



“Loopholes” Created by the Absence of Sustainability



Gasoline subsidies of about 6.2 trillion yen over two years, which focus only on short-term economic measures, are not only unbalanced in the present generation (car users and non-users), but also have an intergenerational inequity issue because debts are successively passed on to future generations, so there is a double equilibrium problem.

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This paper examines energy security from an economics perspective, using the gasoline subsidy issue and the delay in introducing carbon pricing as examples.

Fujii Hideaki, Professor, Faculty of Economics, Kyoto Sangyo University

What is energy security?

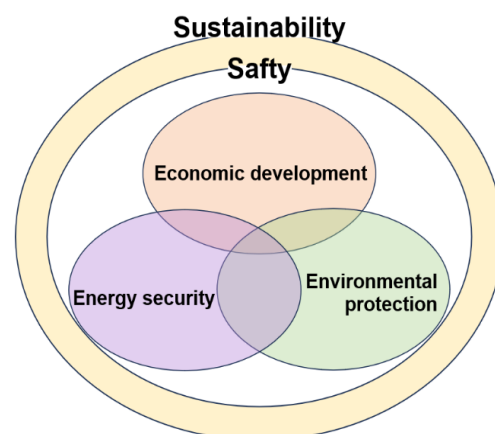
Japan's high economic growth, which began in the late 1950s, came to an end with the first oil crisis in 1973, and 2023 marks 50 years since then. Subsequently, as the external environment of the energy market changed, the Japanese economy succeeded in reducing energy consumption intensity (energy consumption required to produce a unit of gross domestic product) over the long term. This has been because of the rapid yen appreciation due to the Plaza Accord (1985), deregulation and market opening, Japan-US trade friction, the bubble economy and its collapse, the end of the Cold War structure, the deflationary economy, globalization, crude oil price volatility, the Global Financial Crisis (GFC), the rise of China, the Great East Japan Earthquake and the nuclear accident, the COVID-19 pandemic, Russia's invasion of Ukraine, and inflation and the soaring of energy and raw material prices, making it a success won through a succession of difficult challenges.

Amid such developments, Japan’s energy security concept is continuously changing as the four elements “What is to be protected?” (security targets), “What risks are to be protected from?” “How to protect them?” (security measures),” and “Who protects whom?” that define the security concept keep changing as well. Prior to the end of the Cold War, the concept was characterized by national energy security centered on oil supply, but after the end of the Cold War, it had changed to a concept that needs to address multilayered risks related to various forms of energy demand and supply. Back in 2005, I referred to it as the “New Energy Security” concept.

Now, the “carbon neutrality by 2050” declaration [to be discussed later] has made it likely that we will see a simultaneous reduction of oil and natural gas supply and demand and an oligopolization of the supply market in the future. Meanwhile, growing electrification and renewable energy ratio, volatility in electricity supply, cyber-attacks, semiconductors, storage batteries, power transmission and distribution networks, electric vehicles, development investment into digital technology and elsewhere, ensuring stable supply of important mineral resources, and other new energy security issues are emerging. Moreover, promotion of GX (green transformation) is shifting what is considered the scope of energy security from conventional stable-supply guarantee of primary energy to stable-supply guarantee of secondary energy, parts, raw materials, and other intermediate goods, devices and other final goods.

“2S+3E” issues

In the late 1990s, respecting the intent of the Kyoto Protocol (1997), the basic concept of Japan’s energy policy was set to achieve three policy issues simultaneously: economic efficiency, environmental compatibility (or environmental protection) and stable energy supply. The energy problem in the context of human interactions is also known as the “trilemma problem” because it is always necessary to consider economic and environmental problems at the same time. In particular, in order for Japan with its scarce natural resources to maintain its growth potential, it was thought important to simultaneously achieve the aforementioned three policy issues (referred to as the 3E problem from the initial letters of the English words) on the premise that a healthy market economy of natural resources is functioning globally.



Source: Created by Fujii Hideaki

Subsequently, the Great East Japan Earthquake (3.11) and the nuclear accident occurred in 2011, after which the 3E problem on the premise of safety guarantees, meaning “S+3E” issues, came to figure as a key basic notion. In April 2009, two years before the Great East Japan Earthquake, I started a laboratory for “Energy Economics and Sustainable Development” at Kyoto Sangyo University. After “3.11,” the basic research perspective of the laboratory was changed to simultaneously consider “S+3E” issues premised on sustainability, meaning “2S+3E” issues, as a way to account for intergenerational equity. At that time, I thought that the basic concept of Japan’s energy policy would eventually change to “2S+3E” issues premised on sustainability. However, to date, there has been no explicit statement to the effect that “sustainability” is a major premise for other policy issues.

