



8th CASEE Conference

"Sustainable development in Europe
– cooperation between science and practice –
What's the position of Central and South
Eastern Europe?"

14-16 May 2017

Warsaw University of Life Sciences, Poland



Study concerning resources, production and consumption of fossil fuels at European level, benchmark element for sustainable development

Authors: **Marius SABADAS**,
Marcel DIRJA, Adela HOBLE, Alexandra PADURARIU,
Mihai MAXIM, Iulia GLIGA, Mihaela VARVARA, Maxim
COROCHII, Maria MOLDOVAN

*¹University of Agricultural Sciences and Veterinary
Medicine Cluj-Napoca, 400372, Cluj-Napoca,
Mănăştur Street, 3-5, Romania*



Contents

- ◆ **Introduction**
- ◆ **Aims and objectives**
- ◆ **Fossil fuels**
 - Types of fossil fuels
 - Supply, transformation and consumption of solid fuels, oil and gas
 - Global fossil fuel production and forecast
- ◆ **Alternatives for fossil fuels through renewable energies**
 - Types of renewable fuels and renewable energies
 - Bioenergy production
- ◆ **Conclusions**
- ◆ **References**

Introduction

- ◆ The purpose of the study is to bring into attention, the level of fossil fuel resources, needed for sustainable development, and the need to use renewable energies.
- ◆ Most used energy resources of the present, are the crude oil (petroleum) and the coal.
- ◆ Technology has known in recent years, a rapid growth and develops further, it can be seen that, research for new technologies it is still a priority concern at global level.

Introduction

- ◆ High consumption of fossil fuels has brought a high level of environment pollution.
- ◆ Globally, such technologies can not yet be implemented widespread, an analysis of existing resources, production and consumption of fossil fuels is useful and necessary, if we think at next generations.
- ◆ Strive to protect environment is an important chapter for the future of the human race.

Introduction

- ◆ With how quickly it is implemented a model for environment protection, the pollution will be reduced, and thus the consumption of fossil fuels.
- ◆ The position of Europe can be noticed below in the data obtained from the statistics on fossil fuels.
- ◆ Studies in the field have shown it can not be implemented a unique model for avoiding pollution, for each geographical area part is suitable a particular model of environmental protection, based on the degree and level of pollution up to the present.

Introduction

- ◆ The big problem is that many of these programs of environmental protection are not implemented, the pollution produced by fossil fuels, is still at a high level, because the world is very hard to be aware of the negative effects for the future.
- ◆ **Classical energy - source of pollution!**



Aims and objectives

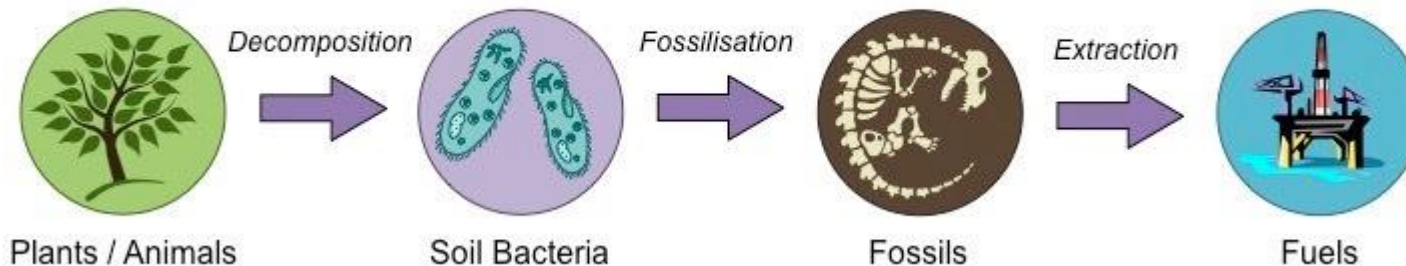
- ◆ Regarding the sustainable development it was established over the years, by researchers in the field that the first priority has to be green technology.
- ◆ Green energy is obtained by using solar photovoltaic cells, wind turbines, installations for producing biogas, as well as other systems that produce cheap energy, as a result of new generation technologies.
- ◆ **Classical energy - exhaustible source!**



