

TEACHING UNIT XI

TECHNOLOGY

ENERGIES

INTERNATIONAL TEAMWORK AS A METHOD TO MAKE OUR
SCHOOLS INCLUSIVE OF DIVERSITY



TEACHING UNIT SPAIN IV

TECHNOLOGY: ENERGIES

1. INFORMATION:

- a. **Date:** April 7th 2016
- b. **Level:** 14-15 yr olds
- c. **Subject:** Technology
- d. **Theme:** Energies
- e. **Teacher:** D. Barquilla Cano

2. AIMS/GOALS

- a. To gain a better understanding of the use of energy in our country and in Europe and its consequences.
- b. To know the different sources of energy we produce in our countries and its environmental impact.
- c. To learn how to use properly the sources of energy our surrounding offers.
- d. To be able to communicate (at a basic level) in the languages of all partner countries
- e. To improve communication and teamwork skills in order to solve the challenge / problem
- f. To improve students' ICT skills

3. COMPETENCES/SKILLS (Which competences/skills will you develop in this unit)

- a. **Competence in Science and Technology:**
 - i. They know the different sources of energy and the consequences of their use.
 - ii. They think in solutions for a technical problem.
- b. **Social and citizenship competence:**
 - i. They work actively in a team
 - ii. They respect the turn of speaking.
- c. **Digital competence:**
 - i. They use properly a computer to present their results.
 - ii. They can look up for information using ICT.
- d. **Competence in linguistic communication:**
 - i. The students listen actively.
 - ii. They use English to communicate.

4. METHODOLOGY

- a. **Type of lesson:**
 - i. Participative.
 - ii. Working in small groups.
- b. **Type of interaction (organization in classroom):**
 - i. Working in teams of three pupils, listening to the teacher and using their devices with internet connection to look up for information.
 - ii. Working in teams to make a presentation.
- c. **Teaching aids: (like digital board, pc's ...)**
 - i. iPads, Pc's or any device having internet connection and a program for presentations, like PowerPoint, Head projector.

5. TEACHING:

- a. **Contents:**
 - i. Energy and sources of energy.
 - ii. Generating electricity from different sources of energy.
 - iii. Renewable energies. Environmental analysis.
 - iv. Energy radiography in our country.
- b. **Activities:**
 - i. Research and do a PowerPoint presentation showing the sources of energy used in your country.
 - ii. Doing research on different green energies, generators, condition... Search for ways of using these energies more in your country.
 - iii. Students will analyse which green energy is more efficient in their country in order to work out a solution for energy saving in their homes and school

6. EVALUATION:

- a. **Individual**
 - i. Consider students' skills in the collaborative work in the group.
 - ii. Consider the personal thoughts arisen in the group.
 - iii. Participation in the group presentation.
- b. **Group evaluation**
 - i. Consider the presentation of the group.
 - ii. Analyze their answers.

Energy surrounding us





AIMS

- FIRST OF ALL: WHAT DO I WANT YOU TO ACHIVE?
 - TO BE CONCIOUS OF WHAT OUR SOURCES OF ENERGY ARE.
 - TO BE AWARE OF WHAT HAPPENS EVERY TIME WE SWITCH ON.
 - TO WORK IN GROUPS IN A COLLABORATIVE WAY. YOU, AS A GROUP, ARE THE STAR OF THIS MOVIE.
 - TO SHOW WHAT YOU HAVE LEARNED AND DISCOVERED TO OTHERS.
 - TO WORK OUT A CHALLENGE, MAKING PROPOSALS FOR A SUSTAINABILITY SITUATION.



CONTENTS

1. Energy. What's that?

2. Sources of energy.

3. The importance of ELECTRICITY.

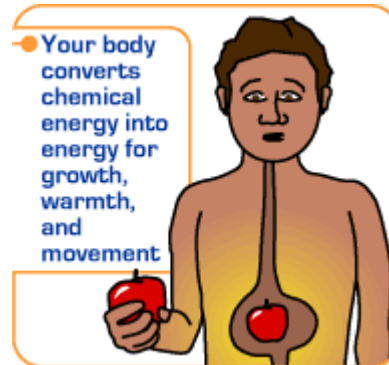
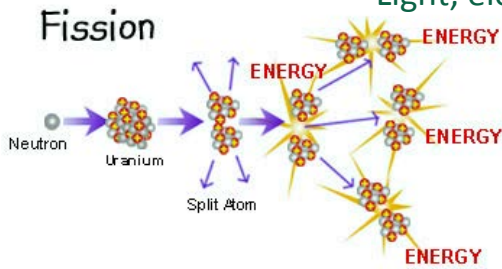
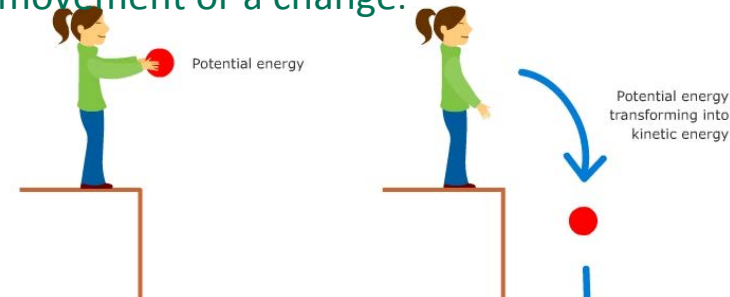
4. Producing electricity.



