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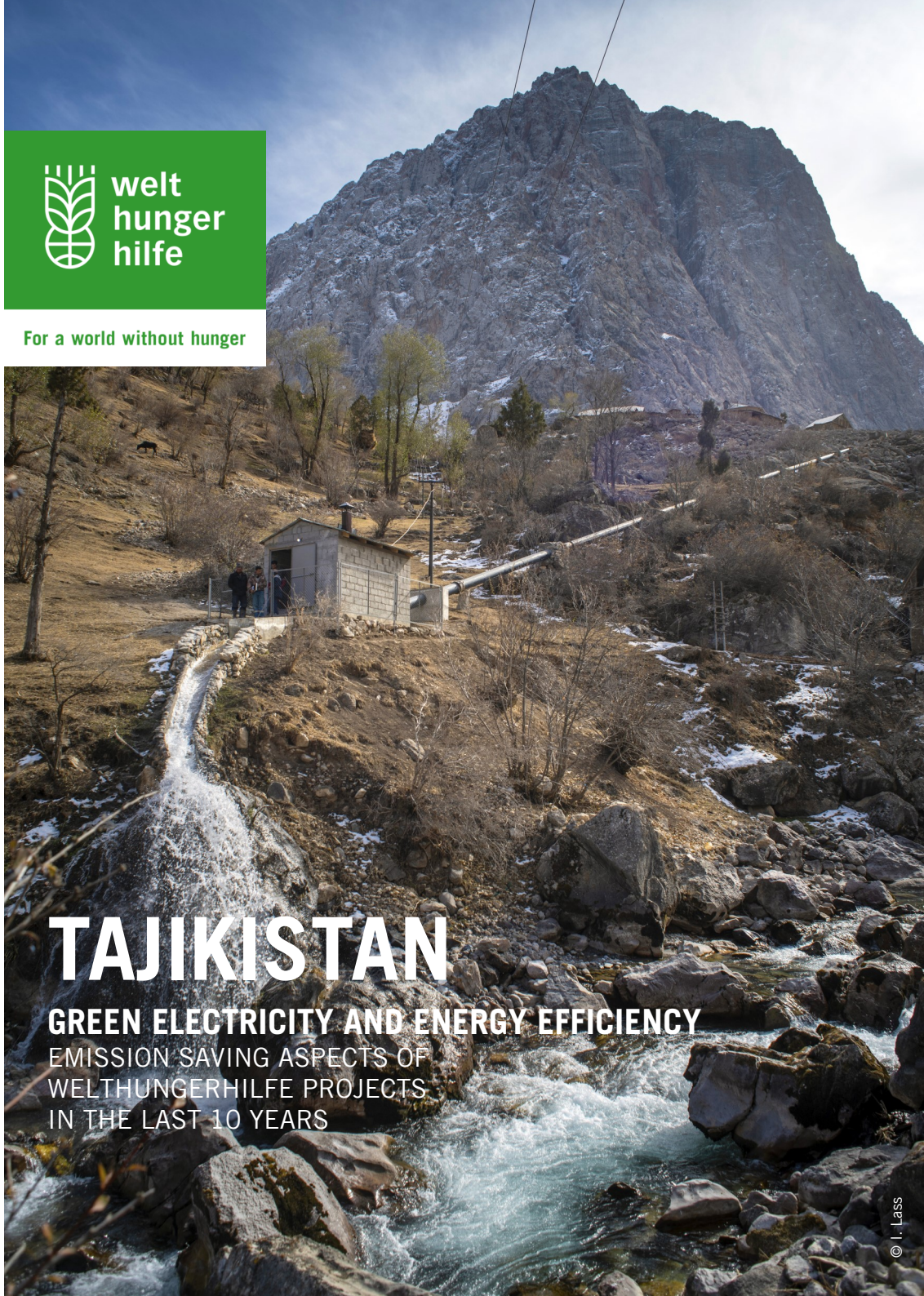
welt hunger hilfe

For a world without hunger



TAJIKISTAN

GREEN ELECTRICITY AND ENERGY EFFICIENCY

EMISSION SAVING ASPECTS OF
WELTHUNGERHILFE PROJECTS
IN THE LAST 10 YEARS

COOKING MORE WITH LESS

HOW INNOVATIVE STOVES REDUCE EMISSIONS

Violent conflicts, the COVID-19 pandemic and climate crisis are the main drivers of hunger worldwide fundamentally threatening the global goal of Zero Hunger by 2030. The effects of the climate crisis become ever more apparent leading to droughts, crop failures and epidemic plant diseases. It is estimated that by 2050 an additional 78 million people could suffer from chronic hunger due to climate change. The effort to contain the global emissions of greenhouse gases is therefore a key element in preventing global hunger.

