



SOLIDARITY TRACKS
Cultural NGO for Youth
Lefkas/Greece

Renewable Energy Guide

For Youth Trainers and Trainees



Lefkas - Greece, May 2010

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Dedicated

To those who want to save the planet and our quality of life.

For the next generations...

Thanks

This book was created with the support of the European program "Youth in Action".

Solidarity Tracks thank the staff of the Greek Institute for Youth who supported the project, the Municipality of Lefkas and the Euro-Mediterranean partners for the effective cooperation.

A special thanks is addressed to the members of the working group Who have devoted valuable time for the creation of this work.

FOREWORD

Nowadays, as we are confronted with the threats of the climate change, we increasingly feel the need to face the real needs of our planet, which means we have to reduce the emissions of greenhouse gases while ensuring access to energy for as many people as possible. There are three kinds of renewable energy which can provide for our needs and help save the planet: wind, sun and bio-fuels.

In this current, complicate context it is important to raise the awareness of the younger as to some crucial matters around energy and climate change, which taking into account the environment and the society at large. Showing the advantages of the renewable sources of power in the frame of an evolving energy context will bring about and corroborate major changes in people's behavior through educative actions pertaining to the use of energy, creativity, consuming and various activities environmentally friendly.

In the light of all this, 24 young people and youth's educators coming from 9 countries of Europe and the Mediterranean have recently gathered on the Island of Lefkas (Greece) taking part in a 8-day seminar promoting the views' exchange over the education about renewable sources of energy and bearing the title «Renewable energy the 3 sources can save our planet». The purpose there of was exchanging experiences and sharing views in order to compile the educative guide in hand aimed at encouraging actions among young people, enhancing the energy and promoting a broader development of the sources of renewable energy.

The Guide in hand propounds a program of raising the youth's awareness of the necessity of facing up to the climate threats through an informal learning made up of an active participation in simple and concrete projects.

The teamwork which produced this Guide have reserved enough space within it for the exchange of experiences and initiatives on an individual and local scale, which will help everyone interested share in these experiences around renewable energy. By enriching this Guide we will establish a fruitful, sustainable cooperation in the Euro Mediterranean zone on the subject of the Education on renewable energy.

It is hoped that this collective work will contribute to the development of a new model of environmental education and enhance young people's awareness of the importance of «greener energy».

The team of Solidarity Tracks

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Introduction

Why we developed this guide

As the entire world is being threatened by the climate changes we developed this guide:

- To raise awareness among young people and the citizens in issues of energy control and developing renewable energy resources.
- To inform and reflect the young generations' views especially in issues related to energy consumption in order to track changing attitudes.
- To develop training tools for youth workers to enhance their knowledge and educational process, programs and activities in renewable energy



When and where we developed this guide

The content of this guide was conceived in Lefkada - Greece from 07th of May, 2010 to 16th of May, 2010 in the 3.2 Action from within the Youth in Action Program in the Greek Institute for Youth named "Renewable Energy: the 3 Forces Can Save Our Planet"

24 participants representing 12 organizations from 9 countries
Algeria, Egypt, France, Greece, Jordan, Morocco, Romania,
Spain and Tunisia.
The members of these organizations are interested but not all
are professionals in the theme of renewable energies.



- By organizing workshops, exchanging experiences between all EuroMed countries, and conducting practical experiments on prototypes of renewable energy sources.
- Selecting the relevant materials.
- Conducting site visits.



To whom we developed this guide?

For Youth workers and Youngsters of Euro Med countries



Preparing Trainers

Definition :

Renewable energy is the energy that is produced from natural sources without harmful interference.

Some examples on natural sources: sun, wind, water, plants and animals.



Basic Information

The mainstream forms of renewable energy are:

Solar power :

Definition :

The energy that uses the rays of the sun

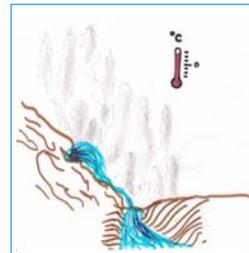
Types :

- Thermal: the rays of the sun are used to heat different materials like water with steel pipes.
- Photovoltaic: the rays of the sun are used to generate electricity with solar panels

Wind Power :

Definition :

The power of the wind is used to generate electricity
And movement



Hydropower :

Definition :

The properties of water are used to produce energy

Types :

- Hydroelectric: The strength of flowing water is used to generate electricity.
- Thermal: The heat of naturally occurring thermal water is used for heating.

Biofuel

Definition :

The naturally occurring oils in plants are adapted to work as fuels.

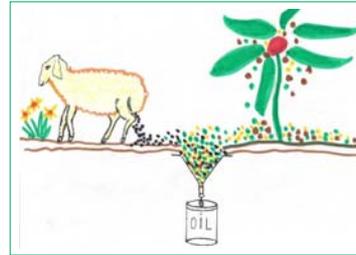
Types :

- Extracted from the fat or waste of animals.
- Extracted from plants.

Biomass

The waste of plants is used to produce biogas.

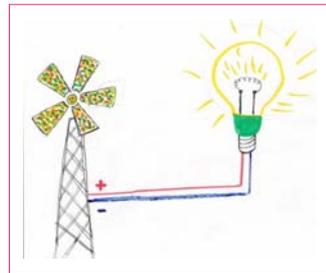
Other :



Beside these widespread resources there are number of new ideas for renewable energy that are being developed.

General Characteristics of renewable energies

1. Available for everyone
2. Can be used without ending
3. They do not affect the environment
4. Naturally occurring
5. Method of production can be perfected



General Advantages of renewable energies

1. Could be available directly in your home
2. Can be stored and shared
3. They can take advantage of uninhabited areas
4. Can produce a lot of energy with small efforts
5. Can be adapted to many types of activities (transportations, mills, heating, ..,etc)
6. It's easy to show that renewable energies are more convenient than fossil ones



General Challenges of renewable energies

1. If these resources are produced in large quantities they still have to be transported as in the case of fossil energies.
2. Method of production is expensive
3. To raise awareness among citizens about renewable energy solutions
4. Pressure from lobbies (any kind that affects environment policies) in favor of fossil fuels stops or slows down transition to renewable energies
5. Needs more scientific investigations to make them even safer, cheaper, accessible and efficient
6. Might need large spaces for installation



Green home in Lefkas



Green home in Matmata



Supportive tools and methods of education

The way of learning becomes more productive by experiencing some practical activities:

- Experiments
- Games
- Interactive Theater
- Painting
- Photography and Video
- Hand crafts

Experiments

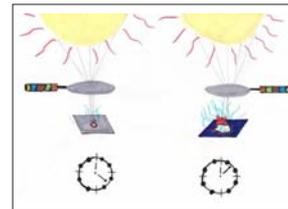
Each group can adapt any plan to their own countries, provided materials, knowledge and innovative ideas.

Experiment 1: Magnifying glass

Absorbed by different colors. The children will learn that a magnifier can concentrate the rays of the sun and what color is best.

Explanation :

- Let the children play with the magnifier
- Give them different colored papers
- Concentrate the sun on these papers
- Let them check the results



Think and Answer :

- How did you burn things before?
- Which is better?
- How can this be used at home?
- What happened to the white paper? Why?
- What happened to the black paper? Why?

Experiment 2 :

Wind Turbine

Explanation:

Follow the pictures and use the provided materials to build a small scale wind turbine which works as a water pump.

Think and Answer:

- Why do you need the tail?
- What else can we use this model for?
- Can you use this model at home?



Experiment 3

Solar Grill

Explanation:

Follow the pictures and use the provided materials to build a solar grill which concentrates the rays of the sun to heat and cook food.

Think and Answer:

- How can you make this grill more efficient?
- What age groups can use this device?



