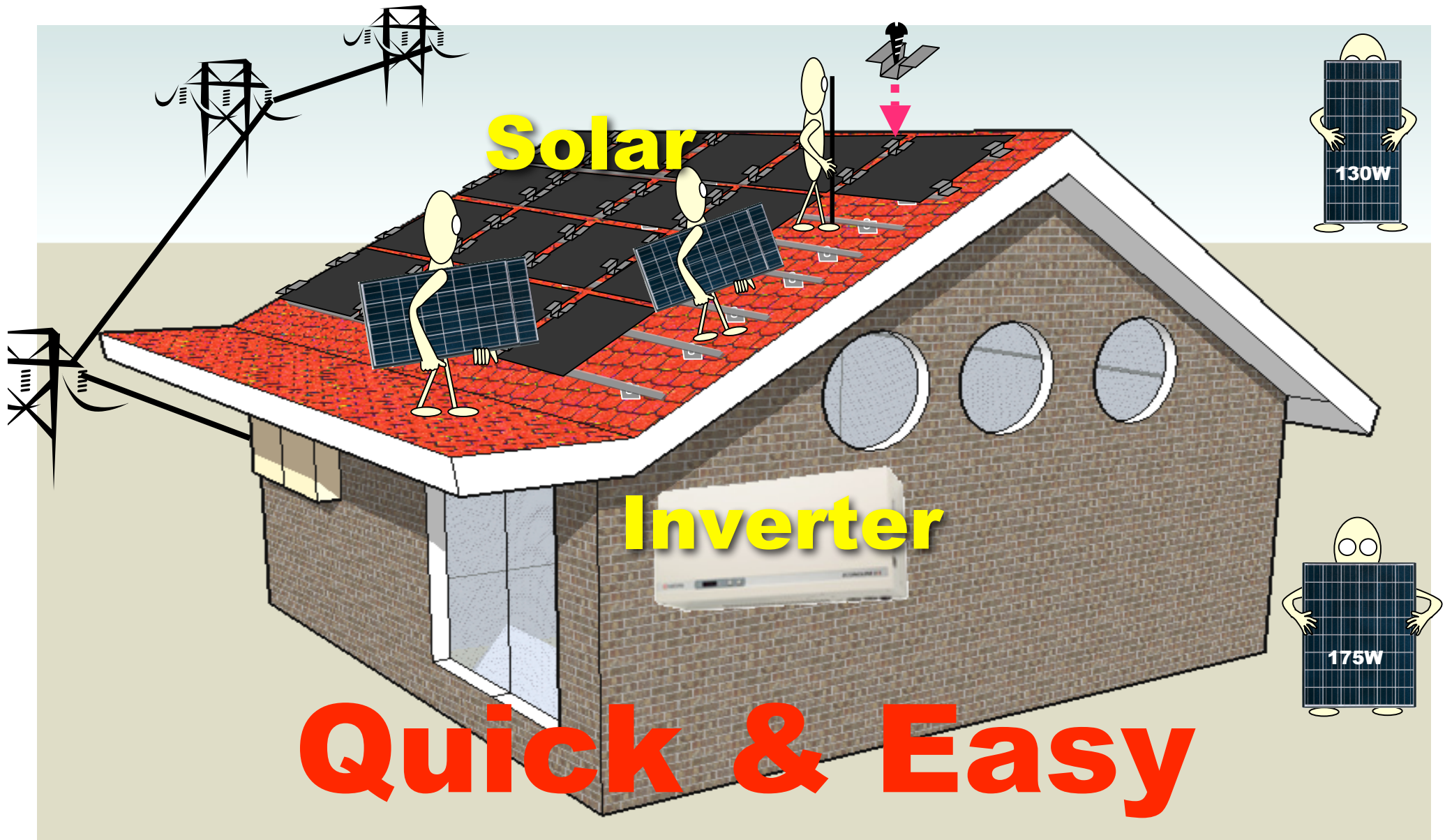


**MEDICAL Fridge**

**Welcome your visit!**  
**20 min. from Narita Airport**  
**5,000 visitors by now.**



## 4. PV Technology Innovation: On-Grid



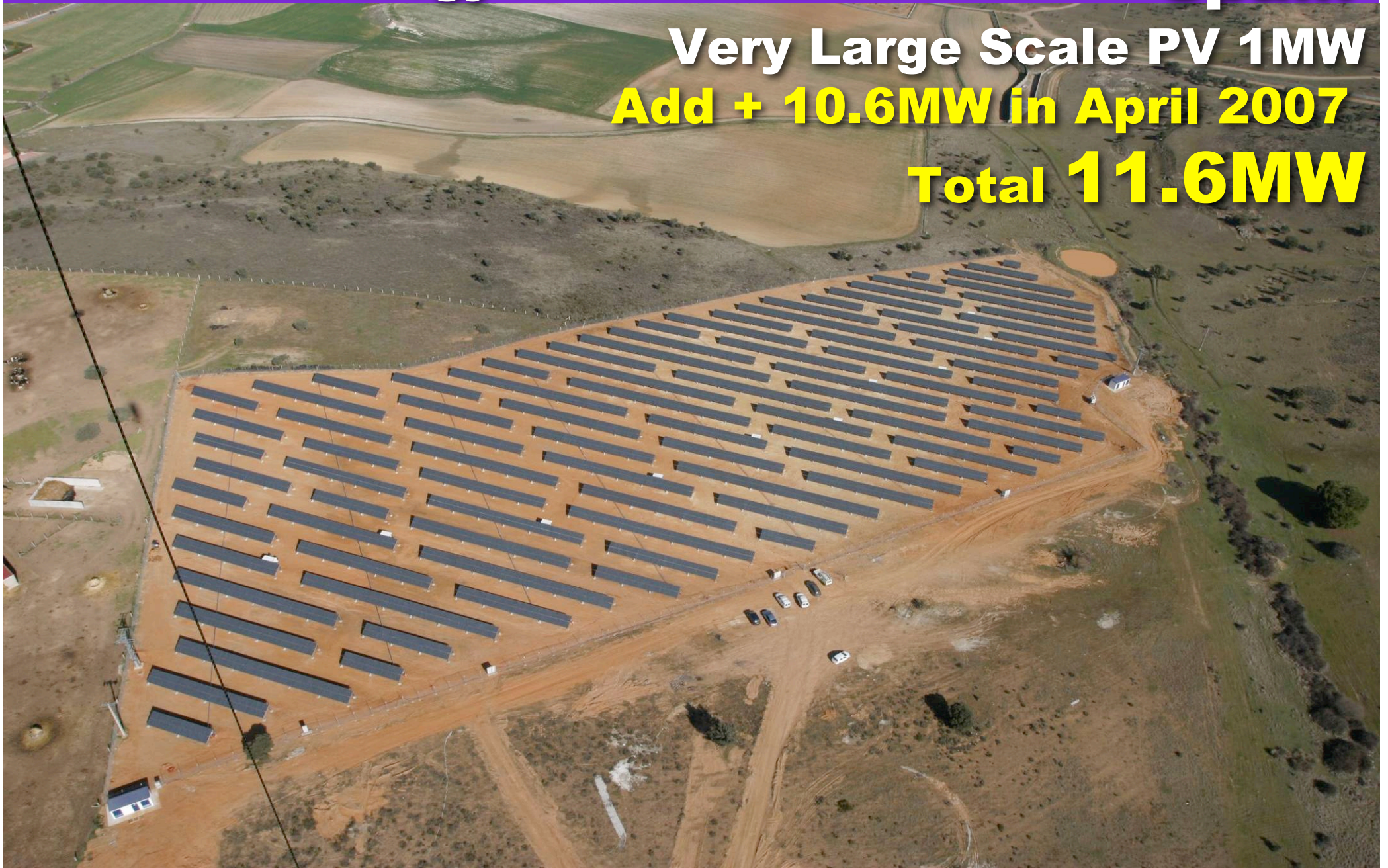


## 4. PV Technology Innovation: On-Grid **Spain**

**Very Large Scale PV 1MW**

**Add + 10.6MW in April 2007**

**Total 11.6MW**





## 4. PV Technology Innovation: On-Grid

# Switzerland

