

# Sustainability Project: Solar Energy Workshop at Universidad de Chile

- Francisco Bucchi -

In Chile the basic energy-related needs (like hot water) of a large part of the population are not covered, although Chile has high natural potential for solar energy. Solar energy technologies are something only middle and upper class families can afford, mainly due to the considerable costs of the technology and installation. In this context, students at Universidad de Chile (UCh) have established the Solar Energy Workshop (*Taller Solar*, or TS) and have taken on the challenge of revolutionizing Chile's energy system from the bottom up.

The Solar Energy Workshop is a multidisciplinary initiative, started mainly by students from UCh, which aims at encouraging **low-cost solar energy use in society**. The members discuss the necessary paradigm shift regarding the way society satisfies energy demand in Chile. The philosophy of the TS Workshop is based on spreading knowledge of this technology through free lessons, open to any interested person from inside and outside the University. By means of 8-9 lessons per semester, people were trained in the construction and installation of low-cost solar devices, mainly flat-plate collectors for water heating (fig. 1).

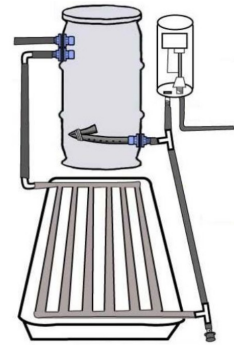


Figure 1: Schematic view of a low-cost solar water heater built at TS

These lessons, given every Saturday morning, were 3 to 4 hours long, and were carried out in facilities belonging to UCh and/or community-based organizations, such as schools and neighborhood committees. Every session consisted of approximately 2.5 hours of manual construction of collectors ('learning by doing'), during which the participants worked in small groups, each making a collector under the guidance of an instructor (image 1). This was followed by 1.5 hours of a group discussion involving all participants, and which included presentations and/or documentaries concerning the basic technical, social, economic and political aspects of energy. These wide-ranging political discussions have led to developing our own concept of *Energy Revolution*.



Image 1: A practical session of the Solar Energy Workshop, where participants/future instructors learn how to build solar devices

The collectors built during these courses were installed in community or public places, such as neighborhood committees, schools and sports facilities (when the materials for the collectors were publicly funded), as shown in image 2, or in private homes (when the materials were privately financed). Although the achievements of the TS Workshop have been mostly qualitative so far — i.e., development of a theoretical basis and a methodology that can be adapted to various circumstances—, there have been some quantitative results: up to hundred devices have been installed so far in the course of these various initiatives. The initiatives carried out have taught hundreds of participants how to make their own solar collectors to heat water.

## Conclusions

The Solar Energy Workshop is a successful experience in the framework of Sustainable Development in Higher Education Institutions, because it shows how theoretical knowledge developed at UCh is put into practice through the use of low-cost solar energy devices.

The main strength of the TS Workshop is its horizontal structure and the heterogeneous and multidisciplinary nature of its members. On the other hand —as in many volunteer organizations—the weaknesses of TS are the scarcity of human resources, the monitors' inability to dedicate themselves full-time to the TS, and the lack of sufficient financial resources.



Image 2: Solar water heater built and installed at the locality of Mincha Norte (Coquimbo Region)