



© 2002 FutureCamp GmbH Seite 1

:FutureCamp

**Use of The Kyoto-Mechanisms
for the Market Introduction
of Renewable Energies**

12th European Conference and Technology Exhibition
on Biomass for Energy, Industry and Climate
Protection
LAMNET-Workshop
Amsterdam, June 19th 2002

Roland Geres



The Kyoto Mechanisms



**Clean
Development
Mechanism**

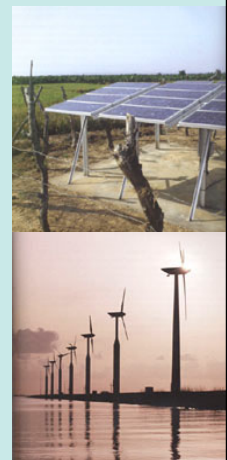
**Joint
Implement-
ation**

Project based Mechanisms



Clean Development Mechanism (CDM)

- Investments in projects to reduce GHG-emissions within *developing countries*
- Emission reductions must be real and measurable (verified by a third party or Operational Entities)
- Credits \Rightarrow *Certified Emission Reductions (CERs)*





Joint Implementation (JI)

= Investments in projects to reduce GHG-emissions
in *industrialized countries*,
e.g. *Economies in Transition (EITs)*

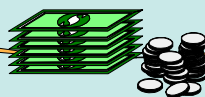
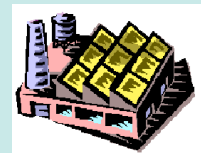
= Credits \Rightarrow *Emissions Reduction Units (ERUs)*



Emissions Trading (ET)

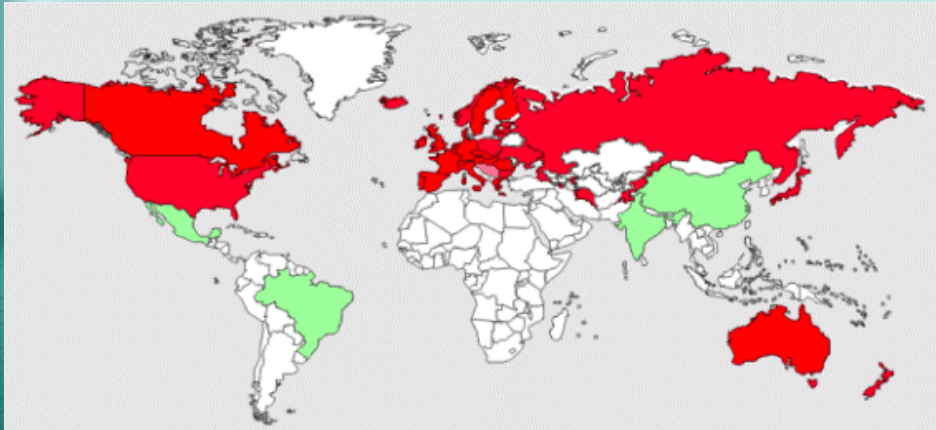


Trading of emission reduction credits
among developed countries or
directly between companies

