Reducing the use of non-renewable biomass: a proposed new methodology

B. Schlamadinger
in cooperation with: Marco Ratton, Rama Reddy, Anandi Sharan

Joanneum Research, Graz / Austria
bernhard.schlamadinger@joanneum.at

Renewable biomass (EB decision)

- **Woody biomass from forests or croplands / grasslands where**
  - Land remains forests
  - Levels of stocks not decreasing systematically
  - Forestry / conservation regulations are adhered with
- **Non-woody biomass (conditions apply)**
- **Biomass residues**
- **Non-fossil fraction of waste**

Types of "NRB projects"

- switch from non-renewable biomass to renewable biomass and other renewable energies,
- improvement of the energy efficiency in the use of non-renewable biomass,
- switch from non-renewable biomass to efficient use of fossil fuels

Small-scale energy projects with non-renewable biomass in their baseline

- Old SSC methodology I.c: thermal energy for the user (heating, drying, cooking)
- Old SSC methodology I.d: grid connected electricity
- Phased out by EB 21 decision in 2005
- Issue: CO2 emissions from non-renewable biomass are not eligible to be included in the baseline

COP/MOP1 decision

Requested the Board to develop, as a priority, a simplified methodology

"for calculating emission reductions for small-scale project activities that propose to **switch from non-renewable to renewable biomass"**

SSC WG proposed:

- I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User

  Examples: Biogas stoves, solar cookers and switch to renewable biomass

- II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass

  examples: high efficiency cook stoves and ovens using non-renewable biomass.

Consequences for projects, as described in a SSC WG paper:

- Two example projects (solar cooker, biogas) would lose 74% and 65% of their credits
- Reasons:
  - ➔ Hypothetical use of fossil fuels in the baseline
  - ➔ Hypothetical use of high-efficiency equipment in the baseline
- Estimated transaction costs about 3$ / ton CO_2

Possible solutions

Solution 1: Modify SSC WG draft methodologies:

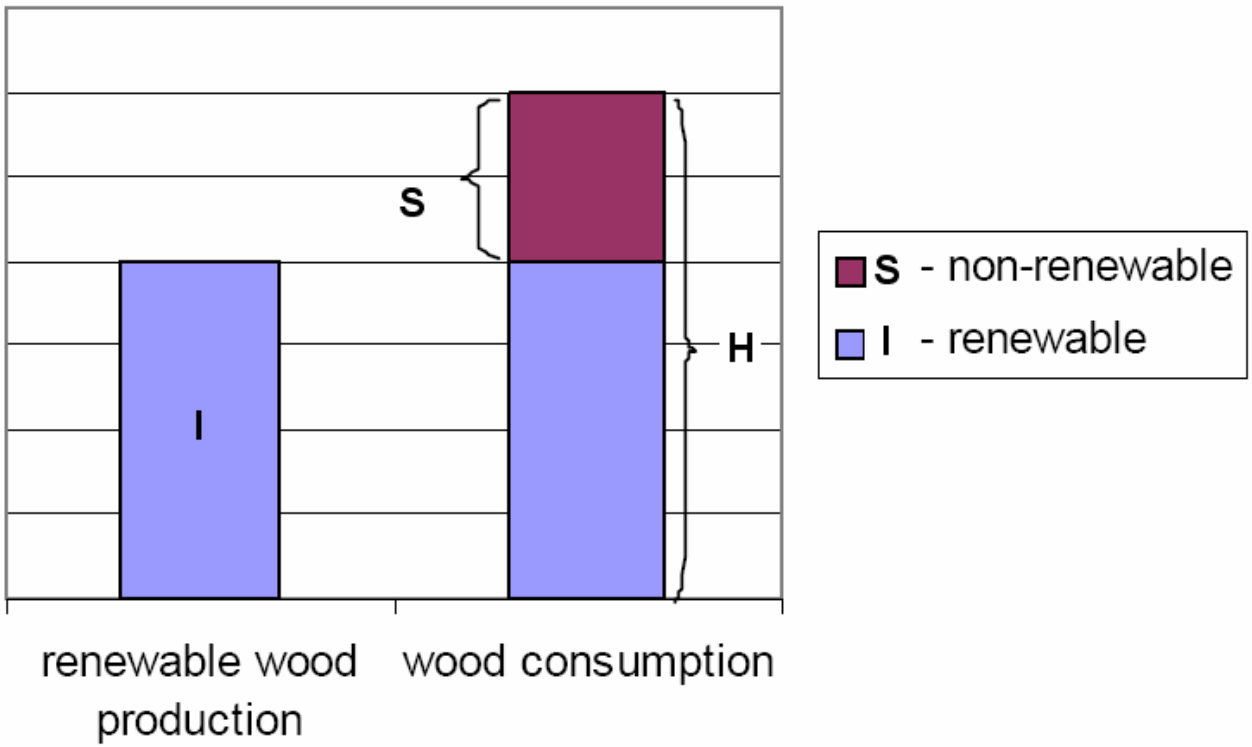
- ➔ Hypothetical use of fossil fuels
- ➔ **BUT:** apply the actual efficiency of equipment used in the baseline

Solution 2: New methodology that accurately reflects the mix of biomass and fossil-fuels in the baseline

New proposed methodology (submitted July 27, 2006)

- SSC_061: http://cdm.unfccc.int/methodologies/SSCmethodologies/Clarifications
  Slightly modified

