

Book, trade and claim systems in LCA: how to model certificates delinked from physical flows



Rolf Frischknecht, René Itten, Karin Flury
ESU-services GmbH



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Do you know «Black Peter»?



Card game,
also known as:
- old maid
- old boy

Contents

- Problem setting
- EECS® and RECS certificates
- Effects of RECS certificates in Norway and Belgium
- LCA of products and organisations
- Conclusions and recommendations

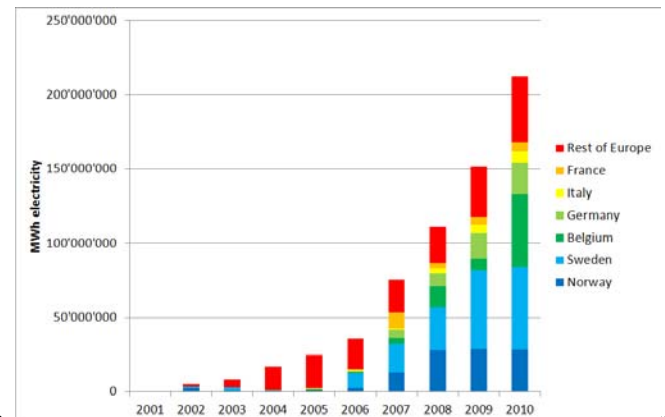
Problem setting

- More than 1 billion EECS® certificates (1 billion MWh) were issued since 2001
- Share of EECS® certificates issued is more than 6 % of European (entso-e) electricity production
- EECS® certificates are admitted in the electricity declarations of utilities
- Life cycle thinking standards (LCA, carbon footprint, water footprint) do not cover the issue

EECS® certificates

- contain standard information on the source of the energy, and its method of production
- are uniquely identifiable, transferable and therefore tradable
- are created (issued), change owners (transferred) and are eventually cancelled - made untransferable (i.e. are used up)
- operated by the Association of Issuing Bodies (AIB)

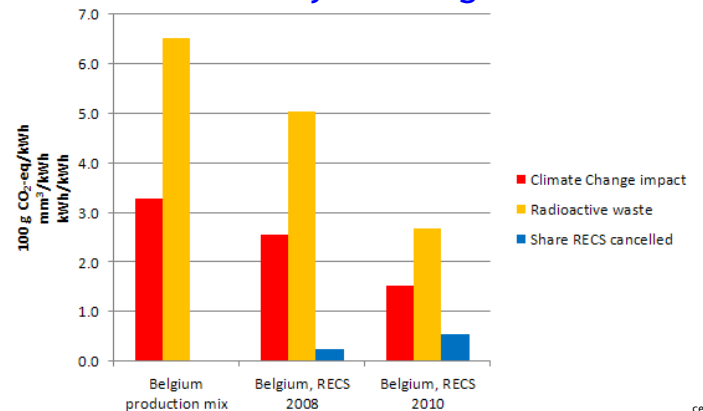
EECS® certificates cancelled (used up)



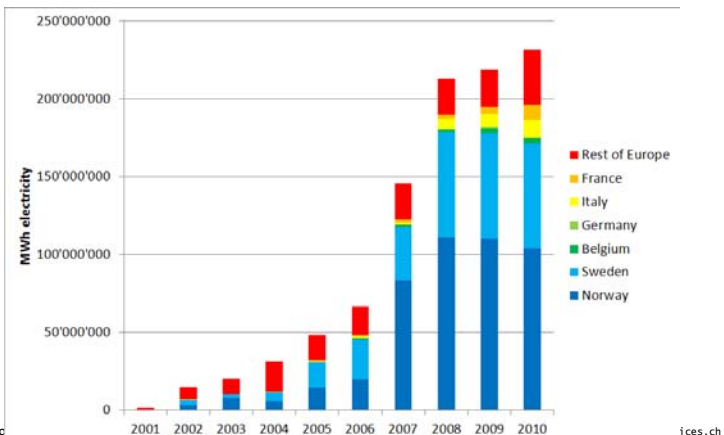
EECS® certificates in Belgium

- Electricity production: 78'500 GWh
- EECS® certificates imported: 53'400 GWh (68 %)
- EECS® certificates cancelled: 48'700 GWh (62 %)
- In 2010 Belgium cancelled about 62 % of EECS® certificates
- Substantial share of renewables in the Belgian mix

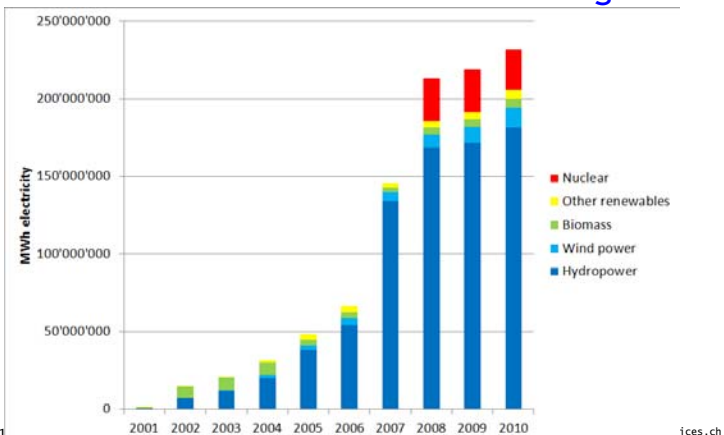
Environmental impacts of the electricity mix Belgium