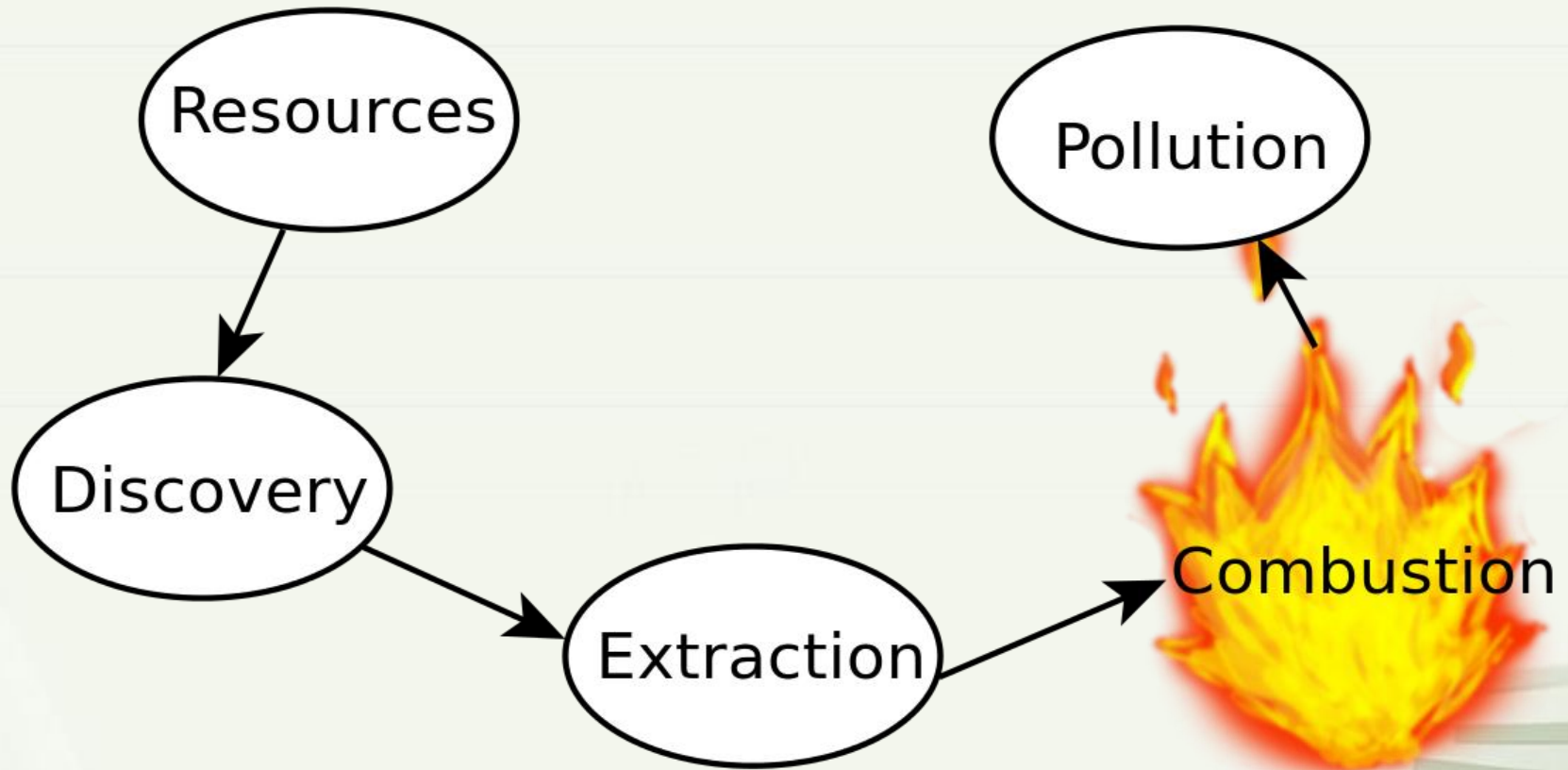
Fossil fuels

- ◆ Fossil fuels are fuels formed by natural processes such as anaerobic decomposition of buried dead organisms, containing energy originating in ancient photosynthesis.
- ◆ Fossil fuels are of great importance because they can be burned (oxidized to carbon dioxide and water), producing significant amounts of energy per unit mass.

