


Impact of the Kyoto Mechanisms on Geothermal Development

Haustþing Jarðhitafélags Ísland

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Geysir Green Energy



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02 CDM and Geothermal
03 CERs
04 Application Process

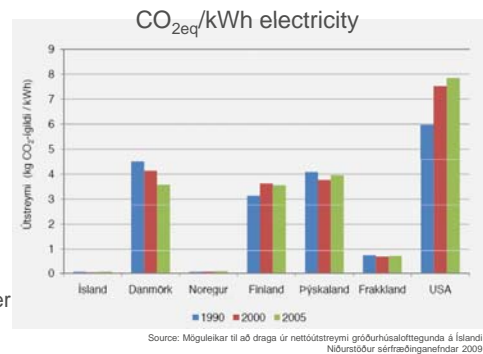


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Kyoto Protocol

Iceland

- Iceland:
 - Is a party to the Kyoto Protocol
 - Is an Annex I country (iðnríki)
 - Has binding targets
 - Icelandic provision: Decision 14/CP.7
- The energy sector contributed 4,1% of the total GHG emission in 2007
 - Mainly due to geothermal power plants!



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Kyoto Protocol

The Kyoto Mechanisms

- Emission Trading (Ísl: Viðskipti með losunarheimildir)
 - Known as “carbon market” or cap and trade
- Clean Development Mechanism (CDM) (Ísl: Hrein þróun)
 - Allows emission-reduction/removal projects in developing countries to earn carbon credits, Certified Emission Reductions (CERs)
 - CERs = 1 tone CO₂ equivalent
 - CERs can be traded, sold or used by industrialized countries to meet emission targets
- Joint Implementation (JI) (Ísl: Sameiginleg framkvæmd)
 - Allows Annex I country (with binding targets) to invest in emission reduction projects in another Annex I country
 - JI projects usually take place in East- Europe
 - No new credits generated

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CDM and Geothermal

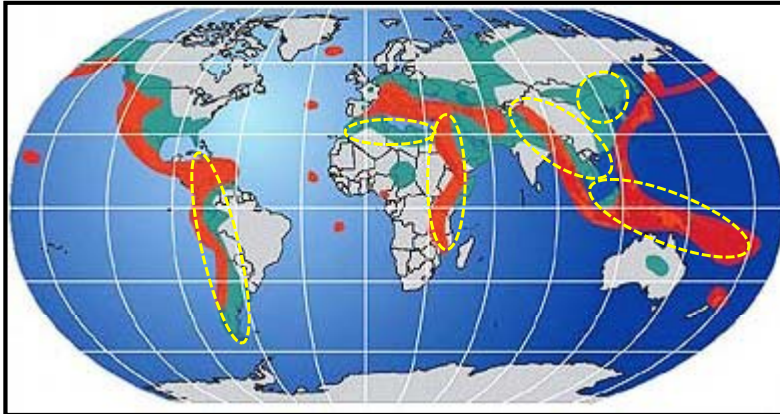
CDM Impact

- Prospects for geothermal energy utilization in the world are excellent
 - East African Rift Valley
 - Western margin of South America
 - Many other regions possess resources for direct use
- Not all countries with geothermal potential can afford to turn the resource into power or make them available for heating
- Interesting fact: Many of the attractive geothermal potential areas are situated in countries WITHOUT emission targets under the Kyoto Protocol
 - Potential CDM host countries

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CDM and Geothermal

World Geothermal Potential



Red: High temp areas
 Green: Low temp areas
 Gray: Area without geothermal potential
 Yellow circles: Mark potential CDM host countries


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CDM and Geothermal


Geothermal Projects

- Ability that the CDM creates
 - Carbon credits, CERs.
 - Additional revenue stream due to selling of CERs
 - Makes number of geothermal projects attractive that have hitherto been uneconomic
- CDM can promote and/or accelerate the development of geothermal energy utilization in developing countries

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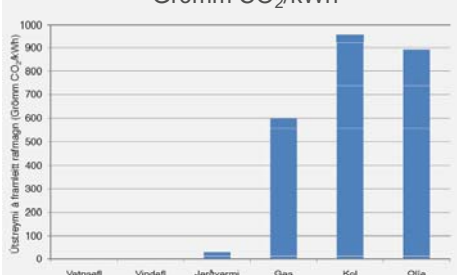


