## **UN Expert Meeting on Renewable Technologies as Energy Solutions for Rural Development; February 10th, 2010**



## **DWS Green Investments**

1<sup>ST</sup> CHOICE FOR YOUR MONEY.



**DWS Fund Management** 

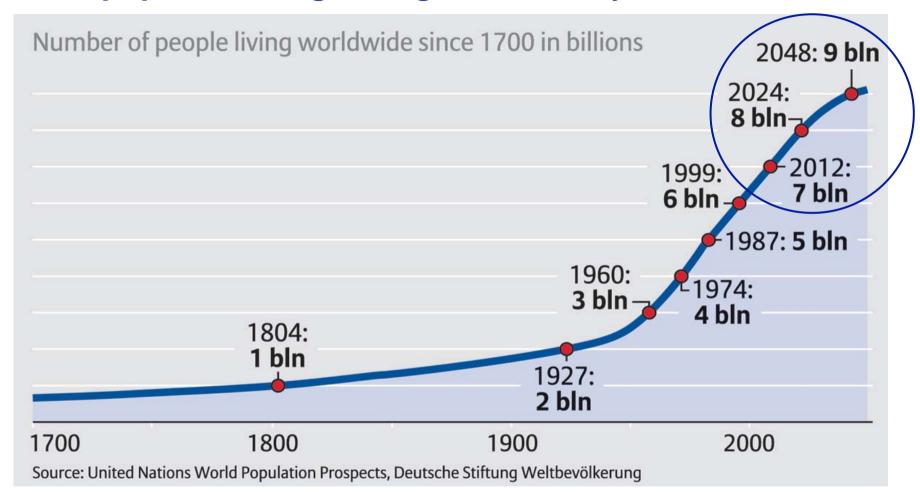
Nicolas Huber, Nektarios Kessidis, Paul Buchwitz, Holger Frey



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## World population is growing dramatically...



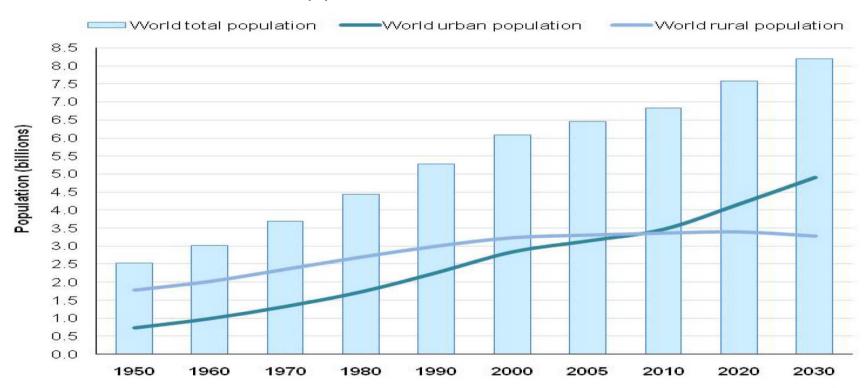


Every year an additional 80m people (the population of Germany) are demanding energy and resources

## ...especially in the cities...



#### World population trends - urban - rural breakdown





## ...increasing scarcity of basic resources.















## **DWS Invest New Resources Thematic Overview**



#### Water:

- Fixed supply but explosive demand growth
- Only 1% of the world's water is drinkable
- Demand will triple over the next 30 years

#### **Agriculture:**

- Climate change and population growth are reducing the amount of arable land
- Greater crop resistance is essential
- Increase in living standards changes dietary habits





#### **Renewable Energy:**

- Supplies of fossil fuels will be exhausted within the foreseeable future: oil production to peak in 2009!
- Importance of alternatives will increase dramatically
- Renewable energy lessens dependence on imported fossil fuels



## **Global water trends**



#### **Driver:**

- Aging water infrastructure
- Building new water infrastructure
- Fighting water pollution
- Mining water causing distressed groundwater levels
- Dealing with Climate Change



US, Partly Europe



China, India

India

**Global** 



Global water demand will triple over the next 30 years!



