

ESN Comenius Water Management Project

THE FINAL PROJECT

DENMARK

SPAIN

NETHERLAND

In the first week we have done a test about using water. We had some questions for answer. The questions talked about using water in the bathroom, about the liters that we spend, etc. These are our questions:

INTRODUCING:

- **Which water do you use for drinking and why? Tap water or bottledwater?**

We use tap water for drinking.

We use the both things. We use for drinking tap water and bottled water, depending the type of tap, because there are people that have a little treatment to take out the chlorine of the water and the people that have this can drink tap water. But if you don't have it, you have to drink bottled water.

USING WATER WHEN YOU ARE USING THE BATHROOM:

- **How many minutes do you take in a normal shower?**

About 13 minutes more or less.

In a normal shower we spend more or less 15 minutes, depending the how fast you want to be.

- **How much water is spent on this shower?**

About 130 litres more or less.

We spend more or less 130 – 150 litres, depending the minutes that I stay in a shower.

- **How many times a week do you take a shower?**

About 5 times a week more or less.

We usually take a shower 5 times a week. But if one day we wake up with dirty hair and that day we take a shower.

- **How many litres of water do you use a week just for showering?**

About 650 litres more or less.

We use more or less 700 litres a week for showering.

- **How many times a week do you take a bath?**

0 times a week.

We never take a bath, because it's better to take a shower if you have to go fast and, it's more comfortable.

- **How big is your bath?(how many litres can it hold?)**

We haven't any.

We have different kinds of baths. But we think that it can hold more or less 90 litres

- **How often do you leave the tap running when you brush your teeth?**

Never.

We always, open the tap before brushing our teeth, to wet the brush with toothpaste, then we close. After brushing our teeth we open the tap again, to take water in the mouth and then we spit the water with the toothpaste that we have it. We open the tap only two times

IN THE REST OF YOUR HOME:

- **How often a week is the washing machine using?**

About 7 times a week more or less.

We often use it 3-5 times a week, depending the dirty clothes that we have. But there are people that have a special cube for the dirty clothes, and when this cube is full, they put these clothes in the washing machine.

- **Do you know where the sewerage water (waste water) goes, after usage?**

Down the drain and out to purification.

First the waste water goes to the drains with a pipes. Then the waste water goes to a treatment, with a pipes again. The result is the clean water. Finally this water arrive, with a pipes, to the sea or on a deposit for watering the gardens of the city or the parks or to clean the soil of the city.

- **Which appliances in your house use water?**

Two faucets, one shower, the toilet, washing machine and dish washer.

In our house the appliances that use water are the shower, the wc, the washing machine, the dishwasher, the taps, the iron machine and the hose.

- **Which appliances use a lot of water and which appliances use a small amount of water?**

All appliances in our houses is using a normal amount of water, not much and not a small amount.

We think that the appliances that use a lot of water are: the shower, the washing machine, the dishwasher. And the appliances that use a small amount of water are: The taps, the wc, the iron machine and the hose.

DRINKING WATER:

- **What is your primary water source- from where do you get your drinking water?**

From the tap, ground water and from bottle, spring water.

We drink bottled water.

- **How much does m3 of tap water cost?**

€ 6,38 Including VAT.

In Barcelona it cost 1,99€/m3

- **In a supermarket what does a litre of bottled water cost?**

About € 1,47 more or less.

It cost about 0'50€

- **How much does m3 of bottled water cost?**

About € 1470,6 more or less.

It cost about 500€

WATER IN PUBLIC:

- **Where in public do you see water being used e.g. swimmingpool?**

Fountains, public toilets and swimming halls.

In the parks there are sources. There are swimming pools, outside and inside. There are the sea, the port...

- **Where else would you see water being used for both leisure activities and in industry?**

In changing rooms for showers and toilets, and toilets on work places.

We would see water in public toilets, in beach showers, in parties (like bath foam...) and in work places.

SUM UP:

- **How much water does a typical citizen in your country use each day e.g. drinking, washing, cleaning, cooking etc.**

About 184,5 litres water on one day.

