Sun&Fun-Park Manual

and lessons learnt from the 23WSJ

A) What is the Sun and Fun-Park?

Introduction: The Sun and Fun-Park is an idea within the 'scouts go solar' activities which was introduced in summer 2015. It is a place where a larger number of scouts can get into renewable energy in a fun way. The main focus is not education, but playing games and trying out fun solar toys and games.

Goals of the sun and fun park:

- Inspire young people about renewable energy while playing.
- Stimulate curiosity and create interest for the topic.
- Offer activities which do not need Instruction.
- Inspire the kids (and leaders) for the solar badge activities.

B) Experience from the Sun and Fun-Park at 23rd World Scouts Jamboree

Resume of the activities: The Sun and Fun-Park was part of the Scouts Go Solar (SGS) activities held from 29 July to 7 August 2015 at the Global Development Village of the 23rd World Scout Jamboree in Yamaguchi, Japan. Within that period, about 2,500 scouts from all over the world were able to participate in the workshops and the Sun and Fun-Park held at the two tents/booths that were assigned to the SGS Team.

In the “Sun and Fun-Park,” scouts were given a less structured environment for learning about solar energy than in the workshop. They could do solar art using a rotating disc to create designs on paper placed on top of the spinning disc, which is powered by solar energy. They also had the opportunity to experience solar cooking with the use of portable solar cookers. Other activities in the “Sun and Fun-Park” included the grasshopper race, which makes use of solar-powered grasshopper toys, and playing with a solar-powered bubble-maker.

Analysis and lessons learnt (by Michael Götz):

(Note: you find a list of all described activities with pictures in section C)

- The scouts **loved** the sun and funpark!
- The scale of attraction from highest to lowest was: Spinning disc – grasshopper race – bubble machine – beeper.
- Two activities which were held at the workshop, but could be part of a sun and fun park: The 'solar darts board' and 'solar art using lenses'.
- Solar cooking does not enter the 'ranking', but was a great attraction.
- Other ideas which were not integrated at the WSJ, but could be good to do: solar cars, solar boats in a pond, solar train for small kids and anything with bike power: water gun, table football, music.
- New ideas which would need development time: sound carpet with mirrors, single popcorn popper.

- How to make it 'educational':
  - It was good to give each group the „10 slides introduction“ (5 to 10 minutes).
  - It could be good to ask each group a few question in the end to make them reflect the subject.
- The 'setting' is important: Give the 'artist' an artists coat and a 'beret', make the darts board game as a small competition between groups (or write the temperature of each group on a board), make some sound when the winning grasshopper reaches the goal line, build a pond with a solar fountain for toy boats, etc.
- Put the solar panels in a place where watching kids might shade them (= on the table). The kids using the toy will tell the others to get out of the sun → <u>all learned that the toy runs on direct solar energy</u>...
- Our booth at the WSJ lacked decoration. It would be great to create the atmosphere of a 'fun fair', even of a 'nostalgic fair'. This could include:
  - Decoration with coloured fabric, 'airbrush' paintings and wind- and light effects. The latter could be done with flashing LEDs (need to be very strong on a sunny day!) or moving mirrors or CDs with coloured filter plastic or 'disco balls' with sqares of mirror.
  - Each game could have its own table or small booth with tablecloth etc.
  - The solar kitchen could look like a sales stall 'selling' popcorn etc.
  - The team could be dressed up in old fashioned uniforms.
- It would have been great to have a little give-away to rememeber the SGS project (and its web directions...) or a least a stamp with the SGS logo.

<u>Some pictures to illustrate the decoration ideas (to be adapted to our topic):</u>

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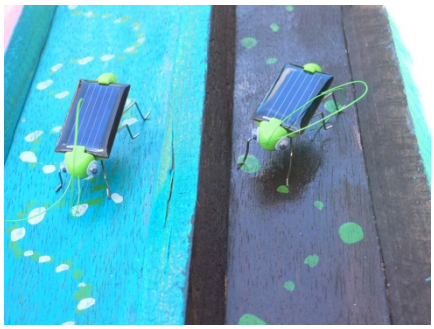
C) Detailed list of all games and toys as they have been used at the 23WSJ or at other events

One remark about shopping materials: Be aware that many articles come from China and can be ordered **very** cheap through the internet **as long as** you order about two month ahead. If you order 'last minute', things become much more expensive due to express shipping.

C1) Grasshopper race track

The solar grasshoppers are small plastic animals with a vibrating motor. If you put them on a inclined slope, they move downwards. The idea is that the racetrack is in the shade and every kid has a small mirror to point at his cockroach to make it 'run'.		