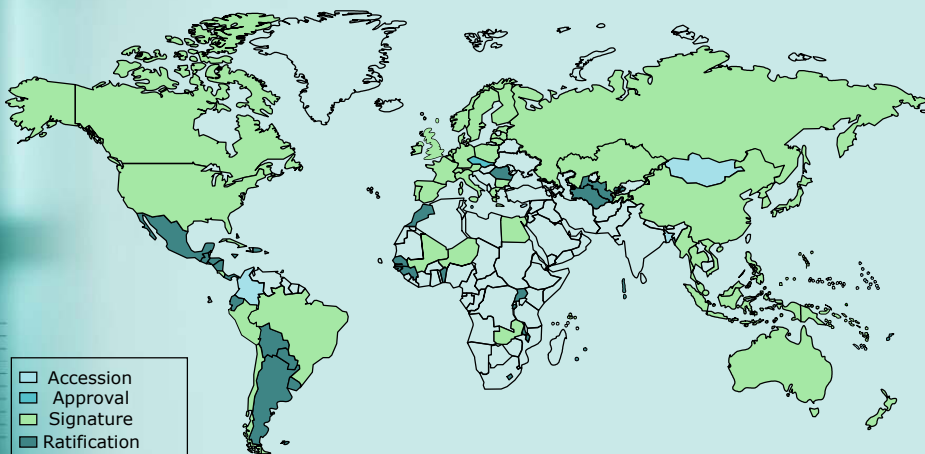




Annex-B and the World



Kyoto Protocol – Status of Ratification (11.04.2002)





JI & CDM – Most important Project Criteria



Kyoto-Protocol and the Marrakesh Accords:

- == Approval by Governments involved
- == Compatibility of project to national plans for environment and development
- == Real, measurable reduction of GHGs
 - ⇒ quantifiable Reference Scenario to project must be defined („Baseline“)
- == Environmental Additionality
- == „Financial Additionality“ (CDM, no substitution of ODA)
- == Under Discussion: „Investment Additionality“ (CDM)



JI & CDM – Projekt Criteria



- == Monitoring and Verification
- == Ecological Effect outside GHG-Reduction at least not negative
- == Social-Economic Effect at least not negative





The impact of emissions trading on renewable energies



The impact of CDM and JI on project finance

1/2

- The Kyoto Mechanisms provide a **new source of revenue** for operators of renewable energy facilities.
- Emissions trading as a **financial add-on** for investors that can
 - make a project more profitable or cost-effective,
 - sustain the company & shareholder value,
 - enhance price competitiveness and the competitive position of renewable energies,
 - mitigate the risk of insolvency,
 - secure credits / loans.





The impact of CDM and JI on project finance

2/2

- == Banks and insurances will henceforth demand from investors to gain credits out of CDM- & JI-projects to ensure the investments of the financial sector!
- == Emissions Trading opens new markets for renewable energies.



**Emissions Trading offers multiple chances
and new business segments
for renewable energies.**





Impact of Emission Trading – The Worldbank Experience with the Prototype Carbon Funds (PCF)

Assuming a revenue stream based on emission reduction (at US-\$ 3/t CO₂), the change in **internal rate of return (IRR)** of projects:

Project,
Not
Equity,
IRR.

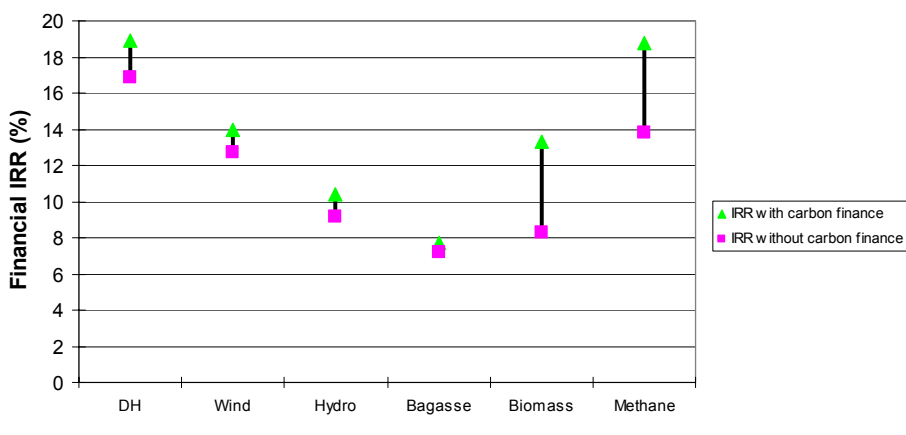
Technology	Δ IRR
Energy Efficiency - District Heating	2 – 4
Wind	0.9 - 1.3
Hydro	1.2 - 2.6
Bagasse	0.5 - 3.5
Biomass with methane kick	Up to 5.0
Municipal Solid Waste with methane kick	> 5.0