For a long time, I have been thinking about why “sustainability” is not explicitly stated among the basic ideas of energy policy. Then I began to speculate that it was due to the unique problems stemming from the policy makers (not the individual people, but their general function) and the policy-making mechanisms.

That is, when it comes to “S+3E,” the effects of policy implementation regarding all relevant policy issues can be verified to some extent during the term of policy makers. However, the time required to examine policy issues related to “sustainability” is too long for policy makers to “identify” which implemented policies have been effective. As a consequence of short-sighted behavior resulting from this inherent problem, the unverifiable term “sustainability” may simply be used as a decorative phrase. I also do not see any items directly subject to financial measures. Additionally, discussions about revisions or changes to the overall framework of “energy system institutional design” to ensure sustainability that takes into account intergenerational equity would involve political judgment and thus be troublesome. Such discussions have been a relatively low priority for policy implementation, effectively postponing them.

For a while after the nuclear accident following the Great East Japan Earthquake, there were strong calls for “Japan’s conventional energy policy to be fundamentally reviewed,” so what has changed since then? Looking back over the past 12 years, there has been little more than a rapid increase in the installed capacity of solar power generation due to the partial decommissioning and shutdown of nuclear power plants as well as the feed-in tariff (FIT) scheme implemented since July 2012 (renewable is still far from becoming the main power source).

Having signed and ratified the Paris Agreement, Japan had a period where it felt like a major turning point in energy policy was finally coming. That was in October 2020 when Prime Minister Suga Yoshihide gave a [policy speech](#) to an extraordinary Diet session and declared, “We hereby declare that by 2050 Japan will aim to reduce greenhouse gas emissions to net-zero, that is, to realize a carbon-neutral, decarbonized society.” The following year, in October 2021, the Cabinet adopted the “Long-Term Strategy under the Paris Agreement as Growth Strategy” that includes basic ideas aimed at carbon neutrality by 2050, which was also submitted to the United Nations.

Japan immersed in carbon society

However, looking at the current situation, the gap between ideal and reality is too great. As of 2021, hydrocarbon resources (coal, oil and natural gas) account for about 85% of Japan’s energy mix (primary energy) (the global average is about 82%), so Japan is fully immersed in the carbon society. Comparing Japan’s energy mix in 2010, just before the Great East Japan Earthquake, with that in 2021, the 10-point decrease in energy supply dependence on nuclear power was compensated by a 6-point increase in renewable energy and a 4-point increase in energy supply of fossil fuel. Rather, the proportion of hydrocarbon resources has risen from about 81% (2010) to about 85% (2021), which runs counter to decarbonization. In order to reduce the fossil energy ratio, the current administration has announced that it will be working to restart nuclear power plants and so on. However, in terms of social acceptability, a decarbonized society transition scenario that relies on a mono-pole structure depending solely on “increasing dependence on nuclear power” is difficult to paint as a “desired future image of Japanese society.”

The Paris Agreement came into effect in 2020, and there has been little hesitation to call for ambitious goals in the transition to a decarbonized society in Japanese energy policy. However, since then, Japan has been bogged down in changes in the external environment, such as the restructuring of supply chains toward decoupling and de-risking due to the United States and China vying for hegemony, Russia's invasion of Ukraine, and soaring global energy prices. The actual energy supply and demand structure remains the old-fashioned carbon society.

In light of this, you might think that it doesn't matter if the basic concept of the energy policy is "S+3E" or "2S+3E." Some might ask who is going to verify whether individual policies are ensuring "sustainability," in the sense of equity straddling the present generation and future generations.

However, we should turn our attention to the possibility that loopholes might be created in "S+3E" by not specifying that "sustainability" is a major premise for the basic concept of energy policy. A discussion about energy security not premised on sustainability has the very same shortcomings as the discussion about traditional energy security in Japan before the end of the Cold War structure. Ultimately, there is a strong tendency to resort to a limited policy debate dedicated to enforcement bylaws to ensure stable supply.

In this article, I discuss the gasoline subsidy issues and the delayed introduction of carbon pricing as concrete examples of loopholes.

