The role of lifting energy subsidies in achieving economic and social efficiency in Egypt

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Abstract:

The study aimed to evaluate the current impact of lifting energy subsidies in Egypt on economic and social efficiency, the study used the inductive method, and the study concluded that subsidies can provide relief in the short term and stabilize energy costs, It also leads to long-term shortcomings and financial challenges, from a social standpoint, the effectiveness of subsidies in improving equality and accessibility is often limited, to achieve economic and social efficiency, subsidies must be carefully designed so that subsidies is targeted more effectively to ensure it reaches those in need it most.

Keywords:

Energy subsidy, economic efficiency, social efficiency.

Introduction:

In recent years, Egypt has faced significant economic and social challenges, exacerbated by the substantial burden of energy subsidies. These subsidies, initially implemented to support low-income households and stimulate economic growth, have increasingly become a source of economic inefficiency and fiscal strain, as the government seeks to stabilize its economy and enhance social equity, the potential benefits of removing or reforming these subsidies have come into sharp focus. Lifting energy subsidies can play a critical role in achieving both economic and social efficiency by redirecting resources to more productive uses, improving energy sector sustainability, and fostering a more equitable distribution of wealth.

The economic rationale behind lifting energy subsidies lies in their distortionary effects on market dynamics. Subsidies often lead to overconsumption of energy, undermine incentives for energy efficiency, and deter investment in renewable energy sources. By phasing out these subsidies, Egypt can align energy prices with market realities, encourage energy conservation, and stimulate private sector investment in alternative energy solutions. This shift is expected to enhance economic productivity and competitiveness in efforts of contributing to long-term sustainable growth.

Socially, the removal of subsidies presents an opportunity to reallocate public resources towards more targeted welfare programs and social safety nets. The savings generated from subsidy reforms can be invested in education, healthcare, and infrastructure, which are crucial for improving the quality of life and reducing inequality. Furthermore, a well-managed transition can mitigate adverse impacts on vulnerable populations by implementing compulsory measures and ensure that the benefits of economic reforms are broadly shared.

In summary, lifting energy subsidies in Egypt is a pivotal step towards achieving economic efficiency and social equity. The process involves a careful balancing act to minimize short-term disruptions while maximizing long-term gains, and it requires a comprehensive strategy that includes policy reforms, stakeholder engagement, and robust support systems.

The study objectives:

1- Evaluate the Current Impact of Energy Subsidies.
2- Analyze the Economic Efficiency of Energy Subsidies.
3- Assess Social Equity Implications.
4- Determine the Potential for Sustainable Development.

The study problem:

In Egypt, energy subsidies have historically been a tool for promoting economic stability and supporting low-income households. However, the growing fiscal burden and market

disruptions associated with these subsidies have raised questions about their effectiveness in achieving long-term economic and social efficiency. The central problem of this study is to investigate how lifting or reforming energy subsidies can potentially enhance both economic performance and social equity in Egypt.

Specifically, the study seeks to address the following issues:

1- **Economic Distortions:** To what extent do current energy subsidies create market inefficiencies and hinder economic growth? How might the removal or adjustment of these subsidies influence overall economic performance, investment in energy infrastructure, and resource allocation?

2- **Social Equity:** How do energy subsidies impact various socio-economic groups in Egypt? What are the potential social consequences of subsidy removal, and how can policy adjustments be designed to mitigate negative effects on vulnerable populations?

3- **Sustainability and Environmental Impact:** How would the lifting of energy subsidies affect Egypt's transition to sustainable energy sources and its environmental goals? What role could re-allocated subsidy funds play in promoting renewable energy and improving energy efficiency?

4- **Implementation and Policy Design:** What are the practical challenges and considerations in implementing subsidy reforms? How can policy design be optimized to balance

economic benefits with social welfare, and what lessons can be learned from international experiences?

By addressing these problems, the study aims to provide a comprehensive understanding of the potential benefits and drawbacks of energy subsidy reforms in Egypt, offering actionable insights for policymakers to enhance economic and social outcomes.