## **Key drivers for growth in the water industry:**



- 1. Fixed supply, explosive demand growth
- 2. Climate change leads to drier land requiring more irrigation
- 3. Neglected water infrastructure in developed and water stress in emerging economies

#### **Investment opportunities in the water industry**

### Distribution & management

- Utilities
- Distribution / piping
- Pumping
- Management/ engineering

#### **Purification**

- Waste water cleaning
- Filter systems
- Disinfection
- Desalination
- Monitoring

#### Consumer efficiency

- Home installation
- Grey water recycling
- Water meter



## Food supply is at risk

#### Growing Population and available acreage per person 1950 10,000 0.50 9,000 0.45 8,000 0.40 2020 7,000 0.30 5,000 0.25 4,000 2050 3,000 2050 1960 1970 1980 1990 2000 2010 2020 2030 2040 Arable land available per person (RHS) —World population (LHS)



Urgent need to increase productivity, but how?



## Agriculture: the growth market of the future



#### Demand for soft commodities in a strong long-term uptrend:

- 1. Population growth
- 2. Decreasing farmland per person
- 3. Increasing urbanization
- 4. Rising income in emerging markets causes protein consumption to rise sharply

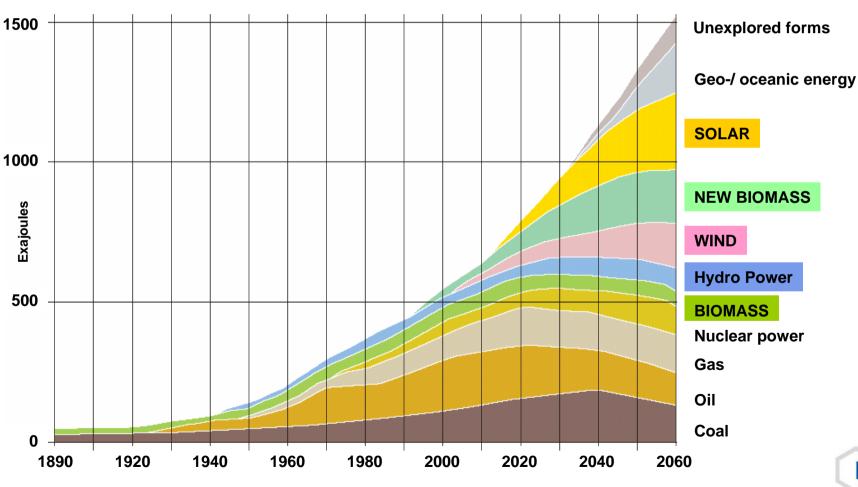
#### DWS Invest New Resources invests in:

Seed Fertilizer Pesticides Engines / Machinery Food



## Alternative Energy will play the most important role in meeting the rising demand

### **Shell-energy forecast: World energy demand until 2060**

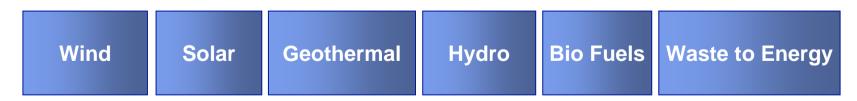


10 Green Investments Source: Shell, 2006

## World electricity demand is set to double by 2030\*

- Wind is the most competitive renewable energy technology
- National energy security and reduction of green house gases are key issues for developed and emerging countries
- Utilities are investing in wind and solar parks as an attractive alternative to centralized electricity generation
- New investment opportunities in power storage arise
- Asian solar companies will profit from structural change (decreasing silicon spot prices, improving quality of Chinese modules and attractive production cost structure in China)

