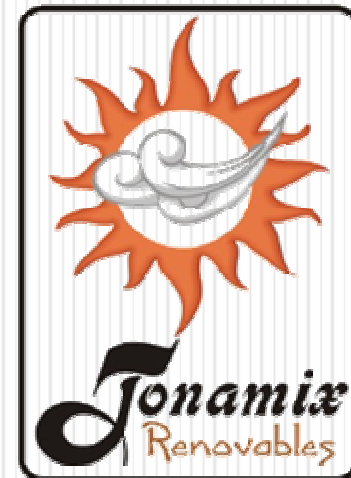


# CDM opportunities in Oaxaca

## IMRE alumni meeting Mexico 2012

M.C. Marco Sámano Díaz  
Tonámix Renovables



# Today

- Brief introduction to Kyoto Protocol
- Clean Development Mechanism description
- CDM projects in Mexico and Oaxaca
- CDM opportunities in Oaxaca
- Conclusions
- Questions

# What is the Kyoto Protocol?

- The Kyoto Protocol is an international and legally binding agreement to reduce greenhouse gas emissions worldwide. This agreement entered into force on February 2005, and it defined goals of CO<sub>2</sub> emission reductions for industrialized countries.  
(UNFCCC, 1998)



Source: UNFCCC website

# Annex I countries

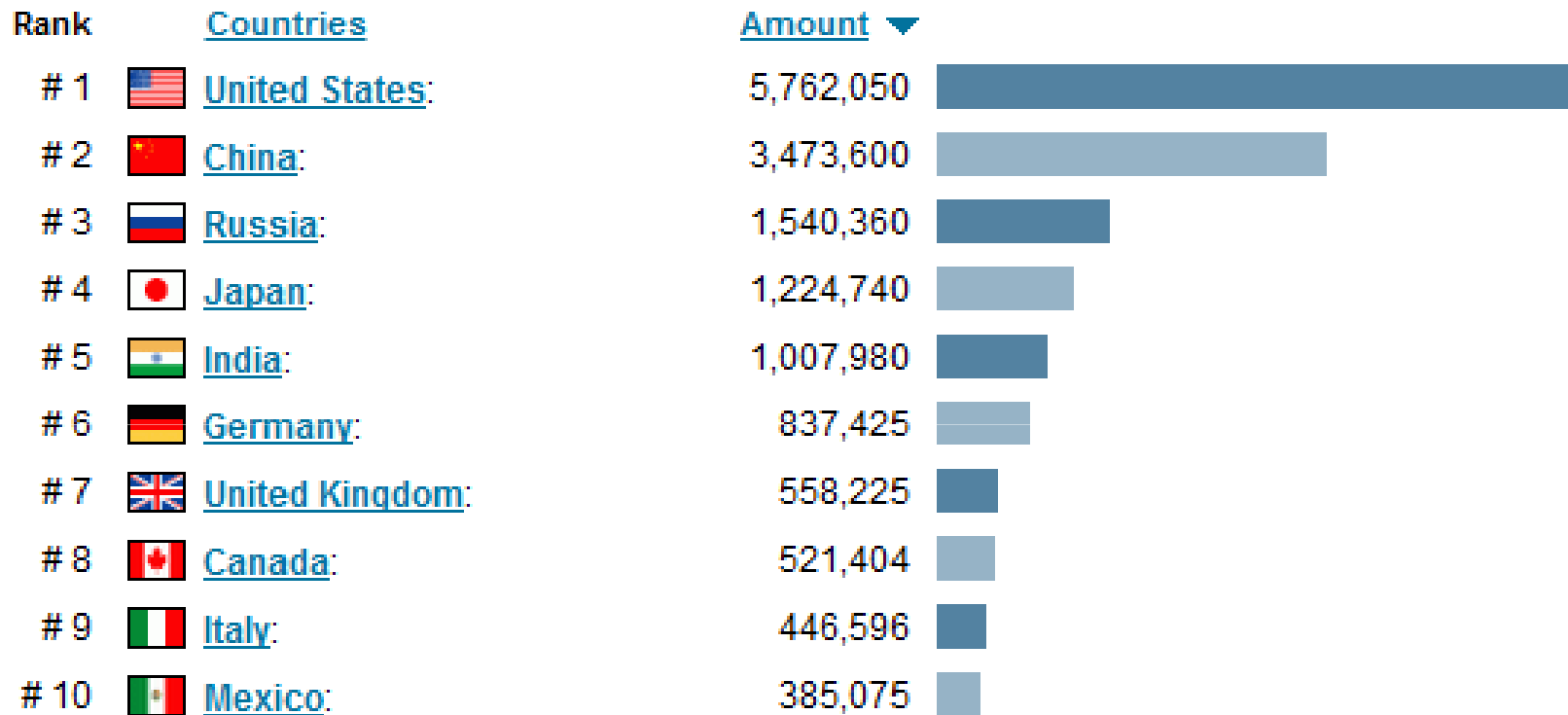
	Australia		Greece		Norway
	Austria		Hungary		Poland
	Belarus **		Iceland		Portugal
	Belgium		Ireland		Romania
	Bulgaria		Italy **		Russian Federation **
	Canada		Japan		Slovakia **
	Croatia **		Latvia		Slovenia **
	Czech Republic **		Liechtenstein **		Spain
	Denmark		Lithuania		Sweden
	Estonia		Luxembourg		Switzerland
	Finland		Monaco **		Turkey **
	France		Netherlands		Ukraine **
	Germany		New Zealand		United Kingdom
					United States of America