In our country we use about 300 liters/day.

In the second week we have done a redaction about where we want to build our ECO-house in Jutland (Denmark). We have searched a map with the land that we are going to put the ECO-house. We indicated the cities, villages and the roads to arrive. These are the text which we explained the situation and some photos:



We want to build our ECO-house near the lake and a little bit near the sea too. Because we think that we can put a machine to treatment the water. We put near a village, to buy the food or necessary things to live, and near a road to arrive. The field it's plane and easy to build. We put a red circle where we would like to put the ECO-house and we do a line to mark the road that we would take to go.

I think the location that you picked is fine but in you explanation it says that the place is close to a village. It seems to me that the whole area is a bit deserted....

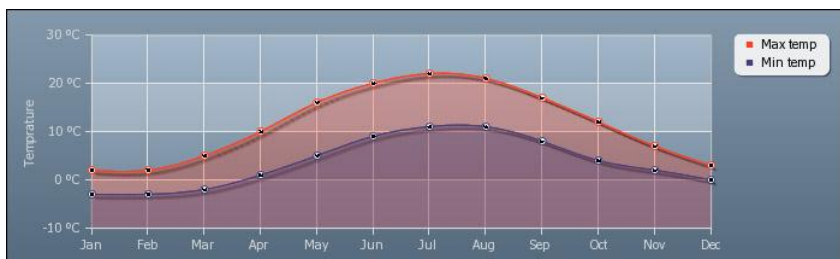
It rains on a average 700 mm in the location of the house. The average temperature is 16 degrees.

THE RED POINT IS THE LOCALITATION OF THE ECO-HOUSE, THE RED CIRCLES ARE THE CITIES!

Then we have searched some graphics about the weather (precipitation, sun hours and temperature) in Denmark:

We can take the water of the lake and we can put a sewage or a purifying to treatment the water and then use it in the ECO-house.

It rains a lot and it's better for us because we can take some water from the rain and purify it too. There is not so much sunshine, but the little bit sunchine that there are we save it to create energy with a solar panels.



The next week we have done a square with some results about how to use the less water possible. These are the document and photo about the document:

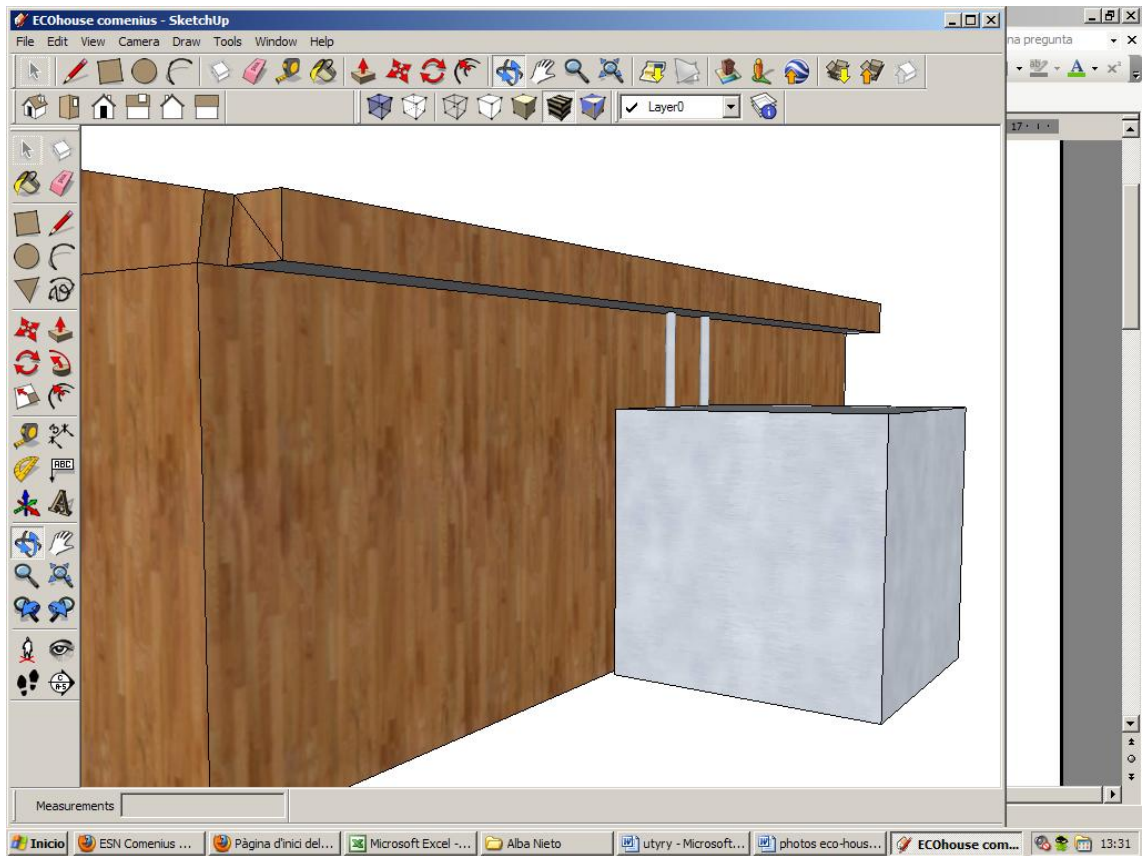
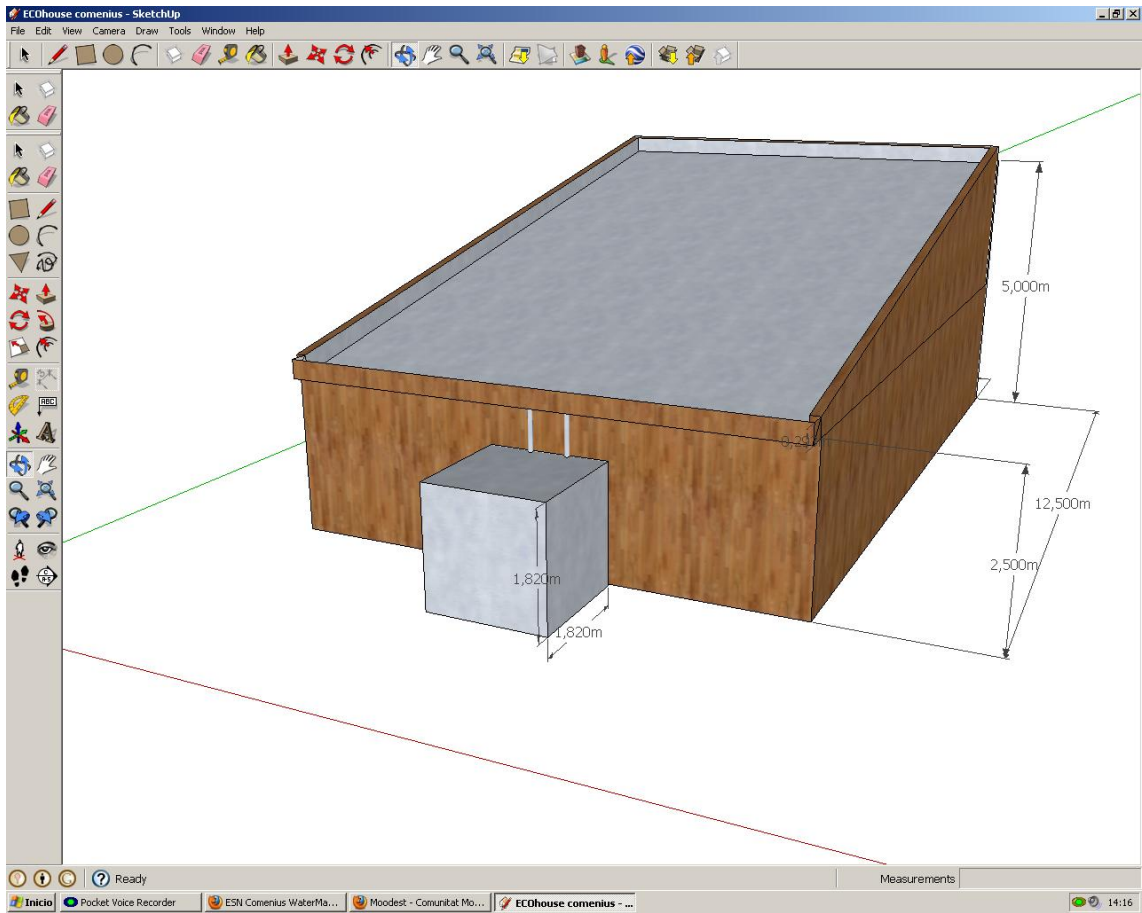
EUROPEAN SCHOOL NETWORK. COMENIUS PROJECT. WATER MANAGEMENT 2011										GROUP Nº:	1
WATER SUPPLIES CALCULATOR											
n° of people living in the house:		4	surface area:		110	m ²	per person		TOTAL		
appliance	type	water usage	time of use	times used per day	times used per week	in a day	total in a week	total in a week	total in a week		
BATHROOM											
shower	normal	12 l/min	8 min		4 ut/week	55 l/d	384 l/week	1,536 l/week			
bath		200 l			0 ut/week	0 l/d	0 l/week	0 l/week			
washbasin	ECO	6 l/min	0,2 min	4 ut/day	28 ut/week	5 l/d	34 l/week	134 l/week			
toilet	ECO	4 l		4 ut/day	28 ut/week	16 l/d	112 l/week	448 l/week			
others						l/d	l/week	l/week			
						76 l/d	530 l/week	2,118 l/week			
KITCHEN											
sink	ECO	6 l/min	1 min	4 ut/day	28 ut/week	6 l/d	42 l/week	168 l/week			
dishwasher	ECO	12 l		1 ut/day	7 ut/week	3 l/d	21 l/week	84 l/week			
cook & drink		10 l		1 day	7 ut/week	10 l/d	70 l/week	280 l/week			
others						l/d	l/week	l/week			
						19 l/d	133 l/week	532 l/week			
LAUNDRY & CLEANING											
washing machine	ECO	50 l			2 ut/week	4 l/d	25 l/week	100 l/week			
floor washing		0,2 l/m ²			5 ut/week	4 l/d	28 l/week	110 l/week			
car washing		150 l			0 ut/week	0 l/d	0 l/week	0 l/week			
others						l/d	l/week	l/week			
						8 l/d	53 l/week	210 l/week			