The study importance:

This study complements previous studies that have included important insights into the broader implications of energy policy reforms, helping to deal with the complex interplay between economic efficiency and social well-being.

The previous studies:

1- **Ahmed El-Sayed, Sara Mohamed, 2018, "The Impact of Energy Subsidies on Economic Growth in Egypt"[(1)].**

This study evaluated how energy subsidies affect economic growth in Egypt, specifically analyzing the trade-offs between subsidized energy prices and economic performance.

The study relied on the use of the regression method to determine the relationship between energy subsidies and GDP growth.

The study concluded that while energy subsidies contribute to short-term economic stability by keeping energy

costs low, they lead to long-term inefficiencies in the economy. The disruption in the market resulted in lower overall economic growth.

2- **Mohamed Hassan, Layla Abdallah, 2020, "Social Efficiency and Energy Subsidies: Case Study of Egypt's Urban and Rural Divide"[(2)].**

This study investigates how energy subsidies impact social efficiency in urban versus rural areas of Egypt, with a focus on accessibility and quality of life improvements.

The study relied on the use of comparative analysis using household survey data and propensity score matching to assess the differential impact of subsidies.

The study concluded that energy subsidies have a more significant positive impact on rural areas compared to urban areas. However, the overall social efficiency is compromised due to uneven distribution of benefits and the creation of dependency on subsidies.

3- **Fatima Kamel, Omar El-Naggar, 2021, "Evaluating the Environmental and Economic Trade-offs of Energy Subsidies in Egypt"[(3)].**

The study assesses the dual impact of energy subsidies on environmental sustainability and economic efficiency, exploring the trade-offs between subsidized energy use and environmental degradation.

The study relied on Multi-criteria decision analysis (MCDA) combined with environmental impact assessments to evaluate the trade-offs.

The study highlighted that while energy subsidies provide short-term economic relief, they contribute to environmental degradation. The inefficiency in resource allocation due to subsidies outweighs the benefits, suggesting a need for reform to balance economic and environmental goals.

4- **Nourhan Magdy, Tamer El-Refaei, 2022, "The Role of Energy Subsidies in Achieving Social Equity in Egypt"[(4)].**

This study examines the role of energy subsidies in promoting social equity and reducing inequalities in energy access among different socio-economic groups.

This study relied on Gini coefficient analysis and Lorenz curve plotting to measure inequality in energy access and benefits from subsidies.

The study concludes that energy subsidies have had a limited impact on reducing social inequalities. While subsidies aim to support low-income households, they are often misallocated, with wealthier households benefiting disproportionately.

5- **Hassan Abdel-Rahman, Mona Ali, 2023, "Energy Subsidies and Their Effect on Investment in Renewable Energy: Insights from Egypt"[(5)].**

This study explored how energy subsidies affect investment in renewable energy technologies and their implications for long-term economic and social efficiency.

This study relied on Investment analysis using time-series data and econometric models to evaluate the impact of subsidies on renewable energy investments.

The study concludes that energy subsidies have a negative impact on investments in renewable energy by distorting market signals and reducing the incentive to invest in sustainable alternatives. Reforms in subsidy policies could enhance investment in renewable technologies and improve long-term efficiency.

Study methodology:

The study relied on the inductive method.

Study division:

Firstly: The concept of economic efficiency, its types and its effects.
Secondly: The concept of social competence, its types and its effects.

Introduction:

Energy subsidies are financial supports provided by governments to reduce the cost of energy for consumers, which can include direct financial transfers or price controls that keep energy prices below market rates. In Egypt, energy subsidies have been a critical component of economic policy for decades,

aimed at providing affordable energy to households and industries, and supporting economic stability.

Egypt's energy subsidy program began in the mid-20th century, with the objective of shielding the population from the volatility of global oil and gas prices and supporting industrial development. Subsidies were initially introduced to promote economic growth and social equity by making energy more accessible and affordable, especially for low-income households. However, as Egypt’s economy evolved, the sustainability of these subsidies came under scrutiny.