Experiment 4 :

Ecological House model

Explanation:

Follow the pictures and use the provided materials to build a model of ecological house able to utilize and store all natural energies (Sun, Rain, Wind and Water) in order to be independent from any kind of fossil energy.

The trainer should try to encourage and help peers to try out in practice the elements on the model.

Think and Answer :

- What did this experiment add to your knowledge?
- What are your other needs and how can you include them in this model?

Experiment 5 :

Solar Dryer

Explanation:

Follow the pictures and use the provided materials to build the dryer machine that can be used to dry food, vegetables, fruits, seeds, spices and so on.

Think and Answer:

- Why is this device better than the traditional methods?
- What other things can you dry using this device?



Interactive Theater

A family has gone to have a picnic, they forgot to bring the burning stuff, what alternatives do they have! Three groups have to provide solutions for this situation with role-playing. Trainer gives each group different materials: 'cow dung', two stones and a magnifier.

Painting

Children are asked to paint how they would use the elements of nature. Followed by reflections.

Photography and Video

Group of youngsters are asked to explore their environment and take photos or make movies of examples of pollution, each child has to provide titles. Followed by reflections.

Conducting Workshops

Groups of youngsters should be asked to reflect and make conclusions by themselves on the following topics:

- The dangers of climate changes and challenges
- The characteristics of renewable energies
- How renewable energies generate new jobs

Find references to external resources

The trainer should offer websites, books and articles that are easy to understand. This information can be found in national websites, specialized organizations, libraries, schools manuals or national agencies.

Organize scientific groups and visits

You can ask the help of specialized organizations, companies, farms... etc to organize scientific days at your organization/school to talk about the renewable energy or visiting these institutions to see good practice models.

Proposed projects

Organizations should apply for resources at agencies such as the Youth in Action Program, Anna Lindh Foundation and the European Youth Foundation, YOUTHetc.

These projects should include trainings, reflections and technical practices in an international environment (like Action 3 of Youth in Action Program).

Be Constructive

Children should be taken out from the stage of being receivers and observers into the stage of being contributors to the teaching process of the trainer.

Let the child discover through experience and encourage him at all stages to express his impressions and inquires. In addition the trainer should educate the trainees about dangers of using some tools during experiments.

General Advices

- Switch-off lights behind you.
- Travel to work by bike, or in groups or use public transportation
- Change your traditional light bulb with the new economical ones
- Close the window when you cool or warm your home.
- Switch off (not just put in standby) your energy using devices when you are not using them.

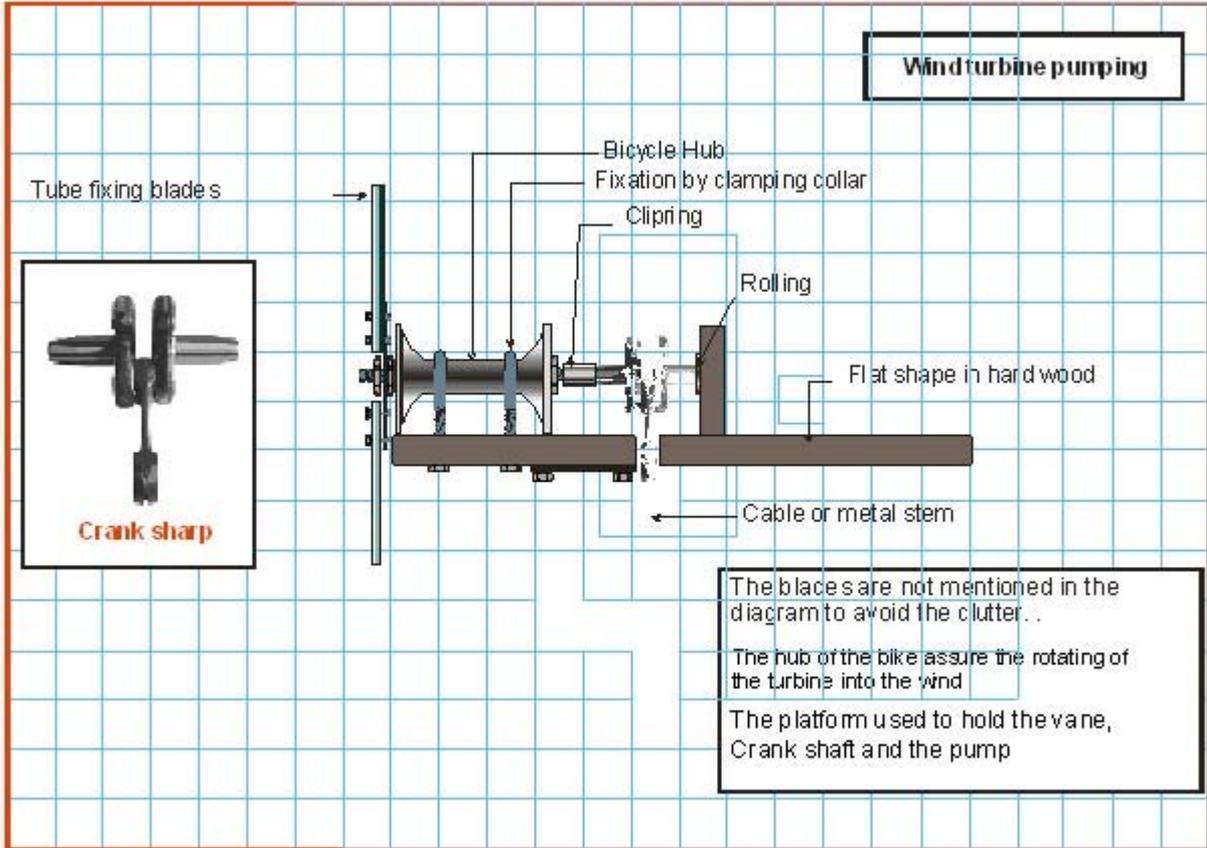


Initiatives of your choice

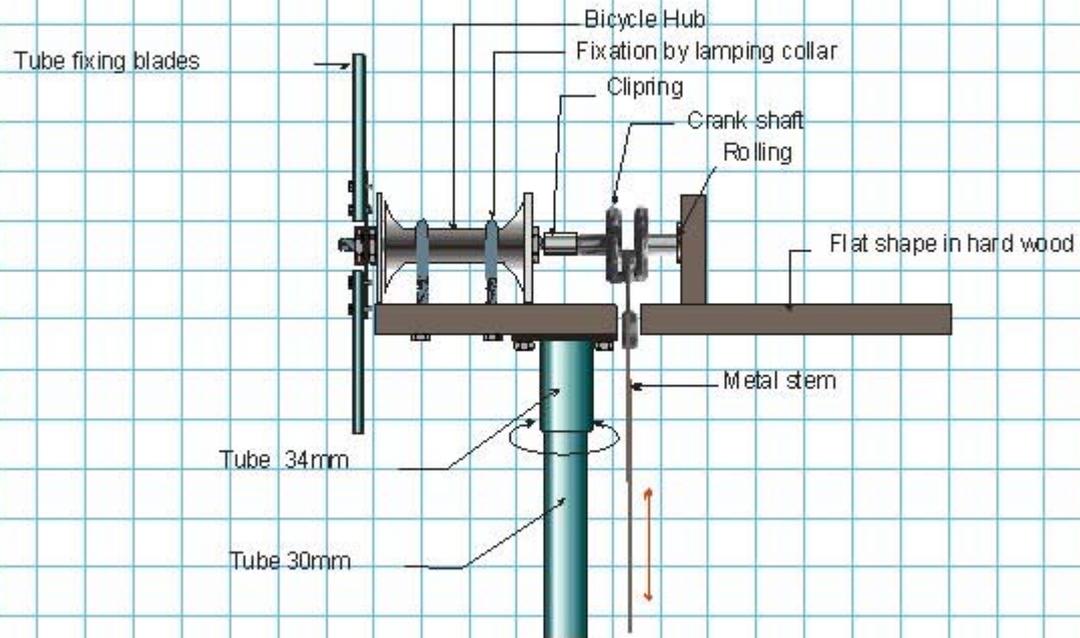
Please your own ideas here

A large grid of graph paper with a light blue background and a thin red border. The grid consists of 20 columns and 30 rows of small squares. The text 'Initiatives of your choice' and 'Please your own ideas here' is centered at the top of the grid.

