

# The Ukraine Crisis and Global Energy Security: Its Implication to Malaysia

**Venue** : Theatrette, G Floor, BA Building  
**Date** : 14th September 2022  
**Time** : 10.30 am - 12.30 pm



**Prof. Dr. Ken Koyama**  
Chair in Energy Economics of  
Energy Commission at  
Universiti Tenaga Nasional  
(UNITEN)



# **The Ukraine Crisis and Global Energy Security: Its Implication for Malaysia**

**Public Talk**

**September 14<sup>th</sup>, 2022**

**Prof. Dr. Ken Koyama**

**Chair in Energy Economics of Energy Commission at UNITEN  
Chief Economist & Senior Managing Director, Institute of Energy Economics, Japan**

# Emerging world energy landscape

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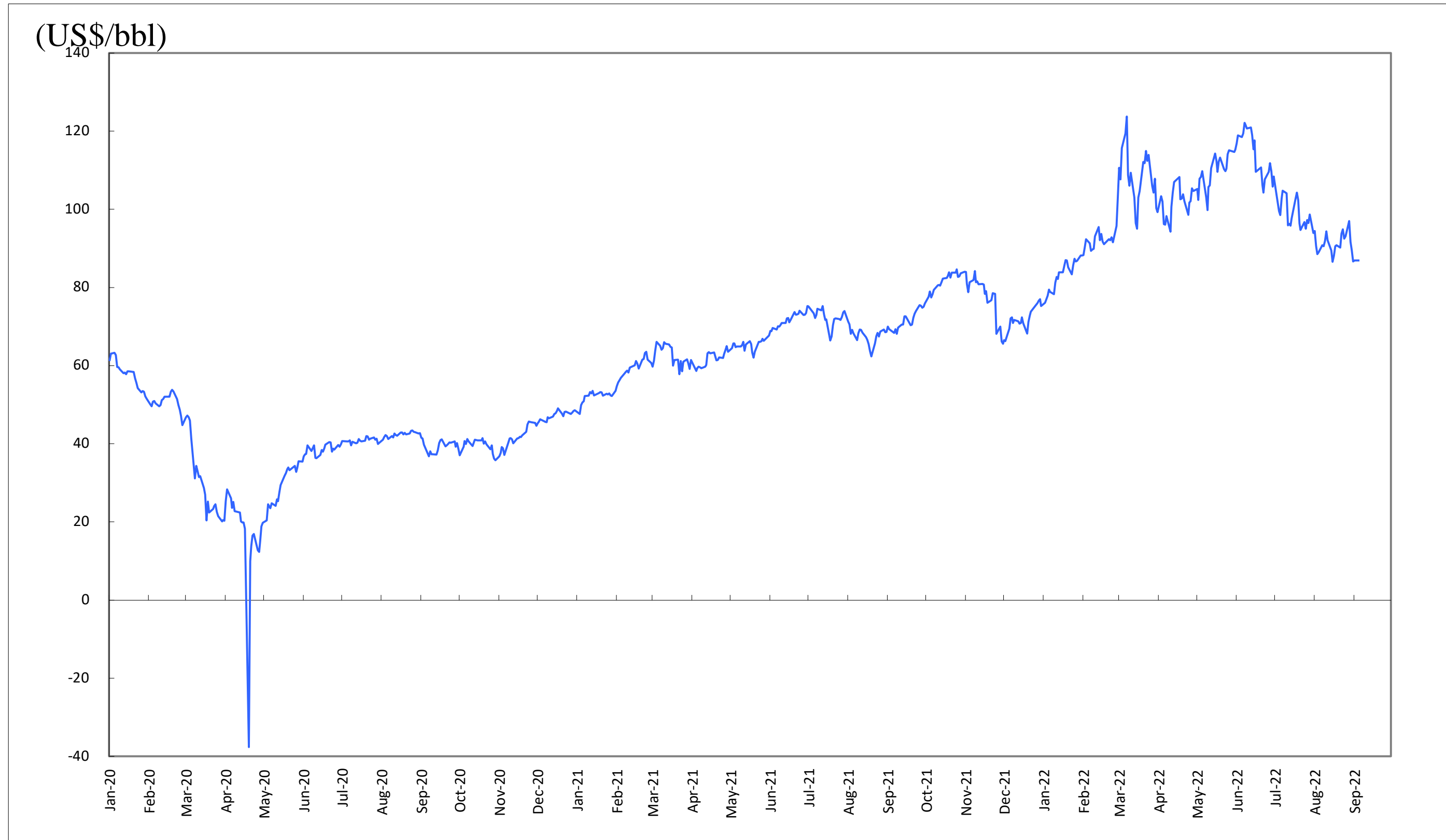
- Unprecedented impact of COVID-19 pandemic
- **The Wave of Carbon Neutrality in the world**
- Asia as a gravity center of world energy demand
- **Simultaneous energy price hikes**
- **Energy Geopolitics/Security revisited: Ukraine crisis**
- Importance of advanced and innovative technology

# Unprecedented simultaneous energy price hikes



- Oil price topped 100\$
- Extremely high European gas and Asian spot LNG price
- Soaring coal price
- European power price run-up
- Concern for “energy crisis” in Europe
- Power shortage/crises in many countries after 2021
- Corona-rebound: Lower the bottom, higher the peak
- Reduced surplus supply capacity
- Impact of low/decarbonization?
- Chain reaction and no loophole
- Revisited “geopolitics of energy”

