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Power production and demand in Viet Nam vs Year from 2016 to first 10 months 2022

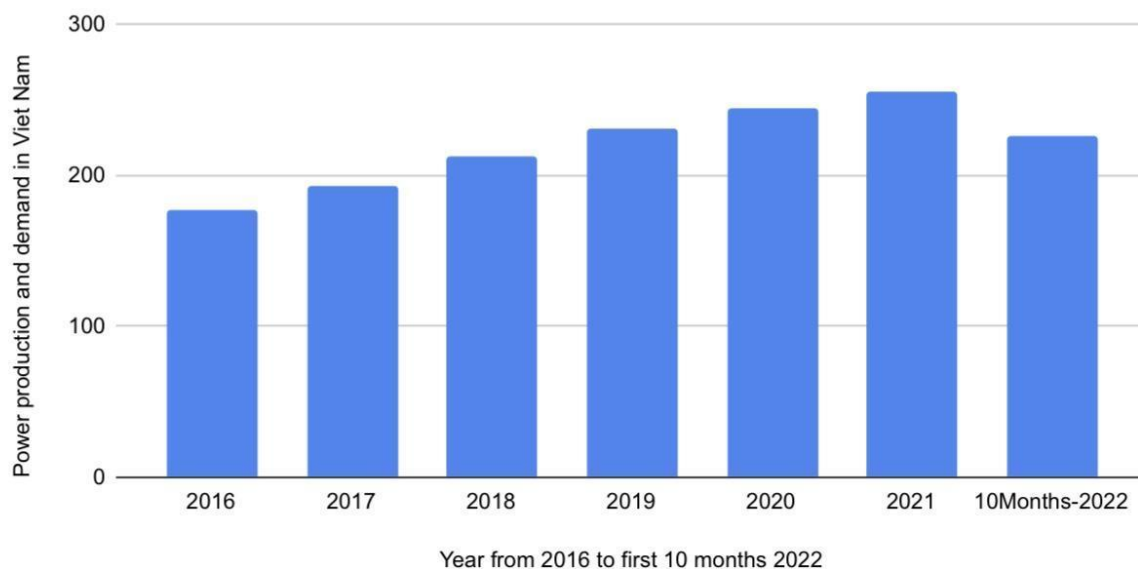


Figure 1: Power production and demand in Vietnam from 2016 to first 10 months 2022: self created with data of Statista

Nuclear power and energy demand:

Figure 1 shows that between 2018 and 2022, the economy's electricity demand will increase by more than 200 billion kilowatt hours (kWh), and that this trend will likely continue. In February 2023, 20.22 billion kWh of electricity were generated from alternative sources, an increase of 9.4 percent from the corresponding period in 2022 (Vietnamnews 2023). Power generation and imports are expected to total 284.5 billion kWh in 2023, far beyond the years 2022 and 2021, as reported by Vietnamnews (2022) and approved by the Ministry of Industry and Trade.

Hydroelectric and coal electricity are the two primary energy sources in Vietnam right now because of their reliability and affordability. There is a growing need for power but limited capacity to produce it from indigenous sources like oil, coal and gas. Unfortunately, this means we must continue importing fuels and energy sources from places like China, Cambodia, Laos and Russia (FPT digital 2022). However, the conflict in Ukraine and Russia has increased the cost of energy and caused a shortage of key commodities. However, the mining and use of these minerals will have consequences for both the environment and human health. Due to the gravity of greenhouse gas emissions and air pollution, meeting environmental protection standards must take precedence (FPT digital 2022).

This newsletter argued that VietNam should apply new requirements for alternative energy kinds by constructing 5 nuclear power plants in Vietnam in order to save money for the country while conserving the environment that ensures a good long-term run.

Advantages

Low Greenhouse Gas Emissions:

Uranium is a powerful and widely available metal: One kilogram of uranium generates the same amount of energy as 2.7 million kilograms of coal, 149 gallons of oil, or 17,000 cubic feet of natural gas (NEI, 2015). Nuclear power is viewed as clean since it produces few emissions. Its operation does not result in the release of any harmful greenhouse gases, including carbon dioxide. In addition, nuclear energy's lifecycle emissions (those produced

throughout the entire production process) are much lower than those produced by fossil fuels (NationalGrid 2022).

