

Issues Related to Responses to Externalities and the “Invisible Hand”

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There is an interesting issue that has strongly impressed me during my recent talks with European and American energy experts. The issue is related to the so-called “energy trilemma” and the trade-off between the 3Es. It is a dilemma between responses to energy security and environmental protection as externalities and greater market efficiency.

As indicated by the word “externalities”, energy security and environmental protection are external to market forces, meaning that problems would arise if energy security or environmental protection is left to market forces. If everything is left to market forces, for example, the most cost competitive energy source may be selected and used widely under the natural pressure of cost minimization from the short-term viewpoint, causing energy security or environmental protection problems in many cases.

When Japan’s energy demand was substantially expanding amid high economic growth in the 1960s, oil imported from the Middle East was selected as the most competitive energy source. In the early 1970s, as a result, Japan’s rate of dependence on oil far exceeded 70%. As Japan made the most economically rational choice according to market forces, its rate of dependence on oil and the Middle East grew high. In 1973, however, the first oil crisis made it clear that the excessive dependence on oil and the Middle East brought about the grave vulnerability of Japan’s energy security. Since then, Japan has made tremendous efforts, implemented enormous investment and paid relevant costs to reduce its dependence on oil, diversify energy supply and import sources, improve energy efficiency and build up oil stockpile. As leaving everything to market forces has failed to respond to the energy security problem, Japan has implemented powerful energy security policies.

Meanwhile, Asian emerging market countries such as China and India have depended on coal as the most abundant domestic and cost competitive energy source to satisfy growing energy demand accompanying their robust economic growth. As a result, coal accounts for around 60% of primary energy supply in China and India. It is economically rational and natural for them to use the cheapest energy source for satisfying growing energy demand. Due to the high dependence on coal, however, these countries have suffered from air pollution and have had no choice but to seriously address climate change as a long-term challenge. Symbolically, these countries have faced a dilemma between cost minimization and environmental protection.

As such dilemmas have been recognized, efforts have been made to reform energy markets to improve market efficiency. Japan stepped up oil market deregulation and liberalization in the 1980s and launched electricity and gas market reform in the 1990s. Market reform efforts have made further

progress, leading electricity and gas system reform launched in 2011 to be completed with the legal unbundling of the network sector in the early 2020s. In the rest of the world, some countries have advanced energy market liberalization or deregulation earlier than Japan, while others are planning to gradually implement such reform. Energy market reform, though still patchy in the world, is going in the direction of pursuing better market functions.

Amid such reform, how to promote energy security and environmental protection measures and depict and realize a politically desirable energy future has become a key challenge for each country. For Japan, how to attain the target energy mix for 2030 as a desirable energy future from a viewpoint of 3E policy while proceeding with market reform is a big challenge. This is because the realization of the desirable future mix cannot be guaranteed if everything is left to market forces.

What are discussed above have already been known in a sense. An issue emerging from my recent talks with other energy experts has been the implications of further drastic responses to externalities. Such responses include decarbonization or “net zero” greenhouse gas emissions. Particularly, my talks with European experts indicate that they are strongly conscious of decarbonization as the direction to be pursued and have activated debate about future macro paths to decarbonization. Given the fact that fossil fuels currently account for over 80% of global energy supply, however, the pursuit of net zero GHG emissions in 2050 would require a revolutionary energy transition. Investment to enable such revolutionary transition may not be implemented if everything is left to market forces. European experts whom I met seem to believe that very powerful policy interventions would be indispensable.

They argue that the investment required for such revolutionary transition cannot be naturally implemented by private sector corporations due to uncertainties about profitability and the future business environment but can be implemented directly by the government sector or through the government sector’s development of market design, frameworks or regulations to decide optimal allocation of the required investment and implement it. The argument may represent a fundamental question regarding energy market reform and regulatory and institutional designs.

The enablers of decarbonization or “net zero” emissions are expected to include technological advancement and the subsequent development and diffusion of advanced or innovative technologies to dramatically reduce relevant costs. Technological advancement and cost cuts are thus expected to allow market forces to naturally realize decarbonization or “net zero” emissions. Their possibility is not zero. Great hopes are placed on technological advancement and cost cuts. At present, however, it may not be responsible to bet on the potential technological advancement and cost cuts to resolve the great existing uncertainties.

This means that if responses to some externality are given top priority and required to be very drastic, very powerful policy engagement or intervention would be needed with little room left for depending on market forces, exerting great influence on discussion on market regulations and designs. The issue has recently been emerging. Whether the issue would exert influence on policy talks is still uncertain. Given its essential significance, however, we may have to pay much attention to future discussions on and the fate of the issue.