Give me a day off – Effects of the Improved Wood Stove Program in Lak District

The Problem

M’Nong ethnic minority families in Lak cook and heat with a traditional 3 stone stove and are solely dependent on wood as energy source.

Families consume about 30 kg of firewood per household/day, which is mainly collected by women and children in the forest surrounding the villages and on the shifting cultivation sites.

The core problem of this situation is the low energy efficiency of the traditional stoves (5-10%) resulting in:

- High labour requirement for fuelwood collection and cooking
- Acceleration of deforestation and forest depletion due to firewood collection

The labour requirement for fuelwood collection becomes even more pronounced, as the transition from shifting cultivation to sedentary cultivation occurs. Whereas families still collect firewood before and while returning from their shifting cultivation sites, they will have to make special fuelwood collection trips as soon as they are farming on permanent plots.

Figure 1: Collecting firewood

Program Development
Based on the request of villagers, the project "Sustainable Management of Resources in the Lower Mekong Basin" (smrp) supported the introduction of improved wood stoves (IWS) in early 1997. Together with experts from the Forest science and technology application center (FSTAC), the villagers developed an improved woodstove model suitable for the local conditions.

To ensure sustainability of the program the following project strategy was chosen:

- **Introduction phase (1997):** Training of villagers in construction skills. Most expenses for material and know how are covered by the project. Little contribution from villagers in kind.

- **Expansion phase (1998):** Increasing contribution from villagers for material and know how, intermediaries such as Woman’s Union or Lak Forest Enterprise support the villagers in program management.

- **Consolidation phase (1999):** Further expansion promotes self-supporting activities solely managed by communities and national programs.

**Advantages on the Micro Level (family)**

During the evaluation of the introductory phase, the following advantages for the families became obvious:

- Reduced time of wood collection (about 30 %)
- Reduced time of cooking (about 20 %)
- Decrease of physical burden of wood collection
- Improved health due to less smoke
- Decrease of room temperature due to less heat radiation
- More time available for leisure, childcare or direct income generating activities
- Increased self-reliance due to successful implementation of new technology

Most families consider the disadvantages of the new stoves, such as immobility and reduced heat radiation during winter, as negligible.
The following figures exemplify the effects on the families:

- An average family saves 60 baskets of wood per year, thus avoiding the physical burden of collecting firewood and carrying back the heavy baskets from the field 60 times.
- A family can save more than 20 labour days per year, which can earn them 300,000 VND if they hire their labour out.

**Advantages on the Macro Level (society)**

The main effect on the macro level is:

- Reduced deforestation and forest depletion

Additional effects are:

- Reduced amount of CO$_2$ released into the atmosphere
- Improved health of the target group
- Increased GDP in the district due to more time spent on income generating activities

Quantifying these advantages gives the following figures:

- A total amount of 3,500 cubic meters of firewood is saved per year, based on a planned number of 800 improved stoves in Dak Phoi and Krong No communes. This equals 11% of the total annual increase of wood in these communes.
- For every 1 US$ invested into the IWSP 165 kg of wood with a market value of 1.9 US$ can be saved.

**Conclusion**
The main advantage of the IWSP is on the micro level. In economic terms the value of saved labour is the decisive factor for the families to replace their traditional stoves with IWSs. However, non-monetary values such as reduced physical burden and improved health play an important, though less obvious role.

The obvious effects on the macro-economic side are less significant than on the micro-economic scale. Suitable forest management strategies have a higher impact on reduction of deforestation, yet they are more cost intensive. The program on IWSs can therefore give valuable and especially cost efficient contribution to an overall resource management strategy.

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The following additional material on the wood stove program is available in English and Vietnamese language:

- Report on introduction, construction and maintenance of fuel-efficient Wood Stoves, Nguyen Phu Nghiep and Tran Ngoc Tue (FSTAC), June 1997
- Some suggestions on development strategies of the IWS program, Tran Huu Nghi, October 1997
- Evaluation report on IWS program in Dak Phoi and Krong No commune, Lak district, Dak Lak province, Tran Huu Nghi, December 1997
- Economic evaluation of the IWS program, Ute Bartels, April 1998