# Record high oil price after global financial crisis



# IMF [World Economic Outlook]

## Continued downward revision of GDP growth



	2017	2018	2019	2020	2021	2022	2023
World	3.8	3.6	2.8	-3.1	6.1	3.2	2.9
OECD	2.4	2.2	0.0	-4.5	5.2	2.5	1.4
US	2.2	2.9	2.2	-3.4	5.7	2.3	1.0
Euro Zone	2.4	1.9	0.0	-6.3	5.4	2.6	1.2
Japan	1.9	0.3	0.0	-4.6	1.7	1.7	1.7
Non-OECD	4.7	4.5	0.0	-2.1	6.8	3.6	3.9
China	6.9	6.7	0.0	2.3	8.1	3.3	4.6
India	6.7	6.1	0.0	-7.3	8.7	7.4	6.1

**Source: IMF "World Economic Outlook (July 2022)**

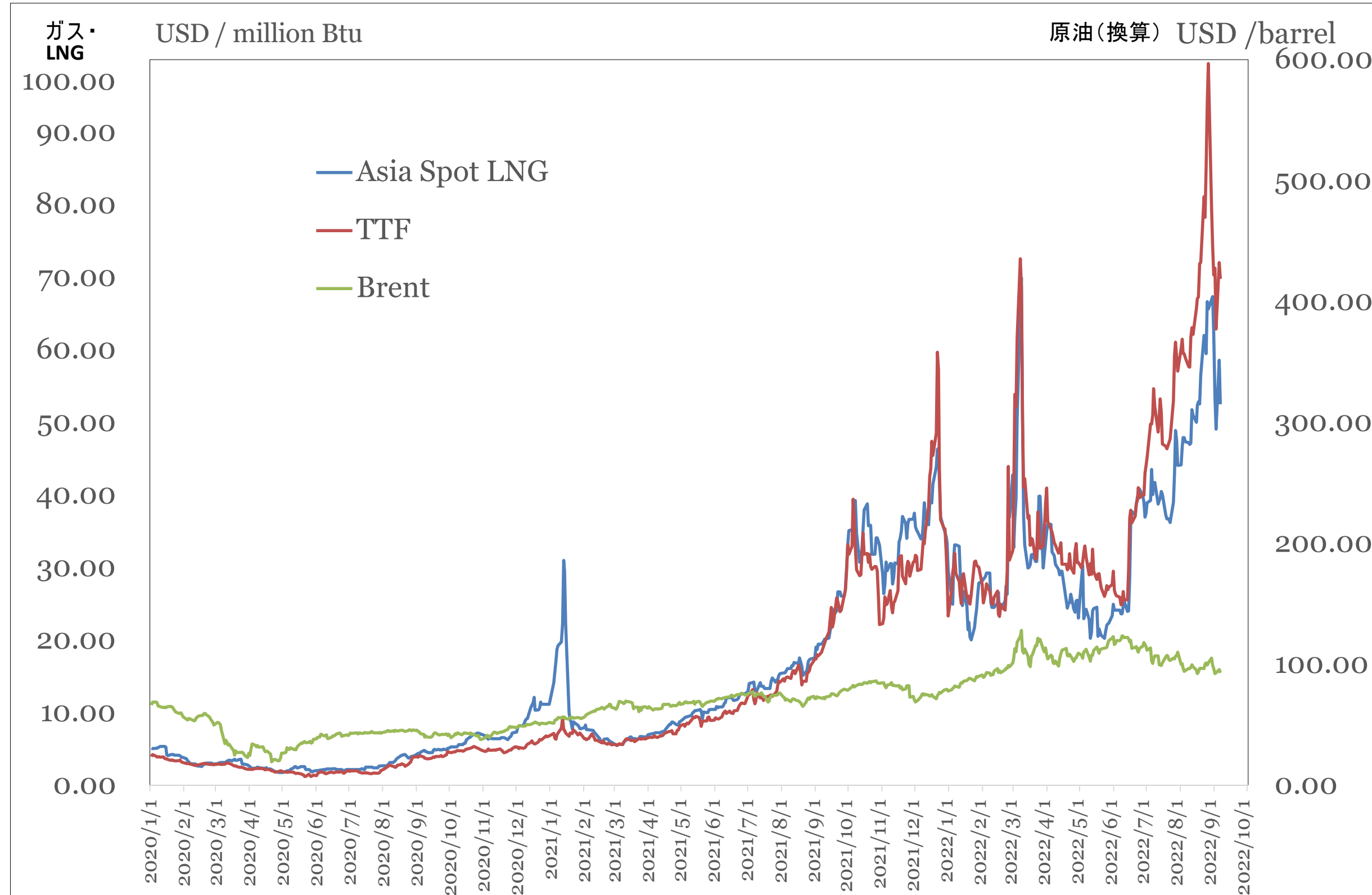
# Response of OPEC plus

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- Stick to its production policy against the request from consuming countries
- Additional production increase finally decided in June 2022
- Bide visit to Saudi Arabia in July
- 100,000 B/D increase decided at August meeting
- But only limited number of producer have surplus capacity
- Oil price decline lead to policy toward production cut
- 100,000 production cut decided at September meeting