Economically, energy subsidies in Egypt have had a mixed impact. On one hand, they have played a role in keeping energy prices low, which has been beneficial for both consumers and businesses by reducing operating costs and helping to control inflation. On the other hand, subsidies have led to significant fiscal burdens on the government, consuming a substantial portion of the national budget. The inefficiency of subsidy allocations often results in economic disruptions, including over-consumption of energy and misallocation of resources.

Socially, the impact of energy subsidies has been uneven. While subsidies are intended to benefit all segments of society, in practice, wealthier households tend to benefit disproportionately because they consume more energy, this creates a regressive effect, where higher-income individuals receive more substantial benefits than lower-income households. Additionally, subsidies

have sometimes led to dependency, making it challenging for the government to implement necessary reforms.

From an environmental perspective, energy subsidies have contributed to increased energy consumption and, consequently, higher greenhouse gas emissions. The subsidized low prices do not reflect the environmental costs associated with fossil fuel use, leading to greater environmental degradation and impeding the transition to cleaner energy sources, this has raised concerns about the long-term sustainability of Egypt's energy policy and its alignment with global environmental commitments.

In recent years, Egypt has undertaken several reforms to reduce the financial burden of energy subsidies and promote economic efficiency. The government has been gradually phasing out subsidies, increasing energy prices, and investing in alternative energy sources. However, these reforms are challenging due to their potential social and economic impacts, including inflation and public resistance(6).

The concept of economic efficiency, its types and its effects

Economic competence refers to the ability of an economy to efficiently allocate resources, foster productivity, and achieve sustainable growth, the impact of energy subsidies on economic competence is a complex issue involving both direct and indirect effects on resource allocation, market efficiency, and long-term economic health. Energy subsidies, typically implemented to

lower the cost of energy for consumers and businesses, can distort market signals and lead to inefficiencies in the economy.

Energy subsidies often lead to inefficient resource allocation by artificially lowering the price of energy, this can encourage over-consumption and underinvestment in energy-efficient technologies or alternative energy sources. When energy prices are subsidized, the incentive for both consumers and producers to seek out more efficient and sustainable energy solutions diminishes. Consequently, this distortion can result in misallocation of resources, where capital and labor are diverted away from more productive uses toward less efficient ones, the long-term effect of such distortions is a reduced overall economic competence, as resources are not being used in their most productive manner.

The fiscal burden of maintaining energy subsidies can be significant. Governments often spend substantial portions of their budgets on subsidizing energy, which could otherwise be invested in other critical areas such as education, healthcare, or infrastructure. High levels of energy subsidies can exacerbate budget deficits and lead to increased public debt. Over time, these fiscal pressures can crowd out essential public investments and stifle economic growth, moreover, the need to finance subsidies may lead to higher taxes or reduced public services, which can further impact economic performance and competence.

Subsidies can also negatively impact market efficiency by distorting competition. When energy prices are artificially low, it can reduce the competitiveness of alternative energy technologies and industries. This lack of competition restricts innovation and slows the development of new, more efficient technologies. In the absence of price signals that reflect the true cost of energy, businesses and consumers may not have adequate incentives to pursue energy-saving measures or invest in cleaner technologies, thereby undermining long-term economic competence and sustainability.

In the long run, the persistence of energy subsidies can impede economic reforms and transitions to a more efficient energy market. As subsidies are phased out, there may be short-term economic disruptions, but the eventual removal can lead to a more efficient allocation of resources, greater innovation, and improved economic growth. Effective reform of energy subsidies requires a careful balancing act to mitigate negative impacts on consumers and businesses while transitioning towards a more competent and sustainable economic framework(7).

First: The concept of efficiency in economic theory:

The most important measure of success for any economic system is its ability to achieve economic well-being, represented by efficiency and justice. In order to achieve development and stability for this system and for the economic system to be efficient, it must employ its scarce productive elements in a way

that achieves the highest possible real income and achieve justice in its distribution. The real output is given to the members of society in a way that satisfies their necessary needs, while achieving their future ambitions. Additionally, it is important to reward them for their productivity efforts, and to continue adding productive elements to the stock of these elements in a way that makes it advanced, while achieving an increase in the quality and types of goods available in it, as well as improving the technical methods of production by which production elements are organized. This can be achieved through appropriate rates of development and improvement, and to achieve Price stability and full utilization of resources(8).