Materials list:

Item	Estimated cost in $US	Where to buy
Solar grasshopper and other animals	2$ each	Www.Ebay.com. Www.Aliexpress.com
Option: Solar animals made in France (beautiful!)	12$ each	Www.heliobil.com
Wood or strong cardboard about 1,5m x 0,4m (smooth surface, or the grasshoppers legs might get trapped!)		Wood store, DIY shop
5 Wood or cardboard lath 1,5m x 2cm x 2cm		Wood store, DIY shop
Paint and brushes		
4 hand mirrors	12$	Supermarket, china shop, stationary shop

C2) Bubble machine

The idea is to buy a commercial soap bubble machine and run it on a solar panel. Kids like the bubbles and they do make the machine stop and go by shading the solar panel.		

Shopping list:

Item	Estimated cost in $US	Where to buy
Bubble machine which works on 6V to 12V DC[1]	40$	Toy store, internet
20W solar panel 12V	25$	Solar materials store, internet
DC / DC voltage converter 12V to voltage of the bubble machine	15$	Electronics or car accessory store, internet
Wires and connectors		Electronics or DIY store
Plywood and paint (if you prepare some stand for it)		
Bubble soap mixture[2]	10$	Internet, toy shop
Or: dish washing liquid with glycerine, shampoo, etc.		Supermarket

[1] If it runs on batteries only, you can adapt a connector.

[2] A commercial mixture is more expensive than shampoo, etc., but produces a lot more bubbles!

C3) Solar art with spinning disc

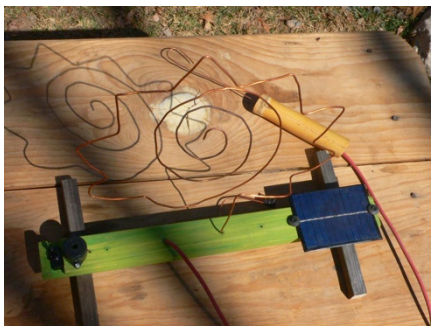
A wooden disc is spinning due to a motor hidden in its base. The motor is run by a solar panel. The kids clip a sheet of paper on the disc and paint circular lines with water paint. It is more fun if the kids get a French painters 'beret' (hat) and a painters coat.		

Shopping list:

Item	Estimated cost in $US	Where to buy
12V motor (strong and rather slow)	20$	Electronics shop, internet
Plywood		
20W solar panel 12V	40$	Solar store, internet
Paint and brushes to paint the machine		
Water paint for kids and brushes	10$	Supermarket, Stationary shop
French artists coat	?	2nd hand shop or use chemist's coat
French artists 'beret'	5$ - 20$	Internet, 2nd hand shop
A lot of sheets of paper! (recycled paper if possible)		Stationary shop, supermarket
Option: a stamp with the scouts go solar logo and internet address plus ink (print a logo on every sheet before distributing it)	30$	Stationary shop, stamp shop, internet

See separate construction manual on Solafrica.ch/scout-badge

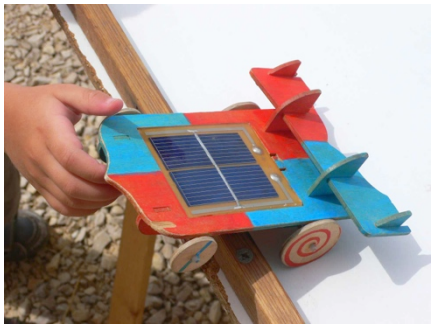
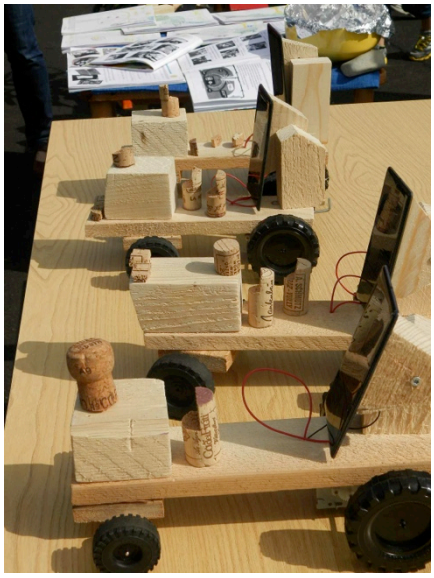
C4) The 'beep'

The beep is a simple but funny toy which consists of a copper wire and a copper ring which are connected to a small solar panel and a 'beeper'. The ring has to be passed over the wire figure without touching it.		

Shopping list:

Item	Estimated cost in $US	Where to buy
Small solar panel 6V	10$	Internet, solar shop
Beeper (prefer a 'higher' sound as it needs less electricity)	5$	Electronics store, internet
Semi-rigid copper wire 2m	4$	Electronics store or hardware store
Paint and brushes to paint the machine		
Bits of wood, wires, switch, ...		