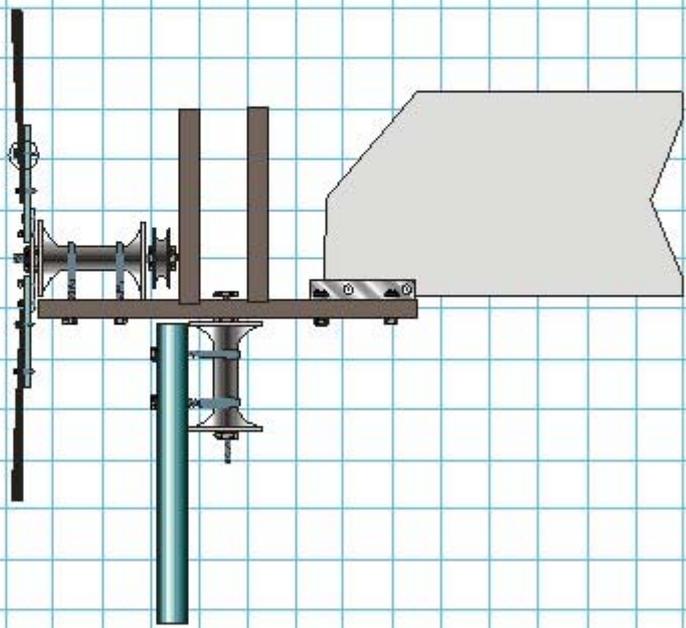
Annex

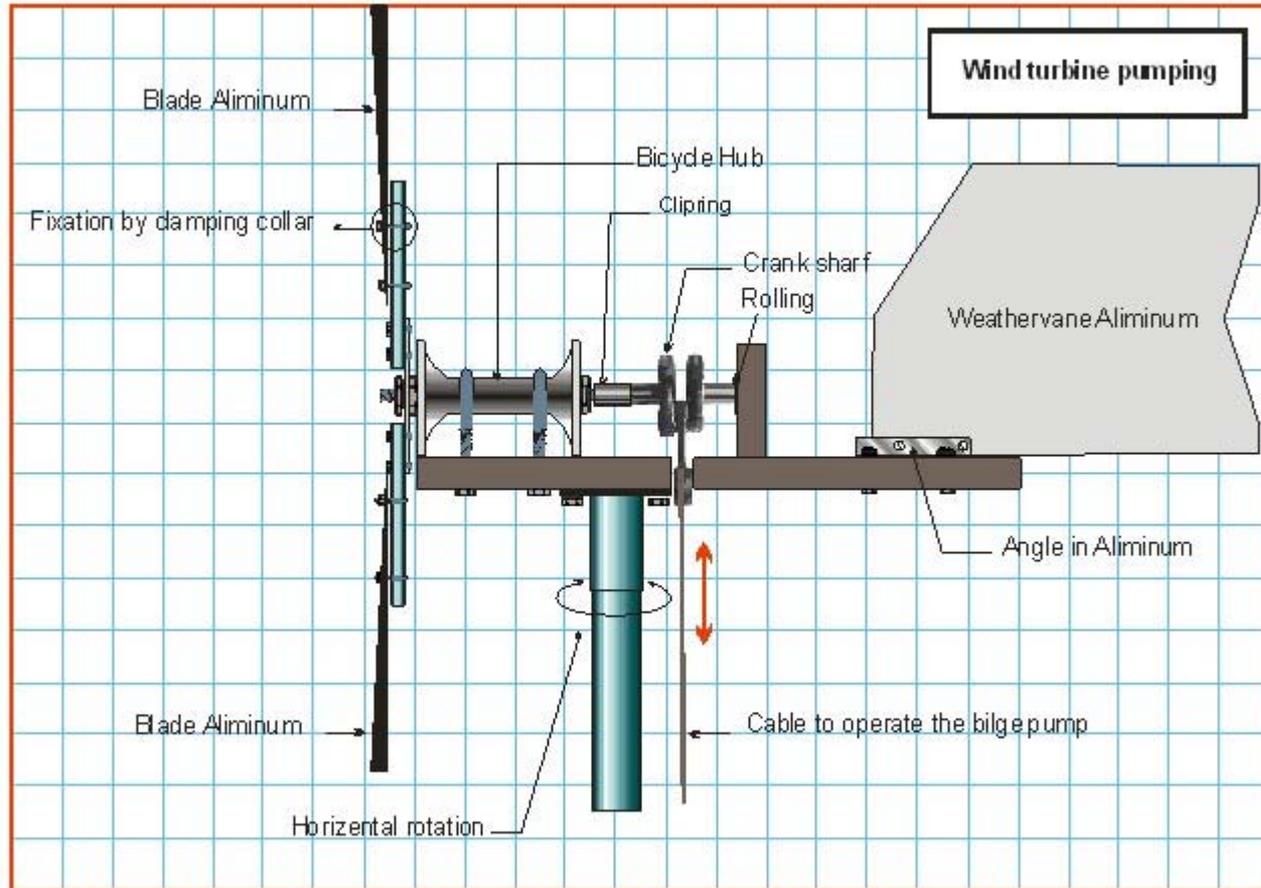


Wind turbine pumping

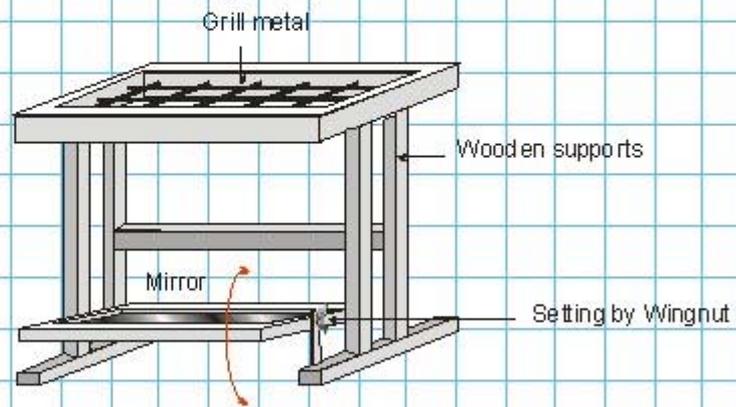


Wind turbine pumping

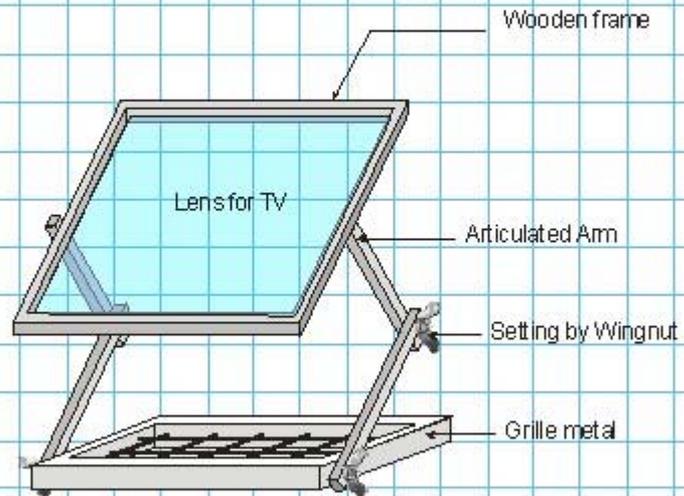