The EU is also listed as a participating Annex I party.  
 \*\* A party that already has a COP agreement in place.

Source: Mother Nature Network website

- Developed countries with high GHG emissions.
- Not included: China, India and México

# China, India, and México ?



Source: Nation Master website

- GHG emissions per country in 2010 (CO<sub>2</sub> tons)

# GHG reduction tools

- Countries included in Annex I are subject to the reduction of their collective greenhouse gases (GHG) emissions by 5.2% compared to the year 1990.
- The protocol offers three mechanisms to achieve these reductions:
  - **Emission Trading**
  - **Joint Implementation**
  - **Clean Development Mechanism.**

# Clean Development Mechanism

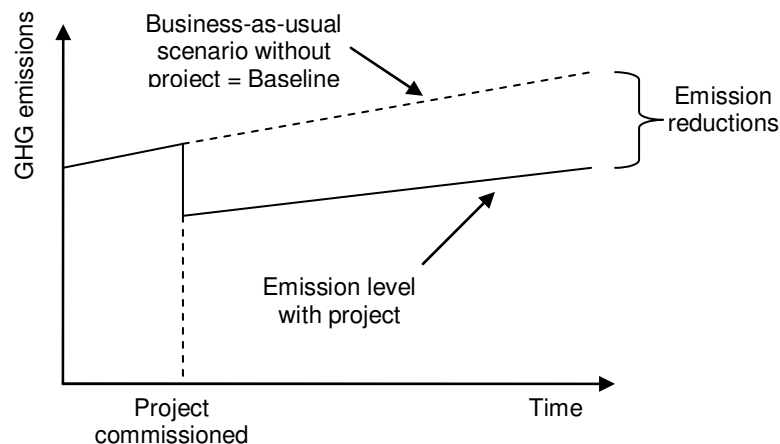
- The Clean Development Mechanism (CDM) allows a country with an emission-reduction commitment to implement an emission-reduction project in developing countries. The purpose of the mechanism is to stimulate sustainable development and emission reductions in developing countries, while giving industrialized countries some flexibility in how to meet their emissions reduction.

(UNFCCC, 1998)

# CDM project requirements

- In order to benefit from the Certified Emissions Reductions (CERs), a Clean Development Mechanism project is required to demonstrate that its effect is “additional” to the baseline scenario

