SOLAR COOKING IN THE UK

Quantifying domestic energy saved using a solar box cooker

LONDON 2012 & 2013

Solar cooking data logged in London 2012-2013

- USING A STANDARD SOLAR BOX COOKER
- IN A REGULAR 2 + 2 KIDS FAMILY SETTING
- TESTING BY COOKING FOOD
- SAVINGS EQUAL TO 36.5 kW PA RECORDED
- TESTING STANDARD PROTOTYPED
- EASILY UNDERSTOOD METHODOLOGY

INTRODUCING THE ONE UNIT DAY

CONVENTIONAL COOKING

1kWh grid electricity will cook
a standard measure of chickpeas

SOLAR COOKING

If 1 sunny day cooked the same
standard measure of chickpeas

THIS WOULD BE A
‘ ONE UNIT DAY ‘

Why Chick Peas (Garbanzos)?

- Its hell to cook them conventionally
- The household loves them – (hummus, falafels, salad, chana masala etc)
- They’re cheap & they store well
- No need to soak them prior to cooking
- Easy & fast to prepare in the morning
- Easy to weigh and measure

Solar Cooking in the UK

RESULTS 2012 & 2013

2012

40 ONE UNIT DAYS

- 40 kWh Electricity displaced
- £6.40/$10.18 saved
- 6.2% yearly electrical cooking energy displaced
- 40 Regular tin size portions prepared

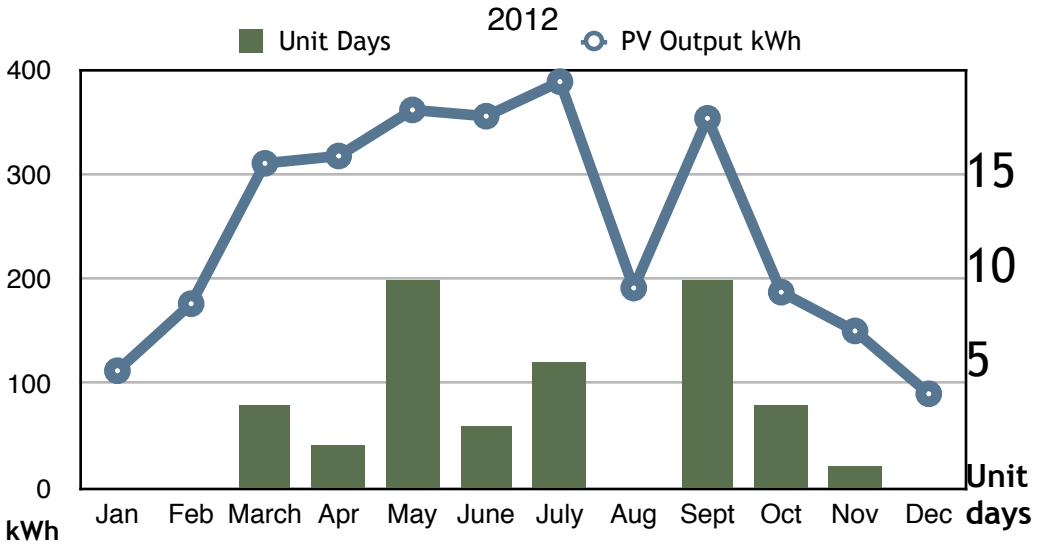
2013

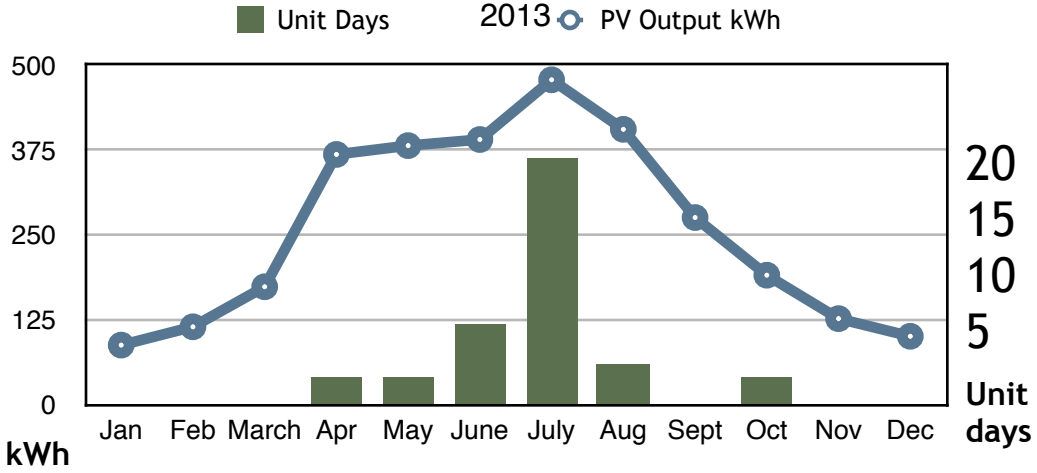
33 ONE UNIT DAYS

- 33 kWh Electricity displaced
- £5.28/$8.39 saved
- 5.1% yearly electrical cooking energy displaced
- 33 Regular tin size portions prepared

Solar Cooking in the UK

UNIT DAYS vs LOCAL PV OUTPUT





SITE LOCATION:
Urban London

0’30’ West
51’30’ North

UK WEATHER
Temperate
Maritime

Always rains on school holidays

Variable at all other times

A Naturalistic Study - Caveats

- Designed to test real time solar cooking use
- Practical approach adopted
- First multi-year test of solar cooking in the UK
- Not a strictly controlled laboratory study
- Domestic, family & vocational duties meant the study data was restricted
- Methodology not fully peer reviewed