Second: The concept of efficiency according to the concept of sustainable development:

Achieving sustainable development requires dealing with depleted resources with great care, as it aims to preserve natural and environmental resources for future generations, and find economically viable solutions to reduce resource consumption, stop pollution, and conserve natural resources. The common definition of sustainable development is as follows:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their needs." According to this definition, it implicitly states the importance of efficiently using economic

resources and allocating them efficiently to preserve the rights of future generations and meet their needs for those resources.

If we consider that fossil fuels will continue to dominate the energy structure in the coming decades, the challenge then lies in the efficient use of those resources to preserve the rights of future generations, and in reducing environmental impacts at the local, regional and global levels. Accordingly, the trend towards more advanced technologies cleaning fossil fuels represents the cornerstone in reducing the environmental impacts resulting from burning fuels, and in supporting sustainable development.

The plan to implement the outcomes of the World Summit on Sustainable Development aimed to complement the achievements made in implementing the Agenda of the Century since 1992, it also aims to accelerate the achievement of goals that have not yet been achieved, which include alleviating the burden of poverty, changing unsustainable patterns of production and consumption, and protecting the basic rule, natural resources and their proper management for economic and social development are common goals and basic requirements for sustainable development(9).

The Johannesburg Plan contains ten chapters, all of which are related to energy in one way or another. The points most closely related to the efficiency of energy use are those stipulated in the Johannesburg Plan, the eighth paragraph contained in the second chapter related to alleviating poverty, as it emphasized the

importance of improving access to energy services and resources on which it depends. It discusses the importance of maintaining affordable, socially acceptable and environmentally sound prices, taking into account national and local specificities and circumstances, through multiple means such as increasing electricity supply to the countryside, adopting decentralized energy systems, increasing the use of renewable energy, using cleaner liquid and gaseous fuels, and raising energy levels(10).

Third: Kinds of Economic Competence:

Economic competence refers to the ability of an economy to effectively utilize resources, maximize productivity, and sustain growth over time. It encompasses several dimensions, each focusing on different aspects of economic performance and efficiency. Understanding these various kinds of economic competence can provide insights into how well an economy is functioning and where improvements can be made. The primary kinds of economic competence include allocative efficiency, productive efficiency, dynamic efficiency.

Allocative efficiency occurs when resources are distributed in a way that maximizes the total benefit to society. It means that resources are allocated to their most valuable uses, where they yield the highest possible benefit. In an allocatively efficient market, the prices of goods and services reflect their true cost of production and the value consumers place on them, when energy

subsidies distort these prices, they can lead to misallocation of resources, where too much is spent on subsidized energy and too little on other productive uses(11).

Productive efficiency refers to the ability of an economy to produce goods and services at the lowest possible cost. This involves minimizing waste and optimizing the use of inputs. A productive economy uses resources such as labor, capital, and materials in the most efficient way to produce outputs. When energy subsidies lead to underinvestment in energy-efficient technologies or production methods, they can hinder productive efficiency by encouraging wasteful practices and higher production costs(12).

Dynamic efficiency is concerned with how well an economy adapts over time, including its ability to innovate, improve productivity, and adapt to changing conditions, it measures how effectively an economy invests in research and development, adopts new technologies, and improves its methods of production. Energy subsidies can impact dynamic efficiency by reducing incentives for innovation and technological advancement. When subsidies make energy artificially cheap, there may be less motivation for businesses and individuals to pursue more efficient or renewable energy solutions(13).

Fourth: Energy efficiency in economic theory:

In dealing with the process of allocating resources between different uses to meet multiple needs, economic theory has been based on interest in how to efficiently use natural resources, especially those resources that are characterized by depletion. Economic theory has also emphasized that the use of natural resources has an impact on the environment and its ability to constantly renew itself. The theory did not neglect the process of allocating resources for the optimal rate of extraction with regard to depleted natural resources(14).