Carbon Source: Fossil Fuels



Fossil Fuel Life Cycle



Types of fossil fuels

Fossil fuels



Natural Gases



Crude Oil



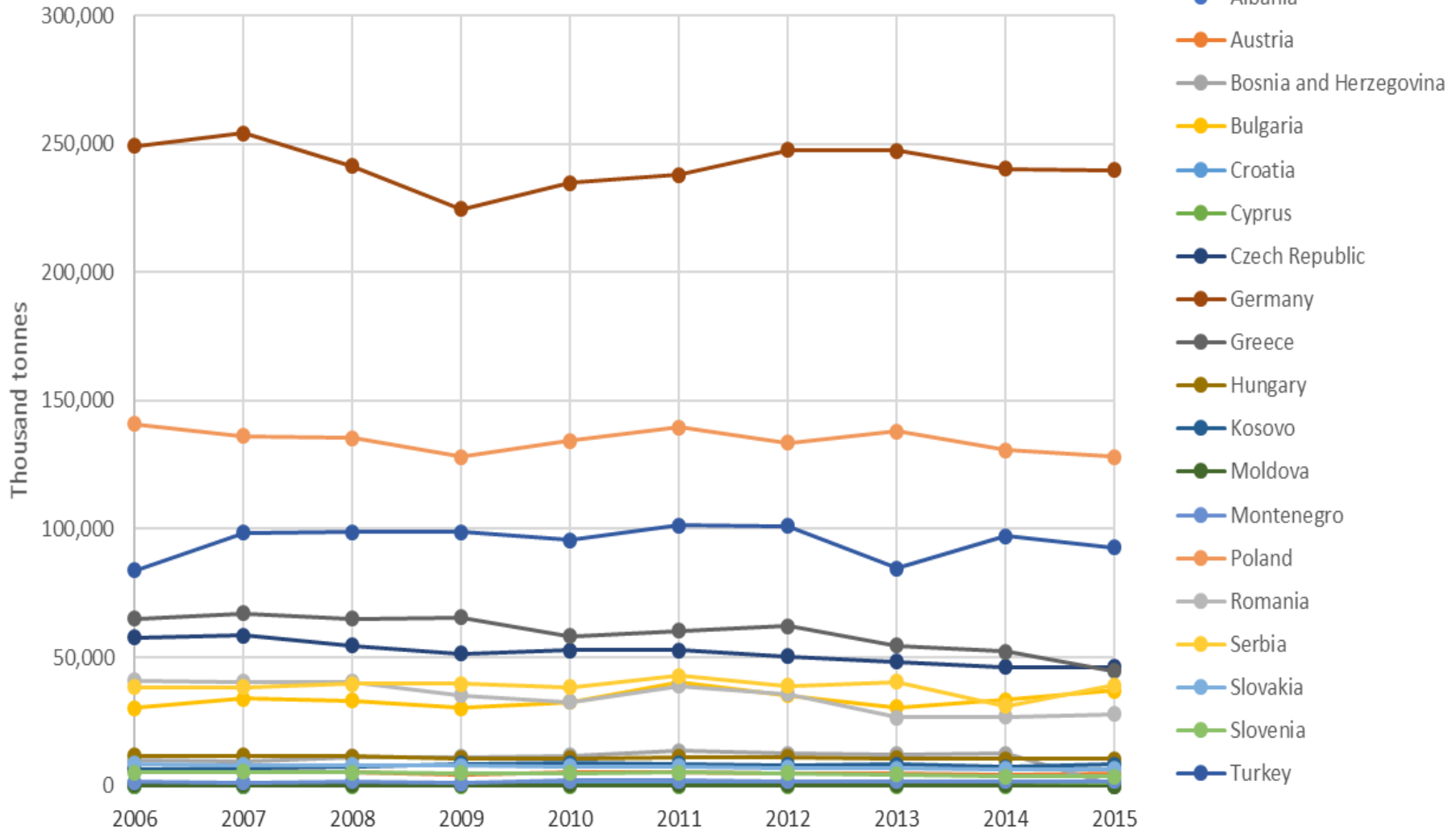
Coal

Supply, transformation and consumption of fossil fuels

- ◆ The number of years that are considered to be exploitable (in the most optimistic estimates) (Oil & Gas Journal, World Oil)
- ◆ Oil: $1,277,702 / 77/365 = 32$ years
- ◆ Gas: $1,239,000 / 47/365 = 72$ years
- ◆ Coal: $4,786,000 / 52/365 = 252$ years
- ◆ European Union representatives as well as leaders of the world's largest countries have proposed in their meetings to reduce the consumption of coal, oil and gas by 2025.

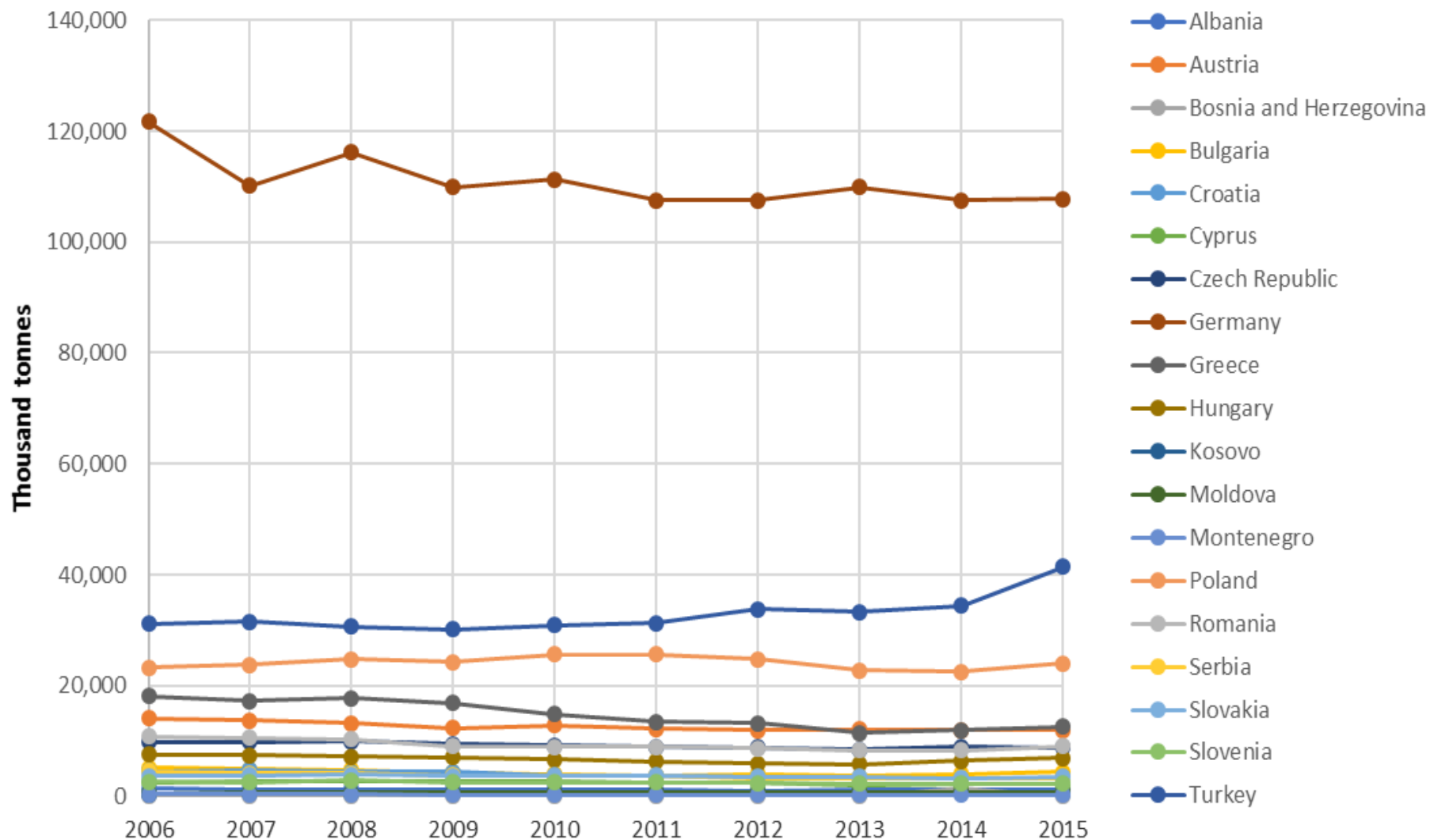
Supply, transformation and consumption of solid fuels, oil and gas

