

A consistent approach on the optimization of the existing forms of energy

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Introduction

- *Questionnaire on the existing forms of energy in:*
 - *mainland and*
 - *island part of the Region of Thessaly.*
- ***Renewable Energy Sources (RES) defined by Directive 2009/28 / EC, i.e.: wind, solar, aerothermal, geothermal, hydrothermal and ocean, hydroelectric, biomass and photovoltaic.***
- *Conclusions, aiming to reduce the environmental imprint.*

Participants

115 respondents took part in the survey, relevant to the subject matter of the questions, i.e.:

- 67 students*
- 23 postgraduate students*
- 12 teachers*
- 4 academic fellows and*
- 9 Institutions*

Brief descriptions on the existing forms of energy

- *Wind energy: It is transformed into electricity through wind farms, either on land or at high sea, with dozens of turbines. These giants are part of our landscape.*
- *Solar energy: It is the sun power converted into thermal or electrical energy used to provide light, comfortable interior environment, and heating water for domestic, commercial, or industrial use.*

Brief descriptions on the existing forms of energy (to be continued)

- *Aerothermal energy : It refers to a technology for extracting up to 77% of the energy from the air, through an advanced heat pump designed to provide cooling in summer and heating in winter (air condition).*
- *Geothermal energy: It is the heat from the rocks and fluids beneath the earth's crust, from one mile deep, up to the hot molten rock, magma.
For production, wells are dug to access the steam and hot water.*

Brief descriptions on the existing forms of energy (to be continued)

- *Hydrothermal energy: It is the heat obtained from a large body of water. The term 'heat' is not associated with high temperature but with relative temperature difference.*
- *Ocean thermal energy conversion (OTEC): Is a subset of hydrothermal energy offering electricity from ocean temperature difference, through a comprehensive utilization of the natural water resources. A hydrothermal resource requires fluid, heat, and permeability to generate electricity.*

Brief descriptions on the existing forms of energy (to be continued)

- **Hydroelectric** energy: *It is actually electricity produced from hydropower. In 2015, hydropower generated 16.6% of the world's total electricity and 70% of all renewable electricity, expecting to increase by 3.1% each year for the next 25 years.*
- **Biomass** energy: *Is the electricity or heat produced by biomass, which might be a plant or animal material. Examples of biomass are wood, energy crops and waste from forests, yards, or farms.*

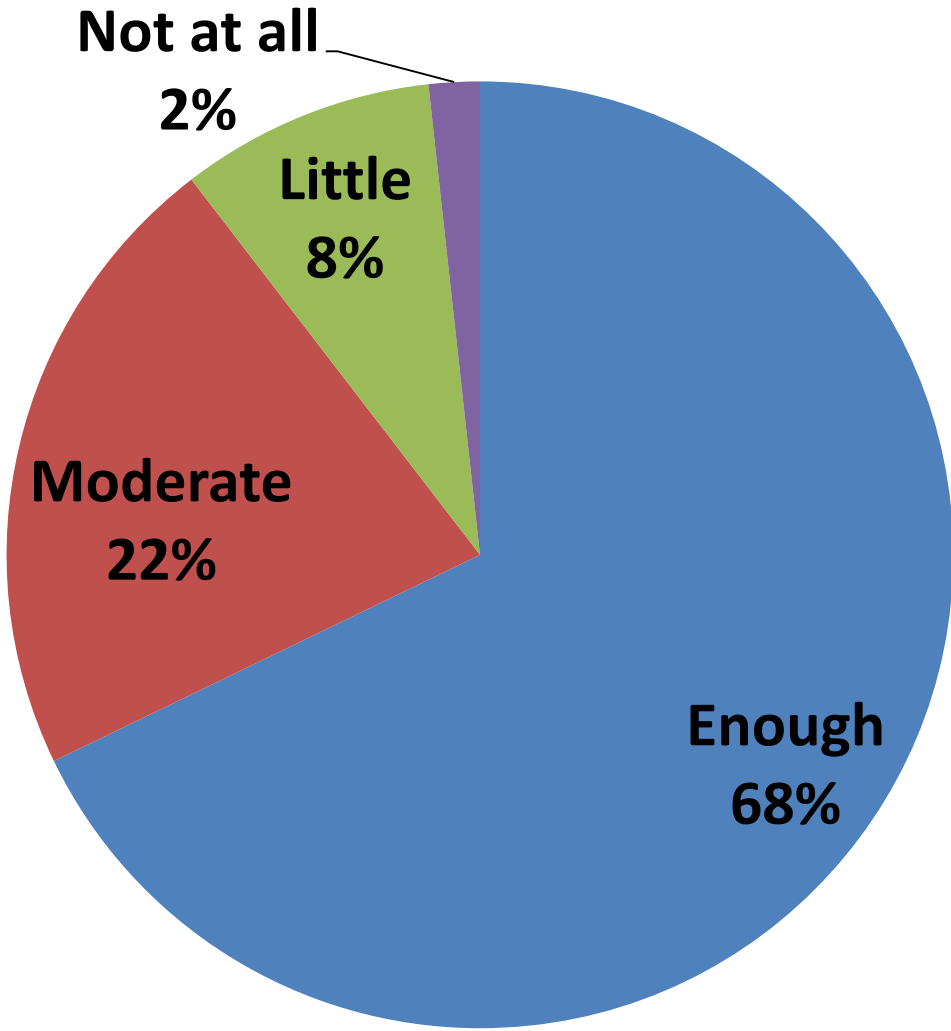
Brief descriptions on the existing forms of energy (to be continued)

