MSc Thesis outline

'Valuation of fuelwood and charcoal in developing countries'

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Problem statement and rationale

Fuelwood is a very important energy resource for a considerable part of the world population, especially in developing countries. Collection of large scale and uncontrolled quantities of fuelwood often has a destructive impact on the fuelwood resources, particularly in poorly managed natural forests. Undervaluation of these fuelwood sources might lead to their unsustainable management. Knowledge of fuelwood's value is important. It prompts to the long-term conservation of forests and other fuelwood sources.

This thesis examines which methods can be applied to determine the value of fuelwood. If a market exists, the value is frequently equated with the price. However, this market price is not an accurate representation of the value: distortions of the market price often occur. Sometimes, there is no market at all. Current valuation techniques will be inventoried and critically examined, and then applied to a number of cases. The particular techniques usable for fuelwood will be investigated.

Problems might rise as to the estimation of fuelwood's value. For some regions, none or few data are available. Different valuation methods yield divergent results. To improve the reliability of the estimation, multiple techniques can be applied. One should keep in mind that the monetary values are estimations, so that they only indicate the order of magnitude of the value. These estimations serve principally as a tool in making the right decisions, for the management of the fuelwood sources as well as for the benefit of the population depending on these.

Research questions

- ❖ Can a precise value be determined for fuelwood?
- ❖ Which valuation techniques can be applied for the valuation of fuelwood?
- ❖ Which factors determine the choice for a certain valuation method? What are the advantages/ disadvantages of each technique?
- ❖ Is the price of fuelwood less then its value?
- ❖ Which elements influence the value?
- ❖ Will the value increase/ decrease in the future?
- ❖ Which term has to be included in models?

Introduction

- ❖ What is fuelwood/charcoal? (definitions of NTFP, NWFP, (in)direct use,…)
- ❖ Fuelwood: what they are used for

- ❖ Fuelwood species: selection, preference
- ❖ Technical characteristics of fuelwood species
- ❖ Sources of fuelwood: ad hoc collection, plantations, silvicultural systems
- ❖ Tree resources: natural forests and mangroves, buffer zones, mountains, frees outside forests, agro forestry, plantations,…
- ❖ Who depends on fuelwood / charcoal: Who collects / sells / uses fuelwood / charcoal? E.g. fuelwood is frequently collected by women for self-support, poor people,…

Fuelwood crisis?

- ❖ Current situation of resources (deforestation)
- ❖ Projections for the future

The rationale behind fuelwood valuation

- ❖ General: valuation of NTFPs
- ❖ Price
  - ▪ Distortions
  - ▪ Price <value?
  - ▪ Does fuelwood become more often marketed? Why?
- ❖ Factors that make the value change: escape from rural areas=urbanization, raising income, political changes, population growth, amount of accessible trees e.g. deforestation, plantation,…
- ❖ Valuation techniques:
  - ▪ Constructed market techniques
    - ♦ CVM-WTP
    - ♦ Contingent Ranking Method
  - ▪ Travel cost and opportunity cost (are these the same for fuelwood?)
    - ♦ Time cost
    - ♦ Caloric expenditure
  - ▪ Option value
  - ▪ Preventive expenditure
  - ▪ Replacement cost
  - ▪ Comparison with other energy sources
    - ♦ Direct substitute approach
    - ♦ Indirect substitute approach
    - ♦ Storage of solar energy
  - ▪ Carbon sequestration: developing countries bear the cost of carbon storage by the conservation of the forest → externality
- ❖ Future
  - ▪ Globally, the use of wood-derived fuels is growing, will it continue to grow? Will the value / price increase?
  - ▪ Global trend: fuelwood use decreases, charcoal use increases