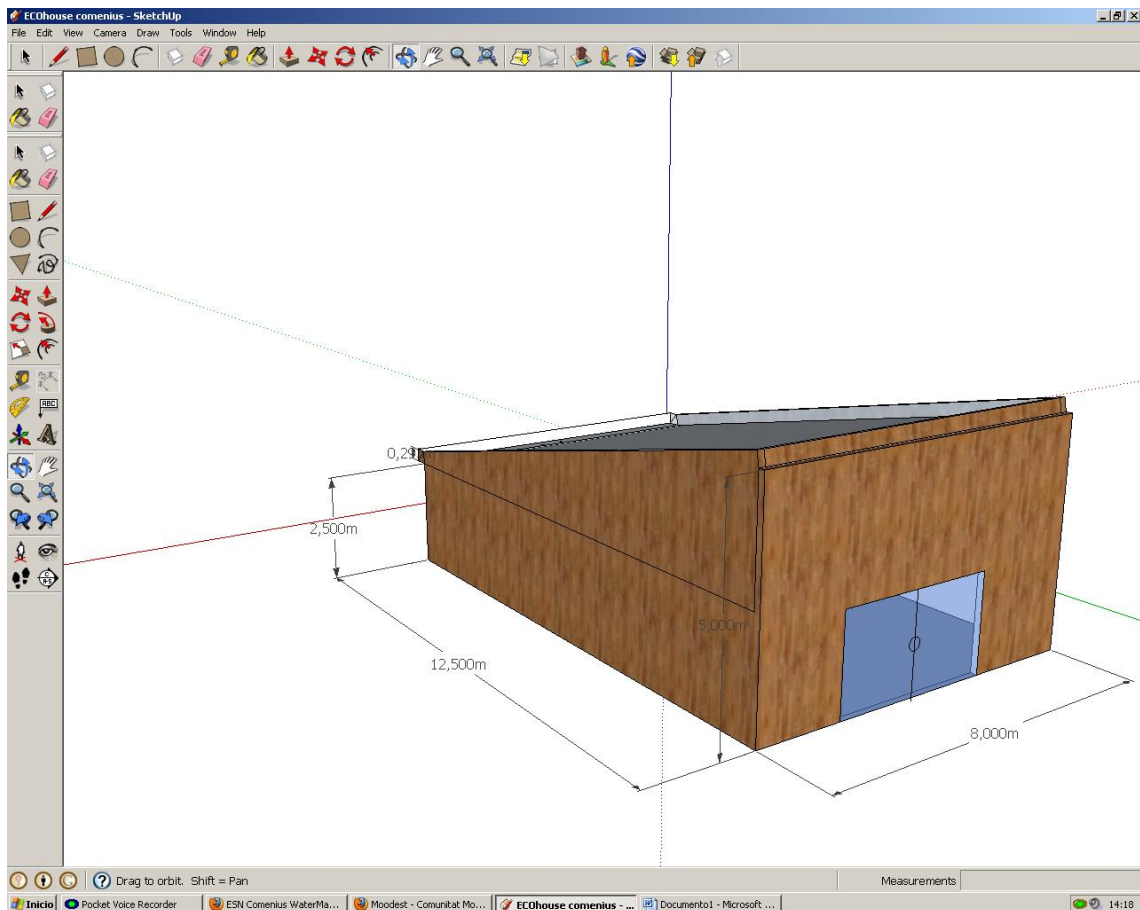
In week 20-21 we have done a table with pros, cons and reasons of using the different kinds of water