Supply, transformation and consumption of solid fuels



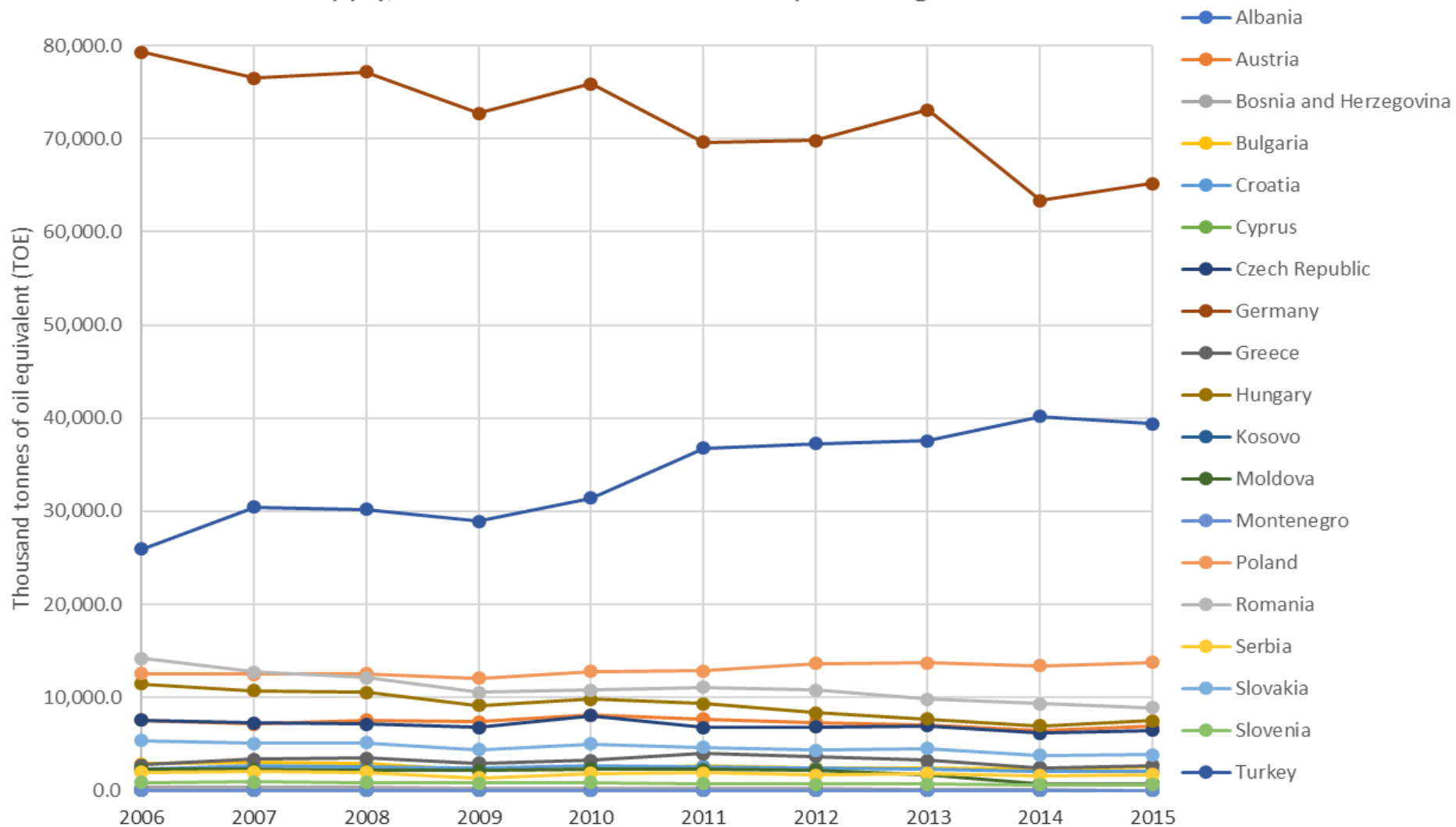
Supply, transformation and consumption of solid fuels, oil and gas