# Super price hikes in European gas prices

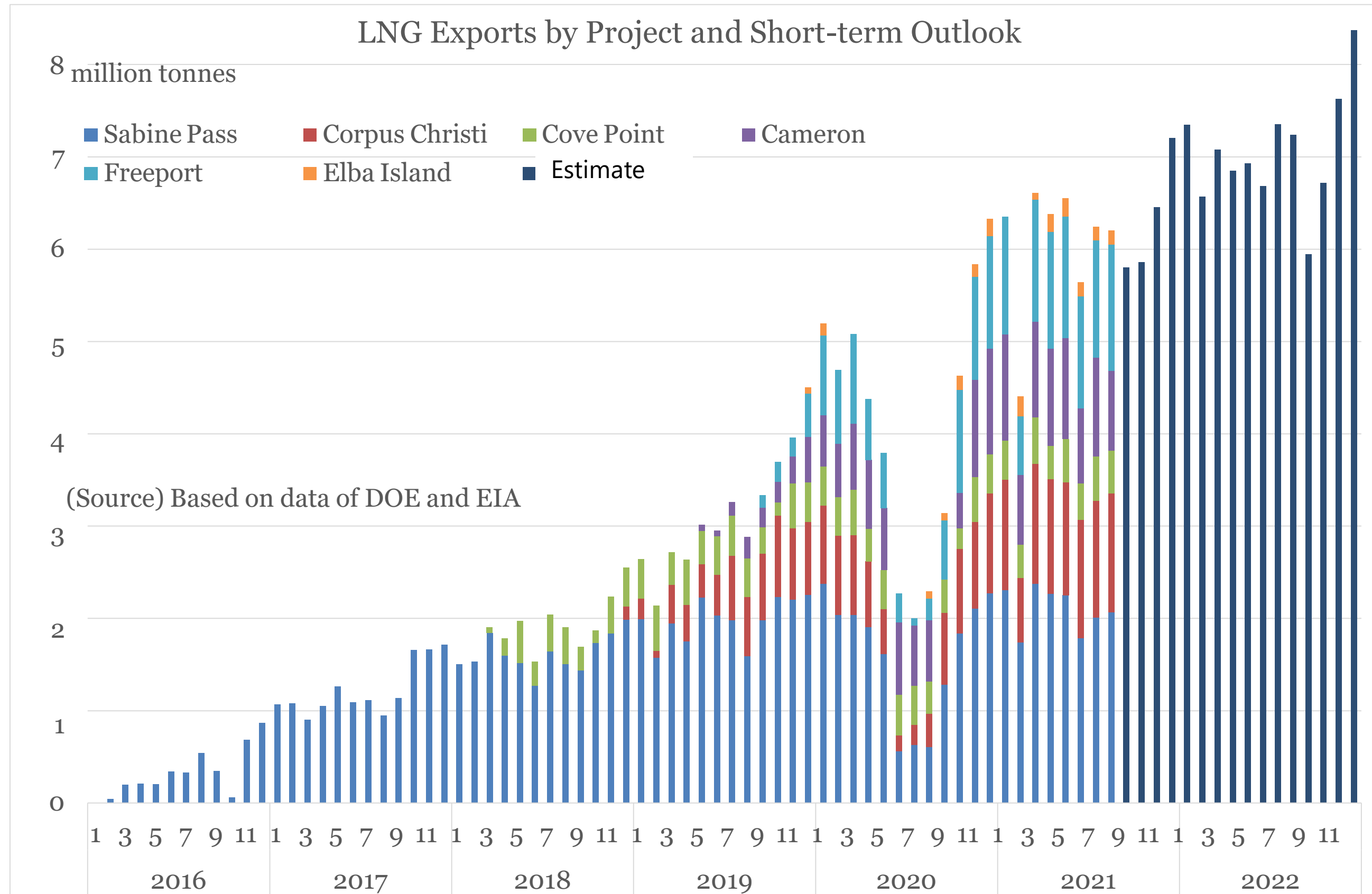
## European gas prices close to 600\$ in crude oil equivalent







# US LNG export growth continues to grow



Source: Hiroshi Hashimoto, IEEJ, November 2021

# **Significance of US LNG to energy security and global energy transition**

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- **Global natural gas/LNG market continues to be extremely volatile**
- **Growth in US LNG supply contributes to enhanced stability and flexibility in global gas market**
- **Gas/LNG expected to play an important role for energy transition in Asia towards carbon neutrality**
- **US LNG as reliable clean energy supply to help Asia's decarbonization journey**
- **US gas-based blue hydrogen/ammonia will also become important energy source for decarbonization in Asia**