### Bern Football Stadium 1.35MW





## 4. PV Technology Innovation: On-Grid

Tokyo

### Water Purification Covering System



**450kW**

Company Confidential Property



## 4. PV Technology Innovation: On-Grid Nagoya

# Centrair International Airport



**240kW**



## 4. PV Technology Innovation: On-Grid

Kobe

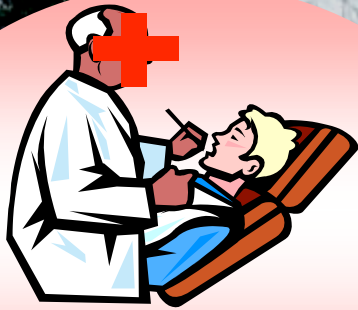
**ON-GRID : Residential  
Kyocera Solar installation in Japan**

**Solar Town**

Courtesy : PanaHome



## 5. PV Education: KYOCERA PV Promotion Activities



**Medical/Clinic**



**Water Pump**

**THE Packaged  
Multi Purpose  
Mini Solar Center**



**Education**

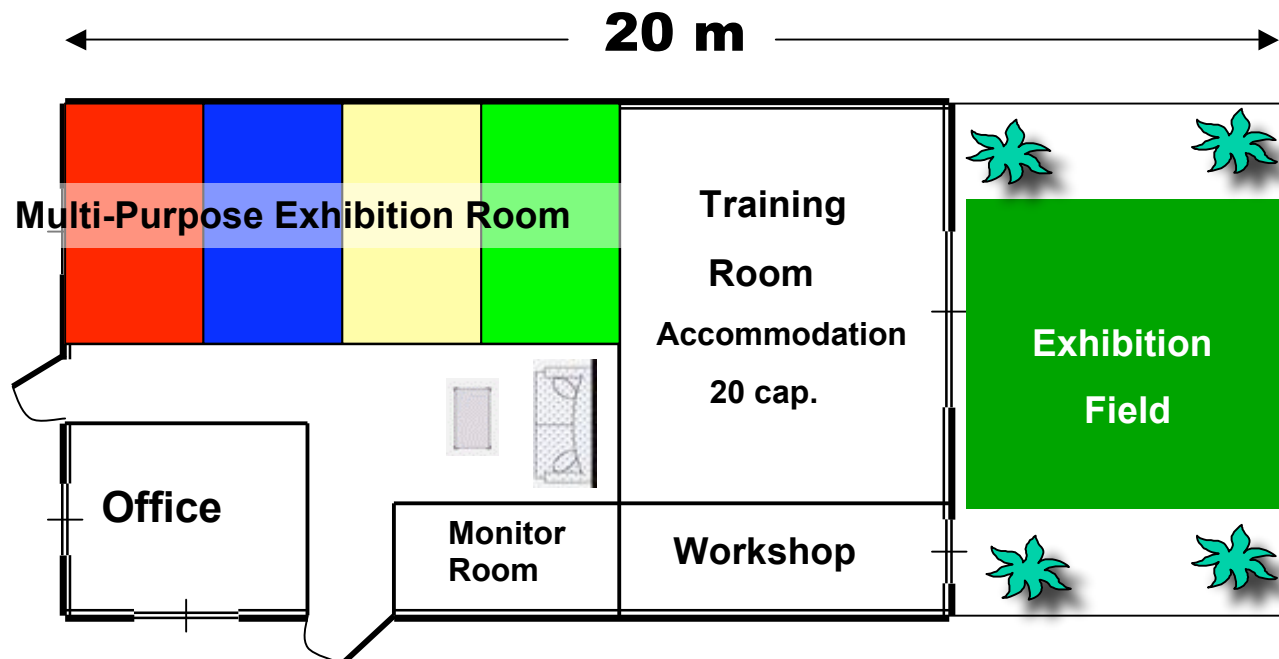


**Village  
Electrification**



## 5. PV Education

### Packaged MULTI Purpose Mini Solar Center Outline



※Multi-Purpose Exhibition Room to be re-arranged by local needs.

