

# Reduced poverty and improved living conditions thanks to RE?

*Using renewable energy (RE) in remote rural areas creates many benefits. It contributes considerably to people's well-being and helps raise the standard of living of rural families. But electricity from RE on its own does not eliminate poverty. A supply of electricity can only help reduce poverty if other framework conditions in rural areas are changed at the same time and if poor households receive direct support.*

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Photo: Richter/Frings

Various RE technologies are presented to interested villagers.

Using renewable energy (RE) in remote areas means making the difficult, but successful attempt to reduce the energy poverty of rural people. Renewable energy (solar, wind, water, and biomass) is converted into electricity/gas by means of various technologies or used directly (as a source of power, to heat water etc.). While the use of renewable energy greatly improves family and business life, it is just as important for the social and physical infrastructure of a village: light in hospitals and schools, better diagnostic capabilities, streetlights, public baths and laundries, and much more.

Studies conducted by international and bilateral donors in various provinces of the People's Republic of China have shown that the introduction of RE positively affects living standards, especially for women (Richter, M.: *Impacts of Rural Electrification in PRC, Rural Electricity Supply Study ADB/Integration, 2004*; Richter, M.: *Sozioökonomische Analyse der Situation der Tierhalter im Zavkhan Aimag der Mongolei, GTZ/Integration, 2000*; Richter, M., Hanskamp, S.: *Ergebnisse des Haushalts-Base-Line Surveys 2003, A.R. Tibet, VR China and Ergebnisse des Haushalts-Base-Line Surveys 2003, Mongolei, GTZ/Integration*). Electricity puts light in homes, allowing people to engage in many activities in the evening. Radio,

television, and sometimes even Internet access connect villages to the outside world. Photovoltaic systems and wind turbines provide enough power for lighting and communication. But if energy is to be used in production, such as for agricultural machines and processing equipment, other sources of energy are needed, such as micro-hydropower units.

### **Hypothesis 1: Light on its own makes poverty visible but does not eliminate it.**

While a supply of electricity solves part of the problem of energy poverty in homes, on its own it does not suffice to provide a better income in the long term for poor groups of people, and thus does not ensure a better standard of living. However, the poor do see a basic supply of electricity as a decisive step forward in development and as a connection to the modern world. Electricity increases their well-being enormously. The overview of the effects of RE on rural families in the People's Republic of China (page 62) shows in point 1 how positively lighting can affect standards of living and working conditions.

## The use of renewable energy in rural China: Effects on households\*

### 1) Lighting

#### Statements:

- Sufficient lighting makes reading and work easier;
- It becomes easier for children to do homework;
- Candles and other sources of light do not have to be consumed;
- There is less smoke when fewer candles are burned;
- Life is made easier for the elderly when they have to go to the toilet at night (toilets are often outside the house);
- Additional income from work done at night at home (such as making carpets);
- When animals give birth in February, often at  $-20^{\circ}\text{C}$ , it is very helpful to have light in the shed. It is also very beneficial to have lighting when a birth is complicated (Inner Mongolia).

**Conclusion:** Electricity raises the social status of a family, and the standard of living and work conditions improve for all family members.

### 2) Information and entertainment media

#### Electronic entertainment devices:

radios, TVs, Karaoke systems, VCDs, DVDs

#### Statements:

- TV brings the whole world into people's homes, especially in dark, cold winters.
- TV informs people of what they can buy and where.
- Weather reports on television help us protect our animals from storms and get them inside in time. This is why we now lose fewer animals (Inner Mongolia).

#### Effects:

- Entertainment, diversion from daily chores;
- Business information (such as market prices for agricultural products);
- Fewer batteries are used;
- The risks of stock-raising are lowered;
- Greater self-esteem;
- Higher status.

**Conclusion:** General standard of living is improved, the overall level of education is higher, children learn to do things by copying what they see on television (break dancing, karate, etc.), and demand for products is created.

### 3) Electrical appliances

#### Electrical appliances:

Irons, refrigerators, rice cookers, vacuum cleaners, washing machines, blenders (Tibet), ventilators for stoves, irons (Inner Mongolia)

#### Statements:

- Food can be stored longer.
- Rice cookers can be left on while women are in the field (Henan).
- The ventilator gets a fire going quickly, and we women do not have to spend so much time fanning the fire. We can just get on with other cooking chores (Liaoning).
- The carpets no longer have to be carried outside and beaten (Xinjiang).

