

Alcan Solar Cooker Project in Ningxia Province/China

Report on the trip from Nov. 10. to Nov. 17, 2007

from
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Summary

Alcan Ningxia donated for families in three villages of the autonomous Province Ningxia 50 solar cookers K14 and the author was charged to support the implementation. A further task of the journey was to check whether CDM-projects can be realized in the future in this region.

In the villages a sample solar cooker was built together with members of the receiver families and the use and application were shown. The brochures enclosed with the kits (Manual and Cookery Book) were explained with support through the interpreter Bruce Jing (substituting Elva Wang, who had broken a leg before my arrival).

The participants were very eager to learn and skilled so that the assembling of the cookers from the kits with stamped parts (deburring, bending, screwing) did not pose a problem and it is to be expected that they can produce their cookers themselves.

In the afternoon of the 13th November we visited the NGO "Ningxia Center for Environment and Poverty Alleviation (Ningxia CEPA)" that was charged the project implementation. It is associated with the NGO "The HOPE of the Poor and Environment Ningxia in Yanchi County". Their Vice-President Li Fengyang participated in the workshops in the villages.

Concerning the CDM-projects I spoke with Li Fengyang and on the residual 2 days I discussed the principles and the necessary steps with Bruce Jing. We clarified the documentation and discussed the proposals with Mrs. Carol Fu.

The journey showed that the conditions for solar cooker use in this region are good. The durable care which is necessary in case of CDM projects would safeguard the use.

Picture 1: Core team with villagers (on the 3rd day)

From left:

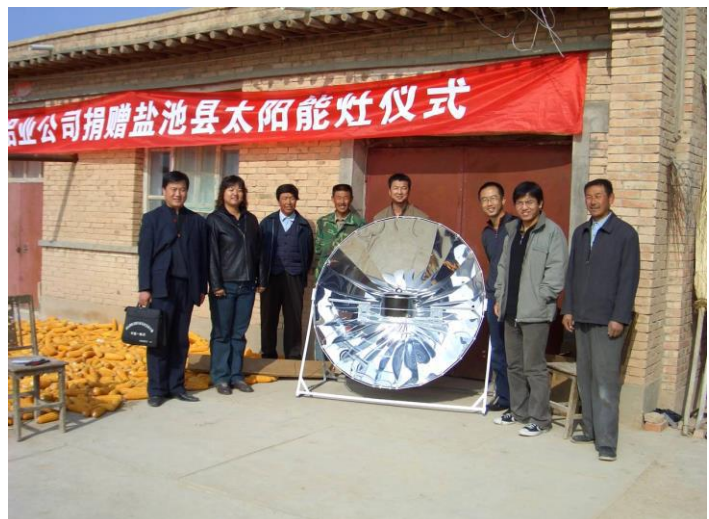
Mr. Li Fengyang, Vice President HOPE

Mrs. Carol Fu, Sustainability Manager
Alcan

two village members

two employees of Alcan and HOPE
respectively

Mr. Burce Jing /Jing Ligu, Alcan
Village member



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1. Course of the voyage

Nov. 10, 18:55, Departure Munich, Terminal 2

Nov. 11, 21:15, arrival Yinchang CN, after stopovers in Beijing and Xi An

Pick up at the airport and drive to Daba Town; Overnight at the guest hotel of Alcan Ningxia

Nov. 12 (1st day), 8 a.m. departure with Mrs. Carol Fu and Mr. Bruce Jing (interpreter) with driver to the 1st village at Doshui Keng, where we were welcomed by Li Fengyang (NGO CEPA) and local officials.

Solar cooker construction and introduction to use with approx. 20 members of the village and the neighboring village; Inspection of households.

In the afternoon, visit a project for the settlement of families in a new village near Yanchi County and visit the site of the Ningxia Center for Environment and Poverty Alleviation (Ningxia CEPA) and The Amity Foundation in Yanchi

Meetings with Li Fengyang and presentations on solar cookers, CDM and UN Millennium Development Goals; Solar cooker as an instrument in pedagogy and prevention

14. Nov. (3rd day); Drive to a village near Yanchi County, where only two solar cookers are set up for the test.

Solar cooker construction and introduction to use with approx. 15 residents. Inspection of households with biogas plant and water supply (Alcan Ningxia project).

Drive back to Daba Town.

Nov. 15, Meetings with Bruce about Chinese-language documentation and results of the work in the villages

Nov. 16, Meeting with Carol and Bruce on results and continuation of the project.



2. Results from the construction of solar cookers in the villages

In each village, a solar cooker K14 was build from the kit in community work. I first showed the goal of the individual steps and the necessary steps and referred to the corresponding pictures in the manual. Villagers invited to the construction courses received a solar cooker kit and they participated with such great interest and skill that it will probably not be a problem to assemble the solar cookers. The core team has proven itself very well, there was always an enthusiastic and cheerful atmosphere and all the important points were explained.