#### DWS Invest New Resources invests in:





**DWS Fund Management** 

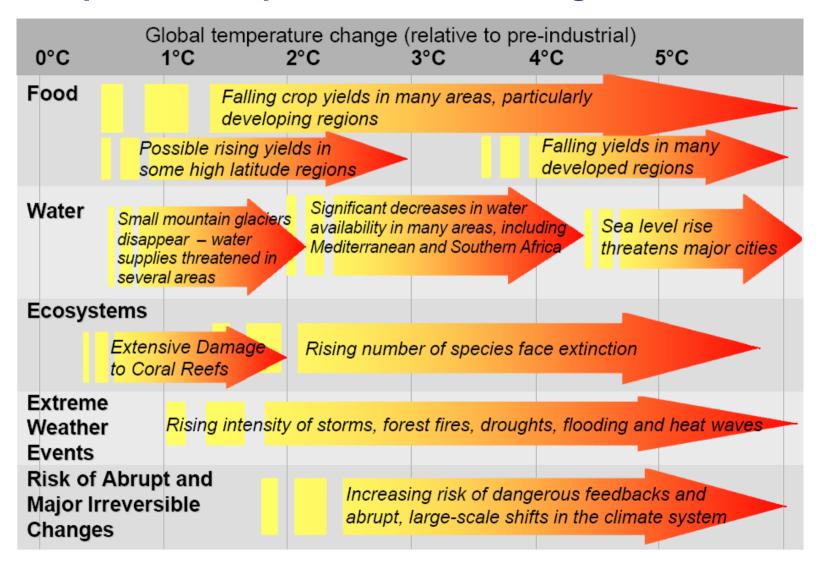
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## The potential impact of climate change is immense...





...and confronts the world with enormous challenges, but also holds large opportunities.

Investment opportunity = Clean Tech +

Energy Efficiency + Environmental Management

- Adaptation to Climate Change
- ♦ Avoidance of■ emissions
  - ♦ Reduction in emissions

**Opportunity** 

Challenge

- Greenhouse gas emissions
  - Global warming
  - Amount and distribution of precipitation
- ♦ Rise in sea level
- Environmental disasters



Source: DWS

## Substantial business opportunities will emerge and DWS Invest Climate Change Fund capitalizes on them

Reduction of greenhouse gases (Mitigation)



Adjustments to climate change (Adaptation)



#### Clean Tech

- Emission-reduced power generation
- Mobility / Transportation
- Natural resources
- Filter systems

#### **Energy Efficiency**

- Facility management / HVAC
- Light systems
- Insulation
- Consumer electronics
- Infrastructure
- New materials

**Environmental Management/ Limitation of Damage** 

- Waste management
- Biotechnology
- Advisory
- Reconstruction



## DWS Invest Climate Change Offering a broad range of investment opportunities

### **Clean Tech**



- Emission reduced power generation
- Mobility / Transportation
- Natural resources
- Filter systems

### **Fund investments:**



- Wind, solar, hydro, biofuel, geothermal
- Battery tech, electric vehicle products, railway operators
- Timber companies
- Air pollution filtration products



## DWS Invest Climate Change Offering a broad range of investment opportunities

## **Energy Efficiency**



- Facility management / HVAC
- Light systems
- Insulation
- Consumer electronics
- Infrastructure
- New materials

### **Fund investments:**



- Building automation, energy management, building services
- LED, production equipment & chip component manufacturer
- Thermal insulation materials producer and distributors
- Stand-by solution technologies (integrated circuits AC-DC)
- Smart Grid technologies, electric cable producer
- Carbon, fiber-reinforced composites, superconductor



## DWS Invest Climate Change Offering a broad range of investment opportunities

## **Environmental mgmt.**



- Waste management
- Biotechnology
- Advisory
- Reconstruction

### **Fund investments:**



- Waste to energy, recycling, energy recovery
- Enzyme producer
- Environmental & emission advisory
- Dike builder, dredger, irrigation, desalination
- Land reclamation, rebuilding





# **Green Investments and Rural Development**

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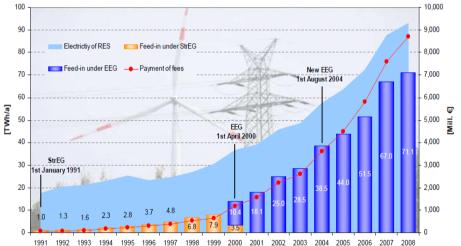
**Deutsche Bank Group** 

## **Local example: Germany**

- Feed-in electricity tariffs have been introduced in Germany to encourage the use of new energy technologies such as wind and solar power
- Under the EEG (Renewable Energy Sources Act) the majority of electricity from renewable energy sources is fed into the grid and paid according to the tariffs
- As the feed-in tariffs are providing planning security electricity generation from renewable energy sources is increasing steadily
- Companies that arise in this young industry are settling in structurally weak regions, in particular the newly formed German states (e.g. Q-Cells, Roth & Rau)
- Solar- and wind parks are usually built in rural areas supporting the local economy and infrastructure







