

## **Economic-Investment Status and Development Tendencies of the Energy Sector in "Green Economy"**

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### **Abstract:**

This article researches the importance of investing in a “green economy,” especially renewable energy, to ensure sustainable economic growth. The current state of investments in the energy sector of the "green economy" in the world is analyzed and development trends are identified.

**Keywords:** green economy, renewable energy sources, green investments, green bonds, economic forecast.

### **I. Introduction**

The concept of "green economy" has entered our life relatively recently. But now it has a huge number of adherents and followers. For millennia, mankind has been consumer-oriented towards nature, barbarously destroying its resources. Thoughtless, unlimited consumption of natural resources has led to the fact that by the beginning of the 21st century the world was on the verge of an environmental disaster. Existing technologies that originated in the era of industrial society, based on hydrocarbons, are resource and energy intensive. A large number of production emissions have already led to a change in the Earth's climate. The thoughtless consumption of exhaustible natural resources has led to the fact that freshwater shortages, depletion and degradation of soils, and destruction of the ozone layer are becoming commonplace for humanity. Consumer society produces millions of tons of garbage, the disposal of which requires everlarger areas. An increase in the population of the Earth threatens that all these problems will worsen many times.

### **II. Literature Review**

By the middle of the 20th century, it became clear that it was necessary to create alternative energy sources, create energy and resource-saving technologies, and a new economic model. It is believed that the history of the "green economy" began in 1972 with the proposal of J.Tobin, adviser to the government of J.Kennedy, a special exemption in the form of deductions in the amount of 0.10.25% of income from financial transactions to help developing countries and parallel restrictions on cross-border currency speculation<sup>1</sup>. This proposal went down in the history of economic science as a Tobin tax, but only forty years later, in 2013, the European Community introduced a Tobin tax as a tax on financial transactions at the proposal of France and Germany<sup>2</sup>. This tax is not directly related to the "green economy", but it allows you to create a fund that regulates the global financial sector and has a social orientation, avoids the debt crisis. It took forty years for humanity to not only realize the danger that the existing model of the economy poses to humanity, but also to begin to take concrete steps to avoid an environmental and economic crisis. The first UN international conference on environmental issues was held in Stockholm in 1972, which addressed the relationship between economic development and environmental issues. For forty years, environmental issues were discussed at the international level, and only in the first

decade of the 21st century it became clear that the existing model of the economy has limits to growth. In 1971, Jay Forrester, in his book *World Dynamics*, analyzed the model of the brown economy and substantiated the problems that humanity will face in the coming decades if it does not change the economic model. "A growing population is driving an increase in industrialization, an increase in the need for food, and the spread of the population across a growing territory. But the growth in the production of food, industrial goods and occupied territory contributes not only to maintaining, but also to increasing the number of people. Population growth, with its accompanying industrialization and pollution, is the result of cyclical processes in which each sector contributes to the growth of other sectors and ensures their development at their expense. But over time, growth encounters the limits imposed by nature. Soil and natural resources are depleted, and the ability of the Earth's biosphere to decompose pollution is not unlimited. The contradiction between the concept of growth and natural restrictions can be resolved in several ways. A person, if he understands this well enough and acts reasonably, can choose a development trajectory that should lead to the stabilization of the world system. And the task is to choose the best of the possible options for the transition from dynamic growth to the state of world equilibrium".