- *and Photovoltaic energy: It is the conversion of light into electricity using semiconducting materials that exhibit the photovoltaic effect. Photovoltaic installations may be ground-mounted, rooftop-mounted, wall-mounted or floating. The mount may be fixed, or use a solar tracker, to follow the sun across the sky. Photovoltaic technology is a hope to produce enough affordable sustainable energy to help mitigate global warming caused by CO₂.*

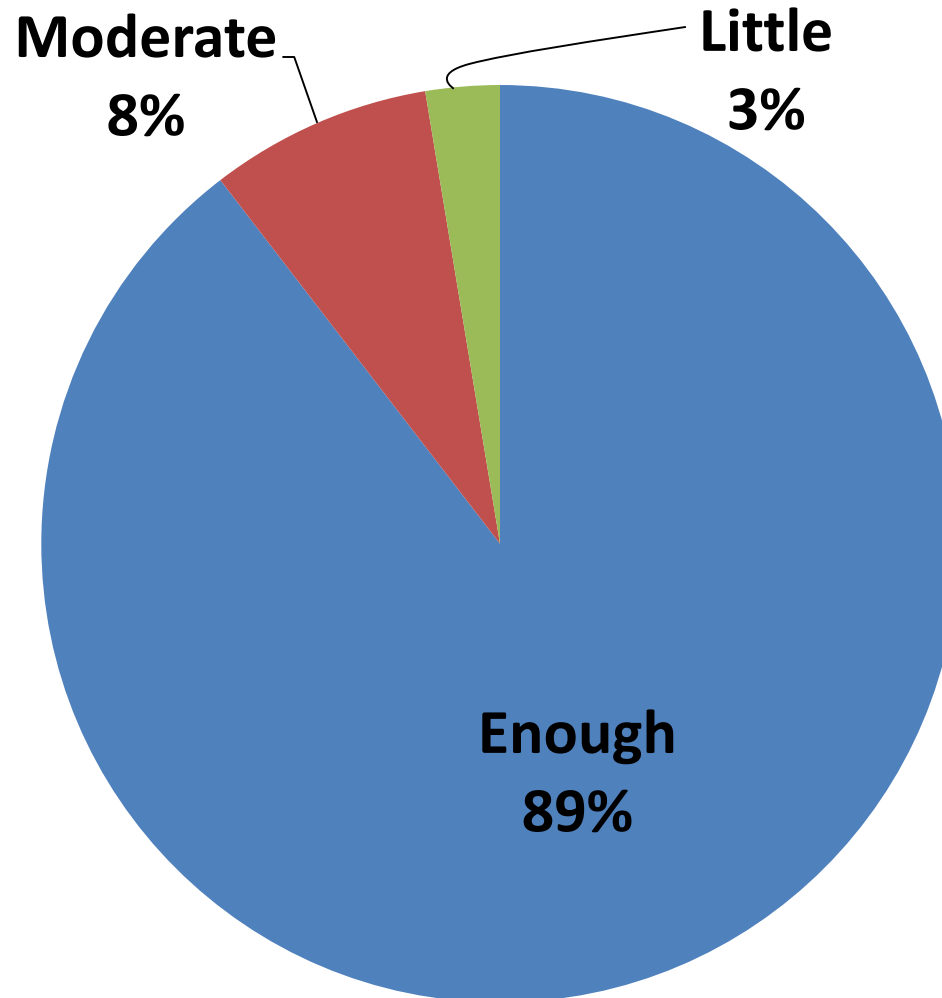
Questionnaire

- *Here are 12 questions which were posed to the 115 respondents in our survey.*
- *In each of these questions the percentages of the given answers are displayed in the form of a pie.*
- *Staying on the same question, it follows a brief comment on the above answers.*

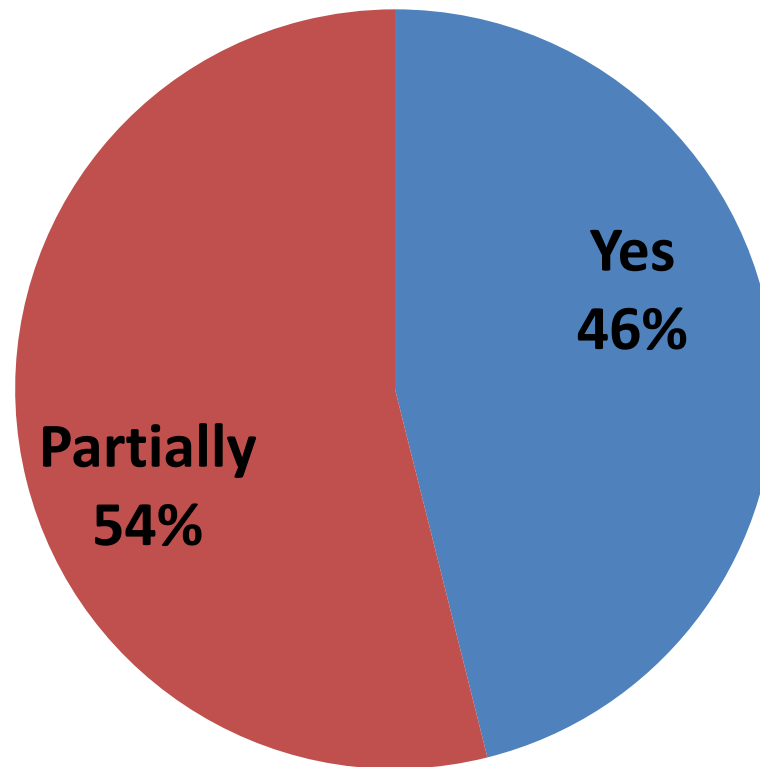
1. How informed are you about the different types of renewable energy sources (RES) used by current technology?