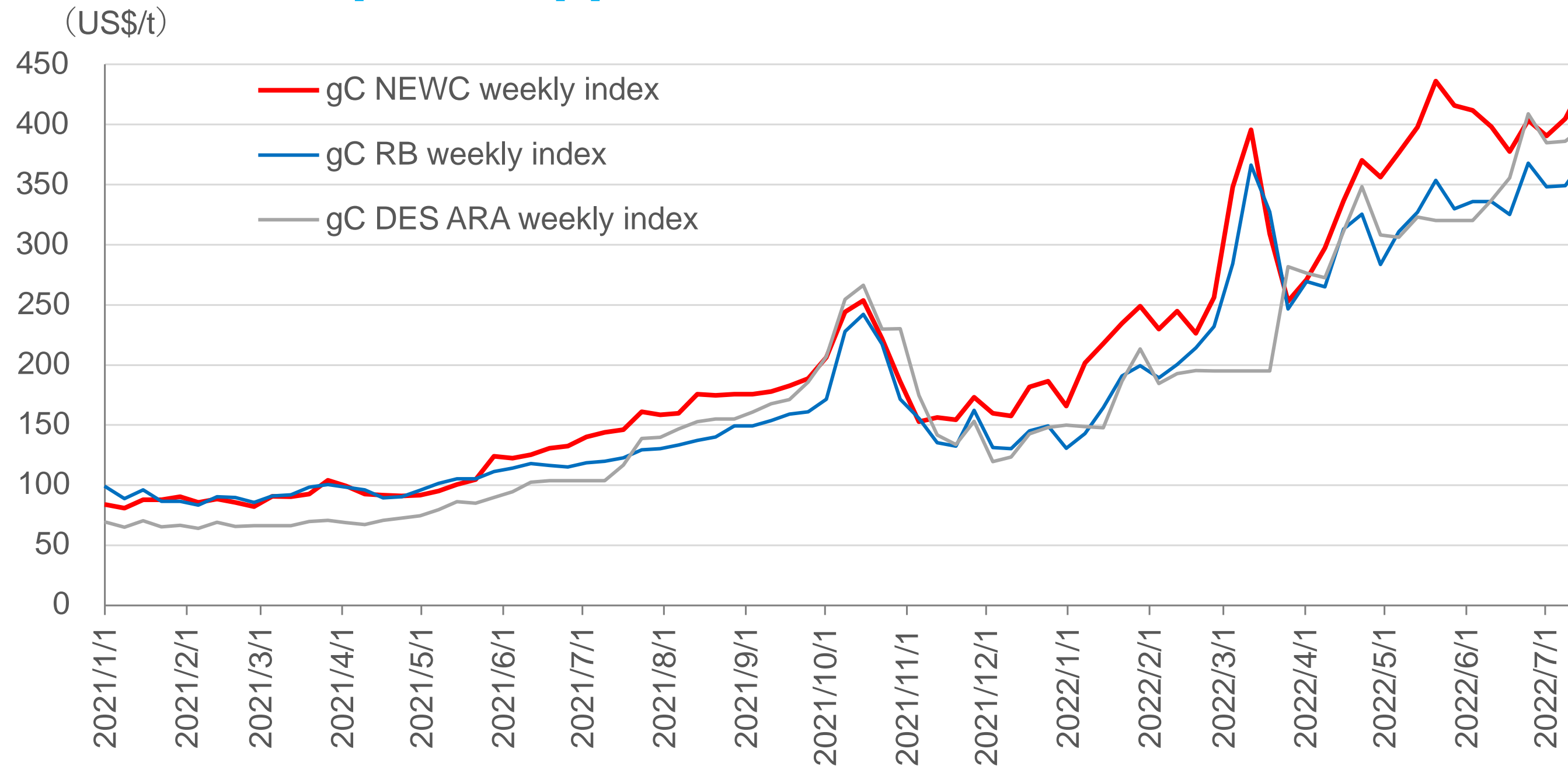
# Scenario for oil and gas market

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- **Key driver: Disruption of Russian energy supply**
- **High geopolitical risk but without major disruption scenario:**  
Oil price at 100 USD plus/minus 20 USD. European gas price at 30-50 USD/MMBTU
- **Large scale supply disruption scenario:**  
Oil/gas prices will top record high level. Oil price may later decline if and when additional supply becomes available. Gas price likely to continue to remain extremely high because of the lack of additional supply
- **Cease-fire and gradual stabilization scenario:**  
Lower price from the current level at 70-80 USD for oil and 20-30 USD/MMBTU for European gas

# Coal prices also soared under the crisis

## Steam coal price topped 400 \$/ton



Data source: globalCOAL (a division of Global Commodities Holdings Limited)

Source: Tetsuo Morikawa, Hiroshi Hashimoto and Atsuo Sagawa, "Fuel markets Outlook" (IEEJ, August 2022)

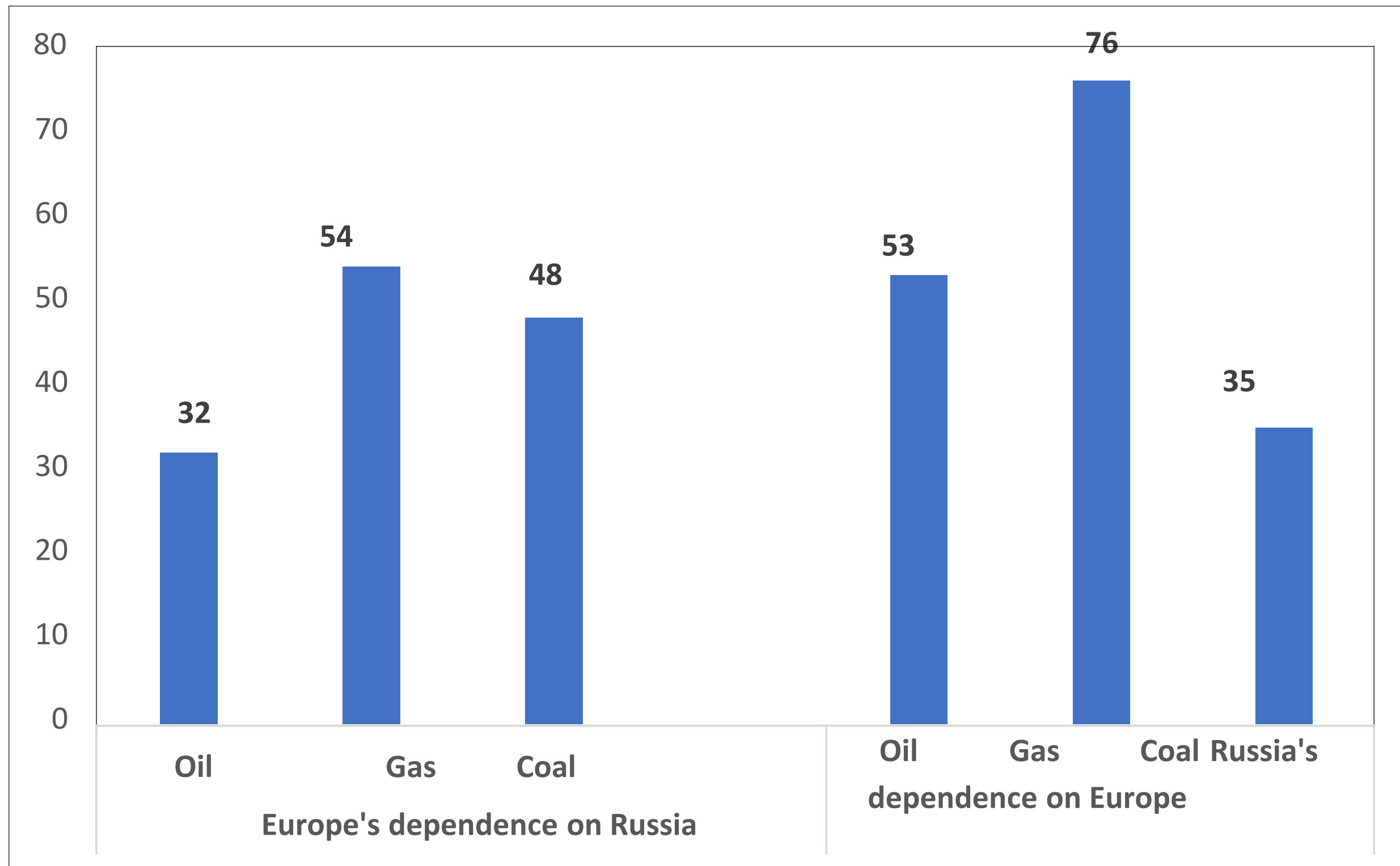
# Ukraine crisis and the global energy market