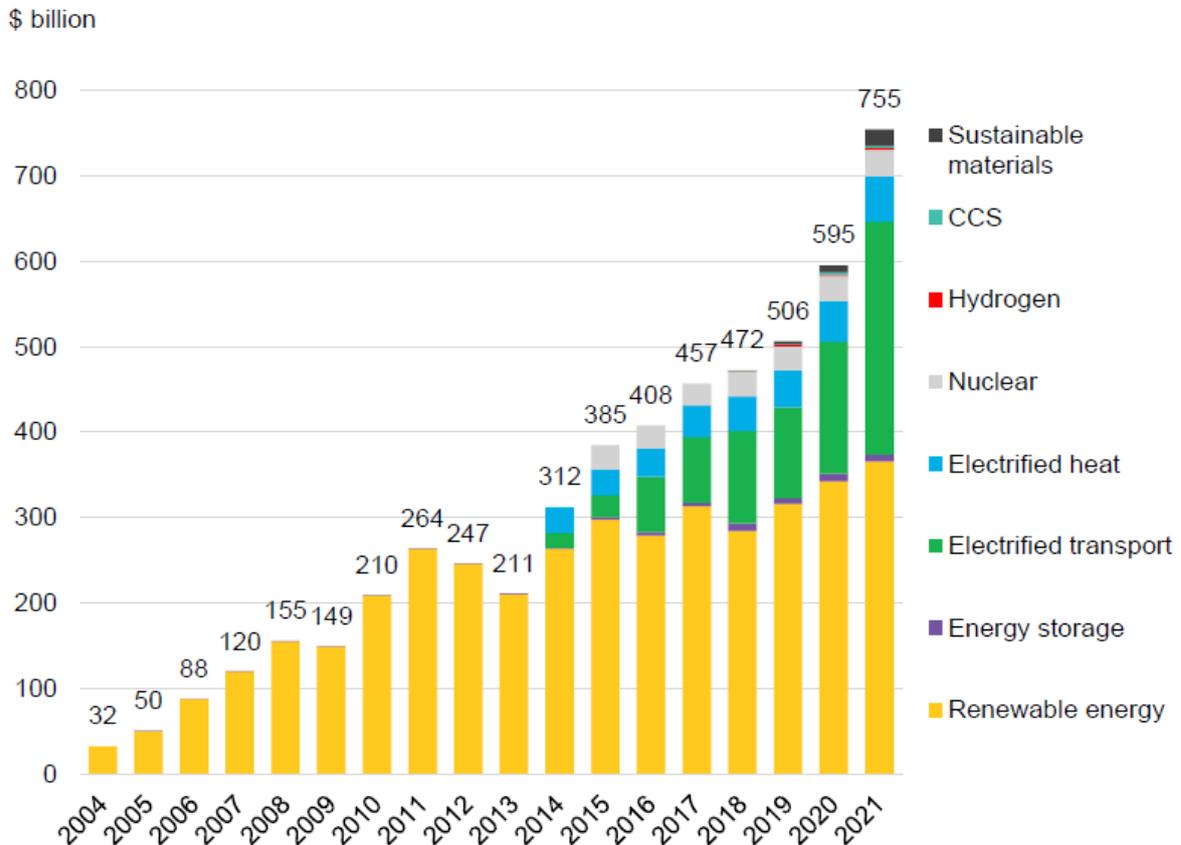
## Discussion and results

Although the level of investment in the green economy has been declining year by year in some countries, some developing countries are developing targeted government programs to support investment in renewable energy sources, such as India, Argentina, Egypt and the UAE. The measures taken in these countries to improve the investment climate in the "green economy" will undoubtedly lead to an increase in investment in the development of this sector. In 2021, as observed in all years, a large share of investments in the "green economy" in the world fell on solar and wind energy. Investment in solar energy in developed countries amounted to \$ 57.4 billion, while in developed countries - \$ 58.6 billion. Such a large share of investment can be explained by the high efficiency of solar energy compared to others and the low operating costs compared to other renewable energy sources.

The next share of "green investments" will be investments in wind energy. In developed countries, the figure was \$ 59.4 billion, and in developing countries it was \$ 50.7 billion. Significantly, despite the high share of solar energy investment in the world, in developed countries, "green investment" is more focused on wind energy, and in developing countries on solar energy. This can be described by factors related to the geographical and climatic conditions of these countries. The share of investments in other renewable energy sources such as biomass, biofuels, small hydropower, geothermal and marine energy is very low compared to the total, reaching \$ 8.2 billion in developed countries and \$ 7.31 billion in developing countries in 2021. When analyzing investments in the "green economy", it is advisable to divide the group of developing countries into two components, namely, the "Big Three" (China, India and Brazil) and other developing countries.

By 2021, investment in alternative energy has increased dramatically to \$ 750 billion, up 27% from the previous year. It can be seen that the amount of investments in the green economy in 2021 is distributed by sectors as follows:

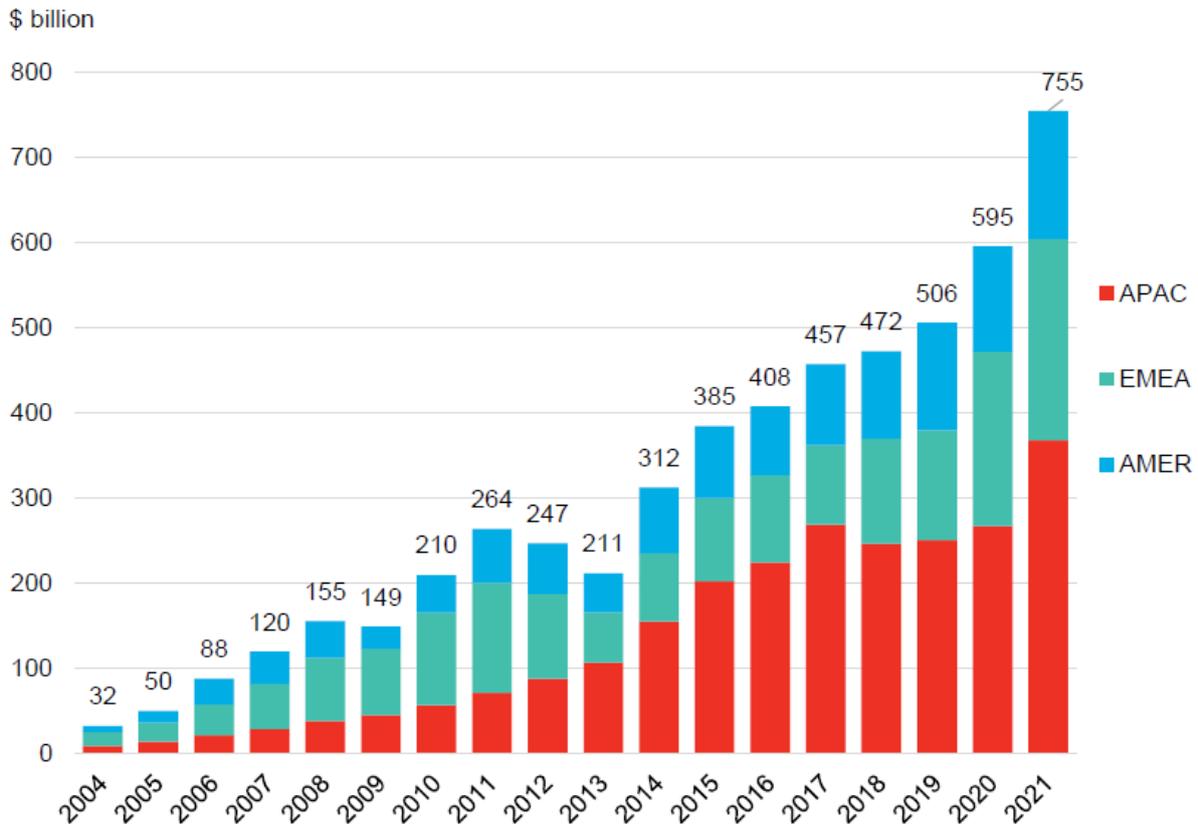
## Global investment in energy transition by sector<sup>1</sup>



- The world committed a record \$755 billion to decarbonize the energy system in 2021, beating the previous year by 27%.
- Both renewable energy and electrified transport, the two biggest categories, rose to new records in 2021 as wind and solar installations and electric vehicle sales surged.
- Companies, governments and households invested \$366 billion in new renewable energy capacity in 2021, up 6.5% on the year.
- They also spent \$273 billion on electric vehicles and associated charging infrastructure, up 77%. On current trends, the EV sector should overtake renewable energy investment this year.
- The next largest sectors of spending were electrified heat at \$53 billion and nuclear energy at \$31 billion.
- Together, clean power and electrification (comprising renewables, nuclear, energy storage and electrified transport and heat) accounted for the vast majority of investment, at \$731 billion. Hydrogen, carbon capture and storage and sustainable materials made up the rest, totaling \$24 billion.
- CCS was the only sector not to see rising investment in 2021, dropping slightly to \$2.3 billion.

<sup>1</sup> Source: BloombergNEF

## The amount of investment by region



- All three regions (AMER, APAC, EMEA) hit all-time records for energy transition investment in 2021.
- The Asia Pacific region was both the largest region for investment at \$368 billion, and the region with the highest growth at 38% in 2021. Electrified transport was the biggest driver as it more than doubled its investment flows in 2021, but renewables investment was up too.
- Energy transition investment in Europe, Middle East and Africa grew by 16% in 2021, reaching \$236 billion. Renewable energy investment was flat, but electric transport spending jumped 46%.
- The Americas saw energy transition investment grow by 21% to \$150 billion in 2021. As in EMEA, renewable energy investment stayed flat, but electric vehicle investments grew by 84%.
- APAC now accounts for 49% of global energy transition investment. EMEA is second with 31%, and AMER lags behind at 20%.

## Conclusion

The transition to a green economy at the global level requires a large amount of financial resources. Various scenarios of the International Energy Agency to halve CO2 emissions by 2050 show that to achieve this goal, the amount of additional investment in the "green economy" will be required at 1-2.5% of world GDP. Significantly, most of these investments will be directed to "greening" the construction and transport sectors.

Financial, banking and insurance investments are becoming the main source of private investment in the "green economy". A large amount of capital is circulating in the financial services and

investment sectors, and this can be seen as a potential source of investment in the “green economy”. Today, public and private sector institutional investors, banks and insurance companies are interested in investing in the green economy in order to reduce environmental, social and managerial risks. Microfinance plays a potential, important role for community and village level projects. It allows low-income people to invest in resource and energy savings and reduce the risk of this activity.

Availability of opportunities to finance the "green economy". Rapid growth and the growing focus of the capital market on the green economy, the development of market support such as carbon finance and microfinance, and the recent economic downturn have allowed funds to finance large-scale green economic reforms aimed at global green growth. But these flows are far less than the need for investment. therefore, if we want to start the transition to a “green” economy in the near future, we will need to rapidly expand these flows.

The state will need to create a favorable investment climate for private investment in increasing the flow of investment in the "green economy". In financing investment projects, it is effective for the private sector to use political, financial and tax incentives provided by the state to support the "green economy".

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