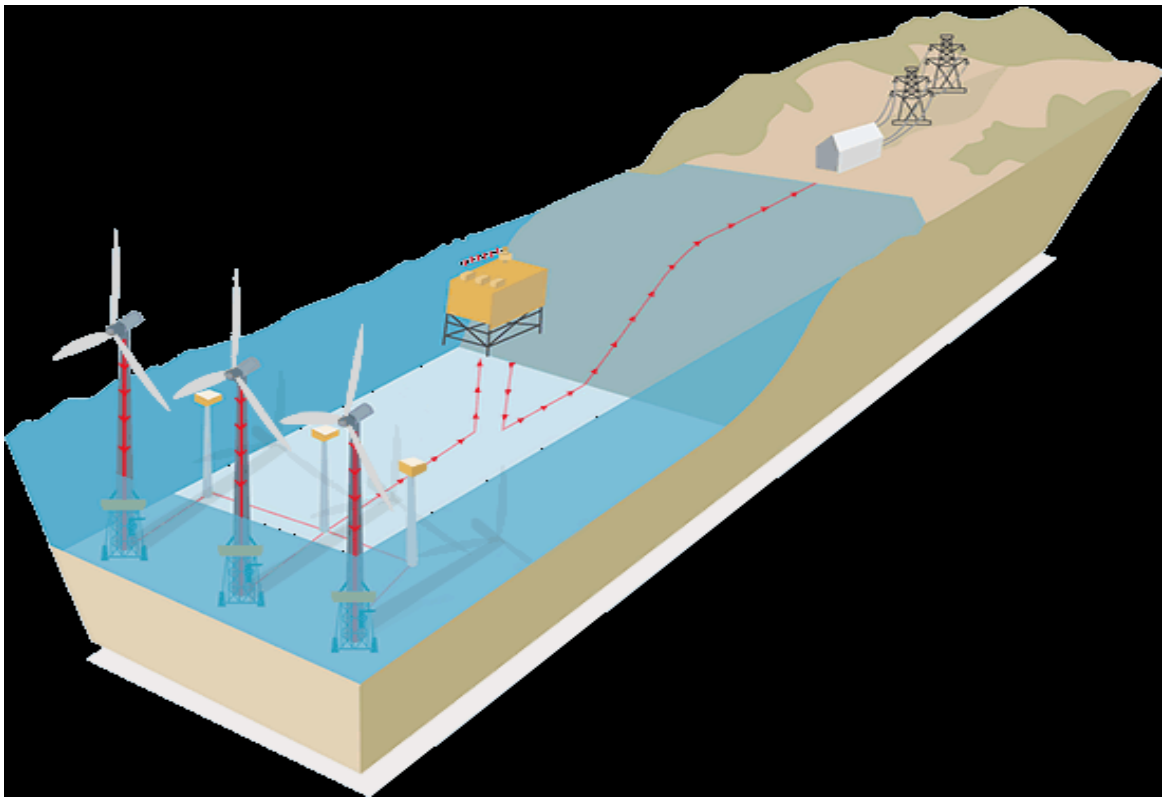
*TÍTOL* **– ELECTRICITY AS DOMESTIC USE - MYSTERY.II**

Àrea - **TECHNOLOGY**

Author: Anabel FRAU





## Ten tips for learning success

- Identify different energy transformations.
- Know where our power electricity comes from.
- Learn about all the other energetic sources.
- Be aware about environmental advantages and disadvantages of each kind of energy.
- Focus on the energy coming from sea and oceans.

## Project: collaborative problem solving

Following with the energy chapter, started with the very important relationship between magnetism and electricity, you will have to present a final microproject basically based in the construction of an access database table with all the energies actually used and their main characteristics.
Previously, you need to discover and get use to a few definitions.

1. Discuss with your partners and match the following definitions with their names:

| | | | |
|---|---|---|---|
| 1 | Primary energy | | When sources are considered to be inexhaustible |
| 2 | Turbine | | Device transforming kinetic energy, produced by a turbine, into electrical energy |
| 3 | Power plant | | When sources are derived from organic material fossilization, such as coal, petroleum and gas |
| 4 | Energy source | | Industry which goal is to transform a certain type of primary energy into electrical energy |
| 5 | Renewable energy | | Energy obtained directly from nature |
| 6 | Secondary energy | | When sources are limited and decrease as consumption occurs |
| 7 | Alternator | | Resources that provide some form of energy |
| 8 | Non-renewable energy | | Energy that has been obtained after a transformation of a primary energy |
| 9 | Fossil energy | | Device transforming primary source into kinetic energy |

Then, make the sentences:
1. Primary Energy is the energy obtained directly from nature.
2. Turbine is ….
3.
4.
5.
6.
7.
8.
9.

2. Fill the gaps

Use the next words and make as many sentences as energies kinds there are.