#### Utilities Required

- Electricity ; 50KVA
- Water service
- Telephone lines

## 5. PV Education: Off-Grid

# What a wonderful School in Kenya



**Kyocera Solar Modules**



**20ft container**



**Controller in a container**



**Students with laptop PC**



**Opening Ceremony**



## 5. PV Education: Off-Grid

## Cambodia

**Truck**



**Cow**



**Boat**



**Solar Energy** ➤ **Knowledge Energy**



**IT School**



**Installation**



**Hand**



## 5. PV Education/Promotion

## Bangladesh

Promotion & Awareness  
Development



A woman engineer demonstrating  
SHS's in public places

micro credit  
finance



## 5. PV Education: Promotion & Awareness Development

**Doctors find it less risky to operate by solar light**



**Schools & Libraries have installed SHS thus extending education facilities**



**Social Impact**





### Lecture on Demand Awareness Campaign





# 5. PV Education: KYOCERA PV Promotion Activities

## What solar panels can do ②

"Now I see a town. People are using solar panels all around town, at lots of places, like on houses, schools, soccer fields, hospitals, and the airport. Wow, I didn't know they were used at the South Pole, too."

# MANGA



"Here comes a panel delivered to a small village by bicycle. Will the electric lights really come on? Oh, here's the light! Wow! That's great!"

"One solar panel is a magic panel to make life better."



# MANGA



## 6. BASIC HUMAN NEEDS: Off-Grid

# SHS :Solar Home System

**PV 40W:**

**1 TV set  
4 Lamps**

**Village Electrification**





## 6. BASIC HUMAN NEEDS: Off-Grid Bangladesh

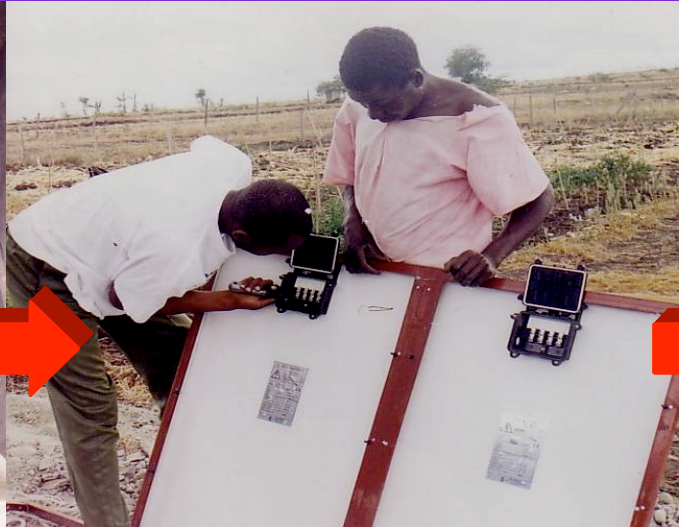
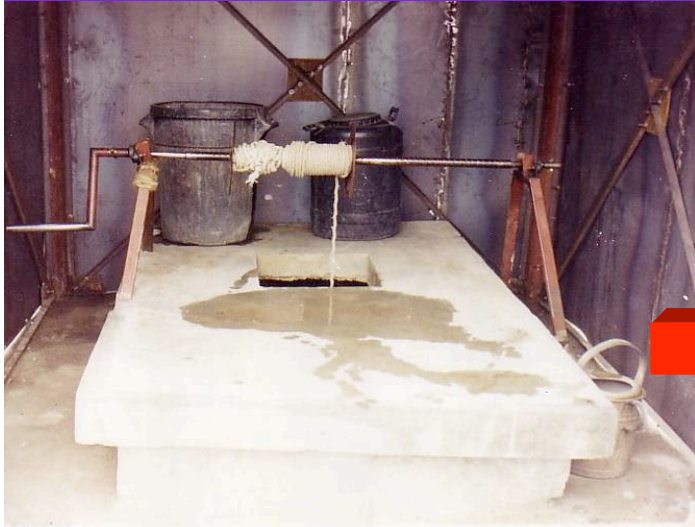