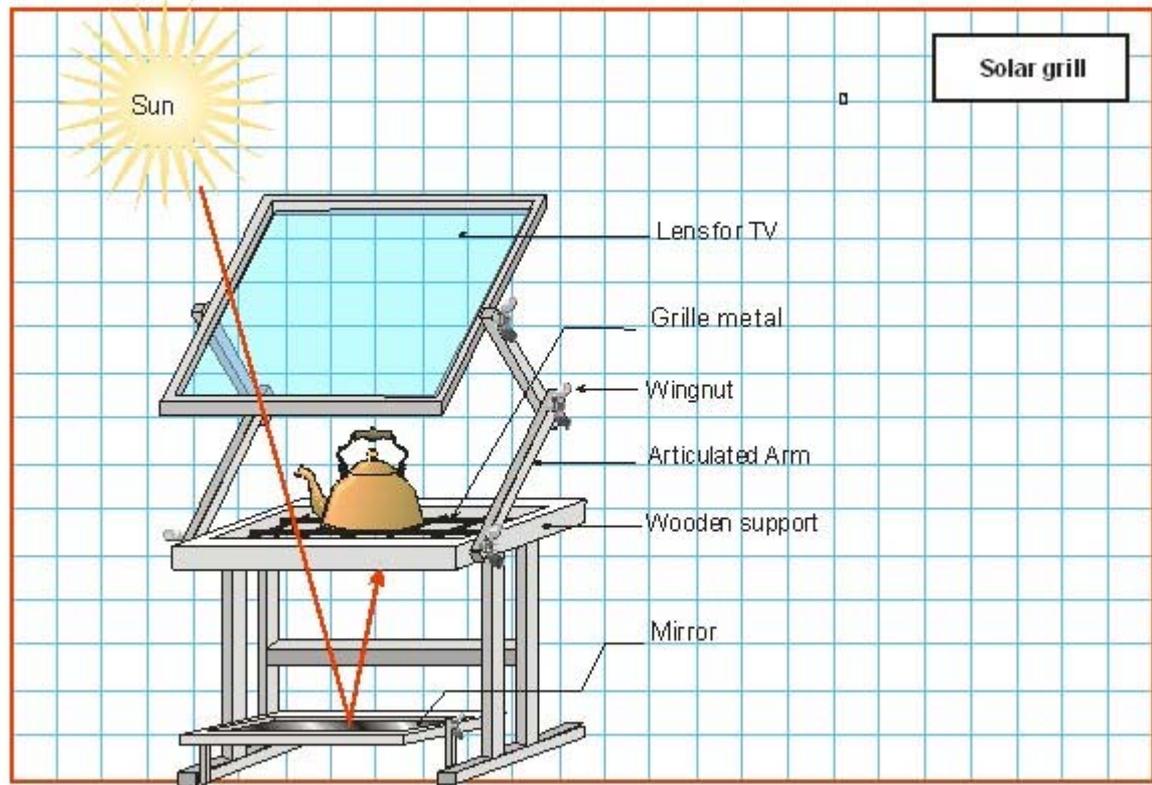


Solar grill

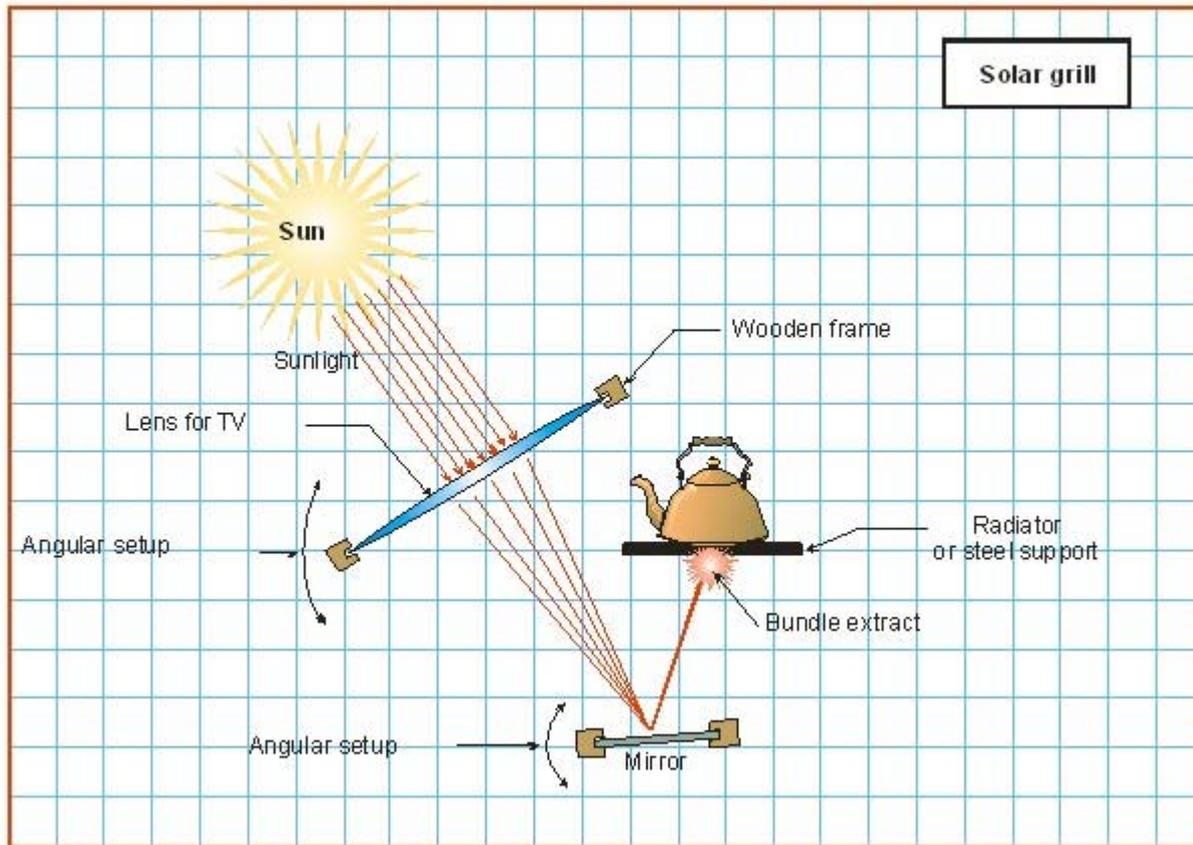


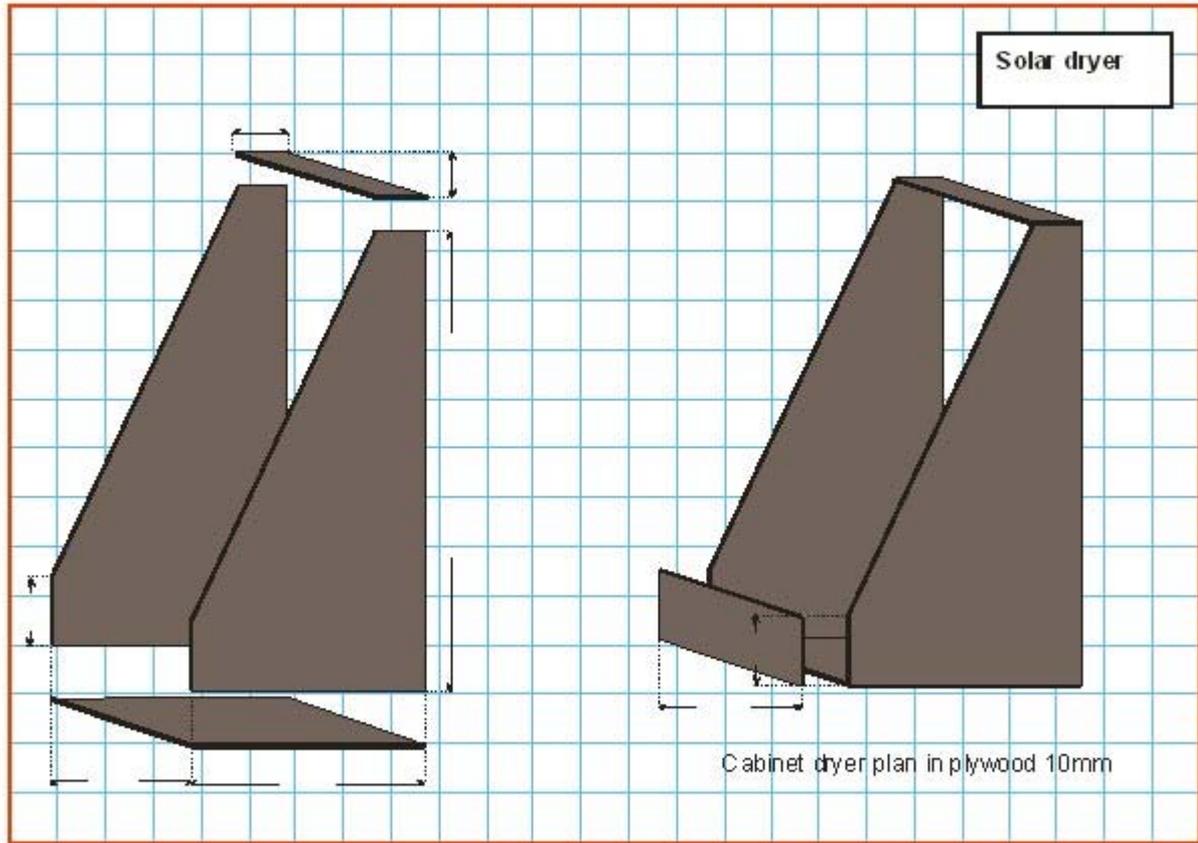
Solar grill





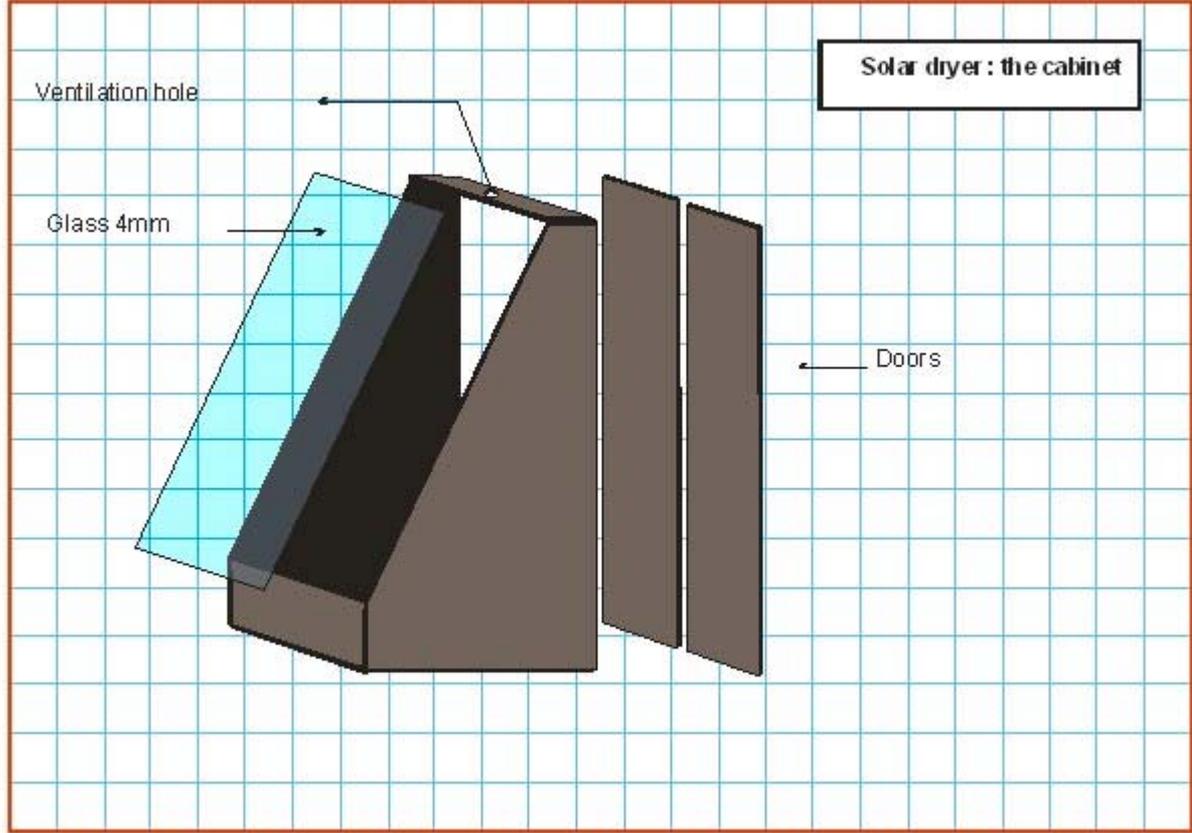
Solar grill



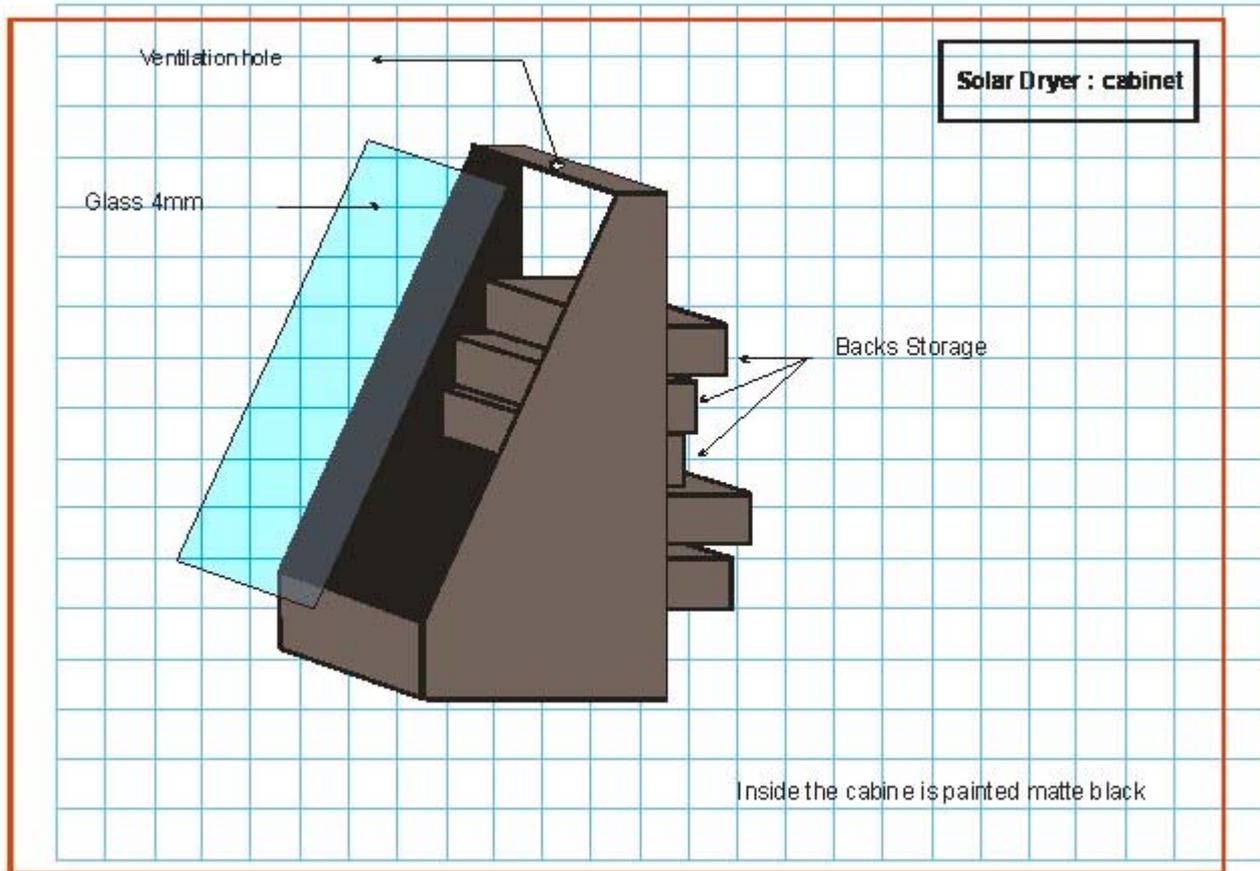


