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# Carbon Income for Renewable Energy projects



*May 2010*

# This presentation

- What does the market look like and what are the perspectives?
- What are the emission reductions of the different technologies, what are investment and development costs and how much carbon income can be generated?
- What does this mean for your programme?

# Voluntary Carbon Market Data

	2004	2005	2006	2007	2008	2009
<b>VER volume Million tCO<sub>2</sub>e</b>	20	24	50	66	123	+/- 120
<b>CER volume (CDM) Million t-CO<sub>2</sub>e</b>		401	563	947	1.609	1.600
<b>VER Value Million US\$</b>	38	42	99	335	705	+/- 420
<b>CER Value Million US\$</b>			6.226	12.887	32.000	26.240
<b>VER prices US\$/tCO<sub>2</sub>e</b>			4	5	7,5 VCS 10,8 GS 1,6 CCE 3,6 Ind. gases	2 – 2,50 6,50–9,50
<b>CER price US\$/tCO<sub>2</sub>e</b>			11,06	16,29	19,88	16,40

# Prices in 2010 ?

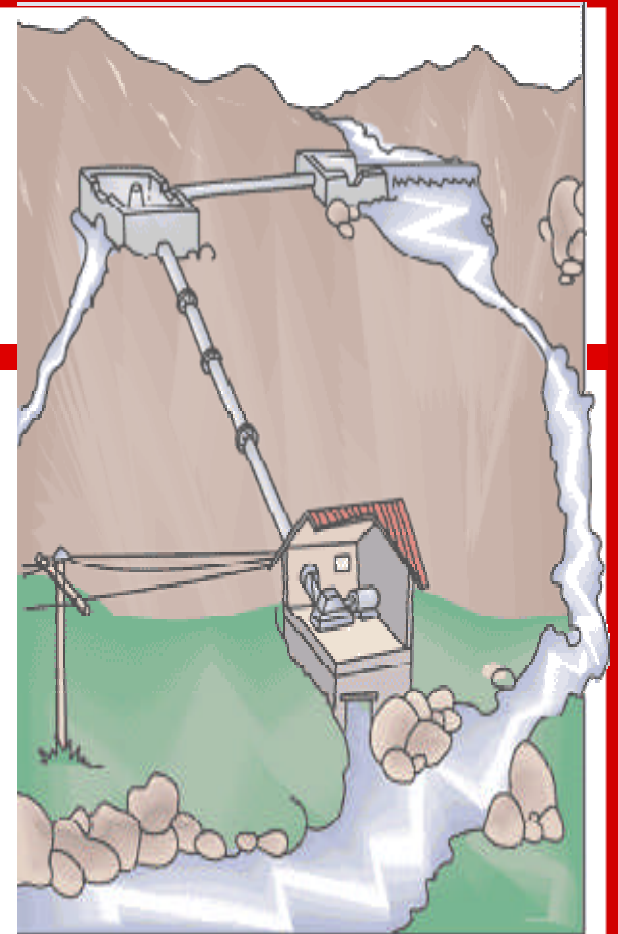
## Future prices: many drivers

- Economic crisis
- Large supply of cheap reductions in the market
- Outcome of Mexico (agreement, REDD, CCS, sectoral)
- Obama's carbon policy
- Company policies: CSR, pre-compliant
- EU commitment



# VER market is an emerging market

- Not a developed market, not transparent market, a volatile market
- No clear relation between the compliance and voluntary market, although the compliance market generally pays better
- Big differences between sectors and countries and individual transactions



# Volatile market, but:



## Trends

- Market will most likely grow: Australia, New Zealand, USA
- Market increasingly calls for third party certified reductions
- High standard pays

# Renewable energy technologies and carbon income

Different RE technologies vary a lot:

- Cost of unit of technology
- Emission reductions/household/year
- Investment per ton CO<sub>2</sub>e reduced
- Programme costs



# How much do you invest for 1 tCO<sub>2</sub>e for each technology?

US \$	Solar PV	Micro-hydro 200Wp/hh	Efficient wood stove	Domestic Biogas
Cost of unit technology	200Wp US\$ 1000	US \$ 2-3000/kW = 400 – 600 US\$/ 200W	US \$ 40	US \$ 800
CO <sub>2</sub> reductions/ family/year	1 t/2000kWh 350 kWh/year 0,175 tCO <sub>2</sub>	1 t/2000kWh 1400 kWh/year 0,700 tCO <sub>2</sub>	2 tCO <sub>2</sub> e	3 – 6 ton tCO <sub>2</sub> e
Investment US\$ per tCO <sub>2</sub> e reduced	US \$ 5700 /21years = US \$ 272	US \$ 600 /21years = US \$ 285	US\$ 20/tCO <sub>2</sub> e 10years US \$ 2	US\$ 200/tCO <sub>2</sub> e 10years US \$ 20

# Costs of Registration, validation and verification

Elements	US\$
• Base-line study	4,000
• Registration requirements	7,000
• Fees	
• Passport	
• Stakeholder consultation	
• Sustainability matrix	
• Non-renewable biomass calculations	
• Programme Design Document	4,000
• Validation	30,000
• Verification costs (10 years)	<u>120,000</u>
• Total	165,000