## 6. BASIC HUMAN NEEDS: Off-Grid

**Kenya**

**Water Pump**



**Solar Pumping System**



**After 1 year**



## 6. BASIC HUMAN NEEDS: Off-Grid

## Vietnam



**Water Pump**



**For the pumping**



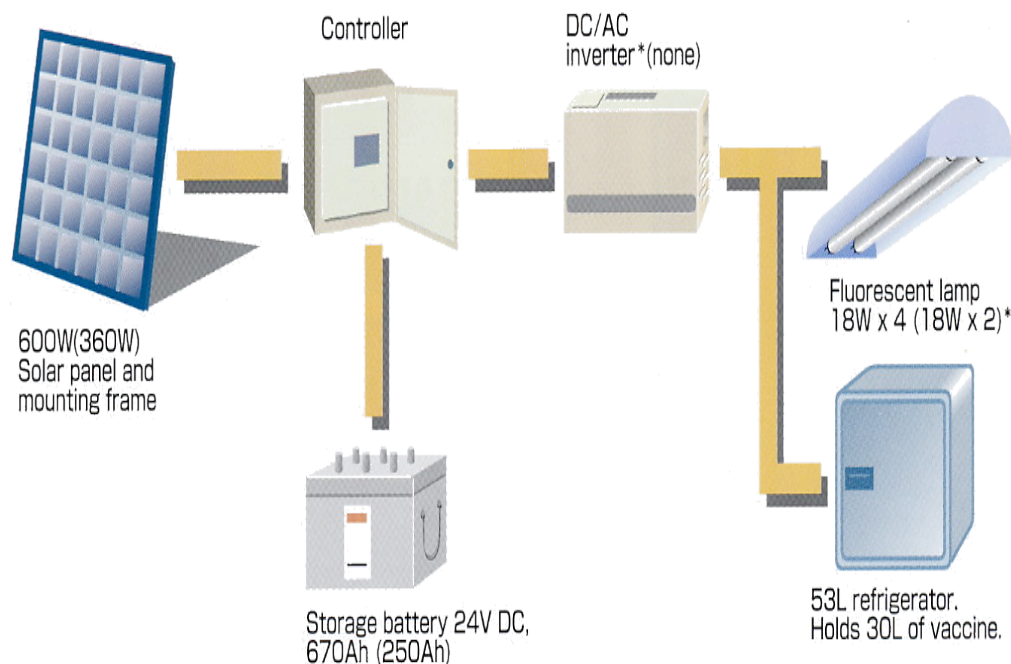


## 6. BASIC HUMAN NEEDS: Off-Grid

# Medical/Clinics

**Conserving vaccine and other sensitive medical supplies is crucial to the health of rural people.**

**Kyocera has been a global leader and earned a World Health Organization ( WHO ) and UNICEF designation as a Qualified System Supplier of solar powered vaccine refrigeration systems.**