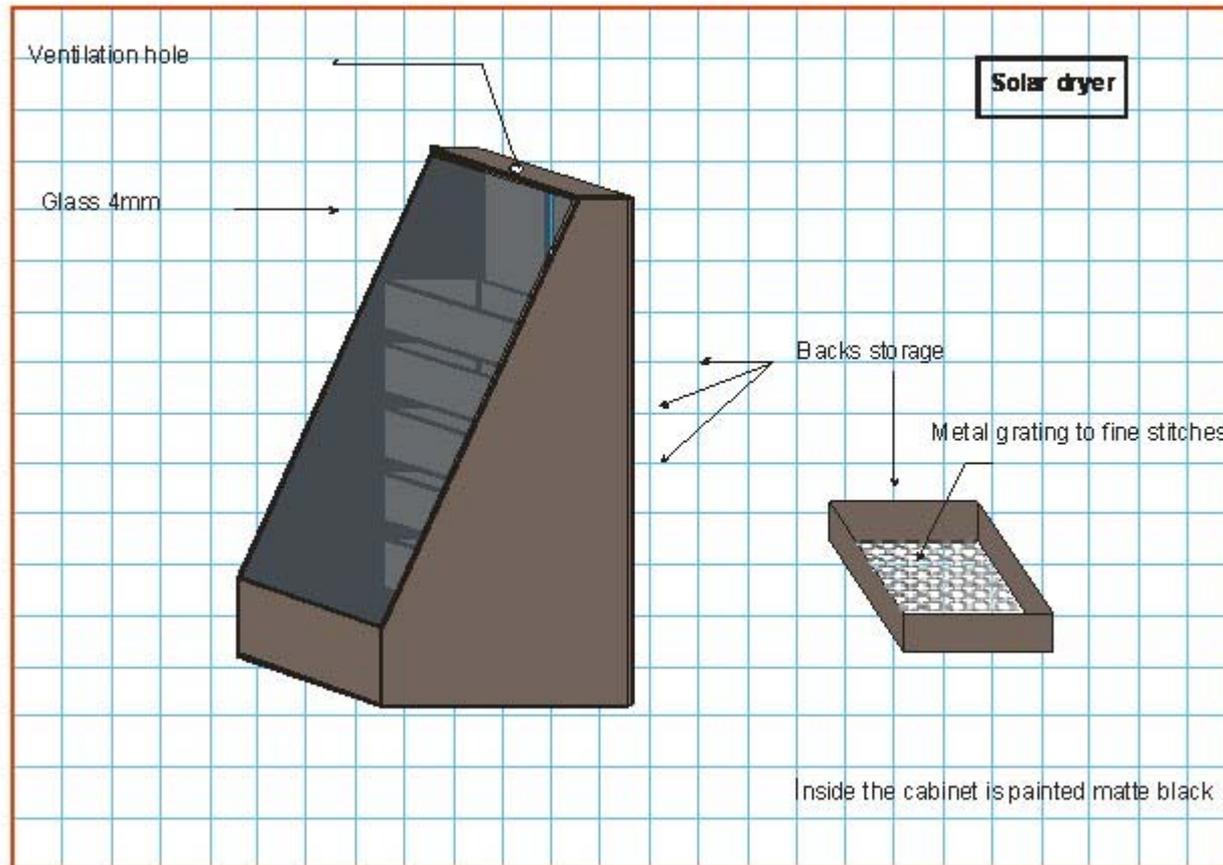
Solar dryer

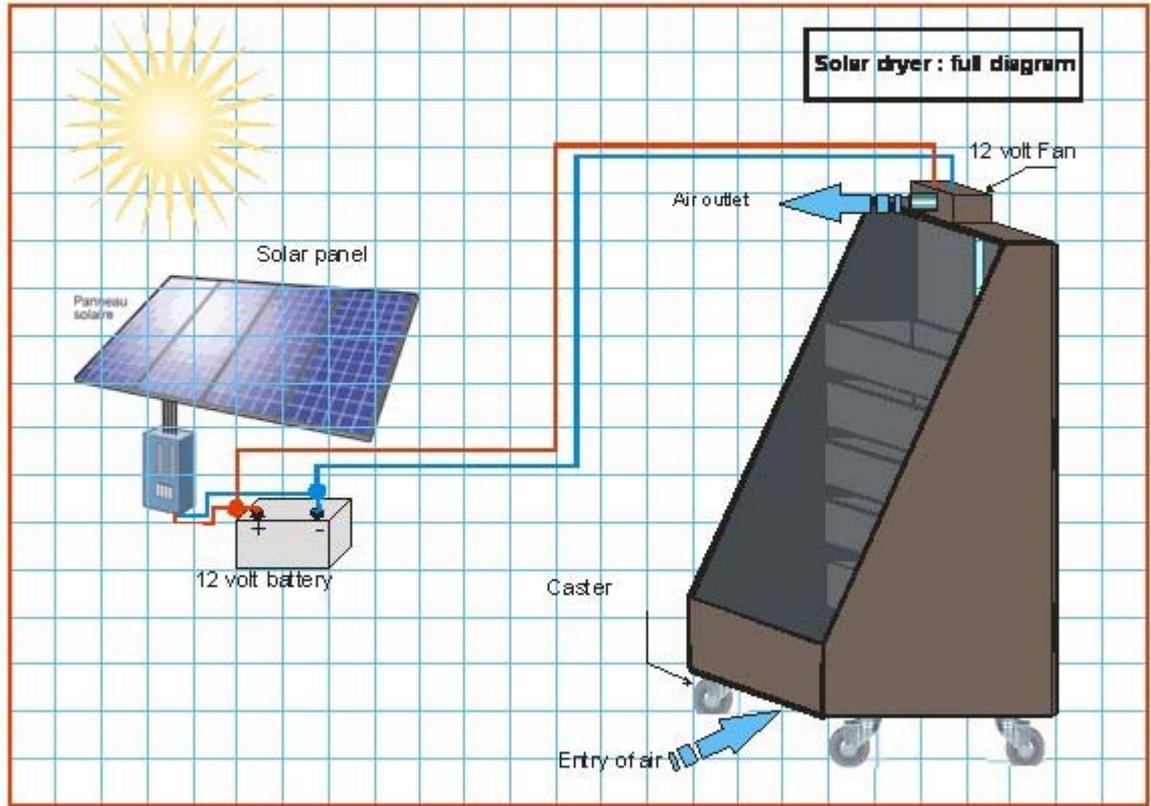
Cabinet dryer plan in plywood 10mm



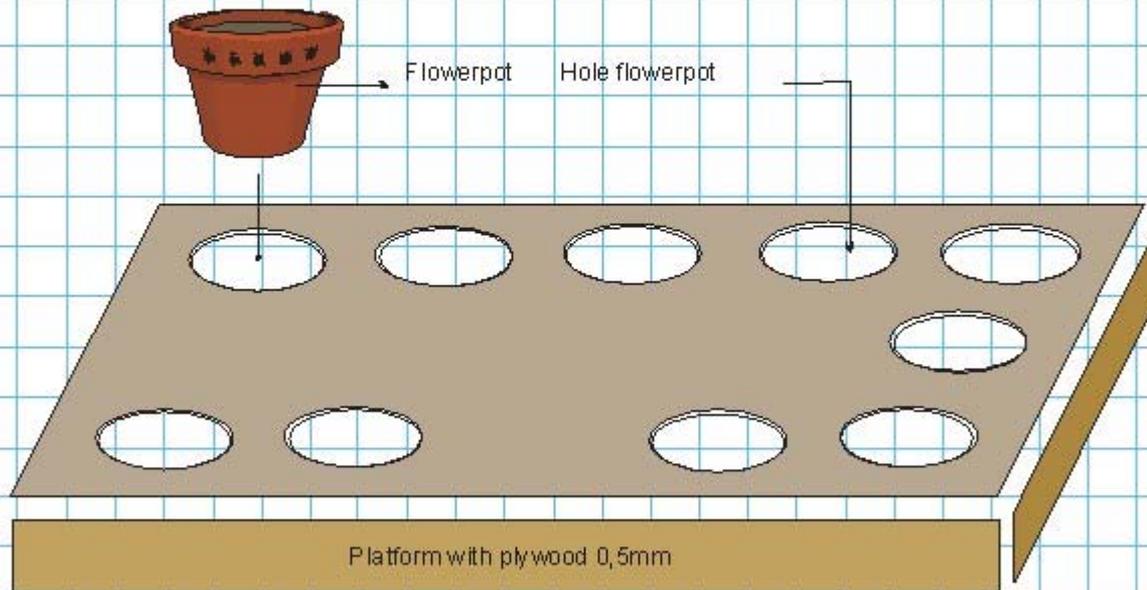
Solar dryer : the cabinet

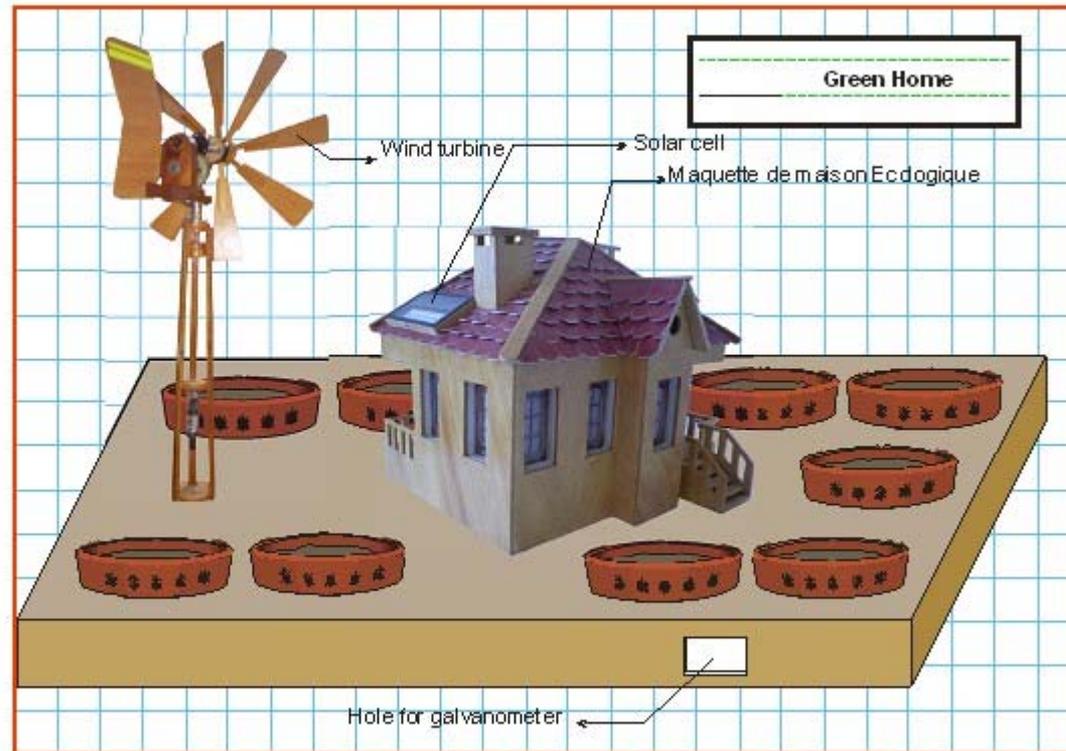