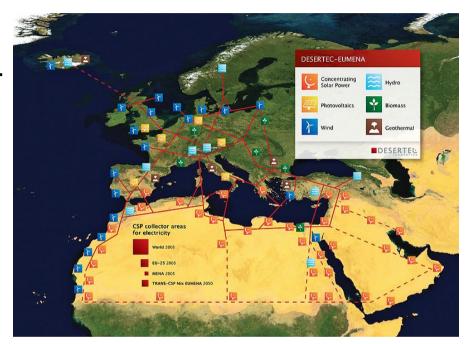
Feed-in payment under the Electricity Feed Act and the Renewable Energy Sources Act (EEG) in Germany since 1991

Source: Federal Ministry of Environment, Nature Conservation and Nuclear Safety, Version: December 2009



## Global example: Desertec

- Desertec is a technical, economic, political, social and ecological framework for carbonfree power generation in the deserts of North Africa
- Produce sufficient power to meet around 15% of Europe's electricity requirements
- Provide a substantial portion of the power needs of the producer countries. Electricity may also be used for water desalination.



- This international cooperation is designed to create new wealth and development perspectives for the North African and Middle East countries
- Increases political stability and reduces migration



carbon free power generation, job creating, transfer technological know how to developing countries and support rural development



## How to attract green investments in developing countries

- A lot of positive effects of green investments in developing countries...
  - Transfer of future-oriented technologies
  - Reduction of energy dependency
  - Reduction of energy costs
  - Job creation
  - Support the global fight against climate change



- Establishing a legal and economic framework
- Ensuring material and intellectual property rights
- Planning reliability



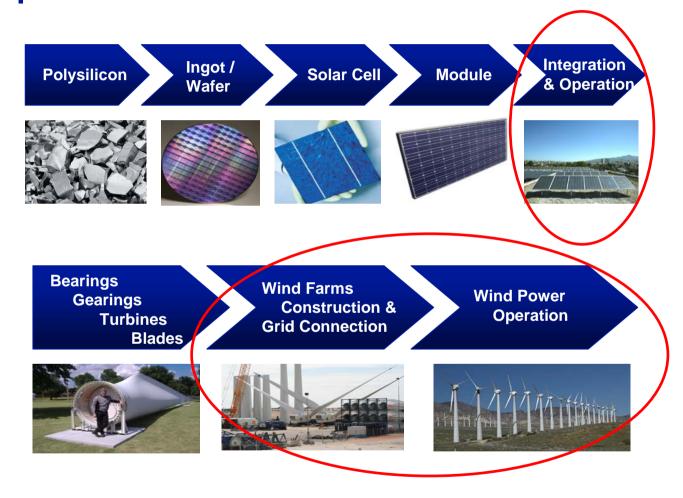




Provide attractive risk-adjusted rate of returns and a stable legal framework



## Which part of the value chains are of interest



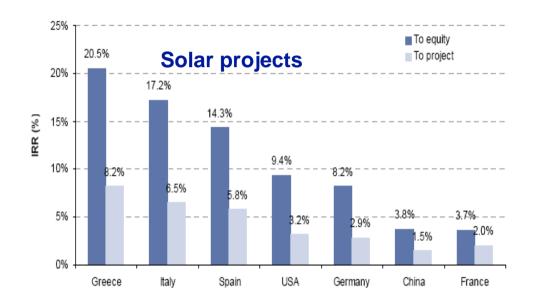


Downstream parts (integration and grid connection) can be easily covered by developing countries



## Important parameters of an IRR calculation

- Load factors for wind and sun shine hours for solar
- Land lease costs
- Cost of dept
- Equity requirement
- Duration of a project
- Feed-in tariffs



IRR to equity and projects, based on €4/Wp for Greece, Italy, Spain & France; €3.3/Wp for Germany (thin film) and €2.6/Wp in China & the US



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