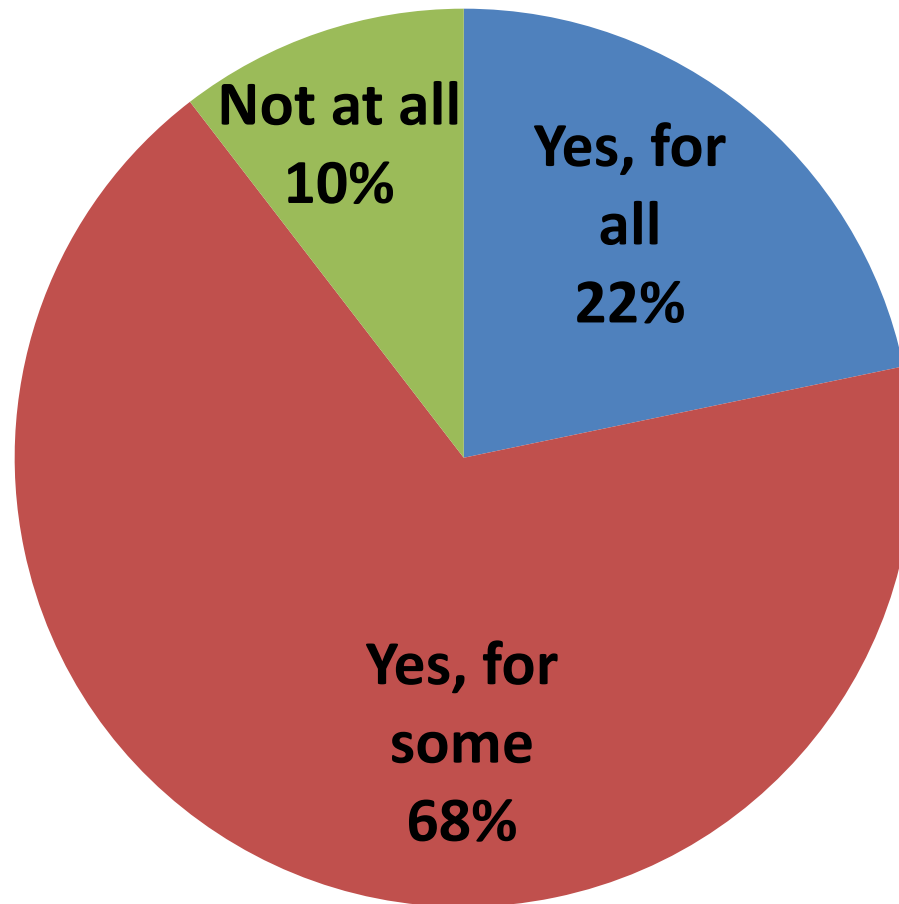
2. To what extent do you consider RES to be environmentally friendly?



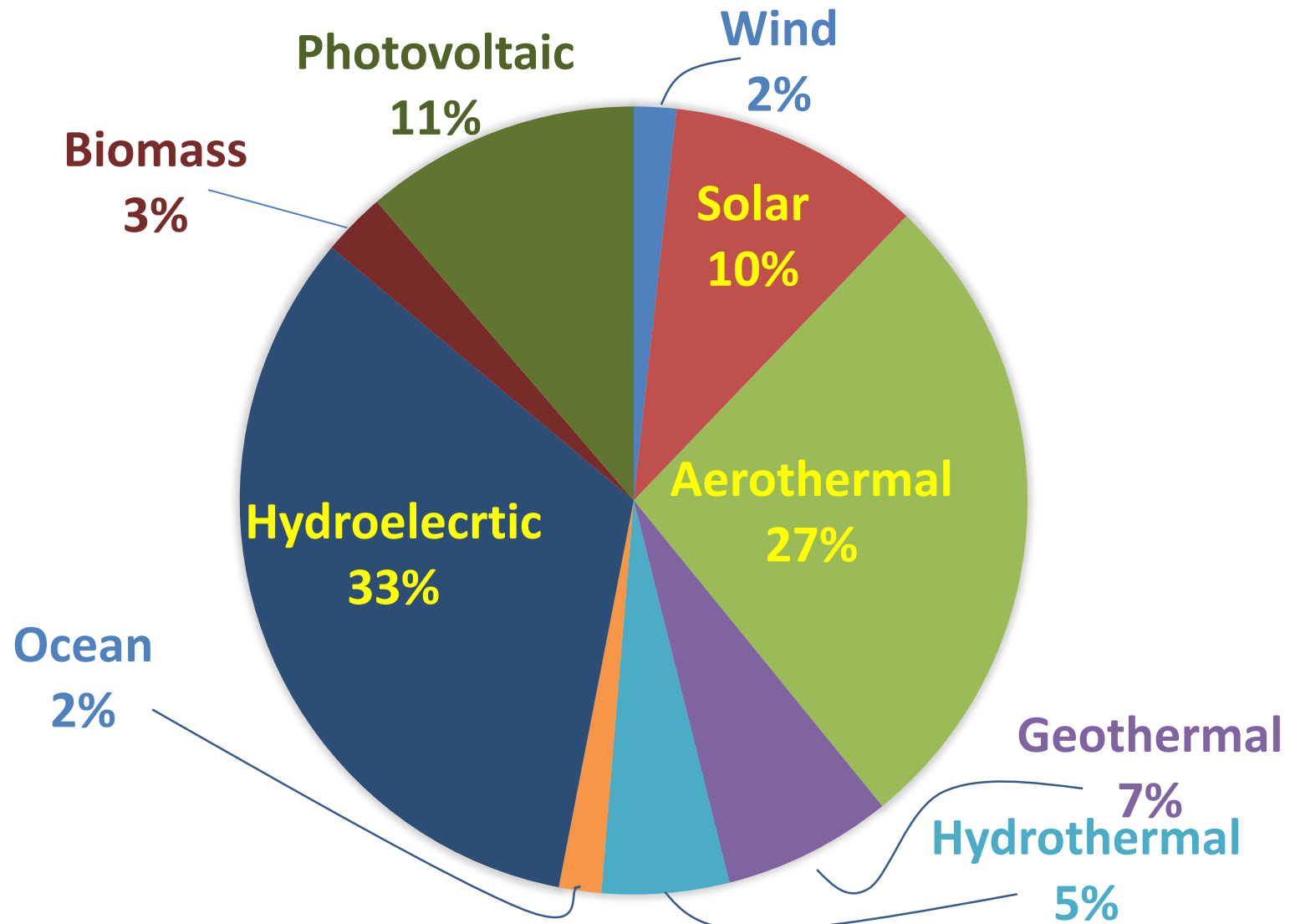
3. Are you aware of the different types of energy known today, i.e. : a) Wind b) Solar c) Aero thermal d) Geothermal e) Hydrothermal f) Ocean energy g) Hydroelectric h) Biomass and i) Photovoltaic ?