Low cost to run:

While the initial investment is high, nuclear power plants have low operating costs and are competitive with alternative kinds of energy generation in all but the 10% of the world where inexpensive fossil fuels are readily available (World Nuclear 2022). In some cases, it can make power cheaper to produce than using imported coal. Because of the conflict between Russia and Ukraine, there is currently a lack of fossil materials, however this helps to avoid some difficulties associated with relying on import resources and does not rely heavily on fuel transportation issues.

Lower unemployment rates:

As a result of the worst-ever fourth wave of COVID-19 infections for months (Vietnamplus VNA 2022) the General Statistics Office (GSO) estimates that more than 1.4 million Vietnamese were unemployed in 2021. This is an increase of 203,700 from the previous year, or 17 percent.

The United States, for example, already has nuclear power facilities, and studies suggest that a wide variety of energy employees in the United States earn almost \$20,000 more per year than those working with competing energy technologies (Agneta Rising 2020). Wages in the nuclear industry are about 25-30% higher than in any other sector of the energy economy. When workers are compensated better and more jobs are made available, they and their families are in a position to buy more things in the local economy

Disadvantages

The high cost of nuclear power plants:

It is understandable that nuclear power facilities would be costly due to the high technology needs, high quality materials, and complexity of the project. Nuclear energy expenses are typically categorised as either "capital costs" or "operating costs." Preparation of the site, production, construction, engineering commissioning, and financing are all examples of capital costs. Costs associated with running a nuclear power plant include things like fuel (from uranium mine to fuel manufacturing), upkeep, decommissioning, and disposal of waste

(Daria Iurshina, 2019). Nuclear power reactors in the United States are being scrapped due to manufacturing challenges and escalating costs of \$14 billion to \$23 billion, or almost 540 trillion VND. Vietnam must also cover ongoing expenses, such as the cost of repairs and the price of complying with safety regulations concerning hazards like natural catastrophes.

The budget deficit that could result from Vietnam's decision to invest in its program of establishing five nuclear businesses would have a negative impact on the country's economy as a whole (Adam Barone 2023).

Radioactive waste & risk:

Nuclear power plants produce a lot of radioactive waste, including spent reactor fuel, uranium mill tailings, and other radioactive pollutants. The effects of these radioactive substances on human health can last for millennia. The "Chernobyl disaster, accident in 1986" is just one example of the devastation that might result from the release of radioactive waste. Hundreds of thousands of people nevertheless remained in the midst of the millions of acres of poisoned forests and farmland, despite the fact that thousands of people had been evacuated. It was expected that thousands of people would get sick from the radiation and die from cancer in the years that followed (Michael Ray 2022).

Conclusion

In my opinion Vietnam should construct five nuclear power plants to ensure its continued existence for the next many decades and to protect the environment, which will in turn improve the health of its citizens. Nuclear power plants are able to generate about 800 billion kilowatt hours of electricity annually and create more than half of the nation's emission-free electricity (Office of Nuclear Power 2021). This makes nuclear power plants a potentially significant and reliable source of electricity. Additionally, this leads to a 470 million metric ton reduction in carbon emissions annually, which is roughly equivalent to taking 100 million cars off the road (NEI 2022).

For Vietnam's disadvantages, it is necessary to both prepare funding financially within the country and seek aid from outside sources, as well as implement efficient financial policies in order to revive the country's economy. Radioactive waste and the management of risks are two additional concerns that need to be addressed. For the purpose of reducing unwelcome

hazards in the foreseeable future, Vietnam ought to make an appeal to specialists located in other countries for assistance in the construction of nuclear facilities as well as the provision of cutting-edge technology and equipment. The benefits of constructing a nuclear power plant far outweigh the drawbacks, hence, Vietnam needs to pursue this endeavour.