- **Military invasion**
- **Economic sanction**
- **Concern for Russian energy disruption**
  - **Impact of Western sanctions**
  - **Physical disruption of energy infrastructure**
  - **Supply reduction by Russia**
- **Global energy market to be de-stabilized**
  - **Oil market**
  - **Gas/LNG market**
  - **Coal market**
  - **Power market**
- **Serious negative impact on economy and life (in Europe)**
- **Energy security revisited**

# Importance of Russia

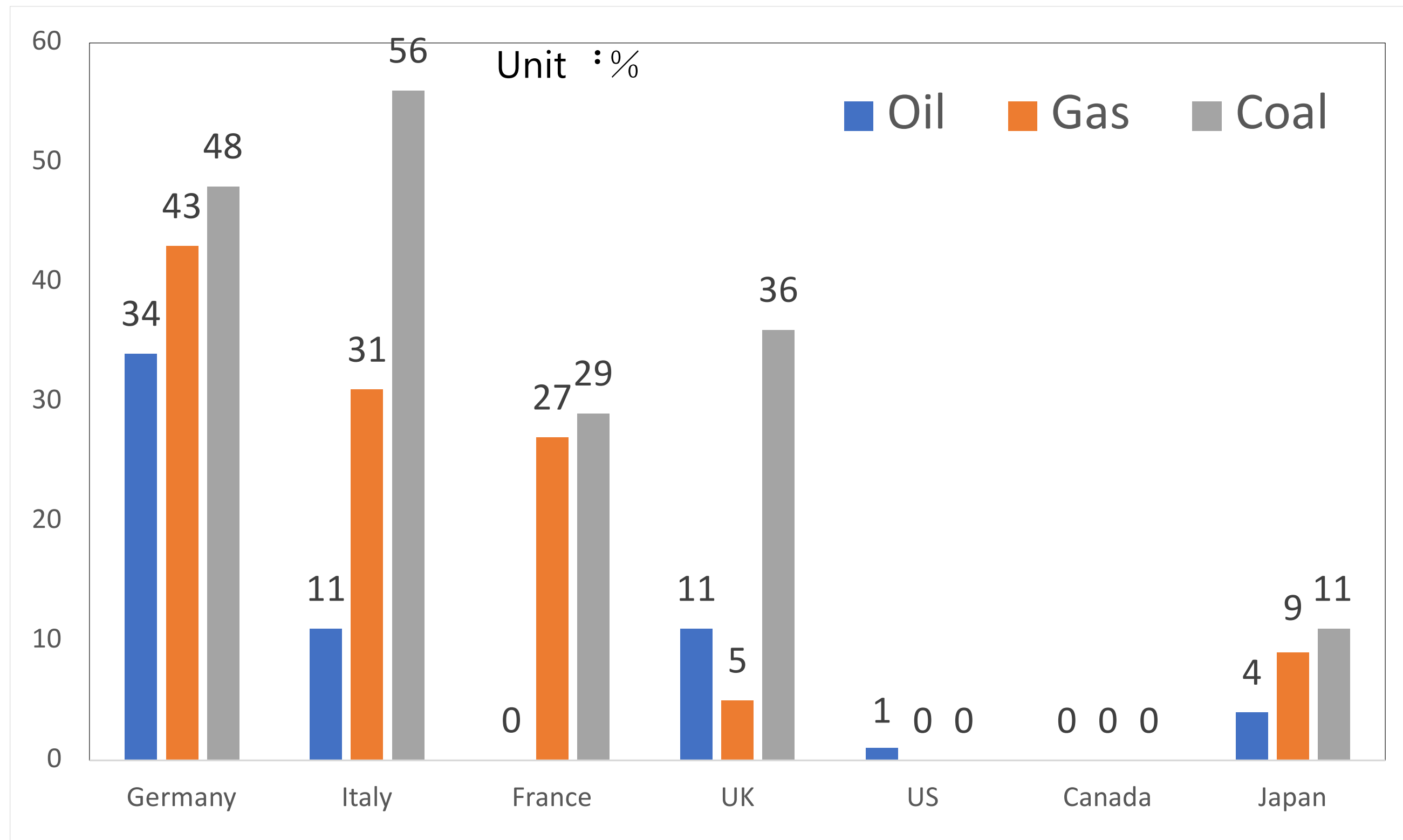
- **In oil and gas market share (2021)**
  - Oil resource: 6% (No.6) , gas resource: 20% (No.1)
  - Oil production: 10.9 MBD, 12% (No.3)
  - Gas production: 702 BCM, 17% (No.2)
  - Oil export: 8.2 MBD, 12% (No.1)
  - Gas export: 241 BCM, 24% (No.1)
  - Coal export: 5.99 Exajoules, 18% (No.3)
  
- **Russia's international strategy**
  - Energy as strategic goods for Russia
  - Energy being used to maximize national interests
  - Energy sectors under the influence of the top leader