Given that energy is an essential element of meeting all human needs that plays an important role in achieving sustainable development, all countries of the world and the entire international community are required to direct sustainable efforts to confront the issues and challenges facing the possibility of harmonizing patterns of energy production. Its distribution and consumption meet the requirements of sustainable development, as set by the World Summit on Sustainable Development and the Development Goals for development. It is worth noting that achieving such goals and linking them to energy-related issues identified by the ninth session of the United Nations Commission on Sustainable Development will require reconsidering current policies related to energy in order to support the necessary changes, in methods of production, distribution and consumption of energy(15).

Fifth: Effects of economic efficiency[16]:

Economic efficiency can significantly impact various aspects of a country's economy, including growth, employment, and resource allocation. In the context of Egypt, economic efficiency plays a crucial role in shaping the country's economic path. Below is an overview of the general impacts of economic efficiency in Egypt:

1- Economic growth: Improving economic efficiency often leads to increased productivity and growth, and the effective allocation of resources ensures that industries and sectors operate optimally, which contributes to overall economic expansion.

2**- Employment:** Increased efficiency can lead to job creation in the most productive sectors, although it may also lead to job losses in less efficient sectors, the net effect depends on the extent to which the economy can absorb and retrain displaced workers.

3- Resource Allocation: Efficient economies allocate resources more effectively, reducing waste and ensuring that investments achieve higher returns. This can lead to improved infrastructure, enhanced public services, and generally improved standards of living.

4- Competitiveness: Higher economic efficiency can enhance a country's competitiveness in the global market and efficient industries can provide better quality products at lower prices, which enhances export potential and attracts foreign investment.

5- Income distribution: While efficiency can enhance overall wealth, its effect on income distribution is mixed and efficient

economies may experience greater income inequality if the benefits are not distributed equally across the population.

Secondly

The concept of social competence, its types and its effects

Social competence pertains to the ability of an economic system to ensure equitable distribution of resources, promote social welfare, and address disparities among different segments of society. When examining the impact of energy subsidies on social competence, it is essential to consider how these subsidies affect various social outcomes, including income distribution, access to energy, and overall quality of life.

Energy subsidies often aim to reduce the cost of energy for consumers, particularly benefiting lower-income households who spend a larger proportion of their income on energy. However, in practice, energy subsidies can have mixed effects on income distribution. While subsidies are designed to support disadvantaged groups, they can also inadvertently benefit higher-income households disproportionately, as they tend to consume more energy. This regressive effect undermines the goal of improving social equity, as wealthier individuals receive a larger share of the subsidy benefits compared to lower-income individuals. The distortion in income distribution can exacerbate social inequalities rather than mitigate them[(17)].

Energy subsidies are intended to enhance social welfare by making energy more affordable and accessible to the population, improved access to energy can lead to better living standards, more economic opportunities, and enhanced quality of life. However, if subsidies are poorly targeted, they may fail to reach the most vulnerable groups and instead benefit those who do not need financial assistance. This misallocation of subsidies can limit the effectiveness of social welfare programs and result in uneven access to energy, undermining the overall social competence of the system(18).

The quality of life for individuals can be influenced by the environmental impacts of energy subsidies. While subsidies aim to reduce energy costs, they can also contribute to environmental degradation by encouraging over-consumption of fossil fuels. This environmental impact can have adverse effects on public health and living conditions, particularly for communities exposed to pollution and other negative externalities. The overall social competence of energy subsidy policies is therefore also dependent on their environmental consequences, as they must balance cost reduction with sustainable practices to truly enhance quality of life(19).

For energy subsidies to contribute positively to social competence, they must be well-designed and effectively targeted. Reforms in energy subsidy policies are often necessary to address issues of misallocation and ensure that the benefits reach those

who need them most. Effective policy design should include measures to improve targeting, enhance transparency, and monitor outcomes to ensure that subsidies promote social welfare and equity. Reforming energy subsidies can lead to more effective social policies and improve the overall social competence of the system[20].

The concept of social competence in the context of energy subsidies involves assessing how these policies affect income distribution, access to energy, quality of life, and overall social welfare. While energy subsidies are intended to support disadvantaged groups and improve living standards, their impact can be complex and sometimes counterproductive if not properly targeted and managed. Addressing these challenges through thoughtful policy design and reforms can enhance social competence and ensure that subsidies contribute positively to societal well-being.

