

**EXAMPLES OF TEP (TfL) SOLAR ENERGY  
PROJECTS, PAST AND PRESENT SINCE 1980'S**  
**Kari Silfverberg, November 2015**

Short overview of small-scale solar energy development projects (mainly solar cooking) carried out by TEP (TfL) during 1986-2015 in Finland and African and Asian countries

# 1 Starting with small-scale solar energy studies and developments in 1986

- Design of simple integrated solar water heaters for the use of poor families in Addis Ababa - Kebele 37 urban upgrading project (with Finland-Ethiopia Friendship Society)
- Some prototypes were built and tested in Finland and Addis, but larger production failed for various reasons – costs etc.
- Testing carried out partly at Helsinki University of Technology (TKK) physics lab and homes etc. (Risto Kekkonen, Kari Silfverberg, Paul Silfverberg, Pertti Karvonen, Paul Collander & Tom Sundman etc.)

## 2 Small-scale solar cooking development projects in Namibia 1992-1997

- Development of simple solar cookers by TEP started in Finland in 1992 with Risto Kekkonen as team leader.
- 3 types of cookers were designed, built and tested:
  - panel cookers
  - box cookers
  - parabolic cookers
- Construction manuals were produced for parabolic and box-type cookers and distributed to interested individuals and organisations
- Contacts established with partner organisations in Namibia: Green Namibia Community in Ongwediva and Penduka Womens Association in Windhoek.
- More than 100 box cookers produced with partner organisations – Petri Konttinen, Jouko Niemi and Tarja Iivonen



Box-type solar cookers built in Ongwediva in Namibia 1996 in cooperation with Green Namibia Community



One of the used parabolic cooker models

### **3 Training for construction and use of solar cookers in Nepal, 1995-96**

- Studies carried out about the functionality and suitability of different types of solar cookers with Nepalese partner organisations - parabolic cookers were found more popular than others.
- Training for construction and use of solar cookers was organised with Nepalese partner organisations – Plants for Life and Centre for Rural Technology. Also programme in Nepalese television.
- Ari Lampinen, Hannu Virtanen and Riitta Wahlström provided training and studies. TfL-2 Manual for Solar cookers was used.
- TfL and Nepalese partners gave presentations at IUFRO World Conference in Tampere in 1998.

## **4 Photovoltaic lighting for rural villages in Benin, 2009-10**

- TfL was involved with development of photovoltaic lighting for 4 rural villages in Grand Popo district in Benin during 2009-10. The local partner organisation was Nonvikpopo womens organisation.
- 150 pv units (Naps Systems) were installed and training provided. Mia Bungers was coordinator from Tfl. Funding was provided by Ministry for Foreign Affairs and TfL.

## **5 Cooperation with schools and training inst. for solar cooking development in Finland and Ethiopia etc.**

- Simple solar box cookers (TfL 2 model) constructed at Äetsän kansalaisopisto in 1994 and distributed to various development organisations in African countries.
- Courses on solar cooking technology organised at Metropolia University of Applied Sciences for students from Finland and various developing countries (Ethiopia, Kenya, Nepal, Tanzania and Zambia etc.) with contributions from TfL (Antti Tohka, Markku Komonen and Kari Silfverberg) since 2012.
- Veikkola school in Kirkkonummi started in 2012 to train students in construction of simple solar box cookers with technical assistance from TfL (Kari Silfverberg, Jouko Niemi and Arto Vuorela).
- Cooperation was organised with 2 partner schools in Ethiopia and a study trip arranged in September 2013 – teaching





**Teaching solar oven constr. At Yemane Birhan school in Addis Ababa, Sept. 2013**

Tech. teacher Aki Kukkonen from Veikkola school – also  
TV crew from Finnish television (YLE) – document  
ERILAINEN AURINKOMATKA



**cooker at Sertse Dengel school in Bahir Dar,  
Ethiopia**

The exercise was completed in 3 days. Training by Kari Silfverberg.



**Solar oven (Telkes type) completed at Bahir Dar Polytechnic College in Ethiopia, February 2015**

Training provided by Aki Kukkonen and Kari Silfverberg. Participants were teachers of the college.

## 6 Continuation of training programmes for solar cooking

- During February-May 2015 TfL prepared a project plan for an extended solar cooking training programme in Ethiopia in cooperation with an Ethiopian environmental NGO – the Ethiopian Wildlife and Natural History Society EWNHS.
- A project funding application was submitted to the Ministry for Foreign Affairs, but unfortunately the ministry did not provide funding for any new NGO-development projects for 2016, due to the dramatic budget cuts announced by the new government. A new funding application will be prepared in May 2016.
- A comprehensive manual for the construction of solar ovens for Ethiopia has been prepared by Kari Silfverberg, Arto Vuorela and Aki Kukkonen.
- TfL has recently been providing technical assistance for a new solar cooking cooperation project prepared by a Finnish Lions



## Training courses for solar cooking in Finland

Short courses on how to build and use a solar cooker have been organised with different partner organisations, f.ex. City of Helsinki Environment Centre (Harakka Nature School)

# 7 Some examples of solar cooker constr. at Metropolia in 2013-14

Advanced combined model built by Markku Komonen



High efficiency solar oven built by Kenneth