Supply, transformation and consumption of oil



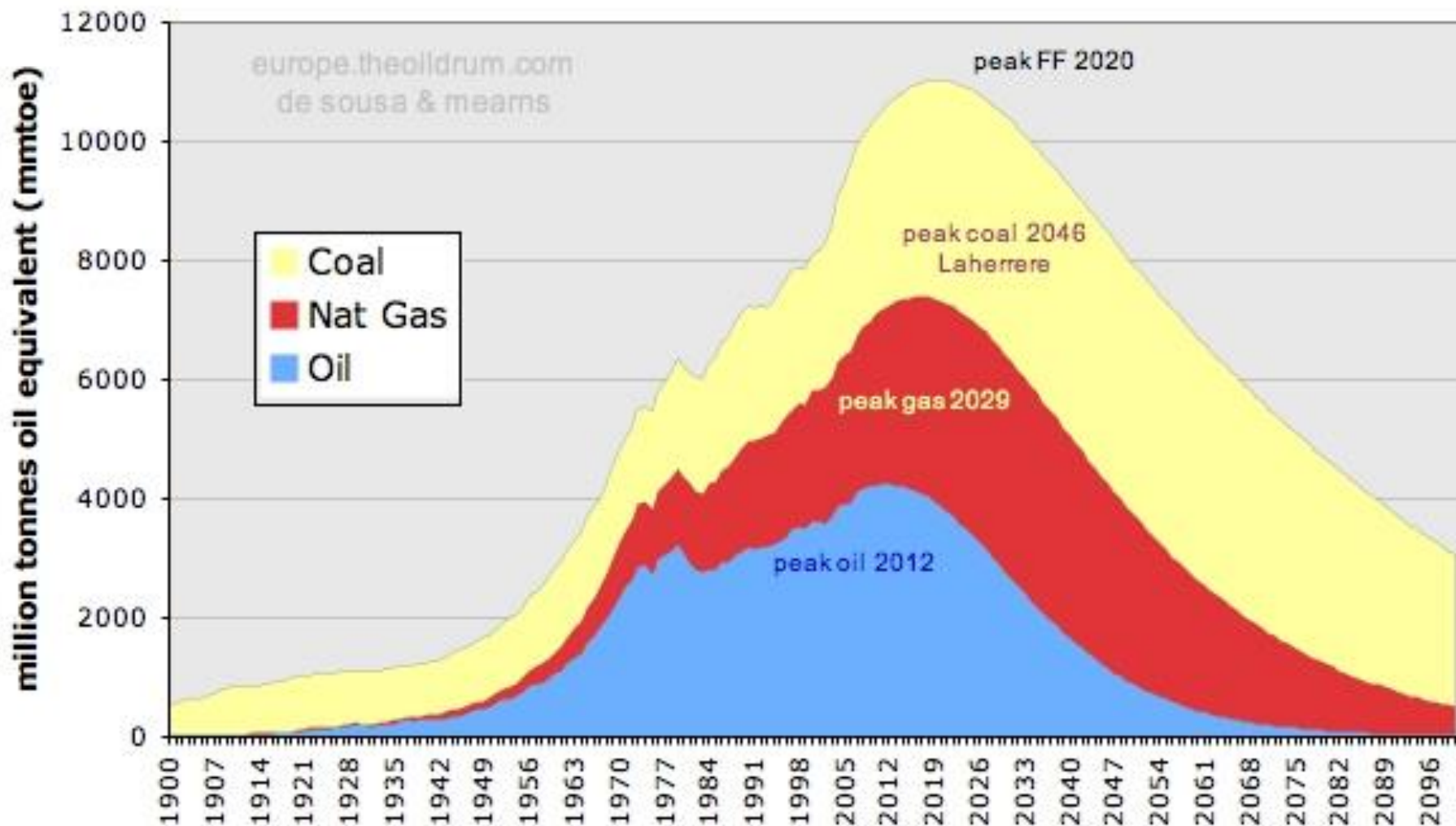
Supply, transformation and consumption of solid fuels, oil and gas

Supply, transformation and consumption of gas



Global fossil fuel production and forecast

Global Fossil Fuel Production and Forecast



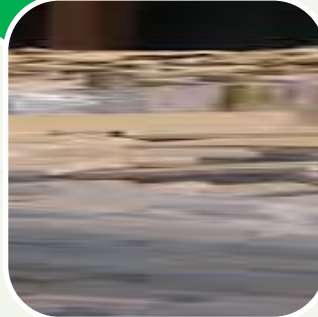
Alternatives for fossil fuels through renewable energies

- ◆ Renewable energies are considered in practice, energies from sources that either regenerate by themselves in a short time or are virtually inexhaustible sources.
- ◆ The term renewable energy refers to forms of energy produced by the energy transfer of energy from renewable natural processes.