ENERGY SOURCE

Coal, natural gas, petroleum, uranium, sun, wind, river water, water sea, thermal difference in the Earth, organic wastes, agricultural and forestry wastes…

POWER PLANT

Hydraulic power plant, tidal power plant, sea waves , thermal or conventional plant, thermal solar plant, nuclear power plants, biomass thermal plant, photovoltaic power plants, wind farm, geothermal plant…

Follow the next example:

If the energy source comes from __*"water sea"*__ the power plant is named _*"tidal power plant"*__.
If the energy source comes from _____ the power plant is named _____.

3. Create an ***access table*** with the following fields:

*Text FIELDS*: Primary source, Mechanical energy produced by, power plant, AC* or DC*?

*Yes or Not FIELDS*: Renewable

*Hyperlinks FIELDS*: Pollution emissions, Advantages, Disadvantages

Look at the example:

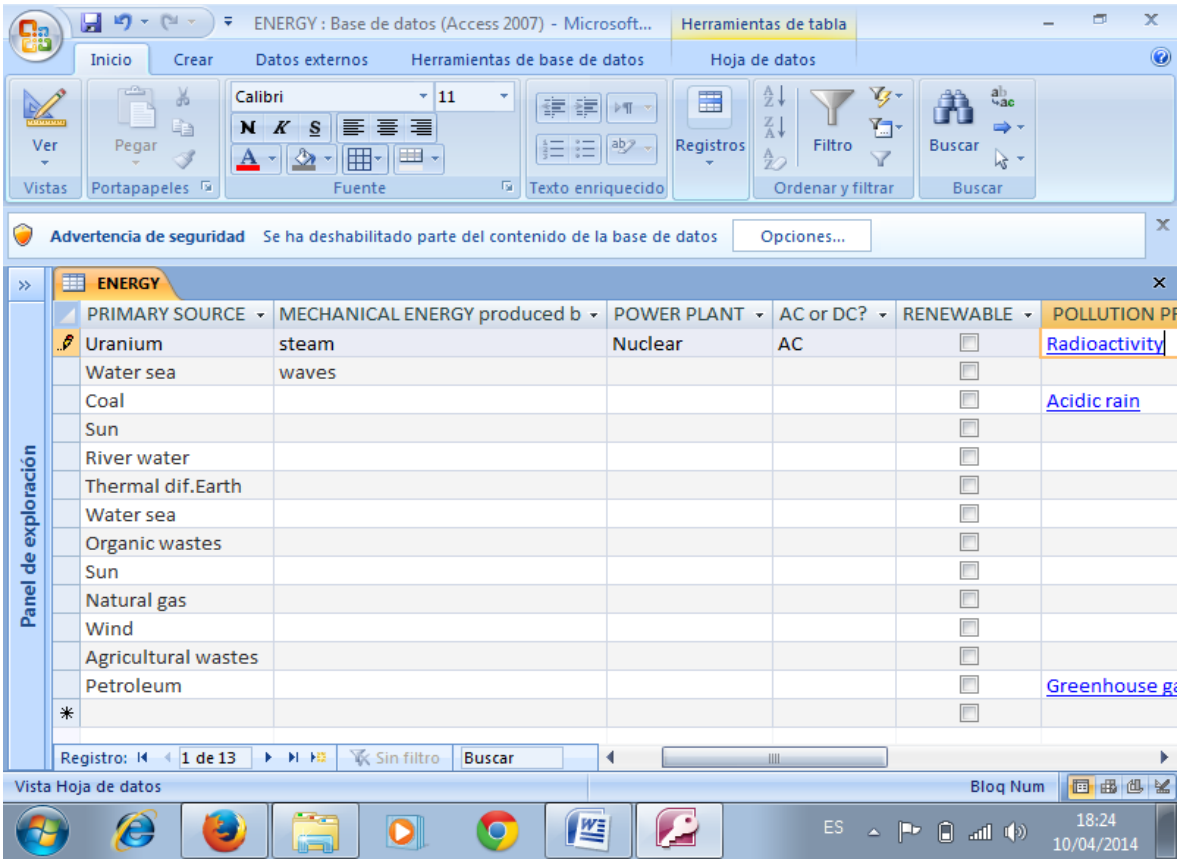



Figure 1. Ana FRAU, INS Viladecans V, Barcelona, 2014

Use either your text book as Internet in order to search for information, definitions or the required links.

THE ENERGY FROM SEAS AND OCEANS; A BIG UNKNOW!!!

Marine energy does not generate visual or environmental impact and it's a significant energy resource. However the force of the waves and marine corrosion, as well as the need for mechanisms to transfer power to the ground, makes this technology to be large investments demanding. That's why, water sea energy is still, unless some exception, in a research and pre-commercial phase.

Your work is therefore to study and research on the potential energy of the sea (tidal energy, wave energy and offshore wind energy from seas and ocean currents). As you know, the strength of the sea gives us the mechanical energy necessary to move the turbines through the principle of electromagnetism we provide electric power so indispensable nowadays.