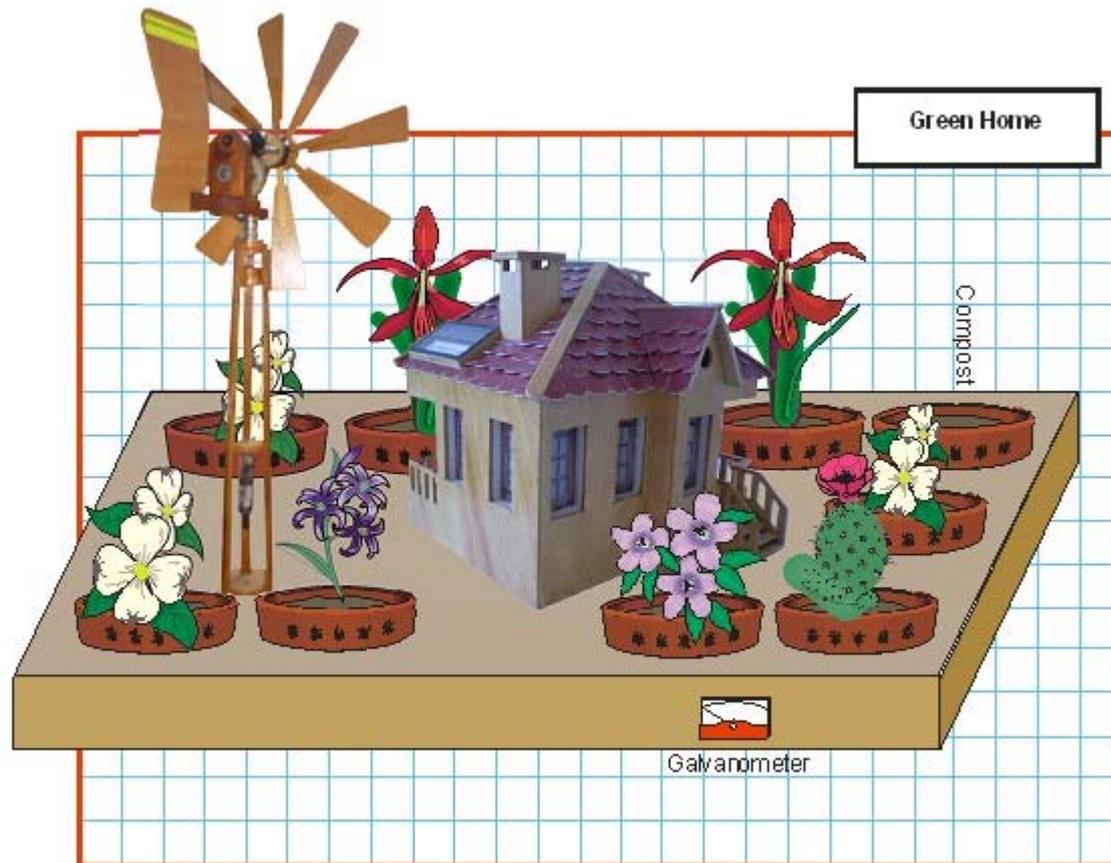




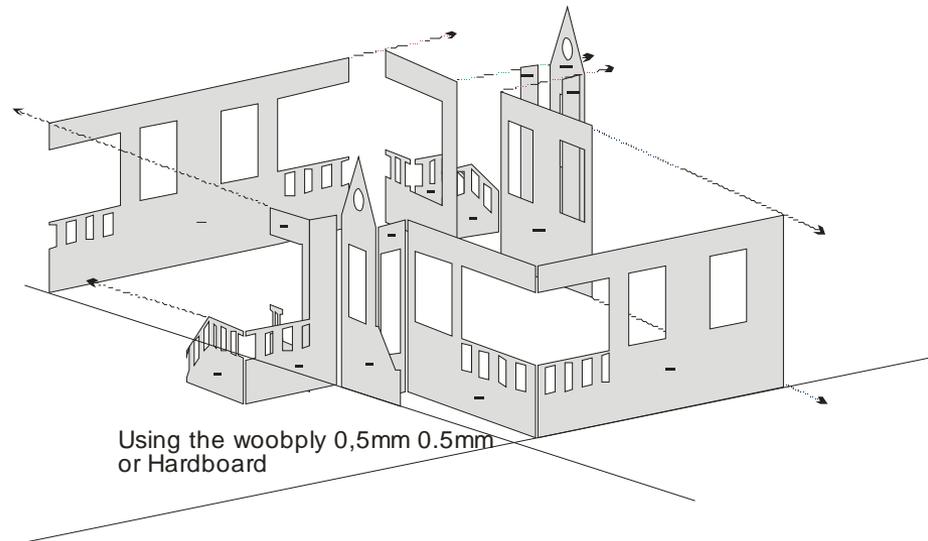
Green Home : platform





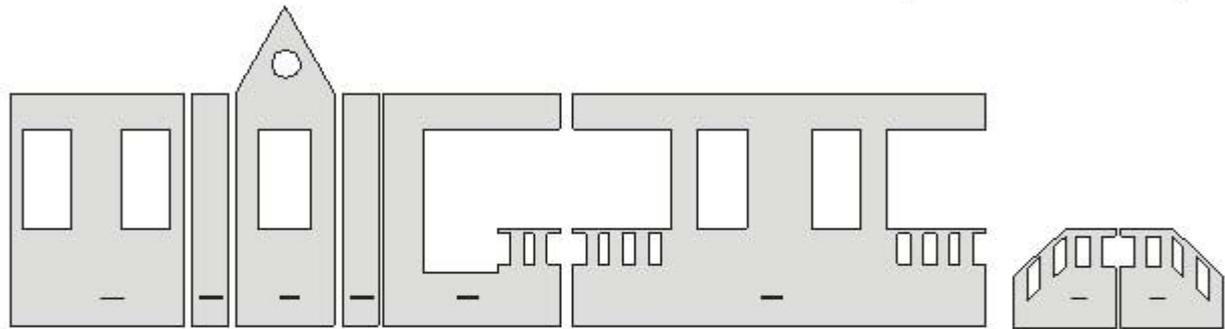


**Green Home:
mounting parts**

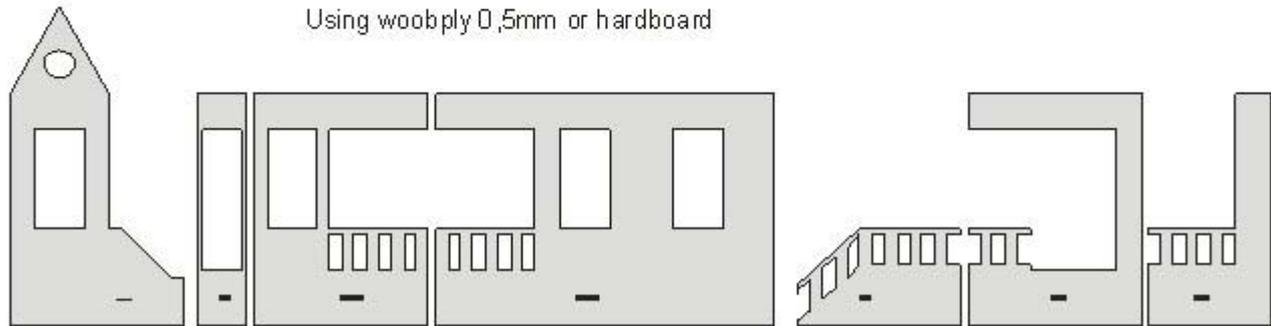


