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## Frequently Asked Questions: New Building/House

### I'M BUILDING A NEW HOUSE. WHAT KIND OF TECHNOLOGY CAN I USE TO HAVE HEATING, COOLING AND/OR DOMESTIC HOT WATER?

If you are building a new house/building, first of all you need to take into account the building codes, including in terms of energy performance. Making an investment in a more efficient house/building (namely in insulation and efficient windows) while constructing can have a small marginal extra cost, but will bring big reductions in heating and cooling needs, so the investment will pay off while using the house over the years, and you are able to have renewable domestic hot water from the beginning.

Also, here is the time to consider which solution is more suitable for each case to assure the needs for heating, cooling and/or water heating, to integrate it in the beginning, while planning the house. Be aware that with a more efficient house/building the heating needs will be lower than in a traditional house, but the domestic hot water needs remain the same, so this specific use will have a greater impact on your energy needs.

All the solutions should be considered since the beginning, including hybrid renewable systems (e.g. mixed systems with biomass and solar thermal), in order for them to be well integrated in the construction, and have the fewer possible changes in this process, and for the house/building have the best energy classification.

Yet, a fair comparison of the technologies must be made. Choosing a technology should not only take into account the initial investment, but also the life-cycle cost and the environmental impact. Indeed, choosing renewable energy instead of a fossil-based systems is not only a major step to fight climate change, but it will also shelter you from future increasing prices on fossil fuels and carbon taxes on fossil fuels' consumption.

**TO BE ABLE TO ACHIEVE THAT, THERE ARE SOME STEPS THAT YOU NEED TO TAKE.**

### CONTACT AN ARCHITECT AND/OR OTHER EXPERTS TO PLAN YOUR HOUSE/BUILDING

The first step is to contract an architect who knows how to plan a house/building in order to make it the most efficient possible.

The architect should discuss the project with all the specialists that will be a part of the construction, in order for all of them to be well integrated. You also must be involved in all the discussions: it is YOUR PROJECT.

The involved experts must consider all of the renewable energy options. Some factors that can condition the choices are the place where the house/building is going to be built, namely the natural or artificial barriers that can condition its behaviour, the solar radiation that it receives, among other things.

It is fundamental to understand that there is not one ideal solution for all situations. Each case is unique and all architectural and technical options should be chosen in order to give the best result for that specific case.

Never forget that sometimes you can pay a bit more in the beginning, but it will pay off over the years, it will value the construction, and you'll have a house/building that has less impact in the environment.

## **PLANNING PERMISSION**

The architect knows what entity do you have to submit your project to and the national /local regulation which must be complied with.

## **EVALUATE THE ENERGY PERFORMANCE LEVEL OF THE HOUSE**

The EU Energy Performance of Buildings Directive introduced the energy performance certificates for buildings. The building performance must be evaluated right in the beginning, in the project phase, in order to see if it complies with the legislation and if the energy level still can be improved. In the construction phase is where you can improve more the energy efficiency of a building with less costs.

Improvements can be made by increasing the insulation of the house (walls, floor and ceiling) and by choosing efficient windows. Also, the use of renewable technologies can be helpful to increase the building level of energy efficiency and reduce the needs of polluting fossil fuels, getting in line with the EU goal for decarbonising the building sector.

## **CHOOSE A RENEWABLE AND EFFICIENT EQUIPMENT/SYSTEM**

The equipment for heating, cooling and/or water heating will last in the house for several years, so it is important to invest in an efficient equipment using renewable energy. Energy label is already in the market for most equipments/systems (biomass systems will have the energy label in 2018). The investment in a more efficient equipment can be costly in the beginning, but over the years it will pay off.

Also, you must be aware when you get comparisons from different salesmen for different technologies. There are several factors affecting the real cost of each technology, and the levelized cost of energy (LCOE) allows a better comparison of different technologies, by including in its calculation the combination of capital costs, operations and maintenance (O&M), performance, and fuel costs. It comes in euros/energy, since it measures lifetime costs divided by energy production.

The system should be designed for the house/building needs, and not be oversized, otherwise you will have a bigger initial investment that what is needed and the system will not be as efficient. This will bring higher energy bills than it should be if the system was well dimensioned.

Also it is important to know how the system works, in order to optimize its operation. So getting the information from the installer on how the system should operate is important to reduce its consumption while working.

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## CLARIFY ALL THE DOUBTS ASSOCIATED TO THE IMPLEMENTATION OF A RENEWABLE SYSTEM

One question that is placed is if a backup system is needed when implementing renewables. The fact is that some technologies need a support system and others do not. A solar panel needs a support system for when there is no sun for several days, meaning the system will not work. Heat pumps (air source and geothermal) system can provide space heating, cooling and domestic hot water with one single device without the need for a backup. But they always need a minimum of electricity to operate. A biomass system also needs energy for its operation for the fan and the pellet supply system to be able to work.

## EVALUATE THE EXISTENCE OF SUPPORT SCHEMES OR BENEFITS FOR GREENER CONSTRUCTIONS

In some countries, besides the mandatory legislation, there might exist:

- regional/municipal regulations that are more restrictive than the national legislation,
- benefits at the municipal/regional level for making a greener construction.

Also you should evaluate if there are support schemes for the installation of more efficient materials or renewable equipment, to help you lower your investment. For more questions contact your national or local/regional energy agency: [http://www.managenergy.net/energy\\_agencies](http://www.managenergy.net/energy_agencies).