## Solar Refrigerator Moving Hospital

Life Is Carried  
The Vital



## 6. BASIC HUMAN NEEDS: Off-Grid

**USA**

**RE New Version  
Telecommunication**



**Brazil**



**Rwanda**



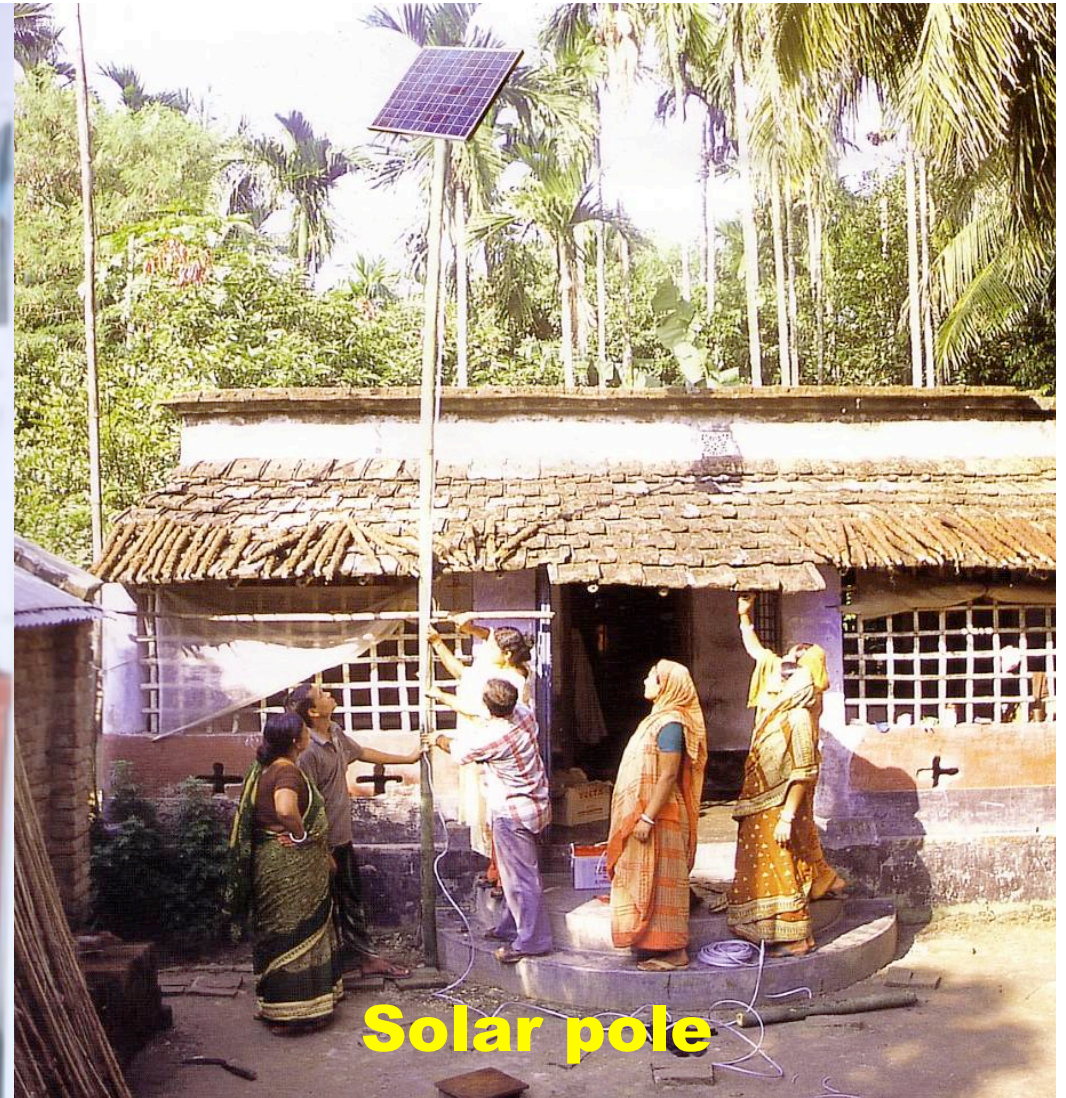


## 6. BASIC HUMAN NEEDS: Off-Grid Bangladesh

**SHS powered mobile phones-  
connecting people around the world**



**Solar mobile**



**Solar pole**



## 6. BASIC HUMAN NEEDS: Off-Grid

## Sri Lanka

Introduction to  
village people



**From Sri Lanka**



## 6. BASIC HUMAN NEEDS

**Knowing There is Enough!**



吾唯足知

© Wikipedia

**for The People, for The Earth**

© Wikipedia



美しい地球を次世代に



**What a Wonderful Job!**  
to be thankful

太陽の恵みに感謝して  
愛と誠と調和をベースに生きる