#### Effects:

- Less time and energy are spent on cooking;
- Work is less tiring, especially for women;
- People's eyes are less irritated when rice cookers are used.

**Conclusion:** Women become less tired and less physically exhausted in the long term.

### 4) Electrical machines

#### Electrical devices:

Irrigation pumps, rice mills, chaff cutters, grain mills, noodle machines, oil presses, tofu machines, battery chargers, welding tools, circular saws, planes

#### Statements:

- RE power can be used to open small workshops to earn money.
- My wife runs the grain mill herself so I can go looking for jobs in town.
- With the chaff cutter we can make the pig-food faster. We can also make more, so we can have more pigs.

#### Effects:

- Greater cash income from the diversification of processing and/or sales of agricultural products;
- More money circulating in the village;
- Greater food security, better health.

**Conclusion:** More income, improved well-being, a higher standard of living, and a long-term reduction of poverty.

\*Source: Interviews with household members

However, incomes only increase marginally. For instance, light allows women to improve their income slightly by permitting them to open up small businesses to earn some extra money. While everyday goods for sale used to be kept in a box under the bed, the supply of electricity now allows them to be presented in a window of the house and the light attracts customers.

**Hypothesis 2: Poor families also use entertainment and communication media.**

RE electricity also has the positive effect of allowing people in rural areas to use media for entertainment and information, such as radios, televisions, Karaoke players, DVDs, etc. Many poor families can afford simple radios and black-and-white televisions. Families with middle incomes can open up a disco or a dance hall with a Karaoke player and a loudspeaker. People who own video projectors can open cinemas, admission charges providing additional income. Point 2 of the overview provides a few examples.

Some poor households also use electricity for entertainment (TV). Nonetheless, power is at a premium as every kilowatt-hour has to be paid for (light bulbs, for instance, are only screwed in when they receive visitors).

Women generally have the same access to entertainment media as men. However, when watching TV, their attention will be divided because they continue to do housework in the evening such as sewing, mending, spinning, etc. This is work that has to be done whether electricity is available or not, but it is less tiring, of course, when there is light and entertainment.

**Hypothesis 3: Electric appliances particularly benefit women in families with middle to high incomes.**

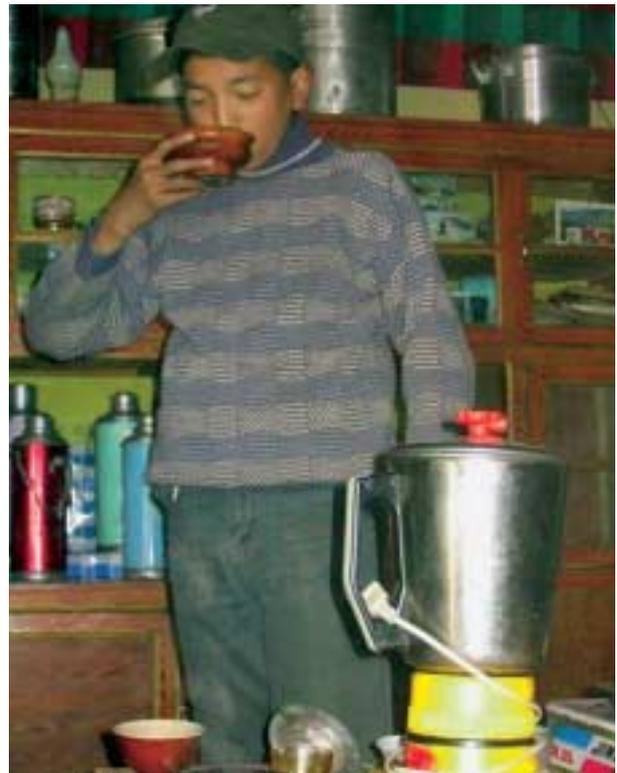
Electricity only covers a small part of the total energy needs of a family and thus only minimally reduces the energy poverty of poor families. Most energy is used for heating and cooking- Electricity, coal, and gas are unaffordable for poor families. Collecting wood and manure remains the only way poor families can obtain enough energy for cooking and heating; but these are time-consuming and laborious tasks. Thus, electricity only takes a small burden off the women who are the energy managers in the family.