Is it appropriate to provide gasoline subsidies?

The first gasoline subsidy issue began on January 27, 2022 with the program to curb dramatic changes in fuel oil prices. It was framed as a program to curb dramatic changes, carried out in a temporary and emergency evacuation manner. It is activated when the retail price (national average, per liter) of regular gasoline exceeds 170 yen (the base price was later raised to 172 yen and has now been changed to 168 yen). Citizens' tax money is paid to oil wholesalers and importers at a maximum subsidy of 5 yen per liter (subsequently fluctuating in the range of about 17–35 yen) for not only gasoline (regular, high octane) but also light oil, kerosene, and heavy oil (aviation fuel added after April 2022). It started out as a temporary measure until the end of March 2022, but as of December 2023, it has been extended until the end of April 2024.

Over two years, more than 6.2 trillion yen is expected to be paid to oil wholesalers and importers in subsidies, or taxes. Under the renewable energy FIT, which has been in effect since 2012, the total amount of renewable energy surcharges paid by the public in addition to electricity bills has been about 2.7 trillion yen in FY2022 (May to April of the following year) and 1.1 trillion yen in FY2023 (same year). On the other hand, the gasoline subsidy policy, which runs entirely counter to the decarbonization policy, has exceeded about 6.2 trillion yen over two years.

While the global shift to EVs is ongoing and the decarbonization of the transportation sector is progressing, these subsidies in Japan have reduced the signal effect of gasoline prices, with the domestic gasoline sales volume in FY2022 starting to increase year-on-year. Looking at the current administration's measures, Japan has set a target of reducing greenhouse gas emissions by 46% in FY2030 compared to FY2013, by 60% in FY2035 compared to FY2019, and achieve net-zero emissions by 2050. However, this is far from the UN's sense of crisis of "global boiling."

The shift to EVs in Japan is slowing down, and corporate profits of oil companies and gasoline engine automakers are high. The long-term growth potential of Japan's economy seems to be becoming

increasingly fragile due to the increase in the public burden in public finances and the deferral of stranded assets.

Regarding the recent policy evaluation of gasoline subsidies, there are the questions of how they are consistent with the decarbonization policy in the context of the “carbon neutrality by 2050” declaration, including cost-effectiveness and equity of reducing the burden on public household budgets, and why subsidies need to be paid to oil wholesalers and importers to suppress gasoline retail prices. The government needs to verify this and be held accountable. In this regard, I would like to see proper policy debate in Japanese politics.

The need for policy mix design

In this article, considering its limited length, I will only cover the last method of subsidy payments. Since there are concerns that the wholesale prices of petroleum products will rise due to rising crude oil prices, yen depreciation, and US dollar appreciation, subsidies will be paid to oil wholesalers and importers so that the wholesale prices of petroleum products that oil wholesalers and importers pass on to retailers will not rise. Normally, the regular gasoline retail price is set depending on competition in the national retail market. Prices of gasoline, diesel oil, kerosene, heavy oil, and aviation fuel, which are refined from crude oil in atmospheric distillation apparatuses and produced as co-products, are set in each product market. However, under the current system, subsidies under the maximum subsidy amount, which is determined by the regular gasoline retail price level, are uniformly paid to oil wholesalers and importers.

Meanwhile, to determine whether subsidies are appropriately reflected in retail prices, the government is conducting price monitoring in a survey of approximately 30,000 gas stations nationwide to verify the effectiveness of implementing this project.

Clearly, this is a policy focused on protecting oil wholesalers and importers. This system incentivizes gasoline retailers to keep the retail price unchanged or raise it, because lowering the retail price would reduce profits. For example, if expectations of higher prices in the crude oil market increase due to reports that “Saudi Arabia will voluntarily extend additional production cuts,” the domestic retail market at the end of the line will look ahead and either maintain or raise gasoline retail prices at a higher level. Meanwhile, would it be economically correct to assume that a rise in crude oil prices in the crude oil futures market will lead to an increase in the wholesale prices of petroleum products? Are the prices of crude oil trading under term contracts subject to conditions that change with market movements?