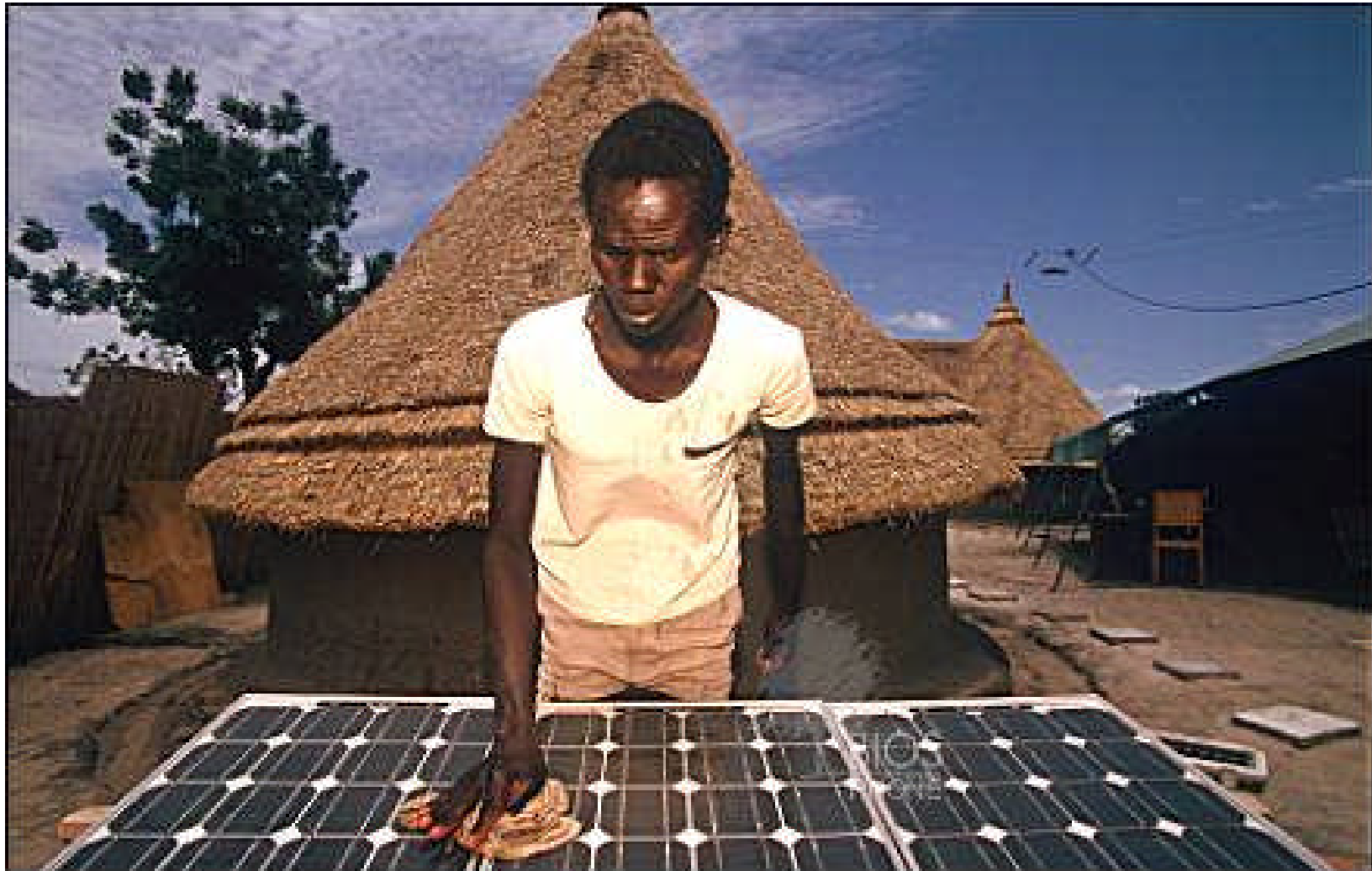
# What can you earn?

	Solar PV 200Wp	Micro Hydro 2000kWp	Efficient stoves	Domestic Biogas
Number of units	10,000	10,000	10,000	10,000
Number of CERs or VERs	36,750 (21 yr.)	147,000 (21 yr.)	200,000 (10 yr.)	400,000 (10 yr.)
Carbon Income (10 US\$/t)	367,500	1,470,000	2,000,000	4,000,000
Carbon income costs	165,000	165,000	165,000	165,000
Remaining (US\$)	202,500	1,315,000	1,845,000	3,845,000
Left for Subsidy	202,500	1,315,000	200,000	2,500,000
Left for Programme			1,645,000	1,345,000

# Conclusions

- The carbon market is uncertain, but seems to be growing
- Prices will be depressed as long as the crisis lasts and will depend on México outcomes
- In the case of solar PV, there is little left after deducting costs for subsidy or programme.
- In the case of Micro-hydro a significant subsidy can be paid from carbon income.
- In the case of domestic biogas the carbon income can provide a subsidy and pay part of the programme costs.
- In the case of efficient wood-stoves a profit can be made

# Thank you



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