

The impact of energy efficiency on the development of economies and communities



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Introduction

Modern society is increasingly aware of the impact of energy consumption and greenhouse gas emissions on the environment and human health. In response to these challenges, the importance of energy efficiency has significantly grown. Enhanced efficiency leads to reduced energy consumption and greenhouse gas emissions, which are crucial for environmental protection and improving quality of life. Additionally, energy efficiency initiatives can support equitable access to energy by improving the availability and affordability of energy services for low-income and marginalized communities, resulting in positive economic and social impacts.

Energy efficiency (EE) can be achieved in various ways: by adopting more efficient technologies, modifying existing building designs, and changing individual behaviors. EE reduces the demand for fossil fuels and associated emissions, contributing to the preservation of limited and increasingly costly natural resources, such as coal, oil, and natural gas. As a result, energy bills can be lower, increasing people's disposable income and potentially driving the economy and creating new jobs. It is also important to consider the positive impact on public health, as reduced demand for energy infrastructure, such as power plants and transmission lines, leads to lower air pollution.

Economic policy plays a crucial role in encouraging energy-efficient behaviors and investments by offering incentives and removing barriers. Examples of such policies include tax incentives for energy-efficient products and subsidies for renewable energy sources. These measures can reduce the costs of renewable technologies, leading to greater accessibility and widespread adoption, thereby decreasing dependence on fossil fuels and enhancing energy security.

Policy initiatives aimed at improving energy efficiency can also contribute to the development of a more prosperous economy. The production and installation of energy-efficient products can create new job opportunities. Additionally, reducing energy costs and increasing the attractiveness of businesses to potential investors are other benefits of energy efficiency that can enhance competitiveness and inspire innovation by supporting research and development of new energy-saving technologies.

The relationship between a prosperous economy and low energy consumption is bidirectional. Economic policies support energy efficiency, and in turn, energy efficiency can foster economic growth and development by reducing costs, increasing competitiveness, and creating new jobs. Growth in Gross Domestic Product (GDP), energy intensity, and labor productivity are just some of the economic growth indicators that can result from implementing energy efficiency measures.



Global Context of Energy Policy

Energy efficiency is gaining importance worldwide as a key element in enhancing energy security, affordability, and accelerating the transition to clean energy. Despite significant policy efforts, the global rate of improvement in energy intensity weakened in 2023, dropping from 2% in 2022 to 1.3% (IEA). This slowdown was due to a rise in energy demand by 1.7% in 2023, compared to 1.3% the previous year.

Significant Progress in Certain Regions

Despite the global slowdown, some regions achieved remarkable results due to decisive policy actions, increased investments, and changes in consumer behavior. The European Union, the United States, South Korea, Turkey, and the United Kingdom recorded improvements ranging from 4% to 14%. In Europe, energy intensity improved by 5% in 2023, and by 4% in the U.S., driven by high energy prices and climate change. Since the onset of the energy crisis in 2022, countries accounting for 70% of global energy demand have introduced or significantly strengthened energy efficiency policy packages. Investments in energy efficiency have increased by 45% since 2020, with strong growth in electric vehicle and heat pump sales. The IEA indicates that to meet the goals of the Paris Agreement, the global annual rate of improvement in energy efficiency needs to double to over 4% by 2030.

The main challenges in achieving these targets include the need for long-term investments and structural changes across various economic sectors. Replacing old, inefficient technologies with new, more efficient units takes time, potentially delaying noticeable energy savings at the national level. Nevertheless, consistent implementation of energy efficiency policies and standards can lead to significant savings and contribute to reducing global demand for fossil fuels in the coming years. To achieve net-zero emissions by 2050, the world must accelerate its efforts toward energy efficiency, which is crucial for keeping climate goals within reach.

Growth in Heat Pump and Electric Vehicle Sales

In the first half of 2023, heat pump sales increased by 75% in Germany, the Netherlands, and Sweden compared to the same period the previous year. Both electric vehicles and heat pumps shift energy consumption to electricity, which is increasingly sourced from renewables, while also using significantly less final energy than conventional cars or gas boilers. Consumers now have better choices when renovating homes or purchasing new vehicles, creating new opportunities for energy efficiency.

Global sales of gasoline and diesel cars, motorcycles, and trucks peaked in 2017, 2018, and 2019, respectively (Policy Commons). Global demand for gasoline, primarily used by passenger vehicles, peaked and stabilized in 2023 at about 27 million barrels per day. At the national level, 93 out of 146 countries, representing 60% of total gasoline consumption, have already experienced a peak, stabilization, or decline in demand.



Demand for Natural Gas in the Heating Sector

In the world's major heating countries, residential demand for natural gas has peaked, stabilized, or is declining in 34 out of 78 countries, representing half of the total demand. In Europe, natural gas demand in the residential and commercial sectors fell by over 15% in 2022 compared to the previous year, mainly due to high prices following Russia's invasion of Ukraine. Although 40% of this decline can be attributed to a relatively mild winter, more than half resulted from various gas-saving measures, including demand reduction and increased efficiency.

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