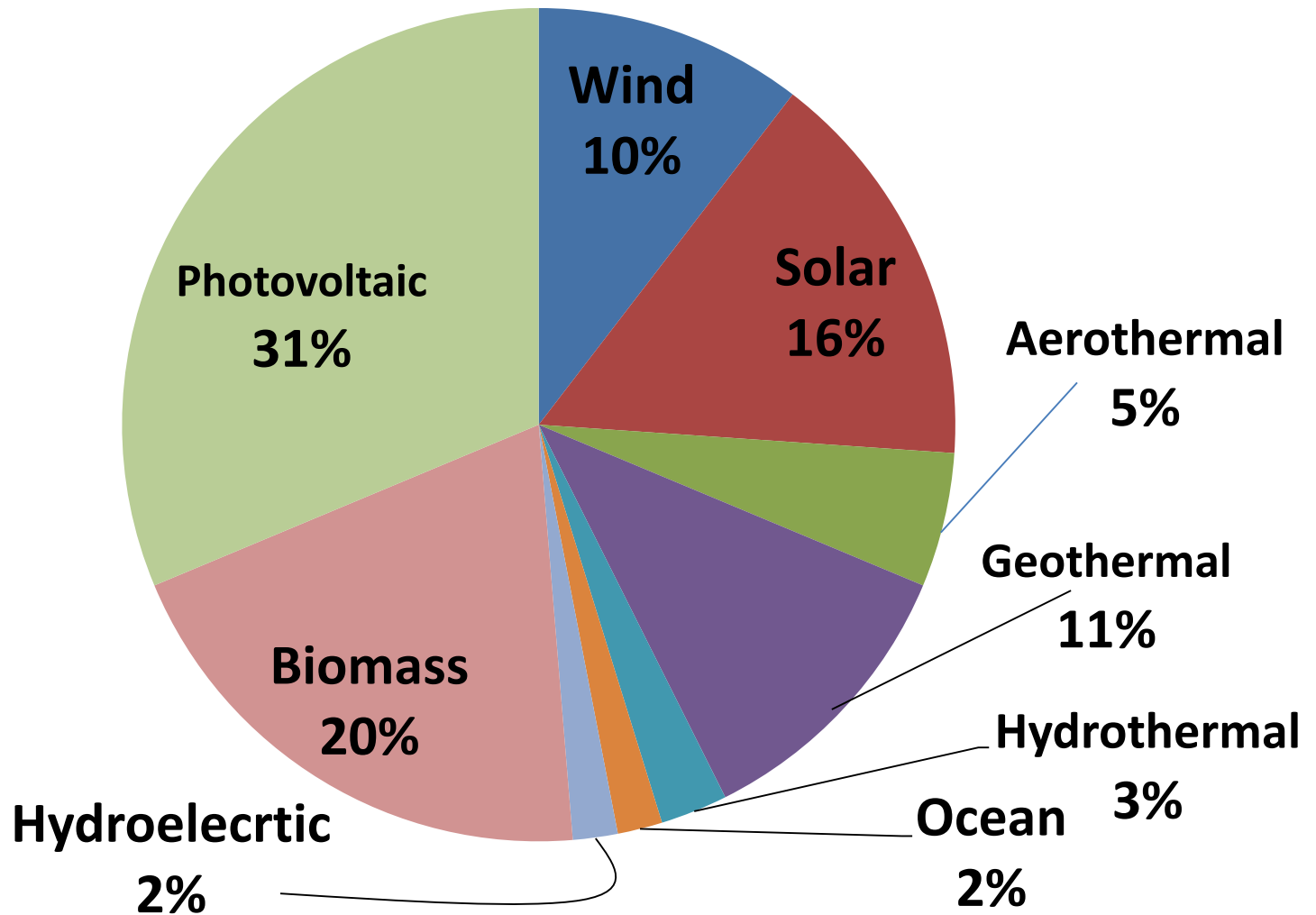
4. Of course, depending on the type, each energy is related to its production cost. Given your place of residence or activity, do you know how energy is related to its consumption costs?