Step1: demonstrate biomass is non-renewable (using "inverse" of EB approved def. of renewable biomass)



New proposed methodology (submitted July 27, 2006)

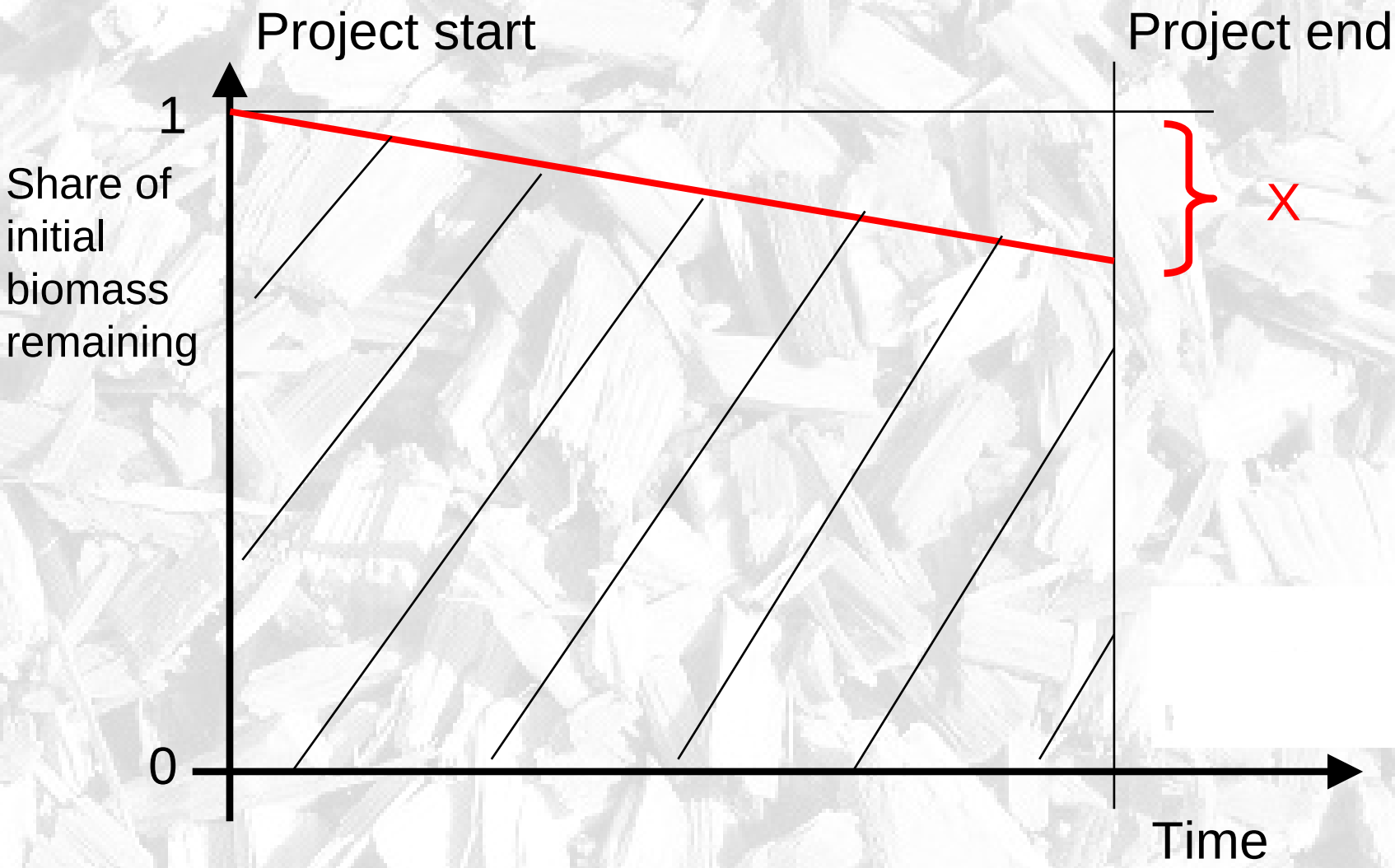
Step 2: calculate baseline emissions

$$BE_y = \frac{1}{2} \cdot (BE_{start} + BE_{end})$$

$$BE_{start} = B_y \cdot NCV_{biomass} . EF_{CO2,\,biomass}$$

$$BE_{end} = B_y . NCV_{biomass} \cdot \left[(1 - X) \cdot EF_{CO2,\,biomass} + X . \frac{\varepsilon_{fossil}}{\varepsilon_{biomass}} . EF_{CO2,\,fossil} \right]$$

New proposed methodology (submitted July 27, 2006)



New proposed methodology (submitted July 27, 2006)

Step 3: leakage

- Savings of non-renewalbe biomass may lead to greater use of non-renewable biomass otuside the project boundary (negative leagage)
- Spillover effects
- Option 1: Demonstrate that no negative leakage occurs, as part of monitoring
- Option 2: standard leakage deduction of 15% (proxy for both negative and positive leakage effects).

Step 4: monitoring

- Sampling of appliances, to ensure complete replacement / improvement of non-renewable biomass

Ideal outcome at COPmop2

Request to EB to approve three methodologies for replacement or reduction of NRB

Realistic description of baseline emissions

No further approval from COPmop needed, so that projects can start