Types of renewable fuels

Renewable fuels



Wood residues



Biomass gas

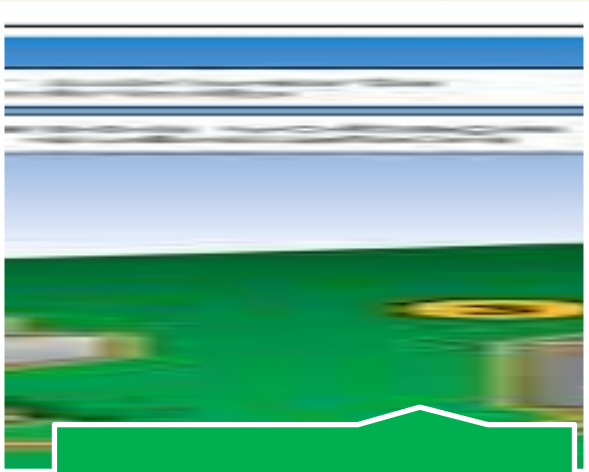


Biogas

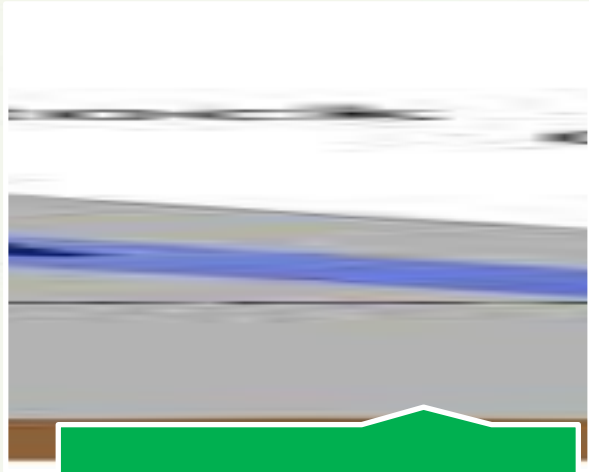
Types of renewable energies



Solar energy



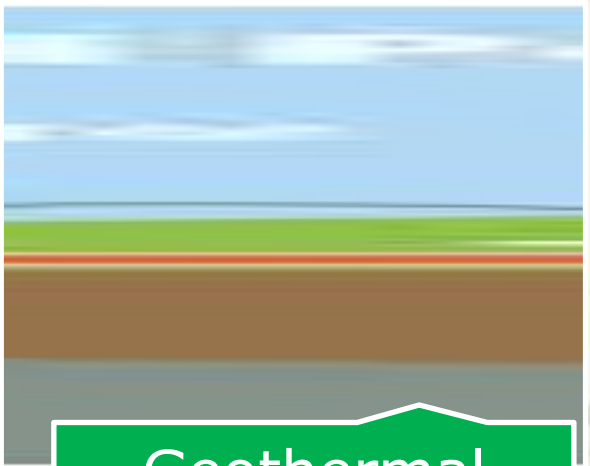
Wind energy



Water energy

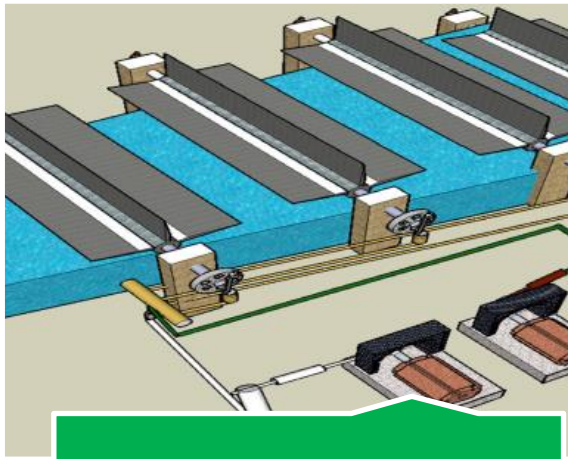


Energy from biomass

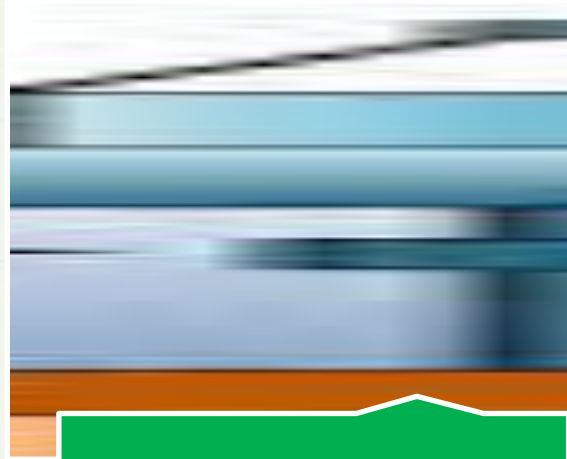


Geothermal energy

Types of renewable energies



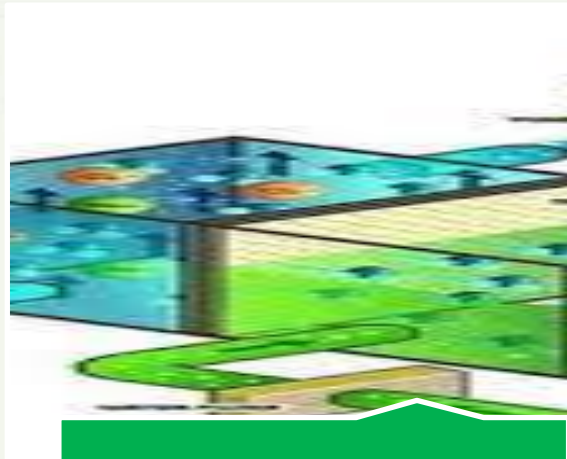
Hydraulic energy



Wave energy



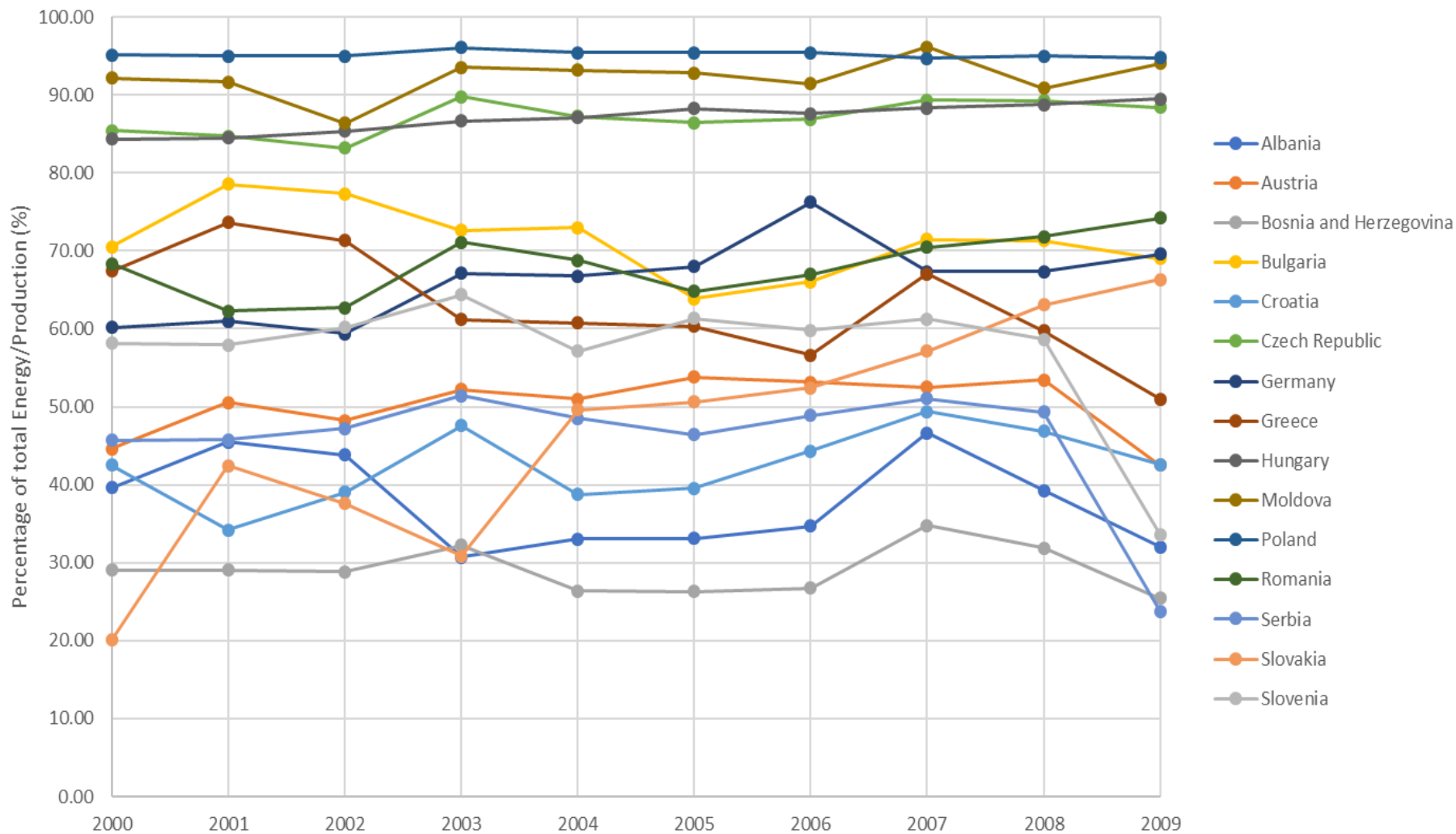
Tidal energy



Osmotic energy

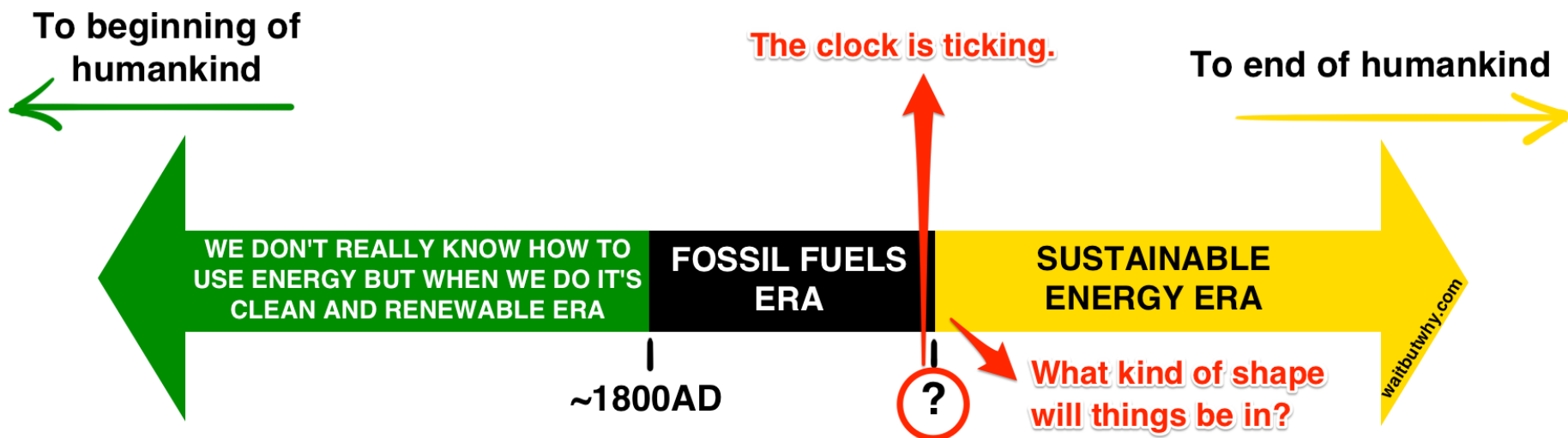
Bioenergy production

Bioenergy production



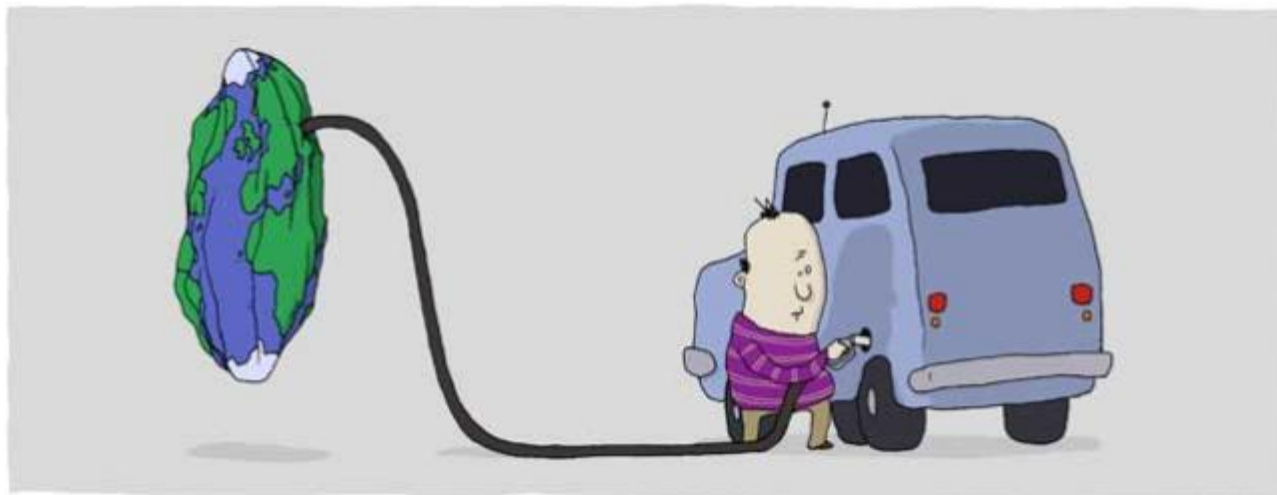
Conclusions