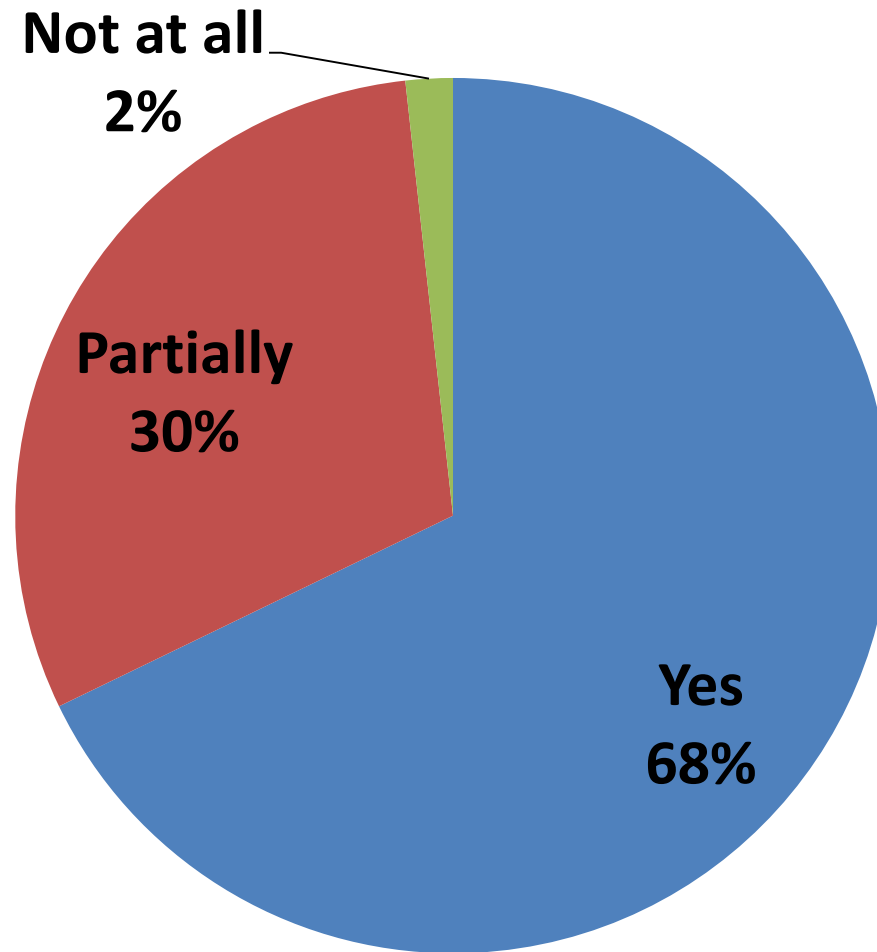
5. Finally, which of the following energies would you prefer for home use?



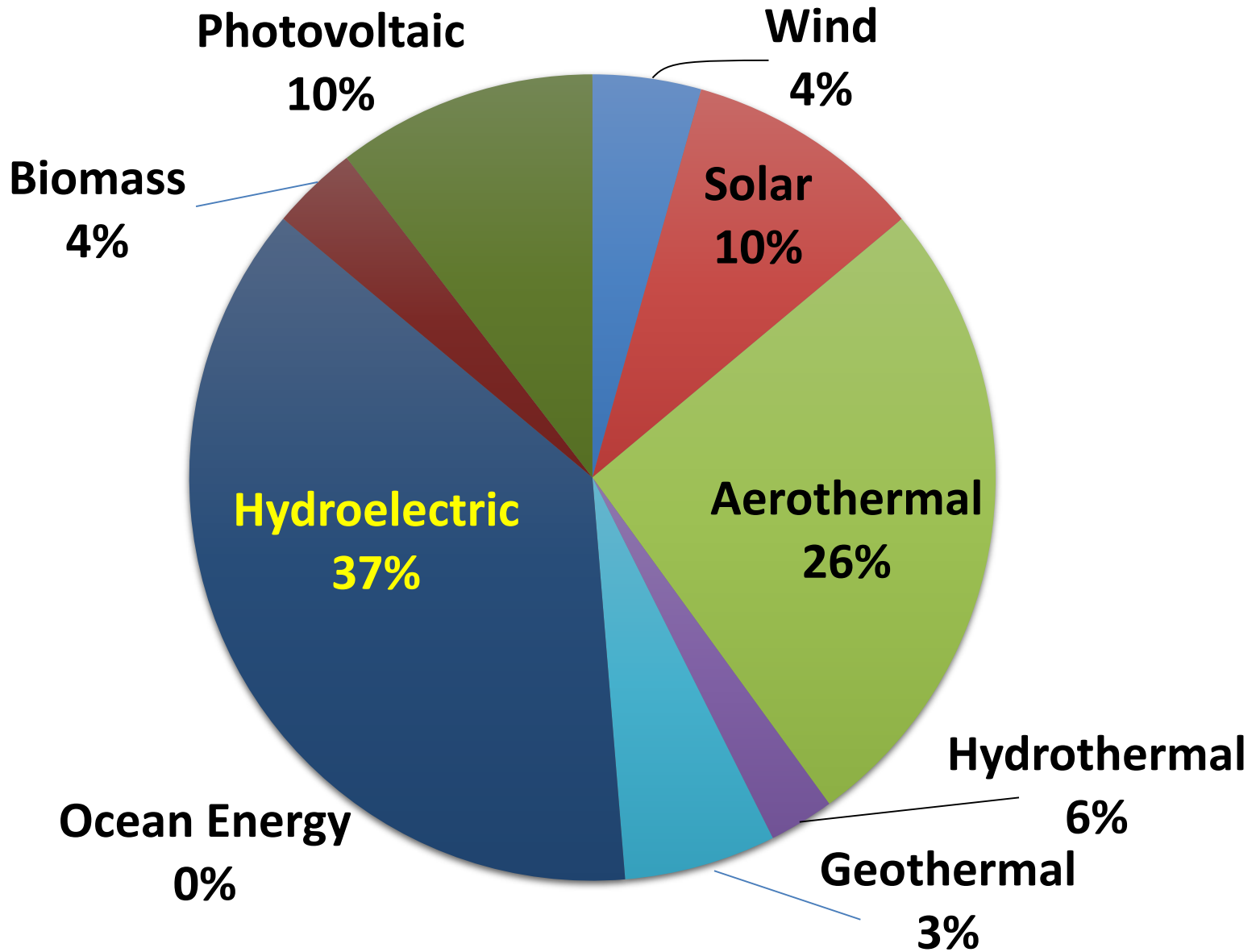
6. Respectively, which of the following energies would you prefer for industrial or other use?