Simple energy efficient technologies save thousands of tons of CO_2

Over the past 10 years, Welthungerhilfe Tajikistan implemented several energy efficiency projects aiming to cut carbon emissions. Overall, the results are impressive: The total CO_2 savings amount to more than 20.000 tons of CO2 per year. This equals the annual ecological footprint of 2.700 EU citizens or 23.000 direct flights from Berlin to New York! Our efforts to reduce greenhouse gas emissions in Tajikistan are twofold. On the one hand, Tajikistan is a country with a huge potential for green energy, while on the other hand, current energy generation and use is wasteful and inefficient. Since its independence, the country never managed to provide enough electricity to cover the wintertime needs of all people. That's why villagers still largely rely on firewood, dung and coal. Welthungerhilfe's actions motivated thousands of households to invest in energy efficiency technologies—and helped over 100 rural businesses to tap into these green business opportunities.

> **"I'm very happy to help people improve their living!"**
>
> Zohir Zohirov (Promoter)

The multiple advantages of new stoves

Efficient cooking stoves contribute the biggest share to the 20.000 tons of annual CO_2 reduction. They consume 50% less fuel, burn cleaner and cook faster. Apart from their contribution towards emission saving and forest protection, the stoves have other advantages which explain their exceptional popularity among rural households: Women spend less time collecting firewood or dried dung and prevalence of respiratory diseases is reduced by 40% due to lower exposure to smoke.

Ensuring sustainability

To ensure the sustainability of these green energy infrastructures, Welthungerhilfe invests great efforts in establishing local management structures for operation and maintenance. We train local technicians and system managers, and provide craftsmen with tools and spare-parts for repairs. Most notably, Welthungerhilfe initiated the establishment of a turbine production workshop in Tajikistan, which produces customized turbines and electric governing equipment for Tajikistan's domestic market. Compared with imported turbines, the local production offers much better serviceability and after sales service and efficiencies en-par with industrial products.
All these efforts in energy generation are accompanied by campaigns for safe, smart and efficient use of electric energy.

Smart usage of solar power

Another green energy resource abundantly available in Tajikistan is solar power. Sunshine is comparable to Europe's sunniest locations like Spain and Greece. Supported by Welthungerhilfe, dozens of farms installed solar pumps for irrigation. Many schools, hospitals and medical points in remote villages now feature photovoltaic systems, which help them to offer better services to the rural population. Photovoltaic systems are also used for electrification of villages which do not have any hydropower potential—either due to absence of a river or because of their location in the country's

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Picture 3: Turbines for hydro powerplants like in Rogich are built in-country. (© I. Lass)
Picture 4: Trained local technicians are operating the hydro powerplants. (© P. Thiriet)

GREEN ELECTRICITY

Electricity as a key development driver

One of the recognized drivers of development is access to electricity. Its absence has severe consequences on afflicted communities: Schools, hospitals and other public institutions can barely provide minimum services, businesses need to rely on generators, which reduces profitability, productive hours are short due to absence of light and living conditions hard. But lack of electricity also causes deforestation and soil degradation as people are forced to use biomass and dung to cover their energy needs.

Overcoming infrastructural challenges

While the mountainous landscape of Tajikistan is an obstacle to cost-efficient construction of long distance power transmission lines, it also offers an enormous potential for hydro power. Because the national power grid does not reach many of the remote areas, Welthungerhilfe opts for decentralized local power infrastructures that provide thousands of people with access to steady and clean electricity.

Harnessing green energy potentials

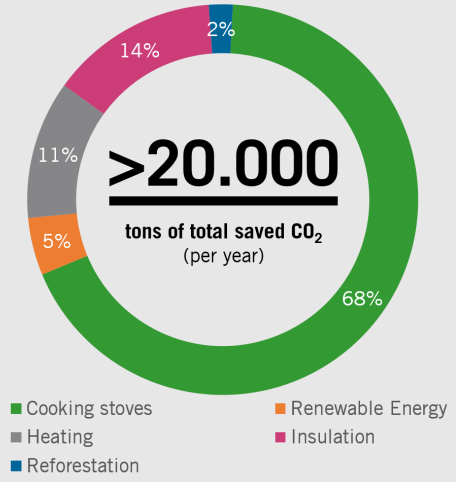
In order to achieve this, Welthungerhilfe helps our local partner NGOs with the design and construction of micro hydro powerplants (MHPP) in rural areas. So far, 23 MHPPs have been planned and built. They produce enough energy to cover domestic needs in winter, even allowing productive use for businesses in summertime, when water abounds.