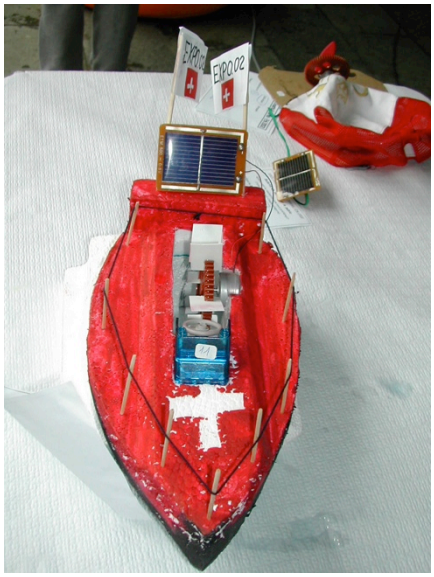
C5) Solar cars

Solar toy cars can be run with a small motor and one or two solar panels. Its more fun if the kids get mirrors to make the cars run faster. It looks cooler if you can set up a race track. (You can buy a commercial kit to make the solar cars or build them on your own)		

Shopping list:

Item	Estimated cost in $US	Where to buy
Solar toy car kit	40$ each	Switzerland or ebay.com, www.heliobil.com
4 hand mirrors	12$	Supermarket, china store

C6) Solar boats

Solar toy boats can be run with a small motor and one or two solar panels. They need some 'pool' and water... It looks good if there is a small solar fountain in the pool. (You can buy a commercial kit to make the solar boats or build them on your own)		

Shopping list:

Item	Estimated cost in $US	Where to buy
Solar toy boat kit	40$ each	Switzerland, France, www.heliobil.com or ebay.com
4 hand mirrors	12$	Supermarket, china store
Solar fountain	50-90	Solar store, internet (a good model is: 'PALERMO')
Material to make a pool (canvas, wood or hay bales, …), water bucket		

C7) Solar art with lenses

The solar art is a 'classic' from the KISC workshops. It needs strong sunglasses and a person supervising that the kids use them.		

Shopping list:

Item	Estimated cost in $US	Where to buy
Lenses (at least 3x concentration)	4$ / each	Supermarket, china store, stationary shop

Very strong sunglasses	5$ / each	Supermarket, china store, or build your own (see Solar Energy Handbook)
Option: a bit of plastic used to darken car windows[3]	10$	Car tuning shop, DIY shop
Small bits of wood or leather	?	Ice cream sticks etc.

C8) Solar darts board

The solar darts board is an experiment about concentrating sunlight / thermal solar energy. A group must try to heat the thermometer in the 'eye' of a darts board as high as possible using small hand mirrors.		

Shopping list:

Item	Estimated cost in $US	Where to buy
Darts board	15$	Supermarket, toy store
Digital thermometer with cable extension (else: use a 'meat thermometer')	10$	Supermarket, DIY shop
10 hand mirrors	30$	Supermarket, china store

C9) Bike powered toys

Bike power is in principle not our topic, but it is related enough and good fun for the kids. You can use a bike for music, preparing smoothies, run a water gun and much more.		

[3] Glue this sheet on cheap commercial sunglasses to make them stronger or make your own cardboard sunglasses as described in the solar badge handbook.

C10) Solar cooking

Solar cooking combines perfectly with the games and toys of the Sun and Fun-Park. Make little things like popcorn (need a good parabolic reflector!), small cookies, etc. to give away. Why not setting up a decorated 'food sales stall' (which can 'sell' for free, for singing a song, ...)		

You will need solar cookers (see the scouts go solar ambassador web directions or build one, plans are available at www.solarcooking.org), cooking pots, kitchen utensils, sunglasses, food, oil, etc.

C11) List of materials which are useful for setting up and decorating the sun and funpark

Useful are: bits of wood, metal wire, screws and nails, acrylic paint and brushes, glue, hand tools, etc. for preparing the experiments. As well as small tables (or fruit boxes, etc.) for the toys.

Shopping list:

Item	Estimated cost in $US	Where to buy
Bits of wood		
Acrylic paint and brushes		Supermarket or paint store
Nails, screws, metal wire, ...		
Glue		
Small tables? Used fruit boxes?		
Plastic boxes to store the toys later on?		

Hand tools: Hammer, different screw drivers, file, sandpaper, different pliers, scissors, saw, ...

Electrical tools (for more sophisticated decoration): Electrical drill ? Jigsaw ?

Michael Götz, 26.10.15