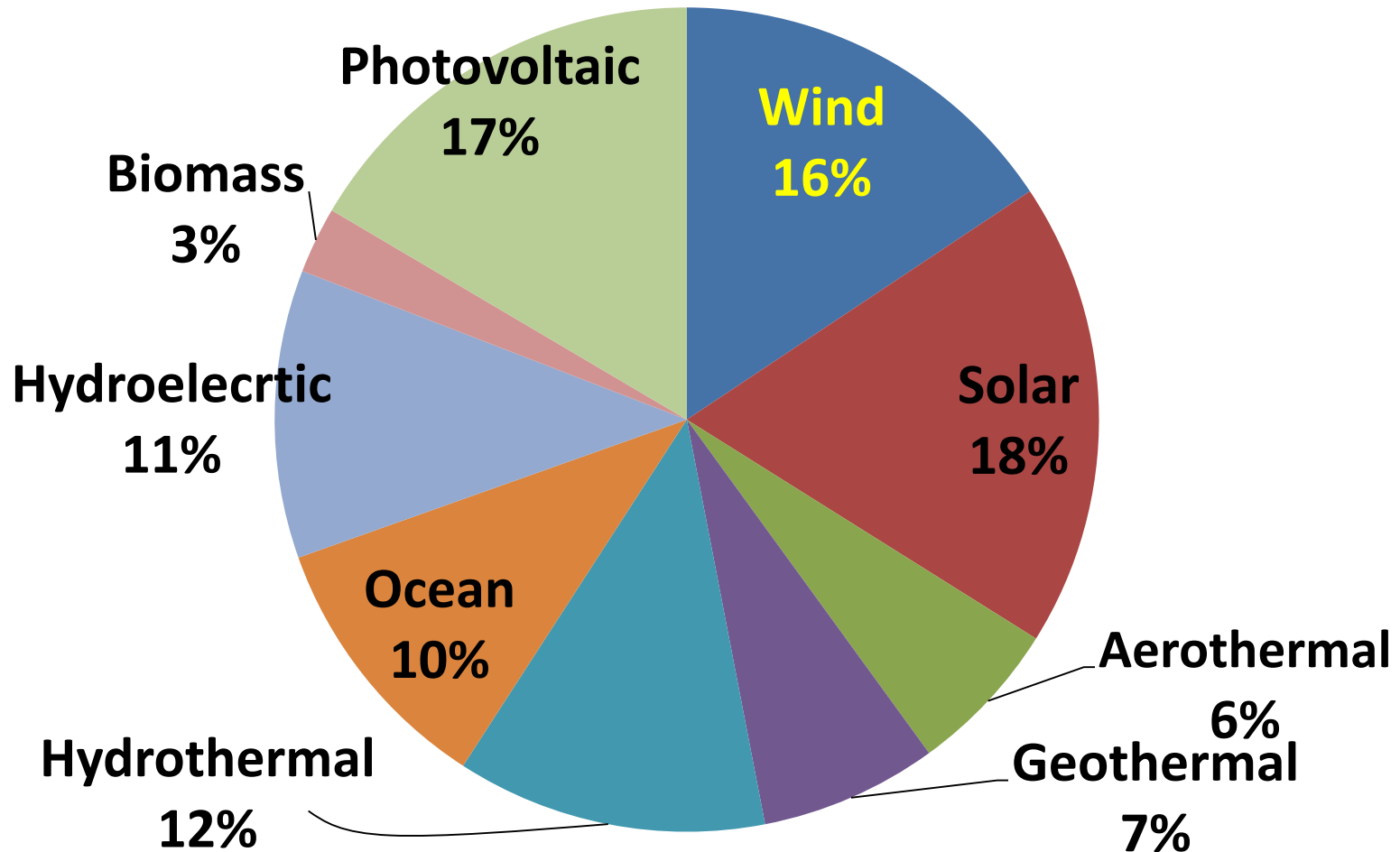
7. Do you think that by using a RES, there would be some financial benefit in the long run?