Picture 1: Solar panels installed at a family home in the village Aspiringon in Baljuvon. (© D. Pilar)
Picture 2: Electricity is crucial for small businesses like this carpentry in Sari Hussor. (© D. Pilar)

The excess heat again is used for heating water. Finally, the vortex of hot gas is directed through a small channel towards the pot, creating a steady and evenly spread heat, which makes cooking easier.
By now Welthungerhilfe has trained more than 180 promoters for cook stoves who so far built and distributed over 15.000 units among their communities over the past years.

A new vocation

One of the promoters trained by our partner Bargi Sabz (Green Leaf) is Zohir Zohirov. The 51-year-old father of five is a potato farmer in the village of Dehisor in the Zarafshan valley. When he took part in an information session about the stoves, he immediately decided to apply for training sessions: “I studied at school for only 3 years. As it was very far from our village, I didn’t have the opportunity to graduate. But I was always interested in handicrafts and when I heard about the trainings, I decided to try my hand in this field.” By now he is building cooking stoves not only in his home village of Dehisor, but also in the surrounding communities. “I am the only person in Dehisor area who constructs cooking stoves, so sometimes I go up to 20 km to other villages to install them.” For him it became more than just a job: “By installing cooking stoves, I get paid 20 Somoni less than if I would work on the field, but I am very happy to help people improve their living.”



Picture 1: Zari Saidalieva prepares dinner in the village of Termumalik. (© D. Pilar)
Picture 2: Cookstove promoter Zohir Zohirov constructs an energy efficient cook stove. (© Bargi Sabz)
Picture 3: The energy efficient cookstove considerably reduces fuel consumption. (© WHH)

REDUCING ENERGY LOSS

Energy saving can be a business opportunity

An important aspect of energy saving is house insulation. This includes floor and ceiling insulations from industrial and natural materials like straw and wool, upgrades of old doors and windows as well as new double-glazed windows.

As of yet, Welthungerhilfe trained 47 masters in the production of double-glazed windows, provided them with the necessary equipment and helped them to market their products. More than 1.400 new energy efficient windows have been installed by now, and a small-scale industry has gained foothold. As a result of their expanded product range, these masters can now fully rely on their craft. They do not have to work part-time in Russia anymore to support their families and some masters have managed to expand their business considerably, employed helpers and sell double-glazed even to the capital Dushanbe.

Keeping warm during long and cold winters

High altitude and continental climate bring about extremely low temperatures. Floor and ceiling insulations are therefore an important aspect to cut heating costs and to reduce the high energy loss. A single household saves up to 700kg of firewood, dried dung and coal in a single year! Including the savings generated by insulated doors and double-glazed windows, Welthungerhilfe and our partners reduce CO_2 emissions in Tajikistan by 3.761 tons every year – just through insulations!

Picture 1: Carpentry in the Zarafshan valley. (© P. Thiriet)
Picture 2: Locally produced Double-glazed window in the Zarafshan valley. (© P. Thiriet)

New and efficient ways of heating

Of course, house insulation is only one side of the coin. It still is crucial to improve the efficiency of heating systems in the first place. Traditional heating stoves are usually very inefficient with much of the energy lost through the chimney. Together with our local partners , Welthungerhilfe Tajikistan designed heat exchangers that save about 30% percent of heating fuels by extracting energy from hot flue gasses to heat water, the room or for baking bread. Here as well Welthungerhilfe is following a capacity building approach that ensures the sustainability of its efforts.
Similar to the workshops that built double-glazed windows, Welthungerhilfe also supports metal workshops. Through training sessions for masters and financial support for necessary tools, these workshops are enabled to produce and sell heat exchangers. By now more than 24 metal workshops are operating successfully. Their products provide a valuable contribution to the reduction of heating fuels and the preservation of forest resources.

Insulation in figures

- 47 trained masters for window fitting
- 1.400 installed double-glazed windows
- 24 operating metal workshops
- 2.261 insulated winter rooms
- 2.377 installed heat exchangers
- More than 3.000 tons of yearly saved fuels (firewood, coal, dung)

Picture 4: Trained master for double-glazed windows. (© P. Thiriet)
Picture 5: Ceiling insulation in a energy efficient home. (© WHH)
Picture 6: Trained masters with their metal heat exchangers. (© WHH)