TRANSITION TO GREEN ENERGY AND IMPROVING LIVING CONDITIONS

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ABSTRACT: The energy transition is one of the most important challenges of the 21st century. The increase in global energy consumption and dependence on fossil fuels have led to environmental pollution, climate change and negative effects on the health of the population. In this context, green energy has become a strategic priority, playing an essential role in protecting the environment and improving the quality of life.

KEY WORDS: green energy, renewable, sources

1. INTRODUCTION

Faced with current challenges related to climate change, pollution and depletion of natural resources, the urgent search for sustainable solutions for energy production and consumption has become a major global priority. Green energy or renewable energy offers the answer to this urgent need, representing a clean, efficient and inexhaustible alternative to polluting fossil fuels.

Green energy includes renewable and non-polluting sources. These include:

- Solar energy: the use of photovoltaic panels and parabolic mirrors to convert sunlight into electricity;
- Wind energy: wind turbines convert the kinetic energy of the wind into electricity, being a clean and renewable source;
- Hydroelectric energy: dams and micro-hydropower plants use the energy of water to generate electricity;
- Biomass: organic materials (wood, plant waste) converted into energy by burning or fermenting;
- Geothermal energy: the exploitation of the Earth's internal heat, with low carbon emissions. This allows for the development of infrastructure, the creation of jobs and the adoption of innovative technologies.

Investments in green energy in Romania have increased significantly in recent years, reflecting the commitment of the state and the private sector to the energy transition.

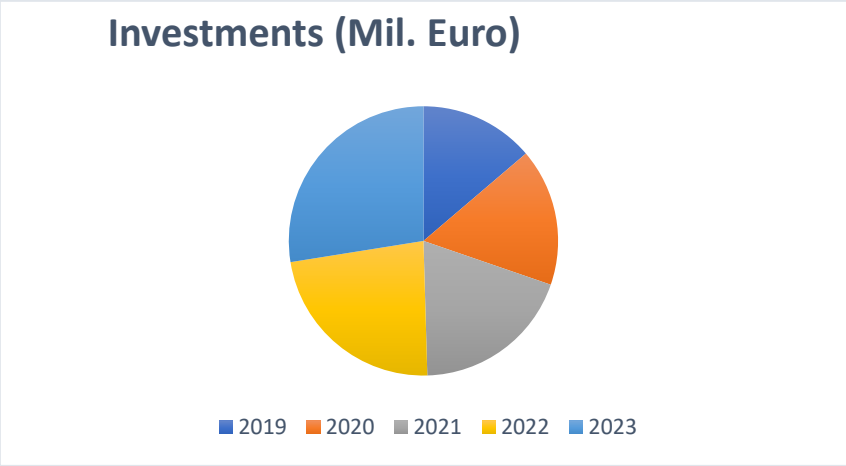

Fig. 1. Distribution of green energy sources in Romania

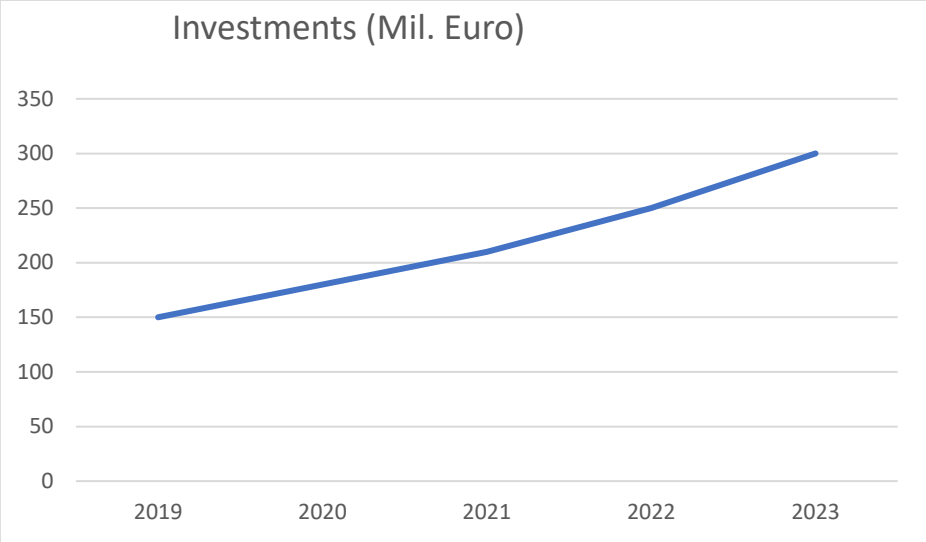

Fig.2. Green energy investments in Romania

2. THE SITUATION OF GREEN ENERGY IN ROMANIA

Romania has made significant progress in integrating renewable sources.