# Energy inter-dependence of Europe and Russia (2021)



# Dependence on import from Russia (2020) in G7

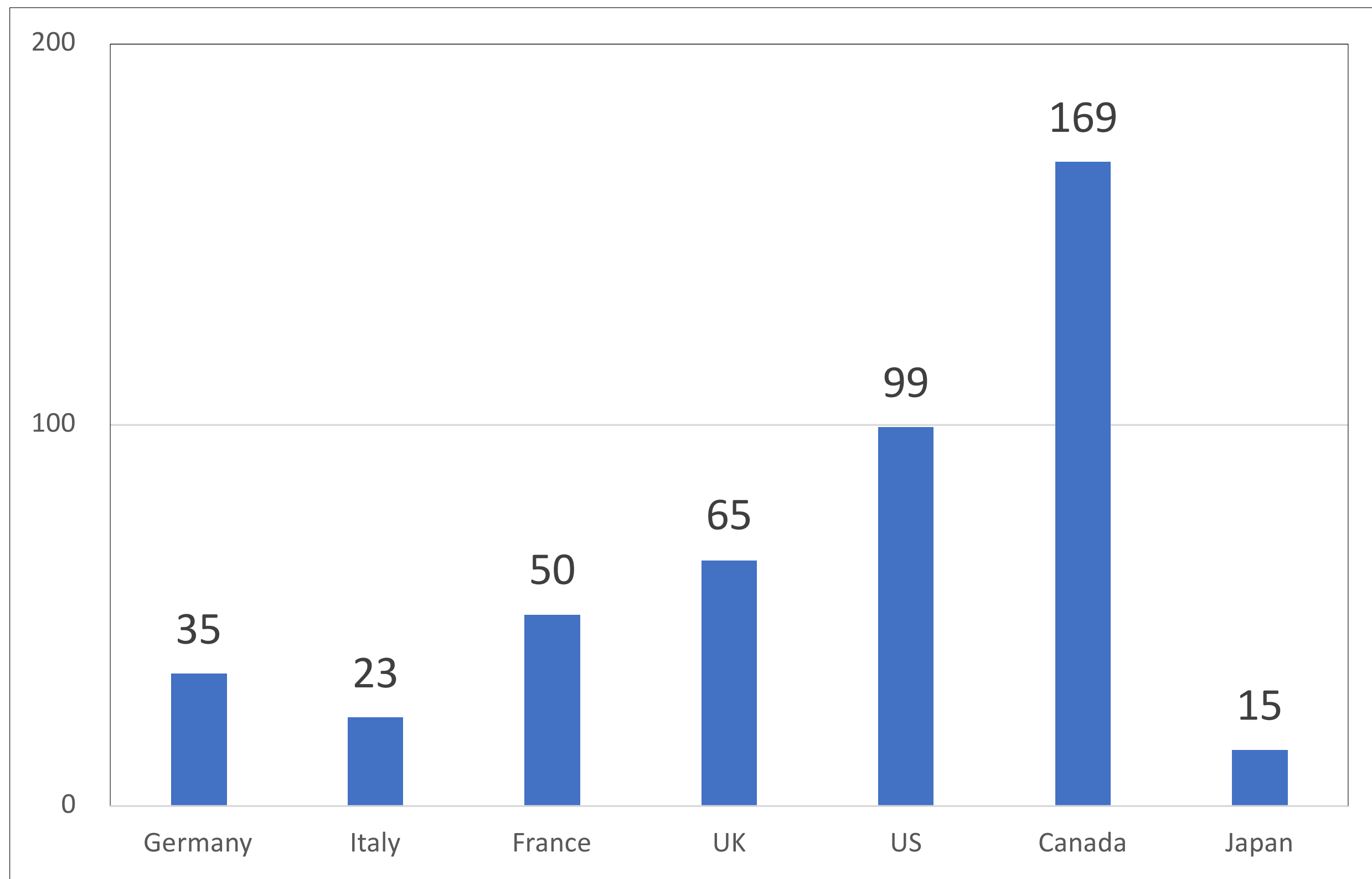
Japan's dependence on Russia is not high in comparison with European countries, but...





# Energy self-sufficiency (2021) in G7

Japan's energy self-sufficiency is extremely low



## Similarity: Ukraine crisis and the 1<sup>st</sup> oil crisis

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- Rising global energy prices BEFORE the crises
- High level dependence on specific import source
- Combination of the two factors: War and sanction/embargo
- Serious concern for “Physical shortage” of energy

# Impact of energy price hike

## ■ Energy as an indispensable good. Negative impact of economy and civil life

- Consumer: impact on disposal income
- Company: higher costs
- National wealth outflow

## ■ Inflation or stagflation?

- Unprecedented rise in US/EU/OECD CPI
- Impact of monetary policy

## ■ Political need to deal with price hike

- Rescue plan including subsidies adopted by EU, Japan and others
- Pressure on OPEC and stock-draw decision by US
- ◆ Importance of energy security policy

# Highlighted importance of energy security

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- **To reduce dependence on Russia**
  - Energy mix policy
  - Alternative supply for oil, gas/LNG and coal
- **To enhance emergency response measure**
  - IEA coordinated response for oil market
  - Flexible supply arrangement for LNG procurement
  - International cooperation revisited
- **To secure necessary investment for sufficient supply**
- **To revisit importance of stable base-load power supply**
  - Highlighted importance of nuclear power by France, UK, etc.
  - Need to address new risk of military attack on nuclear facilities