PCF, at PCF and Climate Change Synergy Workshop, Beijing, November 30, 2001



Impact of Carbon Finance on Sample Renewable Energy and Energy Efficiency Projects



PCF, at PCF and Climate Change Synergy Workshop, Beijing, November 30, 2001



Volumes and Prices of Emission Reduction without the US

Gross annual demand for ERs (between 2008 and 2012) 1400 to 2400 Mt CO₂

- Credits for *hot air* 950 to 2150 Mt CO₂
- Credits for Annex B *Sinks* ≈ 330 (≥ 200) Mt CO₂

= Net demand 0 to 1800 Mt CO₂

With full competition, the PCF market analysis suggests:

- ⇒ CDM trades from **near 0** up to **\$ 8 / t CO₂-eq**
- ⇒ More likely: range of **\$ 1.50 to 4 / t CO₂-eq**
- ⇒ PCF currently pays **\$ 3 to 4 / t CO₂-eq**

PCF, at PCF and Climate Change Synergy Workshop, Beijing, November 30, 2001



Impact of Carbon Finance on Project Financing at \$ 3/t CO₂

- = **Methane-capture projects:** carbon finance can turn "dogs" into "cash cows"
 - = **"Traditional" renewables:** boost return by 0.5-2.5 %
 - Off-grid projects have higher carbon factor
 - Makes marginal deals bankable
 - Reduces subsidy required – may attract ODA (addl boost)
 - = **Improves project's access to capital markets** through:
 - Certain, contractual cashflow from reliable counterparty
 - "Seal of approval"
 - Improved Quality of cash flows
- ⇒ Sponsor can borrow against contract (like PPA)



Example: Actual national biomass project of FutureCamp

__ Client: medium-sized company in Bavaria

__ Description:

- **Bundling** of more than 20 decentralised smaller biomass units to a single project
- Power supply to the grid

__ Aims:

- Reduction of Transaction Costs
- Enabling even medium-sized companies to take part in and to profit from emissions trading

__ Estimated outcome of verified emission reductions (VERs):

>10.000 t CO₂/a



Advantages and Results of the Biomass Example

__ Advantages:

- Standardised baseline for a multitude of small and medium local plants
- GHG-reduction integrated is only the reduction of Methane, not Carbon Dioxide, to avoid conflict with „Renewable Energy Law“
- The Monitoring-System is running



__ The system is under validation by **an independent party** and the first tranche is **already sold!**



What are the basic steps to realise a project?

- = Project Idea, Description and short check on CDM-Feasibility
- = Developing a „project design document“
 - Determination of the GHG-reductions in comparison to a reference scenario („baseline-study“)
 - Monitoring & Verification System
 - Integration in project development process
- = Validating the project design document by independent party
- = Registering the project by national and international institutions
- = Verifying the reductions ex post (annually), done by independent and liable verifiers



Options for the Biomass Community

- = Emissions trading and project based mechanisms can help to make projects economically viable
 - The impact will often be **marginal** – but marginality decides under a competitive economic environment
- = Biomass projects are favoured project-types by several countries and have a good competitive position in comparison to other renewables
- = Small Scale Projects (below 15 MW Installed Capacity) are favoured by a simplified procedure
- = Climate projects should be connected with given or planned business activities
- = Even if the direct economic impact is low, climate projects
 - Communicate clearly the decisive role of renewables for a sustainable energy future
 - Help to develop new businesses in new markets



**The Kyoto Mechanisms
can provide a significant source of revenue
for renewable energies!**

**CDM, JI & ET
will help to introduce
renewable energies into markets!**



Services of FutureCamp

- = Knowledge Transfer to your company
- = Support in any steps of the process by an interdisciplinary team
- = Elaboration of Project Design Documents
- = Implementation of the new Business Process



Contact

Dr. Roland Geres

Managing Director

FutureCamp GmbH

Chiemgaustr. 116

D-81549 Munich

Germany

Fon +49 (89) 68 008-330

Fax +49 (89) 68 008-333

roland.geres@future-camp.de

www.future-camp.de