1. Firstly, search the definition of each of these energy sources with pictures or drawings that illustrate them.

**Clue: points 2.1, 2.2, 2.3 of this article**

## Marine Renewable Energy in the Mediterranean Sea: Status and Perspectives

| Energy | Definition | Image |
|---|---|---|
| Tidal | | |
| Waves | | |

| | | |
|---|---|---|
| Offshore wind farm | | |

https://www.mdpi.com/1996-1073/10/10/1512/htm#B6-energies-10-01512

2..In this activity you will have to share, in a moodle forum, with your classmates your opinions regarding 3 questions:

Which is the meaning of ENSEA?

Which are the counties/regions involved in this project?

Which 5 top European countries have the highest amount of offshore wind farms in Europe?

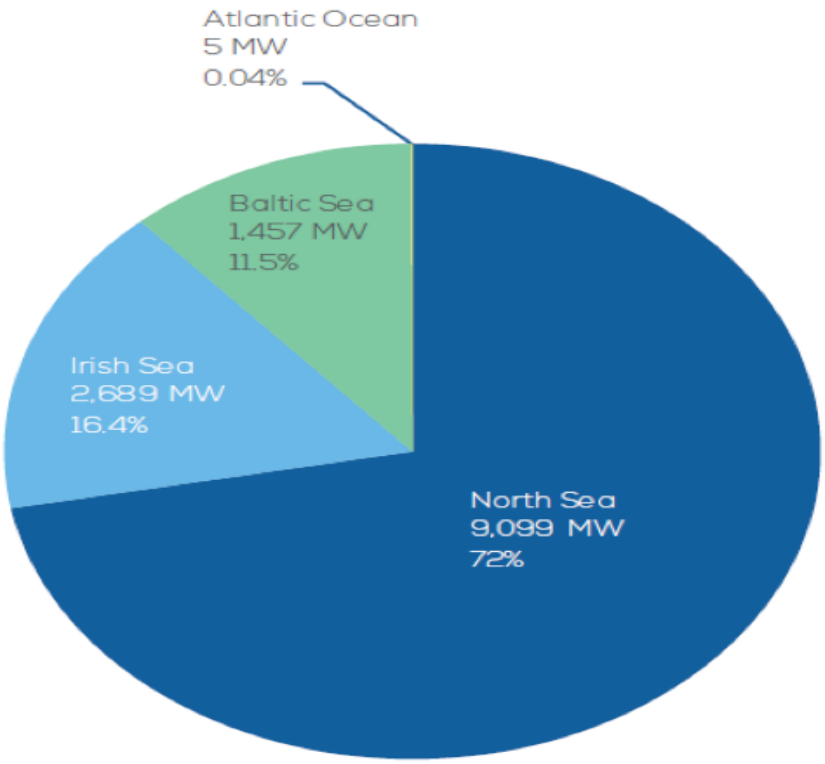



Figure 2 from Northsearegion.eu

https://northsearegion.eu/northsee/e-energy/offshore-renewable-energy-developments-offshore-wind/

**Figure 1.** Ana FRAU, INS Viladecans V, Barcelona, 2014

Figure 2. https://northsearegion.eu/northsee/e-energy/offshore-renewable-energy-developments-offshore-wind/

https://www.mdpi.com/1996-1073/10/10/1512/htm#B6-energies-10-01512

https://northsearegion.eu/northsee/e-energy/offshore-renewable-energy-developments-offshore-wind/

# Assessment

Evaluating rubrics for Access and regular Energy tables & Conclusions

| CATEGORY | 4 | 3 | 2 | 1 |
|---|---|---|---|---|
| Data Collection | Data was collected several times. It was summarized, independently, in a way that clearly describes what was discovered. | Data was collected more than one time. It was summarized, independently, in a way that clearly describes what was discovered. | Data was collected more than one time. Adult assistance was needed to clearly summarize what was discovered. | Data was collected only once and adult assistance was needed to clearly summarize what was discovered. |
| Table display | Each element in the display had a function and clearly served to illustrate some aspect of the contents. All energies, all properties, all images, etc. were neatly and correctly labeled. | Each element had a function and clearly served to illustrate some aspect of the contents. Most energies, properties, images, etc. were neatly and correctly labeled. | Each element had a function and clearly served to illustrate some aspect of the contents. Most items, images, etc. were correctly labeled. | The display seemed incomplete or chaotic with no clear plan. Many labels were missing or incorrect. |
| CONCLUSION II | Student provided a correct conclusion clearly based on the data and related to previous research findings and the hypothesis statement(s). | Student provided a somewhat correct conclusion clearly based on the data and related to the hypothesis statement(s). | Student provided half conclusions with some reference to the data. | No conclusion was apparent OR important details were wrong. |

## Checklist

In this unit you have…

- Identified different energy transformations.
- Known where our power electricity comes from.
- Learnt about all the other energetic sources.
- Used the Access program learnt before.
- Been aware about environmental advantages and disadvantages of each kind of energy.
- Focused on the energy coming from sea and oceans.