# EU's battle against "Russian dependence"

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- **Full-fledged effort to reduce dependence on Russian energy**
- **"REPowerEU" as the symbolic policy initiative**
  - **Reduce Russian dependence leads to decarbonization (RE, EE, nuclear, H2)**
  - **Dash for securing non-Russian oil, gas and coal**
- **But EU may face serious energy shortage this winter**
- **Higher energy costs and shortage may result in serious recession**
- **New lights shed on nuclear power (new build, lifetime extension)**
- **Coal-fired power generation used to avoid black-out**
- **Battle over LNG in "zero-sum game" this winter?**

# Energy security and geopolitics of energy

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- **Ukraine crisis as the top global security concern**
- **Gravity center of global energy market shift to Asia**
- **Tense and complicated US-China relation**
- **Impact of interaction among “big players” (US, Russia, Middle East producers, China, EU, etc.)**
- **Market stability likely continues to be influenced by geopolitics of energy**
- **“Externalities” are important sources to impact on energy market stability and global energy governance**

# Energy market with higher geopolitical tensions



- **Priority shift from “economic efficiency” to security and geopolitics**
- **Cost-up caused by the shift tolerated**
- **Revision of global supply chain based on “cost minimum concept”**
- **“Me-first” and priority on “alliance” and “sphere of influence”**
- **Downward pressure on global economy(deviation from economic optimum)**
- **Global energy demand to be reduced**
- **Differed patterns of energy demand trend by region/country**
- **Enhanced efforts to energy security (self-sufficiency, diversification, strategic alliance)**
- **Possible impact on decarbonization efforts and selection of energy options based on availability/accessibility (RE, nuclear, hydrogen, domestic fossil fuels, CCS/CCUS, etc.)**

## Waves of “Carbon neutral target”

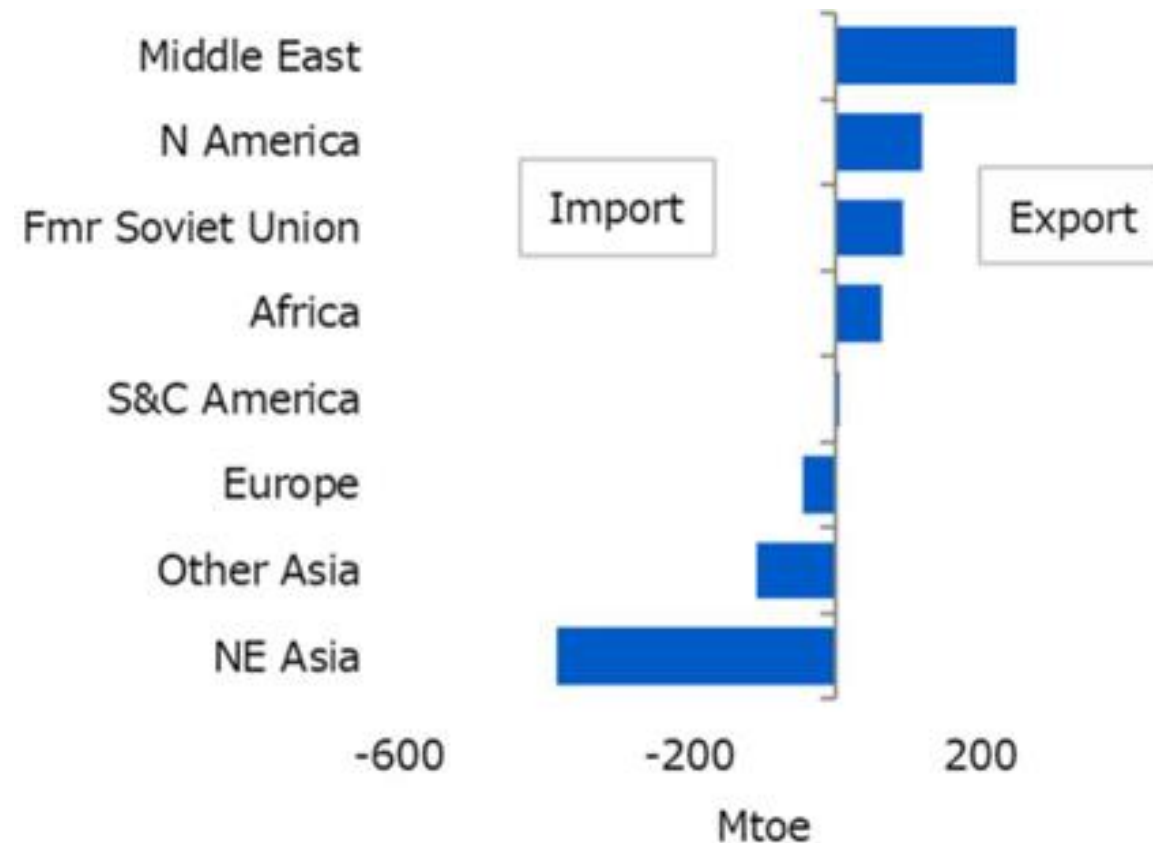
- **EU, Carbon neutral in 2050, together with “Green deal” for corona recovery**
- **China, Carbon neutral in 2060**
- **Japan, Carbon neutral in 2050**
- **Biden presidency aims at US Carbon neutral in 2050**
- **150 plus countries joins “CN club”**
- **“Glasgow Climate Pact” at COP 26**
- **Carbon neutral requires large scale investment to decarbonize the system and needs contribution of innovation**



