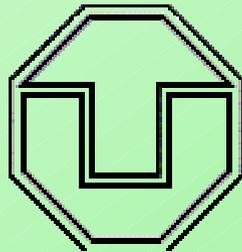


Social-Economic Benefits of Renewable Energy

Prof. Dr. H. Wiesmeth, M. Golde
Technical University Dresden
Germany



Outline

1. Cost-Benefit-Considerations

2. Economic Aspects

2.1 Reduced external effects

2.2 Macro economic benefits

2.3 Local economic benefits

3. Social Aspects

3.1 Stakeholders

3.2 Participation



Cost

- Energy production typically results in direct and indirect costs to the producer and to the society:

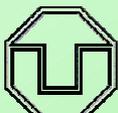
Cost Structure:



Main components:

Pollution
(e.g. air and water pollution)

Operating costs
(esp. fuel)
Investment costs



Benefit

- Energy production leads to direct and indirect benefits for the producer and the society:

Benefit:



Main components:

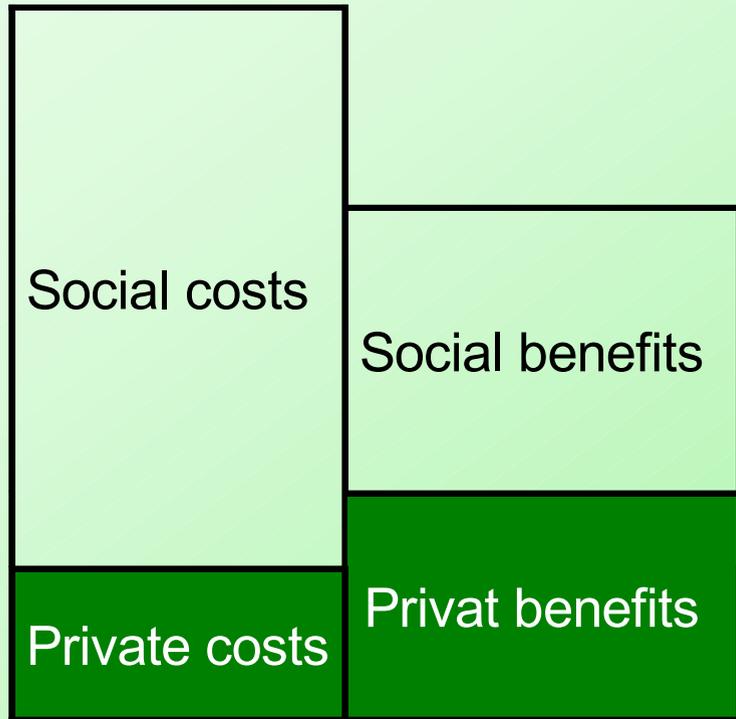
Environmental benefits,
improved standard of living

Revenue from selling energy

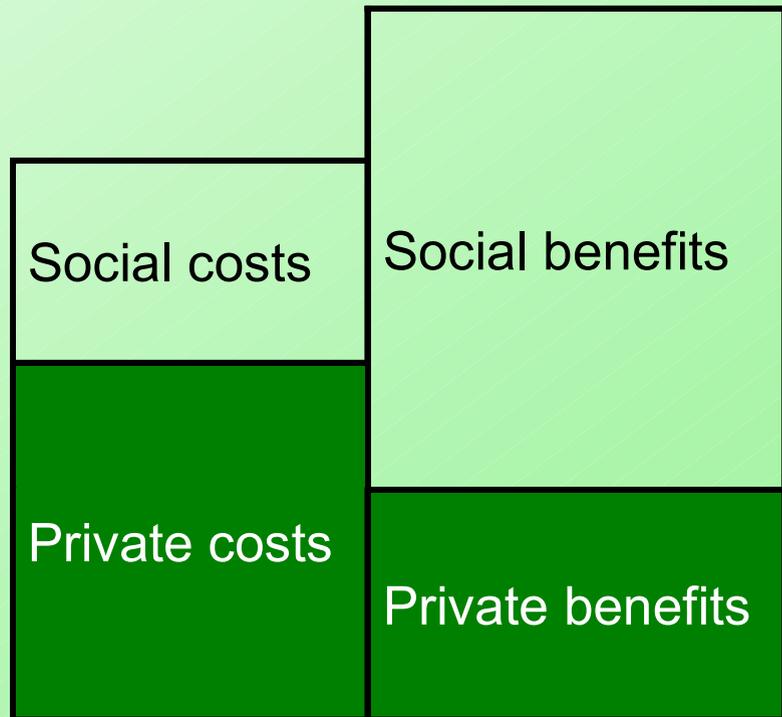


Typical cost-benefit structure

Conventional energy
production:

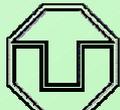


Renewable energy
production:



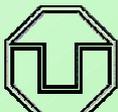
Bridging the gap between costs and benefits

- From a business perspective renewable energy is often not a feasible alternative (private costs are higher than private benefits)
- But social costs and benefits should be considered
- Need for incentives to increase private benefits like
 - tax redemption
 - power purchasing program
 - subsidies
- or increase private cost (internalize social costs) through e.g.
 - emission tax
 - regulations



Costs and benefits

- The following slides will give some information about reduced social costs and increased social benefits by use of renewable energy
- They provide information about
 - reasons, why society benefit more from renewable energy than widely expected
 - reasons, why renewable energy should be supported by local and national governments and decision makers
 - some indirect economic and social effects



Reduced External Effects

- Use of fossil energy exerts some negative external effects like
 - CO₂ and methane emission and thereby global warming
 - polluted air, water and soil, and thereby reduced agricultural output and health effects
 - calculations give values from 2,4 to 20 Eurocent/kWh of external costs for energy production from fossil energy, esp. depending upon fuel (relative low external costs for natural gas up to very high for coal and oil)
- Use of renewable energy helps to reduce external effects and thereby reduces social costs of energy production!



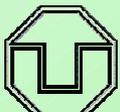
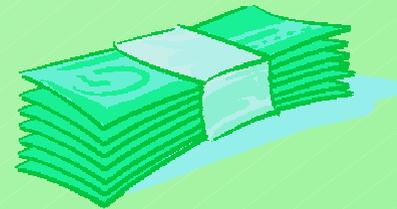
Positive Overall Economic Effects

- Reduction of fossil energy import
 - Saving of foreign exchange
(e.g. current account deficit of Vietnam 8 Bill \$ in 2003)
 - Less dependency upon foreign energy supply
(Oil production of Vietnam will decline from 2005)
 - Less price volatility (fossil energy should be about 3 Eurocent/kWh more expensive to count for economic problems caused by price volatility)
- Improvement of electrical energy supply, especially for rural areas
 - Rural electrification in Vietnam in 2005 only about 95%
 - more economic stability and growth, particularly in remote and rural areas



Good Investment Opportunities

- Renewable energy projects are often small or medium scale
 - Planning, construction and operation of these projects is not too complicated
 - After having collected some experience, more projects can be set up easily
 - These projects provide good local investment opportunities
 - Much development and production could be done in Vietnam



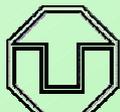
Enhancement of Local Economic Activity

- Local demand for construction and engineering
 - New jobs for skilled and unskilled workers (800 person years/PJ)
 - Increasing income and purchasing power, and an increase in tax revenue (additional income of 700,000 \$/PJ)
- Economic diversification, especially in rural areas
 - makes agriculture more attractive
- Money spent for electricity stays in the region
 - improves local economic stability
 - fosters economic growth even in remote areas



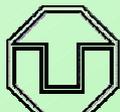
Positive Effects on Electricity Consumers

- Remote regions without grid access:
 - Improvements of standard of living and chances for business opportunities through supply of electricity
 - Often cheaper than electricity from a diesel generator
- Regions with grid access
 - Cost savings in grid and high voltage transmission lines investment through decentralisation
 - Increase network stability
 - Facilitate energy supply extension
- Need of appropriate organisational, technical and financial framework conditions in the electricity market



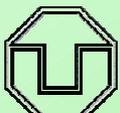
Effects of Increased Biomass Use

- If biomass from waste is used:
 - Waste reduction
 - Reduced costs of waste treatment
 - Reduced environmental risks, ground water pollution, bad smell, health and sanitation problems
- If other biomass is used:
 - Value of this biomass will increase
 - Other biomass users are affected
 - Biomass producers will gain