**It must represent a reduction in GHG emissions**

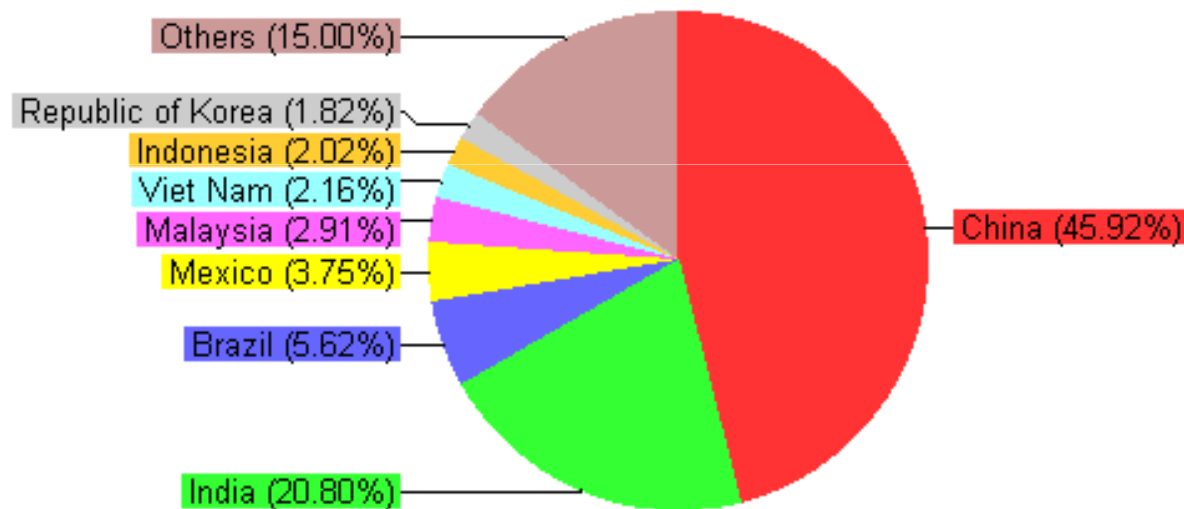


**A project activity is considered additional only if it allows emissions reductions that would have been otherwise prevented by financial, technological or institutional barriers**



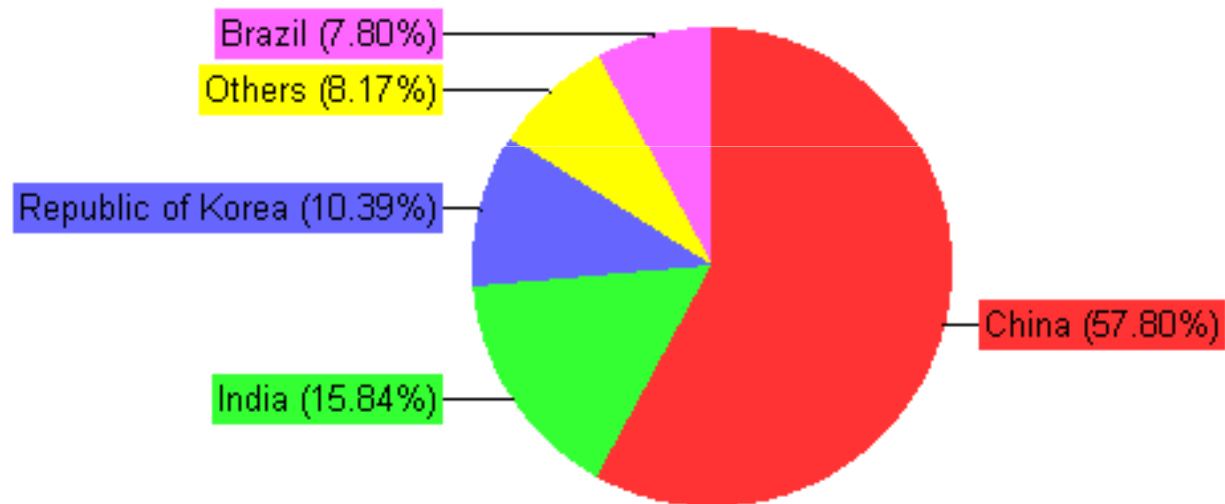
# CDM projects statistics

Registered project activities by host party. Total: 3,467



# CDM projects statistics

CERs issued by host party. Total 743,344,570



# CDM in Mexico and Oaxaca

- In Mexico there are 130 CDM projects. 14 of them are located in Oaxaca state. 50 CDM projects are renewable energy projects.
- 11 out of 14 CDM projects developed in Oaxaca are wind farm projects.

## Example: EURUS



Source: CEMEX website

# EURUS wind farm

- Largest wind farm of Latin America (249 MW)
- Property of CEMEX (cement manufacturer). It is registered under the self consumption scheme and supplies energy to both CEMEX and the Tecnológico de Monterrey system Campi.

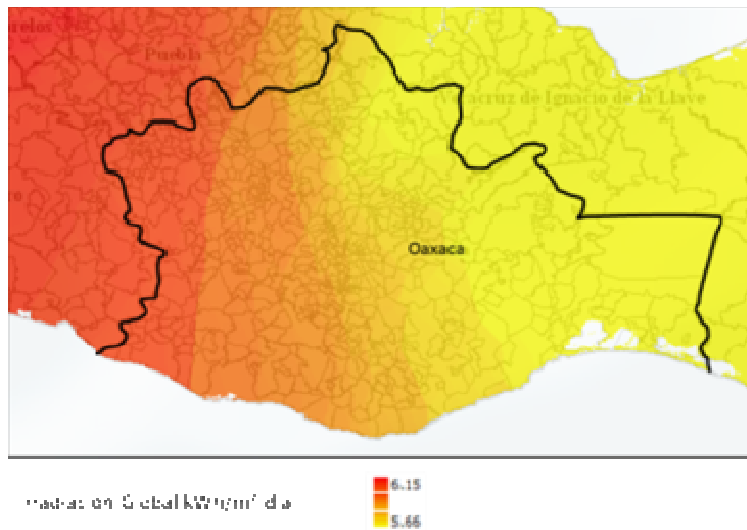


# Renewable energy potential in Oaxaca

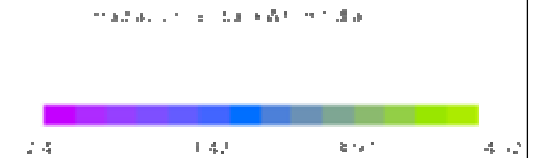
Annual Averaged Insolation Incident On A Horizontal Surface (kWh/m<sup>2</sup>/day)