Electric appliances are mainly purchased by women in mid-income and rich families. As the figure in the box on page 64 shows, women prefer appliances that make work easier and help them save time. Women have three roles: housewives, mothers, and field labourers. They work longer than men and grasp every opportunity to shorten the time they are



Photos: Richter/Frings

Electric appliances in a tent in Mongolia. They make work a lot easier for women.



Electricity increases the well-being of poor people.

obliged to work. Unfortunately, poor women are rarely able to afford such appliances – see point 3 in the overview.

**Hypothesis 4: Electricity for production provides extra sources of income.**

People who own processing machines and electric tools can earn money in secondary occupations and create added value. The number of machines is an indication of the extent to which processing has moved into a given village; formerly, machines could only be found in larger towns, if at all. At the same time, these machines are indicators that electricity is being used for production, thus creating additional income. In other words, they represent the beginnings of a division of labour and a diversification of occupa-

tions. In addition to the use of processing machines, new services and repairs are also offered or improved. Experience has shown that families with a middle or high income are especially likely to take advantage of the opportunity to use power for production. They are able to apply for loans and can assess their income and ability to repay instalments. They can offer tangible assets as securities and are in a better position than poor families to enter into the risk of taking out a loan. They are also able to provide the family workforce needed to earn an additional income through the machines (Point 4 in the overview).

Poor families rarely use electricity for production. Not only do they often lack the financial means and manpower, but also

the entrepreneurial ideas and the training required. Moreover, poor families cannot afford to take any risks as even the slightest business miscalculation could endanger their livelihood. Women in poor families have the further disadvantage of being fully occupied with their reproductive tasks and with repetitive work, rarely leaving them time for new, production-oriented work – a vicious circle. Everyone in the family is so involved in eking out the most basic of livelihoods that no room is left for changes to the organization of labour and work activities. As a consequence, women permanently over-exploit themselves. Back-up measures could go a long way to helping these women in particular to take up productive work.

**Hypothesis 5: RE projects must take a comprehensive approach if they are to reach out to poor groups of the population.**

Because of the unequal footing on which rich and poor families stand regarding the use of electricity, providing electricity amplifies disparities between rich and poor, thus making poverty visible without removing it. Although rich and poor families generally have the same access to electricity, poor families cannot widely benefit from its use as they lack the other resources. Projects have to target poor people, and help them directly to discover their potentials and use them for their own benefit. In the process, gender and cultural aspects of the needs of poor households must be taken into account. Depending on local conditions and the resources available, the required measures may range from technical training

Photo: Richter/Frings



Poor households still cannot afford to buy a biofuel-driven mill.

in the operation of machines to apprenticeships with master craftsmen who manufacture specific products. People also have to learn to scrutinize business ideas, and business training should be offered to this end. The provision of electricity should also include a credit route for the procurement of electric devices and machines. Since poor families are rarely able to provide securities, some

loans will have to be granted on good faith. Interest and repayment deadlines have to be tailored to the incomes of poor families. Once projects go beyond merely supplying electricity and start to take account of the overall conditions of poor families, allowing people to use the electricity supply productively, poor women will also be able to improve their own situation and the situation of their families.

### Demand for electric devices: Cultural and gender disparities

In Mongolia, one of the most important household appliances is the iron: The deel, the national dress for men and women, always has to be freshly pressed. So when people have access to electricity, the first thing they buy is an iron. In Tibet, however, the first thing people buy is a blender so people do not have to spend their time and energy crushing their butter-tea by hand. In their respective cultural environments, both of these devices mean that women's work is easier and less time-consuming.

Traditional ironing requires many preparatory activities: The dried manure needed to supply heat may first have to be collected. The stove has to be heated (even on hot summer days), and the iron has to be repeatedly heated on the stove after only brief use. Butter-tea is always made and drunk fresh. Butter is added to black tea brew. For the butter to dissolve, the tea has to be pounded for a long time and with great force in a wooden vat.

The type of electric device in demand differs not only from one culture to another but also between men and women. Major differences in gender-based roles and tasks are reflected in different electricity needs. The chart illustrates gender-specific wishes for electric devices among 184 families surveyed in Mongolia.

Source: Richter, M.: Sozioökonomische Analyse der Situation der Tierhalter im Zavkhan Aimag der Mongolei, Integration, Chiangmai, August 2000.