ENERGY. What's that?

- Energy is the capacity to perform a work, to produce a movement or a change.

- Ways to “see” the energy:
 - Movement: kinetic energy
 - Position: potential energy.
 - Heat: Thermal energy.
 - Electrical energy.
 - Chemical energy.
 - Nuclear energy.
 - Light, electromagnetic waves, sound....



- Energy can neither be created nor destroyed; rather, it transforms from one form to another. This conservation law implies:
 - All kind of energies can be transformed into electrical energy.... Why?

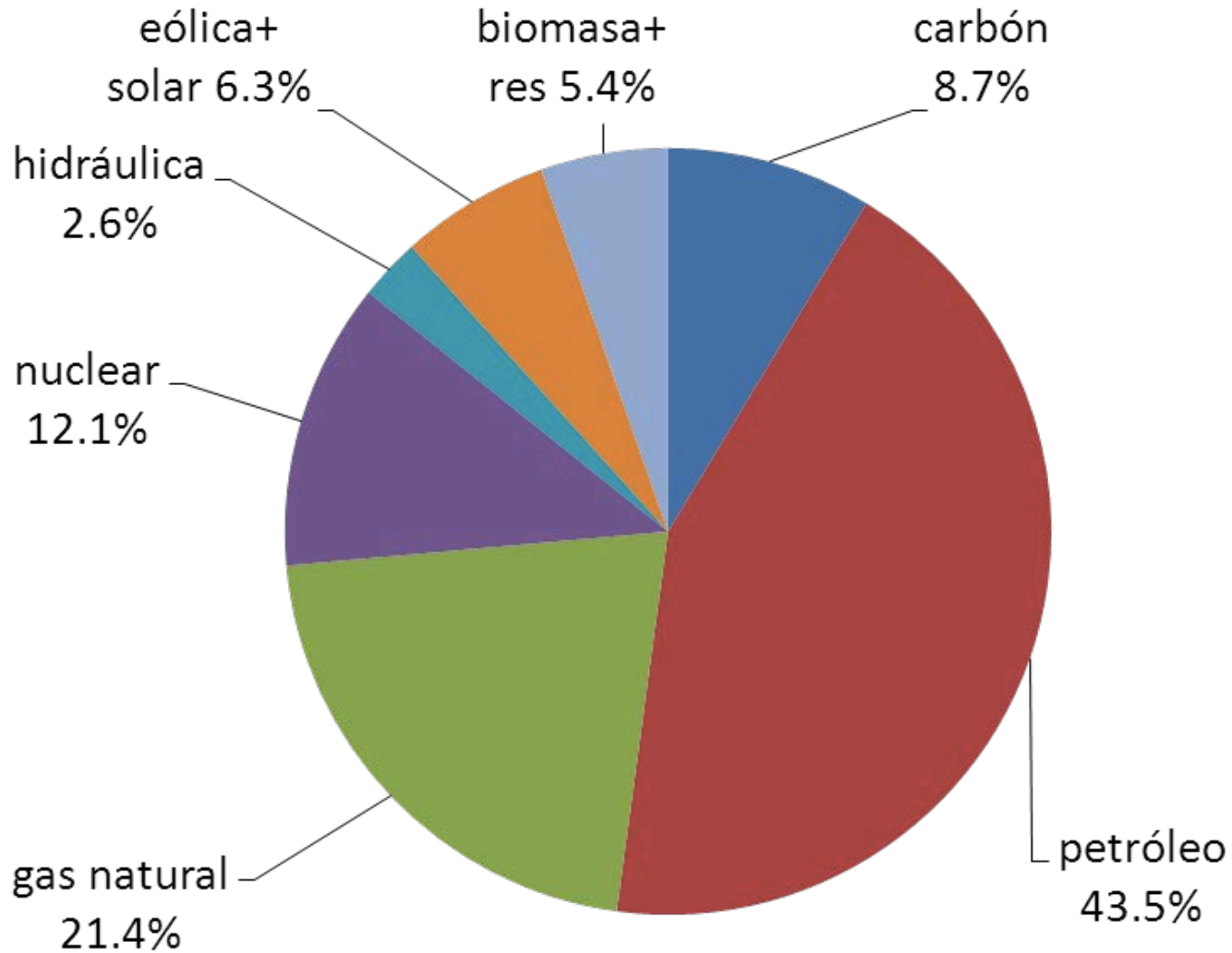


SOURCES OF ENERGY

A source of energy is something from which we can extract energy:

- Petrol
 - Natural gas.
 - Coal
 - Uranium
 - Water: hydraulic or seawater
 - Sun
 - Wind
 - Biomass
 - Heat stored in the Earth: Geothermal energy
 - Others...
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- **SOME OF THESE SOURCES ALLOWS US TO PRODUCE GREEN ENERGY.... We can classify them in non-renewable renewable sources.**
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- **FIRST ACTIVITY: Do a research of the different sources of energy used in you country (you can do it for Netherlands, Spain, Italy or for the whole EU). Do a PowerPoint presentation or similar to show your job.**

EXAMPLE: In Spain





IMPORTANCE OF ELECTRICITY

- Why do we use all the sources of energy to produce electricity?

