

Hydropower, a sustainable way for the future EU energy supply?

SHP- group
EVS run 2013-2014

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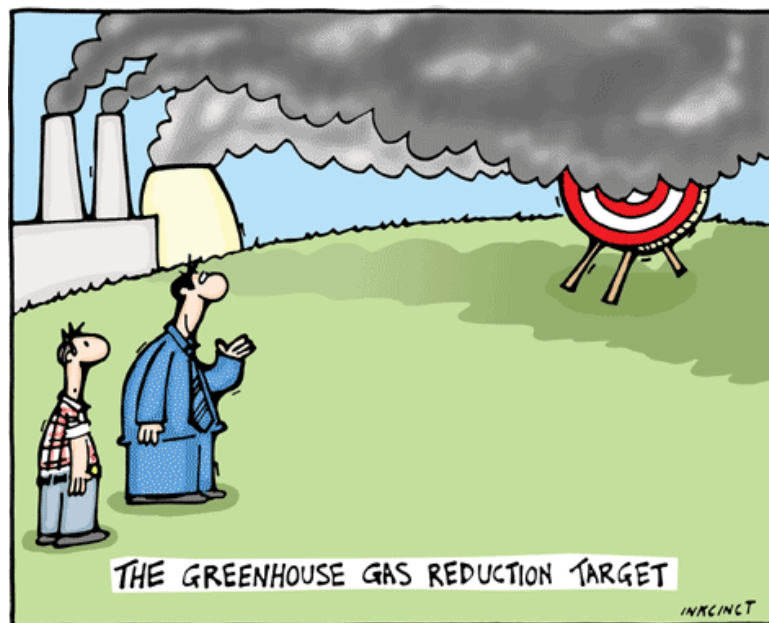


Introduction (1)

- Definition of sustainable development
 - Require that human's activities use natural resources with lower or at least the same rate as they are updated or expects to maintain biological diversity.
 - There is a global need to establish an energy supply system that does not deplete our natural resources and does not add to global warming.

Introduction (2)

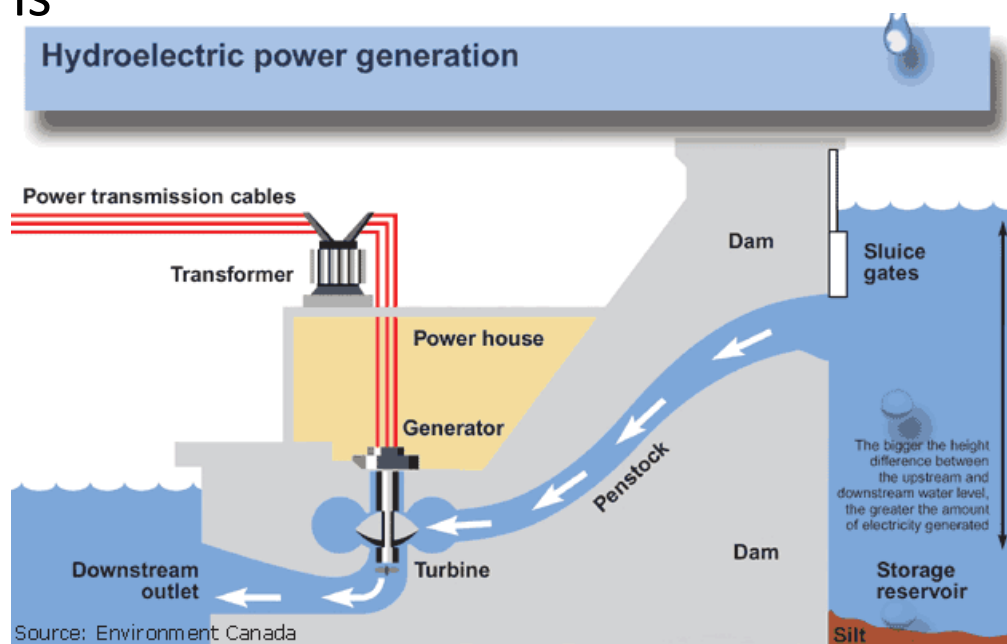
- Need to increase share of renewable energy
- EU: 20% in 2020
- Main sectors:
 1. electricity
 2. biofuels
 3. heating and cooling systems



Source: www.inkcinct.com.au

Introduction (3)

Hydropower plants consists of an energy generating part and a reservoir. The function of the reservoir is to stock water for the constantly generation of electricity



Source: <http://water.usgs.gov/edu/wuhy.html>

Source: Environment Canada

Research question

- Main research question
 - Is hydropower a sustainable alternative for electricity generation in the European Union?
- Derived research questions
 1. What are the main advantages and disadvantages of hydropower production?
 2. Under which ecologic and social conditions can hydropower be considered sustainable?
 3. What is the status in Europe regarding hydropower?

Research approach

- Fully literature based research
 - decision papers from the EU commissions
 - comprises scientific papers
- Goal: Is to give an overview on the main advantages and disadvantages:
 - ecological
 - economic
 - social level
- Criteria that are necessary to be able to denominate hydropower as sustainable

RQ 1: What are the main advantages and disadvantages of hydropower production?

Advantage

- Reduces the use of fossil fuels
- Few to no greenhouse gasses
- No atmospheric pollution
- Inexhaustible (does not consume the water)
- Low maintenance costs

Disadvantage

- Can damage surroundings (especially dams)
- Could deteriorate water status
- Changes ecosystems

RQ 2: Under which **ecologic** and social conditions can hydropower be considered sustainable?

- Need to keep track of impact on ecosystems
 - River's ecology, water ecology
 - Fauna (fish ladders)
 - Flora



Source: <http://www.natuurdichtbij.nl/fotos/8%20waterwerken.htm>

RQ 2: Under which ecologic and **social** conditions can hydropower be considered sustainable?

- Hard to define due to personal values
- Public acceptance
- Resettlement plan

RQ 3: What is the status in the EU regarding hydropower?

- Linked with climate change and need to reduce greenhouse gasses
- EU: hydropower = renewable energy source, policies compatible with existing rules
- Eu Regulations Water framework directive and Natura 2000
- "in the opinion of some stakeholders..." → slowdown expansion

RQ 3: What is the status in the EU regarding hydropower?

- Positive aspects not always considered
- Strict regulations in EU directives → make expansion of hydropower in the EU harder
- Policies applied to general cases and don't consider each specific case

Conclusion

- Is hydropower a sustainable alternative for electricity generation in the European Union?
 - Need for renewable energy sources
 - Not all countries in EU have same potential
 - Competitive energy source
 - Important acceptance issues

Are there any questions?

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