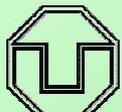
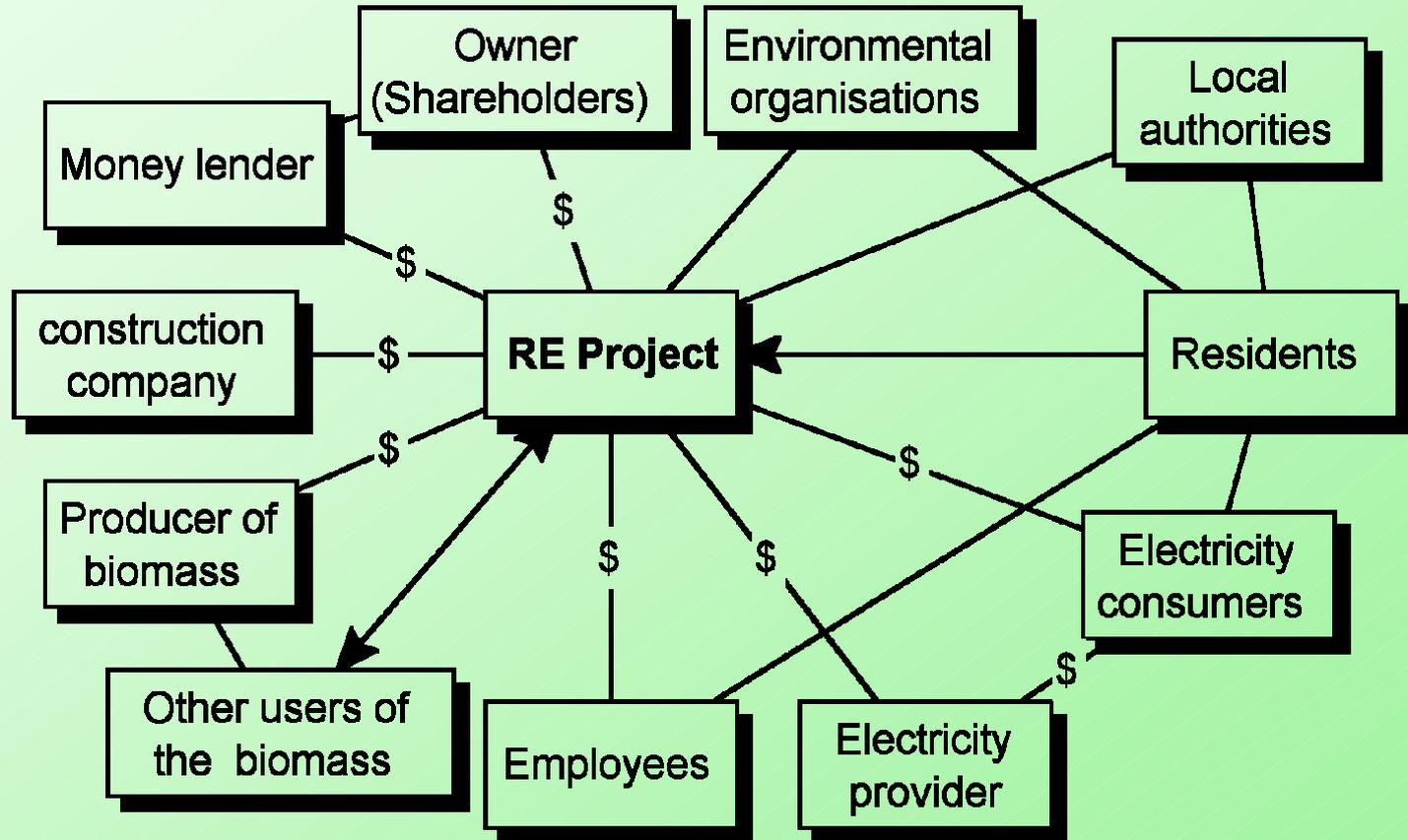


Importance of consideration of stakeholders

- Stakeholders are persons or groups which
 - will profit or loose from a project
 - are affected directly or indirectly
 - are financially or otherwise involved
 - Stakeholder are able to
 - support and promote any project
 - hamper or impede a project
- Therefore any stakeholder has to be considered

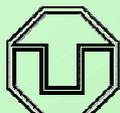


The stakeholder network



Participation and Information Process will Benefit the Community

- Economic improvements yield social improvements and alleviate poverty
- Participation and information is fundamental for success
 - Education and information will increase: this will facilitate other projects like improvement of water supply or education in socially relevant areas
 - Responsibility for environmental, waste and health issues will increase
 - Involvement and participation of people and responsibility for duties of the community will be strengthened



Thank you very much for your attention