EECS® certificates issued: countries



EECS® certificates issued: technologies

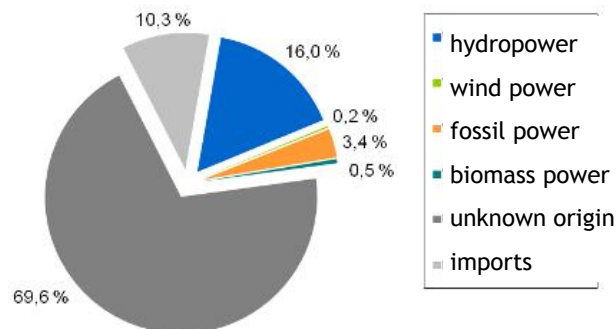


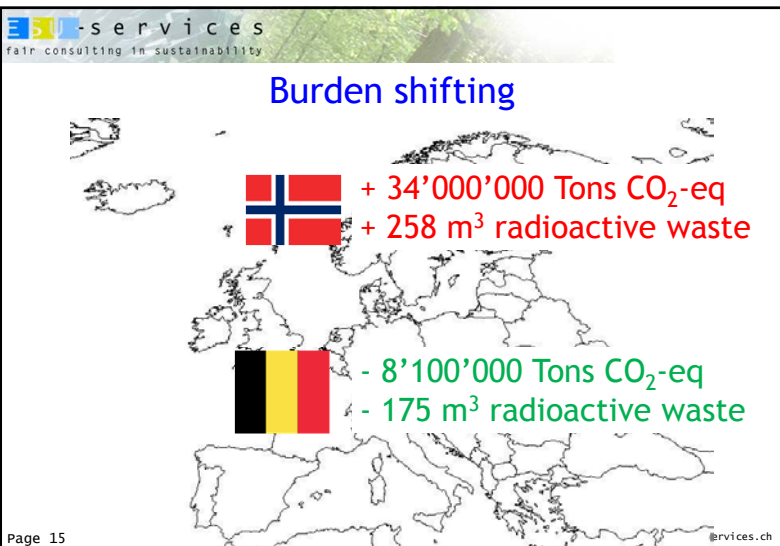
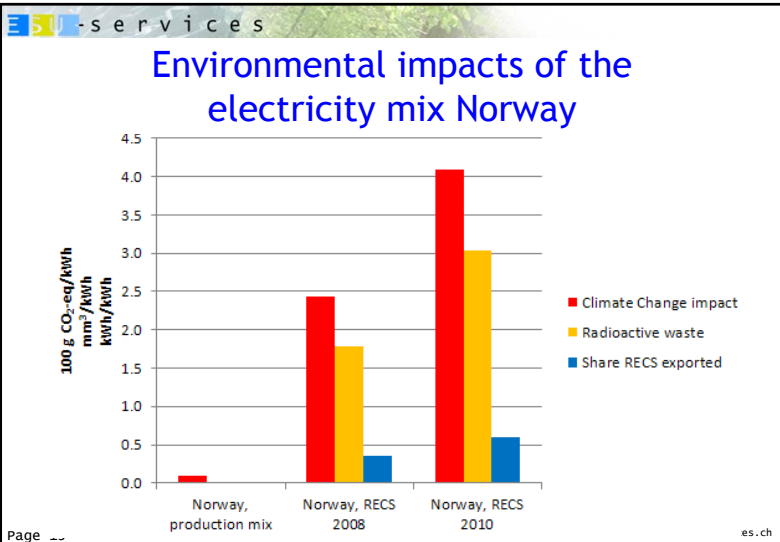
EECS® certificates from Norway

- Electricity production: 142'000 GWh
- EECS® certificates issued: 104'000 GWh (73 %)
- EECS® certificates exported: 85'000 GWh (60 %)
- In 2010 Norway exported about 60 % of hydropower quality
- Substantial share of unknown electricity quality in Norwegian mix

Norway's electricity declaration 2011

Varedeklarasjon 2011





- ESU-services
fair consulting in sustainability
- ### Electricity mixes in LCI databases: current state
- Supply mixes modelled according to the IEA electricity statistics
 - For some countries only (e.g. Switzerland):
 - «Whatever» mix according to national electricity declaration
 - «certified electricity» mix established with electricity products sold separately
- Page 16 www.esu-services.ch

Electricity mixes in LCI databases: outlook

- Reliable disclosure project:
Contributes to improve reliability and accuracy of consumer information
- Adjust national electricity mix LCIs according to the national electricity mix declarations
- Model share of «unknown origin» with non renewable share of entso-e mix

Conclusions

- Trade with EECs® certificates affect national mixes substantially
- National electricity statistics do not include EECs® trade
- Double counting of renewable electricity would occur, if independently purchased RECS certificates were allowed in product and organisations' LCA

Electricity mixes in product and organisation's LCA

Four options to purchase electricity

- Cheap: «whatever electricity» + certificate
- Bundled: «renewable electricity» + certificate
- Owned: «self produced renewable electricity»
- Locked: «no choice electricity» + certificate

LCI *



*: LCI of renewable power in product LCA

Recommendations

- «whatever» electricity plus certificate
 - «whatever» electricity in product or organisations' LCA
 - RECS is improvement measure (like CO₂ offsets)
- renewable electricity plus certificate
 - renewable electricity in product or organisations' LCA