Even if retail prices were to rise, oil wholesalers and importers would be protected by more subsidies. Here, there will be no quantitative adjustment of domestic oil demand due to a rise in crude oil prices. In the end, Japan’s gasoline subsidy policy strengthens downward price rigidity, which is consistent with the interests of oil-producing countries and crude oil futures market participants (as well as Japan’s oil wholesalers and importers), contributing to the supportive effects of crude oil prices. There have been similar examples in the past, and it has been pointed out that the subsidy policies of oil-consuming countries (which did not include Japan at the time) supported crude oil prices when prices continued to rise rapidly in the crude oil market from 2003 to 2008.

Gasoline subsidies are funded by taxes paid by the public. Despite the impact of the weak yen, the public is still concerned about the value of crude oil imports (according to the Ministry of Finance’s “Trade Statistics of Japan,” the import value of Japan’s crude oil and raw oil increased by about 6.4 trillion yen from about 6.9 trillion yen in 2021 to about 13.3 trillion yen in 2022), but not only that, the

public also bears a double burden of subsidies at more than 6.2 trillion yen (over two years). Gasoline subsidies, which focus only on short-term economic measures, are not only unbalanced in the present generation (car users and non-users), but also have a generational imbalance problem because debts are successively passed on to future generations, so there is a double equilibrium problem. Furthermore, gasoline subsidies may contribute to downward rigidity in crude oil prices and may even distort competition in the decarbonization market through mergers and acquisitions.

I think that the measures that ought to be implemented should assume a policy mix design that combines production and purchase subsidies and tax credits for EVs and other zero-emission vehicles, which are consistent with decarbonization policy, various incentive measures concerning alternative fuels for end users of gasoline, diesel oil, kerosene, heavy oil, and aviation fuels, and income transfers to businesses and households.

Incentives for decarbonization are paramount

The second problem is the delayed introduction of carbon pricing. In economics, research on emissions trading began in the 1960s, and it has been theoretically clarified that emissions trading, as an environmental policy tool utilizing economic incentives, can achieve a target level of environmental quality at minimal cost. A few decades later, in 2005, the EU Emission Trading System (EU-ETS) was introduced in Europe. In Japan, carbon pricing in the forms of emissions trading systems and carbon taxes has been studied since the 1990s, which is more than 30 years ago, using tax money to yield nothing more than research and discussions as if it were just educational activities.

There is one story often cited when discussing policy implementation and institutional implementation. In short, as with discussions about Internet protocol development, Rough Consensus and Running Code (RCRC) is important. Moreover, the reason J. M. Keynes's *The General Theory of Employment, Interest and Money* has been read for such a long time and is used as economic theory to create the theoretical basis for policy design is that it provides a rough theoretical framework in line with RCRC. The EU-ETS is a good example of the successful introduction of a new system based on the RCRC concept.

In October 2023, the Tokyo Stock Exchange launched a “Carbon Credit Market” for CO₂ emissions, and Carbon EX Co., Ltd., which is a joint venture of SBI Holdings Co., Ltd. and Asuene Co., Ltd., was also launched as a carbon credit and emissions trading platform, but carbon pricing in Japan lags behind that in Europe.

With Europe's EU-ETS, 18 years after its introduction, the amount of CO₂ emissions trading has expanded to cover more than 40% of all CO₂ emissions in the EU. How long will it take to cover the same amount of CO₂ emissions trading in Japan? In Japan, carbon pricing is often described exclusively as a source for redemption of GX Economic Transition Bonds, but it is important to remember that its essence is economically efficient CO₂ reduction using “market forces,” making it important that decarbonization incentives are functioning correctly.

In this way, my suspicion is that the problems of the gasoline subsidy issues and the delayed introduction of carbon pricing in Japan stemmed from the failure to specify “sustainability” as a major premise for the basic concepts of energy policy.

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FUJII Hideaki, Ph.D.

Professor, Faculty of Economics, Kyoto Sangyo University

Born in Aichi Prefecture in 1961. Graduated from the Department of Political Science and Economics, Waseda University in 1985. Completed his studies at Aoyama Gakuin University Graduate School of International Political Economy. Completed the doctoral course at the Graduate School of Energy Science, Kyoto University and earned his Ph.D. (Energy Science) from the University. He has been in his current position since 2016 after serving as a senior researcher at Mitsubishi Research Institute. His specialty is energy economics and environmental economics. His publications include *Higashi Ajia no Enerugii Sekyuritii Senryaku* (Energy Security Strategy for East Asia) (NTT Publishing) and *Nyumon Enerugii no Keizaigaku* (Introduction to Energy Economics) (Nippon Hyoronsha).