Pictures 2 and 3 (above) were taken during the construction of the solar cooker in the first village (Nov. 12, 2007)

Picture 4: Solar cooker kit in the courtyard of one of the recipient families after the construction course on the first day. The father with his child in his arms had taken part in the construction course (picture 5, 2nd from left) and had started making the solar cooker when we visited him. Inside the box is the black 10-liter enamel pot



Pictures 5 and 6: Construction course on the 1st day (left; near Da shui keng) and 2nd day (in Ma hunag shan)

Picture 7 (below) Construction course near Yanchi County) on the 3rd day

3. Results from the demonstrations

After completing the sample cooker, we showed very clearly how the solar cooker is aligned with the sun using the shadow (first the frame, then the reflector inclination) and how to insert and remove the pot (in the shadow of the reflector). This was repeated several times and explained clearly.

The resting position of the reflector (curved upwards) was also shown, which prevents dust from settling and sticking due to the morning dew. The application was explained using the pictures, as was how to care for the reflector without abrasive substances.

We could only explain the warming cooking technique using the pictures in the manual.



4. Notes on the acceptance of the solar cookers

The solar cooker is obviously appreciated in all villages. Acceptance seems to be particularly high in the villages on the first and second day. Almost all the cookers were delivered there.

For the families in the village near Yanchi County, the use of the two solar cookers is probably not guaranteed as soon as enough biogas is available (see Figure 8 below). We also saw a Chinese solar cooker out of order there (Figure 9).



In the season when the rooms are heated with coal stoves, cooking will be associated with them. Picture 10 with Carol Fu was taken in the community center of Da shui keng; picture 11 in the village near Yanchi County.



From the Aceh project we can learn how important ongoing support is and how beneficial solar cookers are for applications with high energy requirements (e.g. cooking of water).

Acceptance will be high if the villagers support and inform each other about the sensible use and the wide range of possibilities. The exchange of experiences is probably good in

the villages, because life in these regions is not easy, so the families urgently need mutual help.

A translation of the main rules into Chinese is certainly helpful (see point 5).

The climatic conditions in the selected villages are very good for solar cooking. The region has many hours of sunshine. Annual rainfall is 200 mm. Compared to the cities, the air is clear. The typical walled courtyards around the houses, which keep out the wind, are advantageous (see picture 4).

5. About translation of parts of the documentation provided

During the remaining 2 days, I discussed with Bruce and then with Carol which texts he should translate into Chinese (rules and checklist). We went through the application video in detail and I explained each application. Some applications (canning, juicing) would require additional facilities and intensive supervision. However, they should be followed.

6. Preparation of further solar cooker projects

The Ningxia Center for Environment and Poverty Alleviation (Ningxia CEPA), which is involved in the project and is supported by The Amity Foundation, among others, and the Humanities and Development Institute at China Agricultural University, would also be a suitable organization for further projects. Mr. Li Fengyang could also provide the necessary information and make the preparations.

Attached is a calculation of the CO₂ savings and copies of documentation from the NGOs involved, which I received from Li Fengyang.



7. Further possibilities for improving living conditions in rural areas

After the World Summit on Sustainable Development (WSSD) in Johannesburg (2002), my wife and I were invited to a meeting in Neuenburg/Switzerland, which was organized by Dr. Wacker (anthropologist, University of Zurich) and which served as an exchange of experiences on how to make life easier in mountainous regions. The women from Ladakh who attended reported on the cultivation of apricot trees under very unfavorable conditions. Bruce and I successfully searched the Internet for more information and we passed it on (see Appendix A4).



The spread of adapted fruit trees could bring about a significant improvement in living conditions in this vast, largely treeless steppe (see pictures). The biologist Dr. Günther Kunkel, who has spent many years with his wife creating gardens on the edge of deserts, has done exemplary work in this area. He covered hollows with plastic sheeting and planted the tree in the lowest place (see Appendix A5). This prevents water evaporation.

Condensing water is directed to the roots and the tree is protected from damage by other plants. The first few years are crucial, until the tree has sufficiently deep roots.

A holistic approach to poverty reduction is probably preferable to a one-sided focus on solar cooking. Combining the solar cooker with biogas technology, as practiced in the "Smokeless Villages" in India, also has great advantages. The solar cooker ensures that the biogas plant is not overstressed.

The village visited on the 3rd day was provided with a water supply by Alcan Ningxia. The picture shows laying work on one of the houses.



There is a wealth of opportunities to improve living conditions in these regions, but often there is a lack of knowledge - as with the cooking with retained heat. Other techniques, such as building well-insulated houses from straw bales, require additional equipment (baling presses, etc.). In many cases, the various obstacles can be overcome with construction kits, as we show with the solar cookers.

8. Thanks

I would like to take this opportunity to thank everyone who made possible this project to spread solar cooking in poor villages in the province of Ningxia. My special thanks go to the core team, who have always proven themselves.