Technical companion document

This technical companion document will describe the merits of this policy as an appropriate objective for energy demand in Vietnam, which will help readers understand why the country should construct five nuclear power plants to meet its energy needs. Let's assume that the equilibrium of the market remained as it was at E_0 . Nevertheless, as a result of a growth in population and the impact of the conflict between Russia and Ukraine, the demand for electricity rose dramatically, leading to the demand curve to the right ($AD_0 \rightarrow AD_1$), while a lack of supply mentioned above shifts the supply curve to the left ($AS, \rightarrow AS_1$). Moving E_0 to E_1 , which causes product prices to spike ($P_0 \rightarrow P_1$) due to the Negative supply shock theory, while simultaneously causing a decrease in output ($Y_0 \rightarrow Y_1$) (Figure 2). As a result, the number of available jobs decreases because of the pandemic, which contributes to an increase in the rate of unemployment (Elvis Picardo 2022).

As a result, government expenditure on the construction of nuclear power facilities as an expansionary fiscal policy in order to react to the new market equilibrium (The Investopedia team 2022). This strategy will assist the market price of electricity decline ($P_1 \rightarrow P_2$), which will result in a decrease in the cost of production as well, and will promote production. This will help boost AS , shift the supply curve to the right ($AS_1 \rightarrow AS_2$), and ultimately be able to satisfy an increased demand for the usage of energy ($AD_1 \rightarrow AD_2$). Transferring from E_1 to E_2 , as a consequence of this, the unemployment rate may be able to go down because the problem of a lack of available jobs has been overcome.

In the long run, the production growth rate will also increase, which indicates that Vietnam will be able to meet the yearly GDP growth rate, which will allow the economy to improve and remain stable.

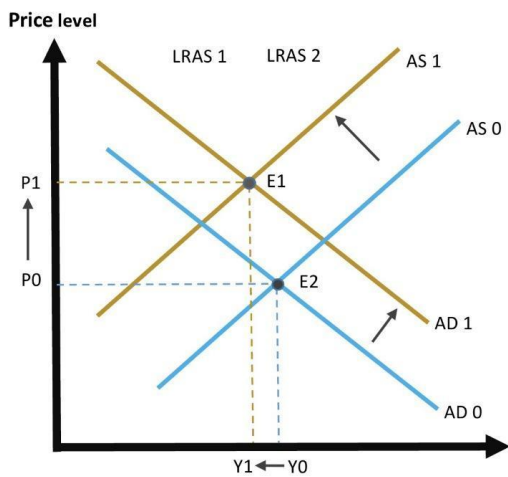


Figure 2: AD-AS model before Policy implement (self created)

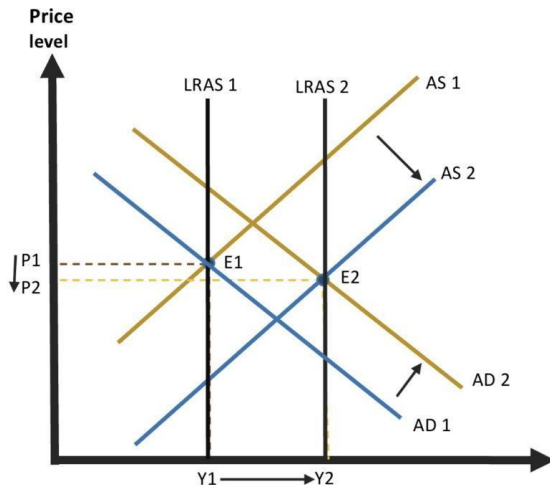


Figure 3: AD-AS model after Policy implement (self created)

Reference

The Investopedia team (2023) Expansionary Fiscal Policy: Risks and Examples, Investopedia website, accessed 16 August 2023.