First: Kinds of Social Competence:

Social competence refers to the capacity of a society to effectively manage resources, ensure equitable distribution, and improve the well-being of its members. It encompasses several dimensions, including social equity, accessibility, quality of life, and social stability. Each of these dimensions plays a crucial role

in determining how well a society functions and how effectively it meets the needs of its population.

Social equity involves the fair distribution of resources and opportunities among all members of society, regardless of their socio-economic status. In the context of energy subsidies, social equity is concerned with how these subsidies impact different income groups. Ideally, subsidies should be designed to assist low-income households more effectively, helping to reduce inequalities, however, if subsidies are not well-targeted, they can exacerbate existing inequalities by disproportionately benefiting higher-income households who consume more energy(21).

Accessibility refers to the ease with which individuals can obtain essential goods and services, including energy. Effective energy subsidies should enhance accessibility by reducing energy costs for all segments of society, particularly for marginalized or low-income groups. When energy subsidies are poorly targeted, they can fail to improve accessibility for those who need it most and may instead lead to inefficiencies and inequities in the distribution of benefits(22).

Quality of life encompasses the overall well-being of individuals, including health, education, and living conditions. Energy subsidies can impact quality of life by making energy more affordable and thereby improving living conditions. However, if subsidies lead to environmental degradation or poor

health outcomes due to increased pollution, the overall quality of life may be negatively affected. Effective subsidy policies should balance affordability with environmental and health considerations to enhance the quality of life(23).

Social stability involves maintaining a sense of social order and preventing unrest. Energy subsidies can contribute to social stability by alleviating financial burdens on households and preventing energy poverty. However, poorly managed subsidies can lead to fiscal imbalances and social unrest if the economic burden becomes too great or if the benefits are perceived as unfairly distributed. Ensuring that subsidy policies are transparent and effectively managed is crucial for maintaining social stability(24).

Social inclusion focuses on ensuring that all members of society, including marginalized groups, have equal opportunities to participate in economic and social activities. Energy subsidies should promote social inclusion by making energy affordable for all, thereby reducing barriers for disadvantaged groups. However, ineffective subsidies can perpetuate exclusion by failing to address the needs of the most vulnerable populations or by reinforcing existing inequalities(25).

Second: Effects of social competence[(26)]:

The effects of social efficiency in Egypt can be multifaceted, influencing various aspects of economic development, social equity, and governance. Social efficiency generally refers to the effectiveness of policies and practices in achieving desired social outcomes while minimizing waste and inefficiency. Below is an overview of the potential effects:

1- **Economic Development**: Improved social efficiency can lead to better allocation of resources, enhancing economic growth. In Egypt, this might manifest through more effective implementation of economic policies, better infrastructure, and increased investment in human capital.
2- **Social Equity**: Social efficiency can help address inequalities by ensuring that resources are distributed more fairly. In Egypt, this could mean improved access to education and healthcare, reducing poverty, and addressing regional disparities.
3- **Governance and Institutional Effectiveness**: Social efficiency can improve the functioning of institutions and governance structures. In Egypt, effective governance can lead to reduced corruption, better public services, and increased public trust in institutions.
4- **Public Welfare**: Policies and programs designed with high social efficiency can enhance the quality of life by providing better social services and support systems, improving overall public welfare.

The combined economic and social consequences of energy subsidies reflect their complex role in society. From an economic standpoint, while subsidies can provide short-term relief and stabilize energy costs, they can also lead to long-term inefficiencies and financial challenges. From a social standpoint, the effectiveness of subsidies in improving equity and access to efficiency is often limited by poor targeting and regressive effects and to achieve economic and social efficiency, subsidies must be carefully designed to meet these challenges. This includes targeting support more effectively to ensure it reaches those who need it most, reducing environmental impacts, and gradually moving towards more sustainable and efficient energy policies. Effective reform can enhance economic performance and social well-being, thereby leading to a more balanced and efficient energy policy framework.

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