Device	Pros	Cons	Reasons
lake water	we can take in the wet periods water from the lake	In the dry periods we can't take water from the lake and we need a depuration	It's cheaper than the tap or bottle water
big rain gauge	It rains a lot in Denmark so there is a good water supply	In dry periods there is no water.	It's cheap.
tap water	It's easy to take it	It's expensive and it's not ecologic	It's easy to take it
bottle water	The flavor is better than the others	It's expensive and it's not ecologic	It's easy to take it

Model 3D: Later we have done a calculation to know the volume of the deposit:

To know the liters of water that we need to take if we spent 12000 liters on a month, we need to calculate the median of liters per m² on a month. We add all the liters that it rains in the months of a year: 55mm + 40mm + 30mm + 35mm + 30mm + 45mm + 80mm + 80mm + 65mm + 65mm + 55mm + 50mm = 630mm in a year. Then we divide 630mm by the numbers of month of a year, $12 \div 630\text{mm} / 12\text{months} = 52,5 \text{ l./m}^2$. Then we multiply it by the m² of the ECO-house $52,5 \text{ l/ m}^2 \times 100\text{m}^2 = 5250 \text{ l}$. After that we search the volume of the deposit if we need to save 5250 l. and 750 l. in case $5250 \text{ l.} + 750 = 6000 \text{ l}$. Finally we calculate the volume $6000 \text{ l.} = 6 \text{ m}^3 = 1,823$
 This is the volume of the deposit.





Water user's manual

In a ECO- house you have to use the least water that you can. We tell you a user's manual to tell how use the water:

- When you go to the toilet, there are two buttons: one you should press if you do a big necessitation that you need more water, and the other one is for a little necessitation.
- When you are in the shower you shouldn't press the green button.
- When you are brushing your teeth you should close the tap water.
- When you water the garden you should use rain or recycled water.