Using the woobply 0,5mm 0.5mm
or Hardboard

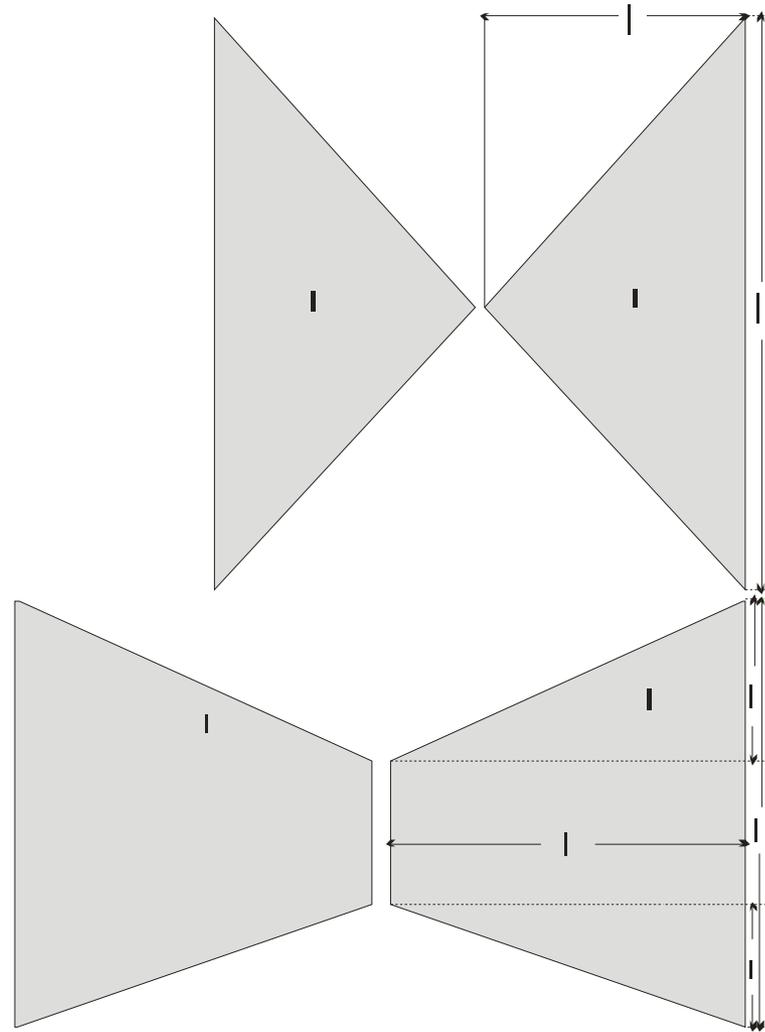
**Green Home:
parts of Home**



Using woobply 0,5mm or hardboard



**Green Home:
mounting parts :the roof**



**Green House:
setting up the Roof**



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Renewable Energy Guide

The three forces can save our planet



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Service Civil International/Hellas

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