● Oaxaca

● Germany



**5.30**



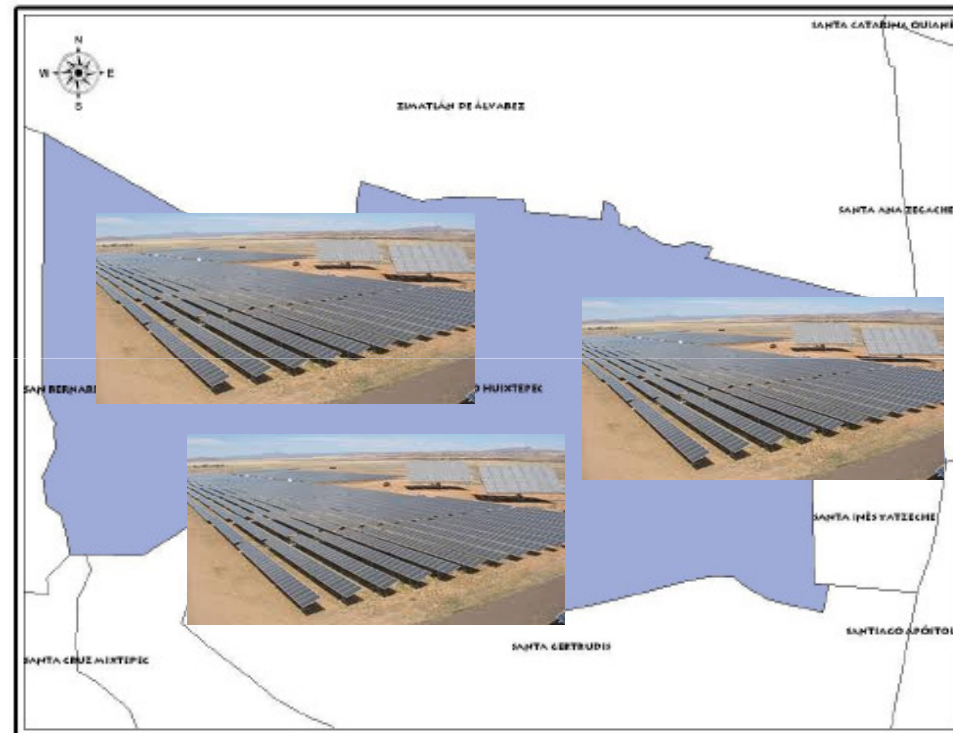
**2.87**

Source: NASA

# Renewable energy potential in Oaxaca

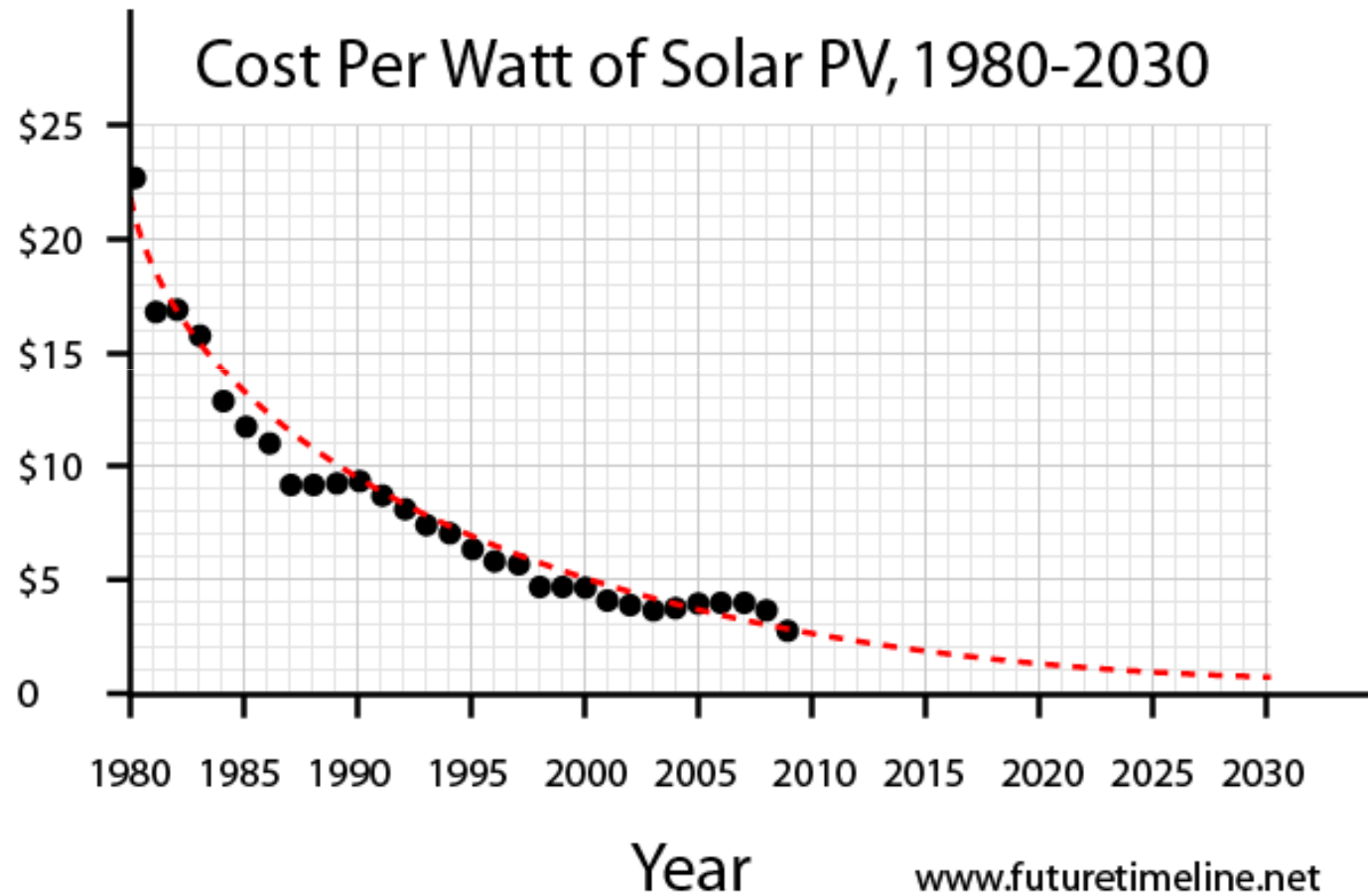
- San Pablo Huixtepec
  - Available area: 22.19 km<sup>2</sup>
  - PV efficiency: 17%

**7,297,514,350  
kWh/year**



*Enough to supply Uruguay, or Guatemala or  
Trinidad and Tobago*

# Renewable energy potential in Oaxaca



# Solar energy projects in Mexico

- 3.80 MW project (16,889 PV modules) in Aguascalientes property of “Autoabastecimiento Renovable S.A. de C.V.”
- Permit emitted by the Energy Regulation Commission (CRE) on February 3rd 2011

Annual Averaged Insolation Incident On A Horizontal Surface (kWh/m<sup>2</sup>/day)

**Aguascalientes,  
Aguascalientes  
5.91**

**Santiago Chazumba,  
Oaxaca  
5.91**

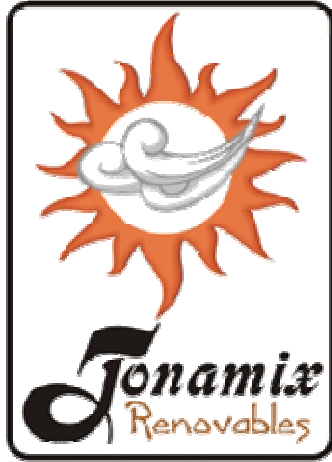


# Kyoto protocol dates

- First phase of KP ends in December 2012. What will happen then?
- Canada and California markets
  - California is on the path to meet its goal of reducing GHG emissions to 1990 levels by the year 2020, and ultimately achieving an 80% reduction from 1990 levels by 2050 with the cap-and-trade program
  - California is working closely with British Columbia, Ontario, Quebec and Manitoba through the Western Climate Initiative to develop harmonized cap and trade programs that will deliver cost-effective emission reductions

# Conclusions

- Oaxaca state has benefited from CDM compared to the rest of Mexico (high share of registered projects)
- However, there is no diversity on the projects registered. Solar energy potential has been neglected.
- Although CDM may “expire” in December 2012, there are still other markets for CER’s (California and Canada)



# Questions