CERs

Emission Reduction

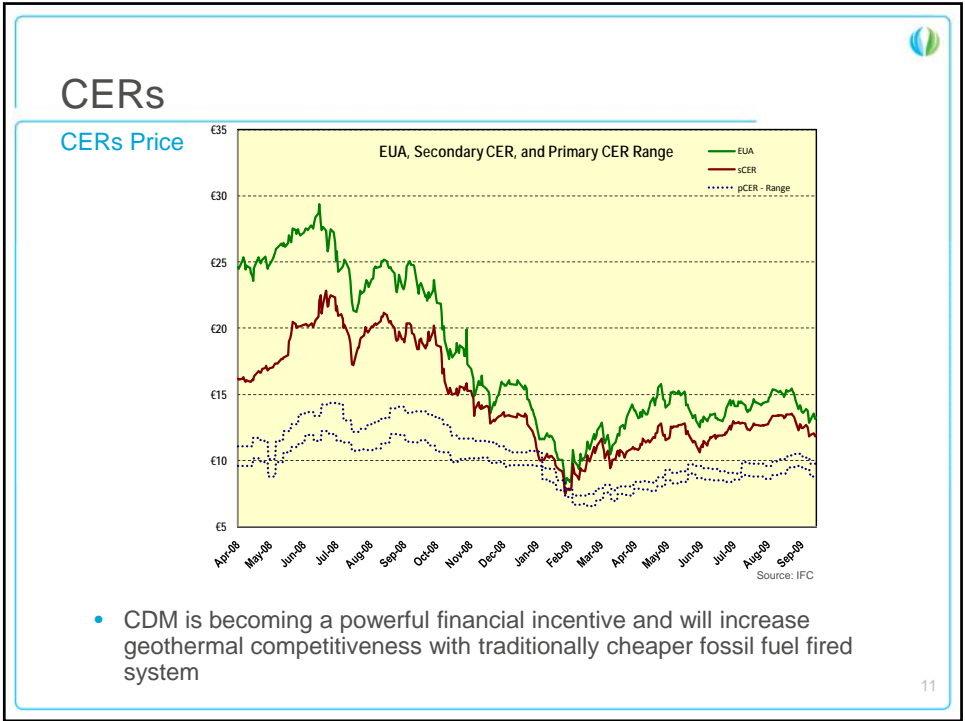
- Geothermal power project reduction
 - Approx: 0,5-0,75 tCO₂eq/MWh
 - Darajat Unit III (110 MW): 652 000 CERs/year
- Geothermal space heating project reduction
 - Coal replacement: 0,32 tCO₂eq/MWh (IPCC)
 - Xianyang Project: Approx: 100 000 CERs/year

Grömm CO₂/kWh



Source: "Möguleikar til að draga úr nettóútstreymi gróðurhúsalofttegunda á Íslandi" Nýrstoður sérfræðinganeftir 2009"

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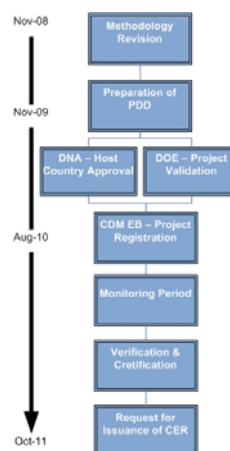
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Application Process

Time Schedule for Xianyang Project

- Time consuming application process
- Approved methodology
- Project eligibility
- Additionality
- Sustainable development



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Að lokum

Skýrsla Umhverfissráðuneytis um möguleika til að draga úr losun

- Íslensk stjórnvöld geta nýtt sveigjanleikaákvæði Kyoto bókunarinnar til að draga úr nettóútsreymi landsins
- Enginn vafi virðist á því að jarðhitaverkefni sem íslensk fyrirtæki hafa ráðist í og munu ráðst í geti uppfyllt öll skilyrði sem krafist er til að öðlast útsreymisheimildir og geta þau því haft verulega þýðingu við að draga úr nettóútsreymi á Íslandi verði þessar heimildir samþykktar hér og vilji fjárfestar flytja þær hingað.
- Með því að kaupa heimildir er stigið skref í þá átt að uppfylla alþjóðlegar skuldbindingar og hvatt til þátttöku atvinnulífs.
- Orkuþörf þróunarríkja eykst stöðugt og á því sviði búa Íslendingar yfir mikilvægri þekkingu og tækni til að aðstoða

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Takk fyrir

Thank You