- ◆ One of the major challenges for the European Union refers to how we can ensure energy security with competitive energy and "clean", taking into account mitigating climate change, escalating global energy demand and the uncertain future access to energy resources. It can be noticed that world-wide humanity will continue to rely on fossil fuels by the end of this century.



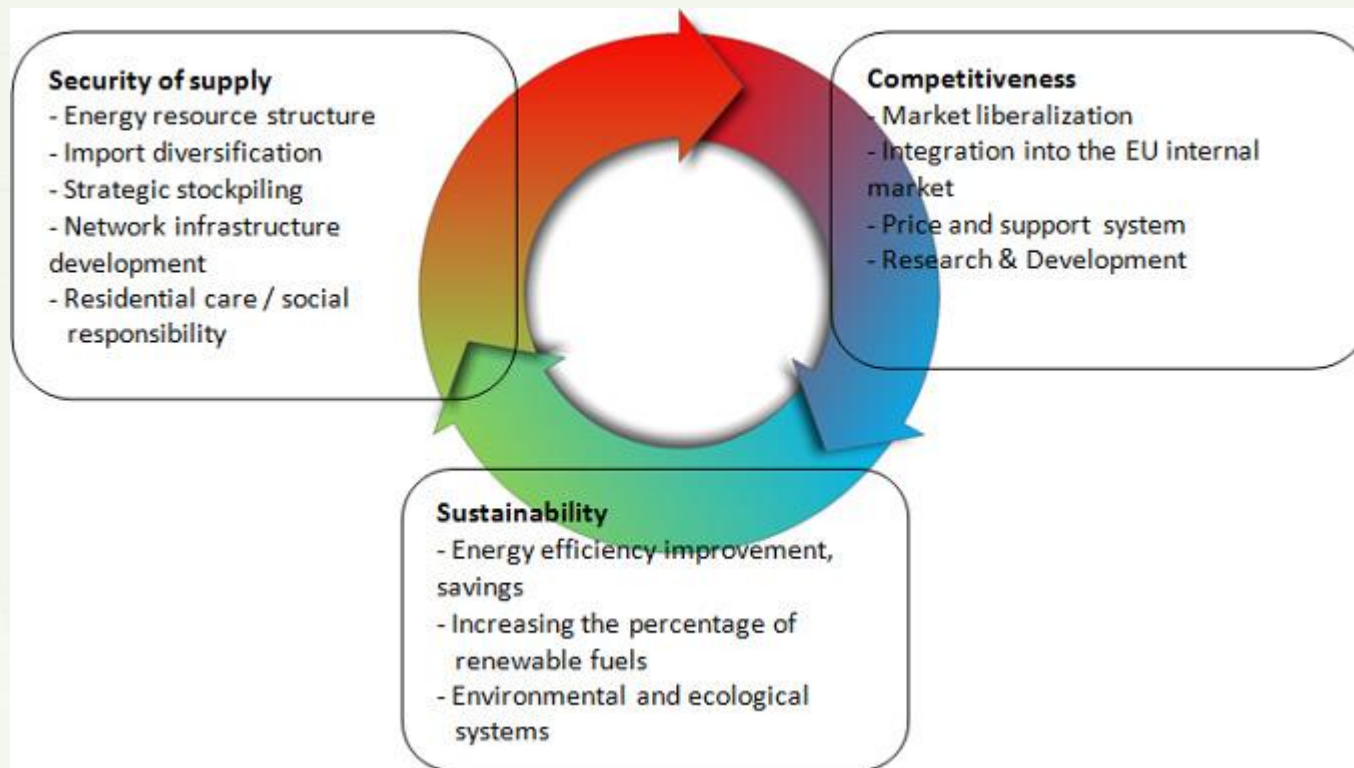
Conclusions

- ◆ The vision of European energy policy today corresponds to the concept of sustainable development and relate to the following aspects: consumer access to energy sources at affordable prices and stable viable development of production, transport and consumption of energy, security of energy supply and reducing emissions of greenhouse gases.



Conclusions

- ◆ European Union energy policy for the period up to 2020 is based on three fundamental objectives for which the EU has proposed separate packages of reform, legislative and regulatory: durability, competitiveness, security in energy supply.



References

- ◆ <http://www.fao.org/faostat/en/#data/EE>
- ◆ <http://ec.europa.eu/eurostat/data/database>
- ◆ http://www.opec.org/opec_web/en/about_us/25.htm
- ◆ <https://www.eia.gov/beta/international/rankings/#?product=53-1&cy=2016>
- ◆ <http://www.keyword-suggestions.com/Zm9zc2lsIGZ1ZWwgIGRlcGxldGlvbG/>
- ◆ <https://www.bloomberg.com/europe>
- ◆ <https://www.agrikinetics.com/miscanthus-giganteus/decentralisation-with-miscanthus/>
- ◆ <https://www.energy.eu/#renewable>
- ◆ <http://www.caneurope.org/energy/renewable-energy>

CASEE

Central and South Eastern Europe



Thank you for your attention!



GO