https://www.investopedia.com/terms/e/expansionary_policy.asp

Elvis Picardo (2022), How Inflation and Unemployment Are Related, Investopedia website, accessed 16 August 2023. [https://www.investopedia.com/articles/markets/081515/how-inflation-and-unemployment-are-related.asp#:~:text=If%20the%20economy%20is%20booming,unemployment%20is%20unchanging\)%20or%20only](https://www.investopedia.com/articles/markets/081515/how-inflation-and-unemployment-are-related.asp#:~:text=If%20the%20economy%20is%20booming,unemployment%20is%20unchanging)%20or%20only)

[https://www.investopedia.com/articles/markets/081515/how-inflation-and-unemployment-are-related.asp#:~:text=If%20the%20economy%20is%20booming,unemployment%20is%20unchanging\)%20or%20only](https://www.investopedia.com/articles/markets/081515/how-inflation-and-unemployment-are-related.asp#:~:text=If%20the%20economy%20is%20booming,unemployment%20is%20unchanging)%20or%20only)

Office of Nuclear Energy (2021), *Advantages and Challenges of Nuclear Energy*, Energy website, accessed 16 August 2023.

<https://www.energy.gov/ne/articles/advantages-and-challenges-nuclear-energy#:~:text=Clean%20Energy%20Source&text=It%20generates%20nearly%20800%20billion,cars%20off%20of%20the%20road>.

Daria Iurshina, Nikita Karpov, Marie Kirkegaard, Evgeny Semenov (2019), *Why nuclear power plants cost so much—and what can be done about it*, Thebulletin website, accessed 16 August 2023.

<https://thebulletin.org/2019/06/why-nuclear-power-plants-cost-so-much-and-what-can-be-done-about-it/>

John R (n.d), *Chernobyl disaster*, Britannica website, accessed 16 August 2023.

<https://www.britannica.com/event/Chernobyl-disaster>

Nei (2015), *Nuclear Plants: Protecting Air, Water, Soil and Wildlife*, Nei website, accessed 16 August 2023.

<https://www.nei.org/resources/fact-sheets/nuclear-protects-air-water-soil-wildlife>

Nei editors (2022) *Nuclear Energy and Global Warming*, Nei website, accessed 16 August 2023.

<https://www.nei.org/advantages/climate#:~:text=Every%20year%2C%20nuclear%2Dgenerated%20electricity,passenger%20vehicles%20off%20the%20road>.

National Grid (2022), *What is nuclear energy (and why is it considered a clean energy)?*, Nationalgrid website, accessed 16 August 2023.

<https://www.nationalgrid.com/stories/energy-explained/what-nuclear-energy-and-why-it-considered-clean-energy#:~:text=It%20produces%20zero%20carbon%20emissions,in%20fossil%20fuel%2Dbased%20generation>.

Agneta R (2020), *Speech: Nuclear jobs to help drive economic recovery*, World nuclear news website, accessed 16 August 2023.

<https://world-nuclear-news.org/Articles/Speech-Employment-in-nuclear-as-a-driver-of-econom>

VNA (2023), *Over 1.4 million people become unemployed in 2021 due to COVID-19: GSO*, Vietnamplus website, accessed 16 August 2023.

<https://en.vietnamplus.vn/over-14-million-people-become-unemployed-in-2021-due-to-covid19-gso/220308.vnp>

World Nuclear (2022), *Economics of Nuclear Power*, World Nuclear website, accessed 16 August 2023.

<https://world-nuclear.org/information-library/economic-aspects/economics-of-nuclear-power.aspx>

Statista (n.d), *Power production and demand in Vietnam from 2013 to the first 10 months into 2022*, Statista website, accessed 16 August 2023.

<https://www.statista.com/statistics/1206469/vietnam-power-demand/>

Viet Nam News (2023), *Vietnam Electricity to increase use of coal and gas*, Vietnamnews website, accessed 16 August 2023.

<https://vietnamnews.vn/society/1494174/vietnam-electricity-to-increase-use-of-coal-and-gas.html>

FPT Digital (2022), *Potential for renewable energy development in Vietnam*, Digital FPT website, accessed 16 August 2023. <https://digital.fpt.com.vn/en/dx-articles/potential-for-renewable-energy-development-in-vietnam.html>