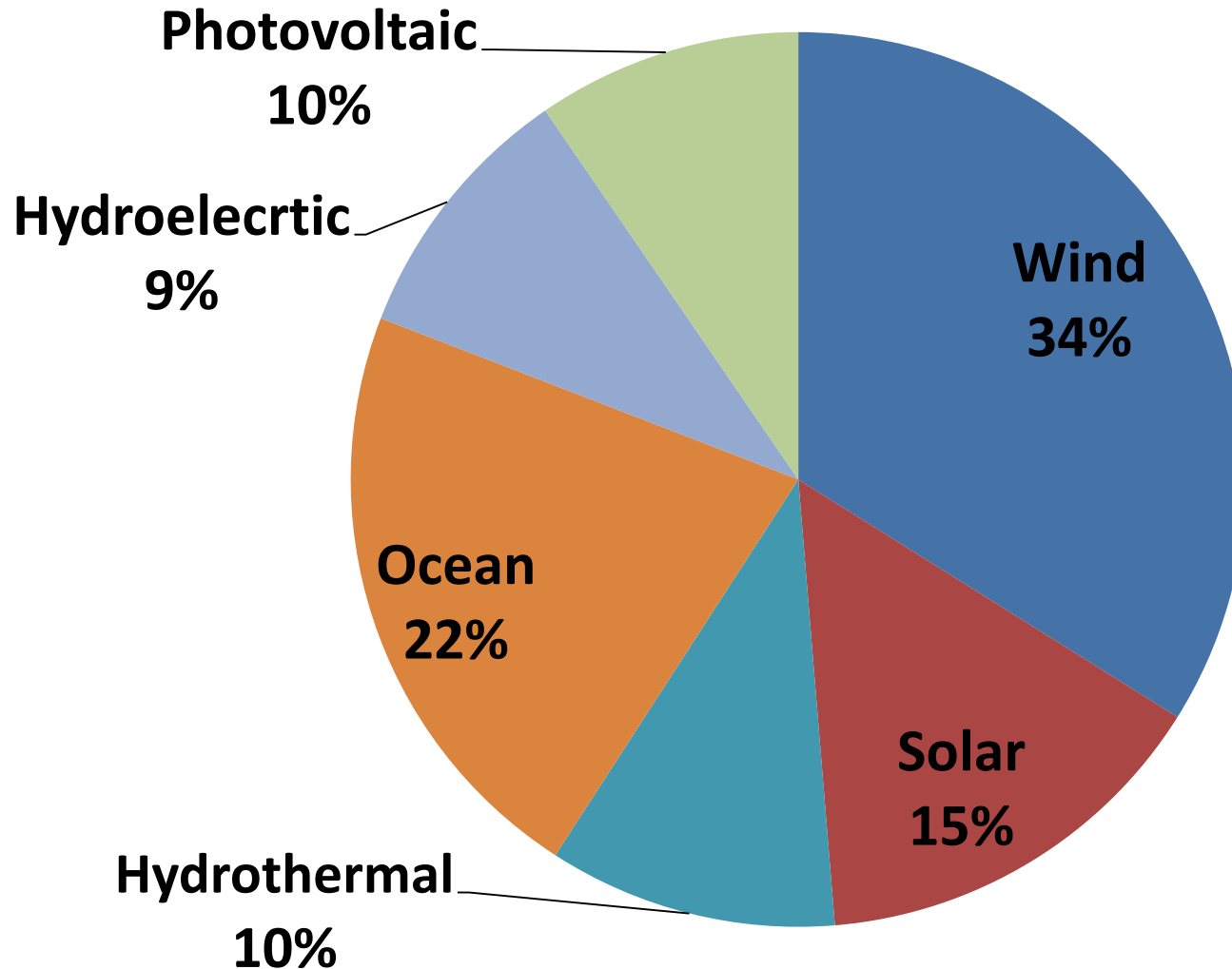
8. Do you use any form of RES and if so what is it?



