
Exploring the Impact of Providing Alternative Technology Products in Remote Tibetan Communities

AUTHOR(S): Dave Webb and Kevin Stuart

ABSTRACT

In the remote North-Eastern corner of the Tibetan plateau in the Western Chinese province of Qinghai, ethnic Tibetans spend many hours each day gathering yak dung, wood and other fuel substitutes necessary for heating, making tea and cooking. Over the past 7 years extreme cold (-35°C) and drought has had a debilitating effect on the environment upon which the nomadic people and the livestock depend. The use of solar cookers as a partial substitute for dung, wood, bushes and straw can help to alleviate some of the negative effects. This paper explores how introducing solar cooker technology has benefited not only the natural environment but also positively enhanced the quality of life of the Tibetan and Monguor people in 48 villages.

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Background

The Tibetan plateau (Qinghai-Xizang (Chinese)), is the youngest (3000 million years), largest (750,000 sq. km) (Jones 1996) and highest plateau in the world with an average elevation of 4,700m (Peissel 2002). Whereas the northern areas comprise mountains, vast basins, and rolling plateau of non-arable alpine meadow, the central and southern plateau is also characterized by wide river valleys more suited to the growth of barley, oats and other staple dietary food products.

The above factors determine the lifestyle of the Tibetan people with arable agriculture and the herding of domestic animals such as yak, goat, sheep, horses and cattle providing for the main basis of their economy (Jones 1996).

Between the years 1996 to 2001, the Tibetan region of Yushu, Qinghai was affected by severe weather conditions resulting in the loss of as much as 80–90% of the livestock (Webb and Stuart 2007). This has negatively impacted the nomads whose livelihood is heavily reliant on livestock-related trade (wool, milk, meat). An annual income of about US\$30-60 per person is insufficient to replace lost livestock (Webb and Stuart 2007), rendering much of the local population destitute.

While no single solution will solve the problem, one popular technology initiative, the provision of solar cookers, has the potential to replace dung and other biomass fuels, the depletion of which has made daily life difficult for the Tibetan people. The number of solar cookers in use in China has increased from 2000 in 1979 to nearly 630,000 in 2003,

making China the number one adopter of solar cooking technology in the world (Xiaofu 2004). In an unpublished white paper Xiaofu (2004) anecdotally suggests that solar cookers benefit the environment and recipients both economically and socially.

Adopting a case approach, this paper explores these 'benefit' themes in greater detail focusing specifically on the socio-cultural, environmental and overall quality of life implications of introducing solar cookers to the Qinghai region.

Method

During the period 2002–2003, 1,787 solar cookers were provided as part of a Canada Fund¹ sponsored initiative to 41 Tibetan villages (1427 households), seven Monguor villages (188 households), four Tibetan Buddhist monasteries (160 monks) and two Tibetan schools (around 250 students and two teachers). At the conclusion of the project², 10,000 residents were benefiting from the initiative. All solar cookers were provided following the preparation and successful submission of a proposal from each community. Each proposal was prepared by village representatives in conjunction with a project manager³, government representatives and a local NGO⁴ in the specific case of the Yushu prefecture. Villages participating in this project were located across an extensive geographic area covering not only Qinghai but also Sichuan, Gansu and the Tibetan Autonomous Region.

At the conclusion of each project, i.e., when the provision of solar cookers to a collective recipient (village, monastery, school etc.) was finalized, a comprehensive report was submitted to the Canada Fund. Each report included a detailed diarized account of each project, letters of thanks (original plus a translation into English) from the village leader or other designated leader from each recipient group (n = 39) and a translated interview commentary from a number of solar cooker recipients. This documentation, comprising over 31,000 words of text, provided for the sample of words that were explored using the WordSmith software package.

Findings

Following detailed textual analysis, six main, but recognizably interrelated themes were identified. Alphabetically these are: '*economic*', '*education*', '*environment*', '*health*', '*social-personal*' and '*time*'. Each theme is discussed in turn below.

¹ Details of the Canada Fund can be found at canadafund@cccsu.org.cn.

² The project was implemented by: one Monguor and 39 Tibetan students from the English Training Program, Nationalities Department, Normal Qinghai University under the guidance of Dr Kevin Stuart; Dr. Limusishiden, a long-time partner of the Canada Fund, in Huzhu Mongghul (Tu) Autonomous County, Qinghai Province; and Mr. Zhu Yongzhong, also a long-time partner of the Canada Fund and Director of the Sanchuan Development Association, in Minhe Hui and Mangghuer (Tu) Autonomous County, Qinghai Province and the Snowland Service Group, Yushu Tibetan Autonomous Prefecture, Qinghai Province.

³ Project managers comprised mostly of students from the English Training Program at the Nationalities Department, Normal University, Qinghai. Many were originally from the villages in which the student was acting as 'project manager'.

⁴ Snowland Service Group (Director: Mr. Rinchen Dawa).