The share of green energy in total consumption increased from 24.5% in 2019 to 33.2% in 2024.

This transition contributes to reducing CO_2 emissions and protecting the environment.

The development of green energy also generates jobs and stimulates technological innovation.

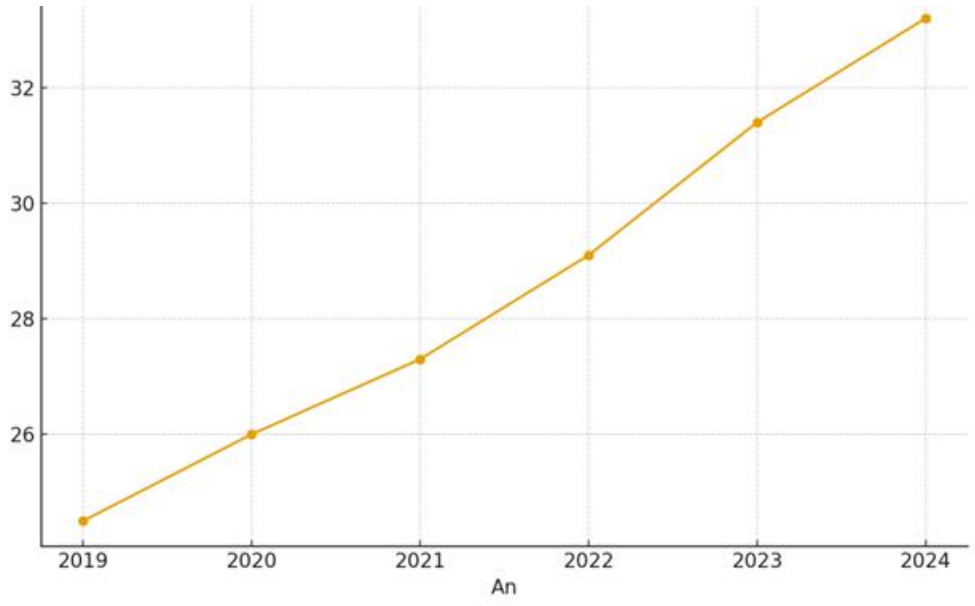

Fig. 3. Share of renewable energy in final energy consumption (percent %)

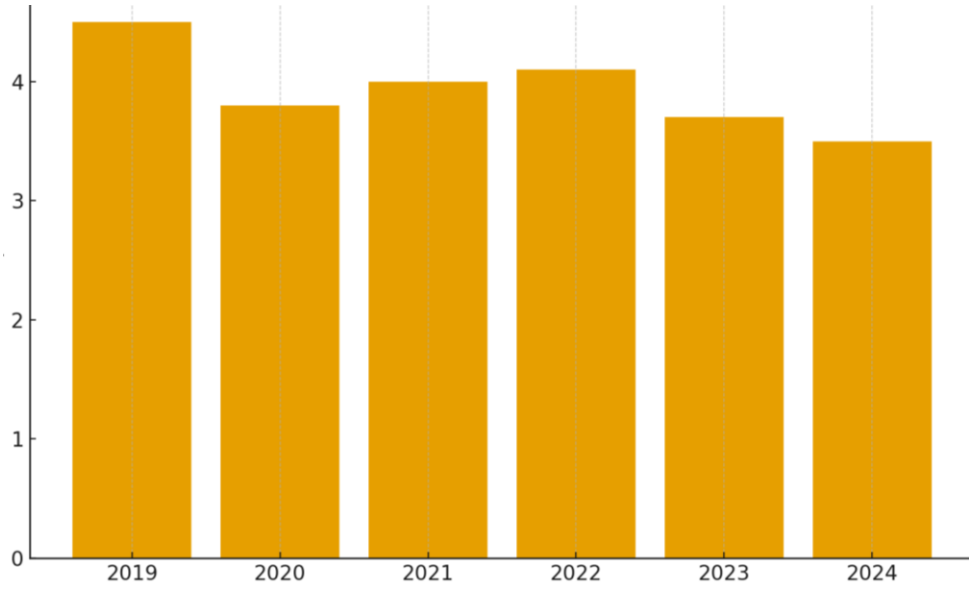

Fig.4. Evolution of CO2 emissions per capita in Romania (Tons/capita)

It can be observed in Fig. 3. and 4 an increase in the share of renewable energy in final energy consumption proportional to the decrease in CO2 emissions per capita in Romania.