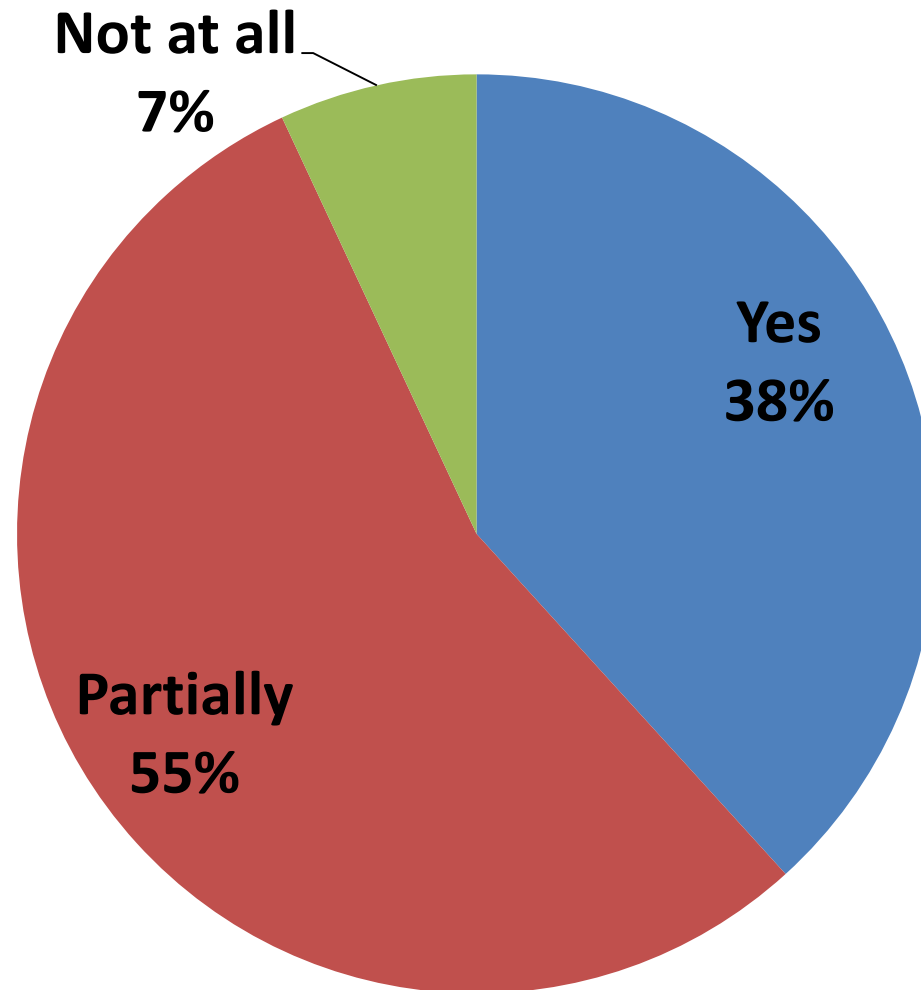
9. Which of the following types of energy do you think could play an important role to face the energy problem? (Select up to three items)



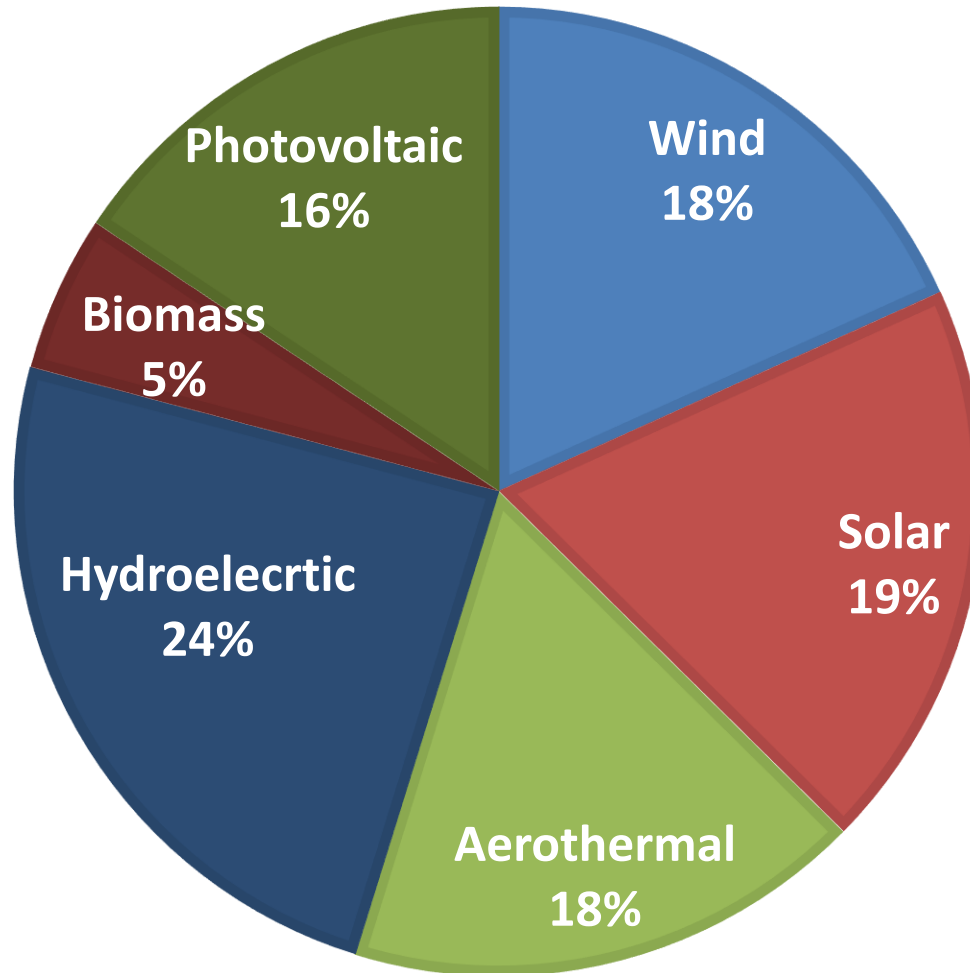
10. Which of the following types of energy do you consider most environmentally friendly?



11. Do you think that a complex combination of two or more types of energy could be more appropriate?



12. If you were appointed to implement a European energy policy, what kind of RES would you suggest, so that an energy crisis on the planet would be avoided?



Conclusions

- *The majority of respondents, knowing the energy to cost ratio, prefer the traditional forms of energy for home use, but consider that other innovative energy sources are also very environmentally friendly and it is a matter of time before they replace other types of energy.*
- *RES are considered by almost everyone to be completely environmentally friendly and according to most, some of them can solve the energy problem of the planet.*

Proposals

- *However, based on the present research and its results, it is proposed to conduct a broader research by all scientific bodies involved in energy management, so that the new emerged data could be a start for a comparative study in all the Regional Departments of the Country.*

Thank you for your attention!