gtz

Education and household energy

Worldwide, 2.5 billion people rely on biomass (such as wood, charcoal and dung), for their daily cooking, baking or space heating. The inefficient use of these fuels on three-stone fires or traditional stoves causes environmental damage, and the indoor pollution from these fires is responsible for 1.5 million deaths each year.

Efficient, low-emission technologies are now available. For the dissemination of energy-saving devices to be successful, increased knowledge is needed. Education can raise awareness of the problems associated with traditional ways of cooking. It can increase the use of efficient household energy technologies.

In addition, the use of energy-efficient technologies in schools, and other centres of learning, offers substantial benefits for the education sector, as it can help to increase the demand for education, as well as enhancing the quality of learning.

Benefits for the energy sector - improved efficiency of household energy use

Long-term sustainable behavioural change in a society cannot be achieved without involving children and young people, who can be reached through formal and non-formal education.

Formal education

Children are tomorrow's users of energy, so educating them on the responsible use of scarce resources is an investment in their future. Even today, well-informed children and young people can act as catalysts within their families. Efficient use of biomass can have an immediate benefit on health, income, and other social outcomes. Hence, schools are an important venue for facilitating the broad implementation of such programmes into society.

Children are eager to acquire knowledge and gain new skills. With proper instruction, school students can learn about energy saving, environmental awareness, health care, improved ventilation, healthy food, and other issues related to household energy. This can make a sustainable impact in their communities.

Household energy can be taught across a wide spectrum of subjects, in particular:

- Geography: natural resources, deforestation, energy sources
- Languages: texts about trees, reports about landscape and use of soil
- Biology: names and function of plants and trees, caring for plants and trees
- Mathematics: calculating cooking times, measuring firewood consumption, calculating energy saving
- Physics: temperature, properties of water, conduction, convection, radiation of heat, greenhouse gas emissions

In many countries, parent/teacher associations (PTAs) have an important role in ensuring the quality of education. They facilitate the link between the school and the local community. These PTAs can provide an important entry point for lobbying for the mainstreaming of energy-saving devices in schools, and for advocating the use of these devices in local community households.

Non-formal education

Non-formal education is an excellent way to teach people about household energy. It is flexible, as the language in which it is taught, the content matter, and the organization of courses, are specifically focused on the needs of each target group, and how their lives relate to household energy. Where the learners are children and young people, it allows parents and communities to become actively involved in the planning and implementation of educational activities.

Education should not be restricted to children and young people. Worldwide, millions of adults participate in basic language skills classes, many of these classes combine learning to read and write with the transfer of knowledge and skills related to health, hygiene, agriculture, the environment and other topics. These non-formal educational settings provide excellent opportunities for introducing theoretical and practical energy concerns.

Non-formal education facilitates the link between general education and vocational training. Some participants of non-formal education classes can be trained to use energy-saving household devices for income-generating activities, for which there may be demand in the local market. These might include the installation of bread-baking ovens, opening restaurants, or producing stoves.

Benefits for education sector - increased demand and better quality of learning

The use of efficient household energy can contribute to the achievement of universal primary education (MDG 2), as children spend less time collecting wood for their households, and thus have more time to go to school. If wood is purchased, school feeding programmes become more affordable with the effective use of efficient cooking energy. As a result, more children attending school can receive a cooked meal.

Case study: Boarding school - Malawi

A boarding school that prepares two meals a day in a 100 litre pot saves US$346 yearly on firewood expenditure through the use of efficient stoves. Depending on the number of meals cooked, and their size, it takes between three and nine months to pay off the price for a stove. Moreover, efficient institutional stoves have been shown to save between 60% and 80% of the firewood used in a traditional open fire. Through reduced firewood costs, canteens can save up to 40% on their catering budget.

"We've enjoyed this stove for three years now. Can you see the soot on the kitchen walls? This was from the open fire when our kitchen was filled with smoke. It was hard to breathe inside the kitchen. With the modern stove we are no longer suffering from coughing and sore eyes as before. Work is much more fun! Moreover, the college saves over half of its budget for firewood and can use the money to buy books and better food for the students. So the students are happy too!" (Cook at a school in Blantyre, Malawi)

In many societies, household chores are almost exclusively performed by women and girls, and in some cases, their role in society can be solely confined to domestic duties. This can reduce the demand for education, as girls may not be sent to school if it is not considered a proper investment in their future as mothers and housekeepers. While action needs to be taken at policy level to address this social issue, the inclusion of household energy issues in schools can make it more attractive for parents to send their daughters to school if they are convinced more easily of the practical impact of education.

Teaching and learning yields better results when it is participatory rather than exclusively teacher-centred. Learning contents should relate to the students' real life context, in order to make the topics relevant and thus attractive. In this regard, household energy technologies, such as a fuel-efficient stoves, can be useful for demonstration and discussion.

Teaching about fuel-efficient stoves in schools

The introduction of fuel-efficient stoves into the school curriculum is especially promising because:

- it links education, the school and the village. Mothers who participate in school feeding programmes can be sensitized and trained.
- Small versions of the stove can be rotated among students' families, so that the students can report their mothers' experiences back to the class
- Saving fuel costs and/or time otherwise used for firewood collection is of immediate benefit to the school,
- It immediately reduces the negative environmental impacts (caused by fuelwood collection) of a nearby school or village compound
- It can stimulate interest among students, teachers and parents to learn about fuel consumption and deforestation
- It can enhance environmental knowledge and awareness
- it can be used as a starting point for discussing nutrition, and for joint cooking/baking sessions, particularly in pre-school classes or primary schools
- It can act as the theme for art or acting competitions, the results of which can be presented at the school and/or at local level

GTZ's contribution to education

GTZ has longstanding successful experience in providing support to partner countries in improving their education systems.

- Through advising partner countries on the implementation of holistic pre-service and in-service teacher training programmes, GTZ is ideally placed to integrate household energy concerns into teacher training. It provide theoretical as well as practical training on the use of energy-efficient technologies in schools.
- GTZ has strong experience in curriculum development, which is important when integrating a new topic, such as household energy, into a school. The revision of national curricula can be a lengthy process. In the meantime, materials can be produced for ad hoc use in the classroom.
- Joint planning with the Ministry of Education is an important part of any intervention targeted at introducing household energy into schools. Hence, GTZ offers to design and implement planning workshops that brings together all relevant stakeholders. Together, the participants can develop a comprehensive strategy that lays out the scope, objectives, activities, responsibilities, and budgetary issues for the project.

Beyond the formal education sector, GTZ works with other actors engaged in the areas of education with young people, such as NGOs or religious institutions. For these actors, GTZ offers sensitization workshops, and supports the development of training modules on household energy.

Participatory processes that involve local communities play a central role in the GTZ approach, in order to guarantee sustainability and meet local requirements. For this reason, GTZ co-ordinates local groups and actors, and advises them on needs assessment and the introduction of communication strategies related to household energy.