Globally, renewable energy production has increased from 2,500 TWh in 2019 to 3,900 TWh in 2023.

This growth positively influences the quality of life by reducing pollution, increasing life expectancy and promoting a healthier environment.

Analyses show direct correlations between the share of green energy and indicators of public health, educational level and economic well-being.

The transition to green energy stimulates the economy by creating jobs in green technologies and reducing dependence on fuel imports.

At the same time, it contributes to reducing emissions, protecting biodiversity and preventing climate change.

3. IMPACT ON THE ECONOMY AND THE ENVIRONMENT

Major challenges include the high initial costs of installing technologies, the need for adequate infrastructure, and the variability of natural conditions.

Social acceptance and coherent policies are essential for the success of the energy transition.

Energy is at the heart of the climate challenge – and key to the solution.

Most of the greenhouse gases that trap heat in the Earth's atmosphere come from burning fossil fuels to produce energy, mainly for electricity and heat. In 2023, the power sector was the largest source of global greenhouse gas emissions.

To avoid the worst impacts of climate change, emissions must be reduced by almost half by 2030, and reach net-zero by 2050.

To achieve this, we need to end our reliance on fossil fuels and invest in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable.

Renewable energy sources — such as sunlight, wind, water, organic waste, and heat from the Earth — are abundant, replenished by nature, and emit little to no greenhouse gases or air pollutants.

Fossil fuels still account for nearly 60 per cent of electricity generation, but cleaner sources of energy are gaining ground. Between 2015 and 2024, annual electricity capacity of renewables increased by around 2,600 gigawatts (GW) - a 140 per cent increase. In the same period, fossil fuels electricity capacity only increased by around 640 GW (16 per cent).

Here are five reasons why accelerating the transition to clean energy is the pathway to a healthy, livable planet today and for generations to come.

Climate change and environmental degradation are an existential threat to the European Union and to the world. To overcome these challenges, the European Green Deal is Europe's new growth strategy, which will transform the Union into a modern, resource-efficient and competitive economy. The European Green Deal aims to make Europe climate neutral by 2050, boost the economy through green technology, create sustainable industry and transport, and cut pollution. Turning climate and environmental challenges into opportunities will make the transition just and inclusive for all.

The European Commission helps EU Member States design and implement reforms that support the green transition and that contribute to achieving the goals of the European Green Deal. It also helps to design the necessary procedures in central and local administrations and establish the coordination structures that are needed for implementing green policies.

The use of renewable energy sources has a number of advantages:

Sustainability is the main advantage, because renewable energy sources are inexhaustible in the long term, are obtained naturally and, above all, they are naturally renewed. In other words, natural resources that do not pollute and are not harmful to the environment are used. Thus, the exploitation and use of fossil fuels will be reduced, which are not only limited resources, but are also among the main factors of pollution and CO2 gas emissions;

Reduction of greenhouse gas emissions: renewable, green energy produces very little, if any, greenhouse gas emissions and other atmospheric pollutants. In this way, they have the advantage of contributing both to reducing climate change, which is increasingly severe, and to improving air quality;

Substantial savings can be made in the long term: although the initial costs for installing renewable energy equipment can be high, the operating and maintenance costs are generally lower than those for traditional energy sources such as coal or oil.

Therefore, they can lead to significant savings in the long term, also taking into account the reduction of energy costs. Especially since the resources used are free and inexhaustible, for the most part;

Environmental protection: the use of renewable energies contributes to the protection of nature, since they do not have a negative impact on it. Also, the quality of your life and that of all the people around you and not only, will be able to be maintained or even improved.

4. CONCLUSIONS

Green energy is an essential component of sustainable development and improving the quality of life.

Investments in renewable sources bring multiple benefits, from environmental protection to increasing living standards.

The energy future of Romania and the world depends on the responsible adoption of clean technologies and the active involvement of each community.

In a report published in October 2015, the International Energy Agency (IEA) predicted that renewable energy would account for 26% of global electricity production in 2020, up from 22% in 2013. The 4 percent increase in quality and life and responsibility, they indices of quality and public life of mental quality, growth and mental responsibility. challenging process of changing mentality

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