Economic

This theme focuses on the economic advantages of owning a solar cooker. These include alleviating the need to collect and/or purchase yak dung, the price of which is becoming more expensive as demand surpasses supply potential.

Education

As a direct consequence of not having to collect dung, more children, particularly females, are able to attend school. It is worth highlighting that the opportunity to attend school, which is in fact a national requirement, is not available to all children. The remoteness of some communities and the non-presence of schools in these areas contribute toward the impossibility of attendance.

Environment

Yak dung provides for a natural source of nutrition for the soil. The availability of nutrition is reduced as the amount of dung decreases. This occurs directly because of reduced livestock numbers and/or dung removal by humans as a fuel source. The depletion of soil nutrient impacts on seasonal pasture growth upon which reduced livestock numbers are dependant. The above evidences a vicious ecosystem effect because, in turn, the population is dependant on the livestock for their existence. Thus at a simple level it can be seen that the provision of solar cookers provides some respite to the above negative ecosystem effects.

Social-Personal

The benefits discussed by respondents to this theme include those that can be described as domestic task related, such as boiling water for use in making tea, taking a bath, washing clothing, and cooking food. It is not uncommon to experience Tibetan nomads drinking upwards of 50 cups of tea per day. With butter added the tea becomes a major source of sustenance. Similarly, with temperatures often cold enough to freeze water, the prospect of a bath is less than welcoming. Access to hot water can go some way toward addressing this point of reluctance, with hot baths and subsequent cleanliness impacting positively on health. This is likewise the case with the use of hot water for washing clothing whereby hot water is better able to rid pitted clothing of germs that thrive in the cold.

Health

A recent World Health Organization report on the global health situation (Desai, Mehta and Smith 2004) reveals that smoke from burning solid fuel (i.e., dung) constitutes one of the major risks relating to death and disease and currently affects one third of humanity (2.4 billion people). The same report reveals that indoor pollution from burning solid fuels kills three people per minute or, 1.6 million people per annum (predominantly woman and children), and that acute respiratory infections, pulmonary disease (chronic bronchitis), lung cancer, asthma, tuberculosis, low birth weight, infant mortality, and cataracts have been linked to the burning of these solid fuels.

Without a solar cooker, up to nine hours a day can be spent breathing in smoke given off by burning yak dung. Thus, it would be logical to argue for the benefits of not having to do so. Solar cookers emit no such harmful emissions and consequently can be considered a positive health contribution.

Time

The benefits in this category, closely related to the aforementioned, include those that make a direct contribution toward enabling recipients to enjoy greater leisure as well as other individual and community pursuits through the provision of greater discretionary time. For example, one recipient highlighted this point by excitedly expressing the possibility of being able to visit friends now that they had a little more time. Similarly at the community level, this author has witnessed the formation of a dance and music theatre group who, with time to rehearse, are now able to play out Tibetan mythology to large audiences at special religious fests.

Summary and Conclusions

In the remote North-Western Chinese province of Qinghai (Tibetan plateau), the Tibetan and Monguor people struggle to gather yak dung, wood and other fuel substitutes for heating, boiling and cooking; the basic necessities for survival. Over the past seven years, extreme cold (-35°C) and drought has had a significant effect on the environment, the nomadic people and the livestock upon which these people depend. The environment has become increasingly denuded and many nomads are caught in a vicious cycle of poverty. The use of solar cookers as a partial substitute for dung, wood, bushes and straw can help to alleviate this cycle.

Based on an extensive exploration of over 31,000 words of text, this paper has presented the results of a program to introduce solar cookers into 48 remote community villages, four monasteries and two schools located on the Tibetan plateau. Successfully achieving the primary objective of this study, the findings here reveal that significant benefits accrue both to the environment and to remote communities when they are provided with solar cookers.

In this and other similar regions, tens of thousands of families would like to similarly benefit from receiving a solar cooker. With a life expectancy of about 10 years, the advantages to each recipient will be accrued many times over in a solar cooker's lifetime.

As the potential contribution of solar technology becomes more widely recognized, it is hoped that the task of funding the provision and distribution of such products will increase in prevalence. Consequently, demonstrating 'marketing in action', it is hoped that readers of this paper will be inspired to contribute by purchasing one or more solar cookers for a Tibetan population in need (See special request below).

Special request from the Authors – *The authors invite readers to provide a Tibetan family with a solar cooker by donating the funds necessary for purchase. One solar cooker costs around USD\$25 and will last a family about 10 years. Read this paper to find out what a huge difference a single solar cooker can make to a family and the environment. Then, contact the second author at kevin.stuart@gmail.com to obtain bank account details. To see the results of a similar project see <http://www.thdl.org/community/pdfs/Spencer2006.pdf>. We are currently fundraising for 39,600 RMB (approximately US\$5,000) to provide solar cookers to 360 Tibetan homes in Hualong County and in Hainan Tibetan Autonomous Prefecture in Qinghai Province, PR China. Just consider the value in your USD\$25 to a Tibetan family accrued over ten years.*