- We can use electricity:

- LIGHT



- SOUND



- MOVEMENT



- HEAT





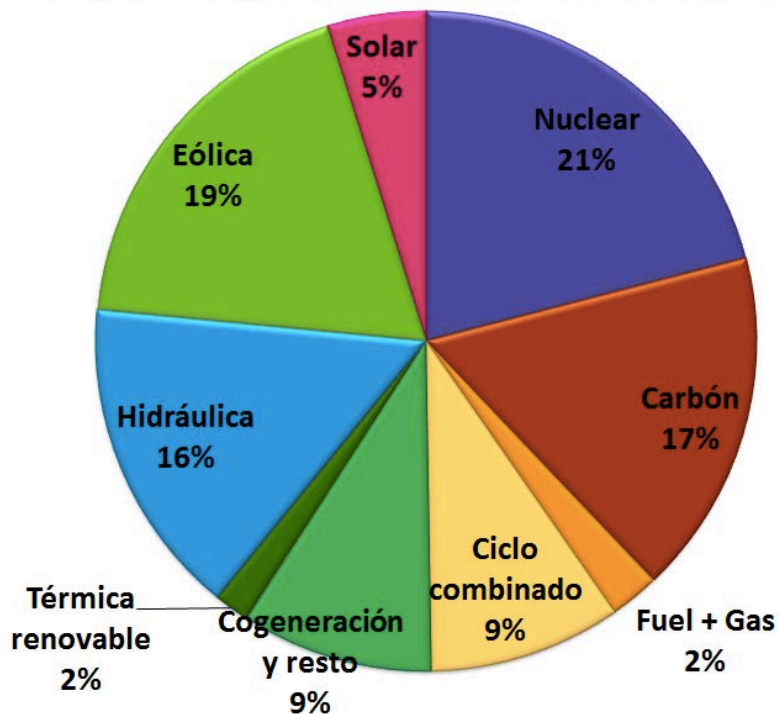
PRODUCING ELECTRICITY

- HOW ELECTRICITY IS PRODUCED?
 - IN THERMAL POWER STATIONS → DIFFERENT TYPES
 - IN NUCLEAR POWER PLANTS
 - IN WIND POWER PLANTS
 - SOLAR PANNELS
 - HYDROPOWER PLANTS

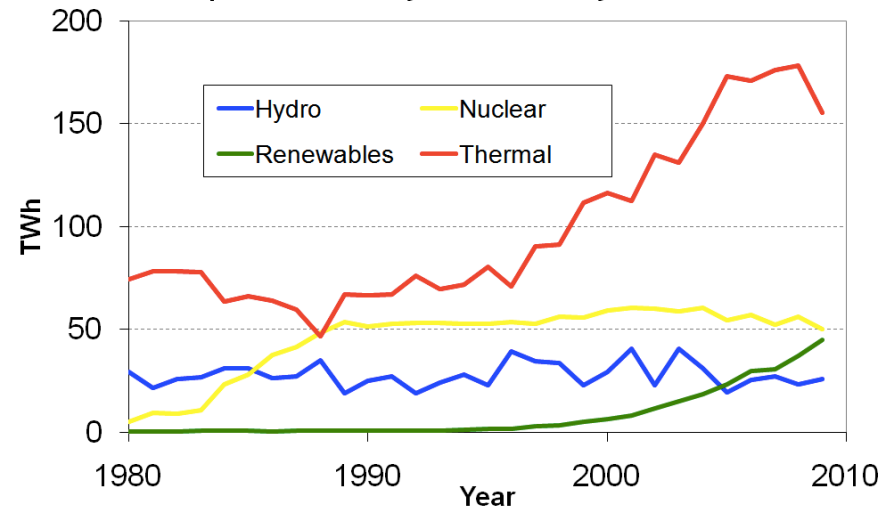


EXAMPLE: In Spain Electricity comes from...

Origen de la generación eléctrica en España (2014)



Spain's Electricity Production by Source





PRODUCING ELECTRICITY

- SO..... WHAT CAN WE DO FOR ENVIRONMENTAL SUSTAINABILITY????

SECOND ACTIVITY:

AGAIN IN GROUPS, LET'S PROPOSE WAYS OF PRODUCING ENERGY IN OUR HOMES/SCHOOLS/
BUILDINGS IN A GREEN WAY.

DO A POWERPOINT WITH SOLUTIONS: THEY CAN BE DEVICES, CHANGE OF HABITS...

USE YOUR IMAGINATION!!!