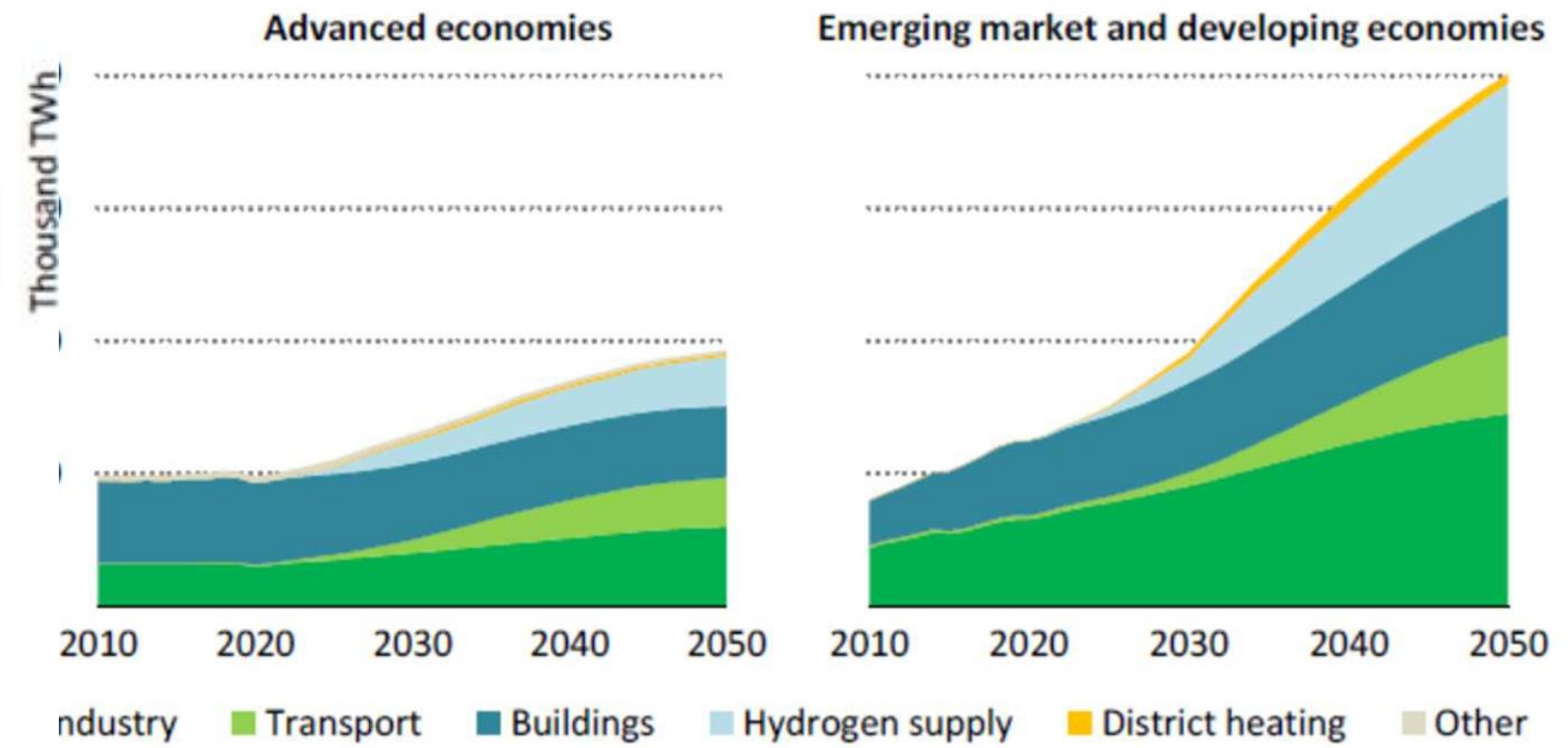
# Energy security with increased complexity

- Energy security risks growing in significance
- The world continues to depend on fossil fuels during the transition to CN.
- Existing resource exporters may reinvent themselves as exporters of decarbonized fossil fuels, such as hydrogen and ammonia.
- As power demand grows, issues of electricity supply security becomes far more important while VRE's intermittency, system reform, cyber attacks remain important critical issues.
- Supply security of critical minerals emerged as a new potential security issue.

## ❖ Hydrogen trade balance as of 2050 in CCE scenario



## ❖ Electricity demand in IEA Net Zero scenario



IEA. All rights reserved.

# Japan's energy challenges under the emerging global energy landscape

- **“S+3E” continues to be the basic principle of Japan's energy policy**
- **Deep GHG reduction and Carbon neutrality remain as one of the most important policy target for Japan**
- **Importance of energy security re-visited due to the impacts of higher energy prices and the Ukraine crisis**
- **Electricity security of supply emerged as the significant challenge for Japan**
- **Impact of Sakhalin 2 project?**
- **Clean energy strategy pursues climate protection and long term growth for Japan**
- **International cooperation and strategic approach needed**

# Japan's energy mix target for 2030

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- **Given condition of 46% GHG reduction (from 26% reduction)**
- **More ambitious EE/ES target of 53 MTOE**
- **Power generation at 930-940 Tera watt hour in 2030**
- **Nuclear target remain same at 20-22%**
- **RE target increased to 36-38% (from 22-24%)**
- **Two third of the RE increase expected from solar PV**
- **H2/Ammonia accounts for 1% (small, but for the first time ever)**
- **Reduced target of LNG at 20% (from 27%) and coal at 19% (from 26%)**
- **Energy security: energy self-sufficiency at 30% (from 25%)**
- **Economic efficiency: electricity cost up to be minimized**

# Implication for Malaysia

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- Energy security and security of supply should be priority
- Impact on the world economy is also very important to Malaysia
- Higher geopolitical tensions and conflicts between West and Sino-Russia have also significant implication
- Need to re-consider the best way to secure stable and affordable energy supply given the current energy market conditions
- It is also important to pursue decarbonization pathway in the long-run with pragmatic approach
- Protect and maximize national interests with international cooperation

# Conclusion

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- **Our energy future is full of uncertainty and unpredictability**
- **Impact of global energy price hikes**
- **Energy security revisited under the ongoing Ukraine crisis**
- **Climate change prevention continues to be global agenda**
- **Possible impact of Ukraine crisis on Carbon Neutrality?**
- **Energy trilemma under the emerging world energy landscape**