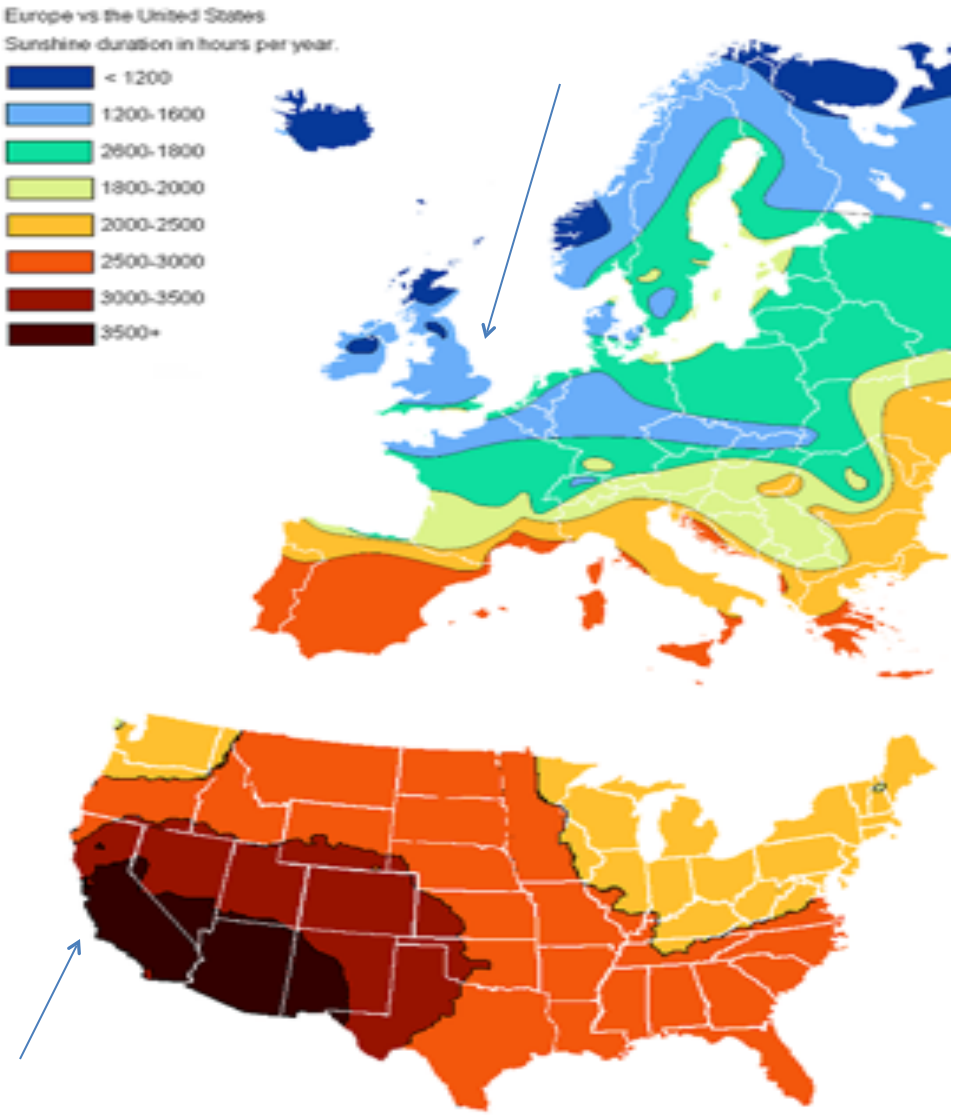
Solar Cooking in the UK

The Brutal Truth

The methodology adopted has recorded data indicating that solar cooking is viable in the UK.

The iso map gives a fuller picture of the resource available in northern Europe.

Its a privilege to present the study to the SCInet 2014 Conference and to invite your discussion and feedback of this human scale approach to a testing standard for solar cooking.



Stewart MacLachlan RIBA MSc

PROFESSIONAL BIOGRAPHY

Stewart MacLachlan
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Stewart lives, works and studies in London, UK

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- ***Stewart MacLachlan*** *is an alumnus of the Centre for Alternative Technology / UELMaster's Program. He graduated from their Advanced Energy and Environment Studies course in 1996, and has since pursued studies in the potential for solar cooking in the difficult cloudy conditions of the UK, 50 degrees north of the equator. His current interest is in practical/empirical demonstrations of the viability of cooking with an unattended solar box oven, and he has been collecting data for over two years. He is also developing an 'integrated cooking' approach, adapted to the UK incorporating frugal devices such as rocket stoves, solar cookers and heat retention cooking.*
- Stewart received his B.Sc. (honours) and PG Dip Architecture from the University of East London, UK in 1992 and 1995. He is a chartered member of the Royal Institute of British Architects (RIBA) being elected to full membership in 2005 and a member of the Architects Registration Board (ARB).
- Specialising in energy use and conservation in buildings he worked from 1996-1999 at the Energy Conservation and Solar Centre (ECSC). Whilst at ECSC Stewart was the Technical Manager of a team piloting the Warm Front project which went on to be adopted by the UK government as its main fuel poverty programme.
- From 1999 - present Stewart has worked in practise as an Architect on various private and public schemes with a portfolio focus on energy conservation and ecological building materials. He has also led on community self-build schemes, where volunteers gain hands on skills in construction and ecological building systems.
- Stewart is the owner and founder of Ecozoom UK which is the sole distributor for Ecozoom rocket stoves in the UK. High efficiency wood, charcoal and biomass cookstoves have been distributed in the UK and across the EU since start up in 2013, creating a market where one previously hadn't existed.
- *Stewart is looking to develop and expand research into UK adapted solar and integrated cooking methods.*