EVOLVING RELATIONSHIP BETWEEN PARTIES IN THE LNG MARKET

Natural Gas 1

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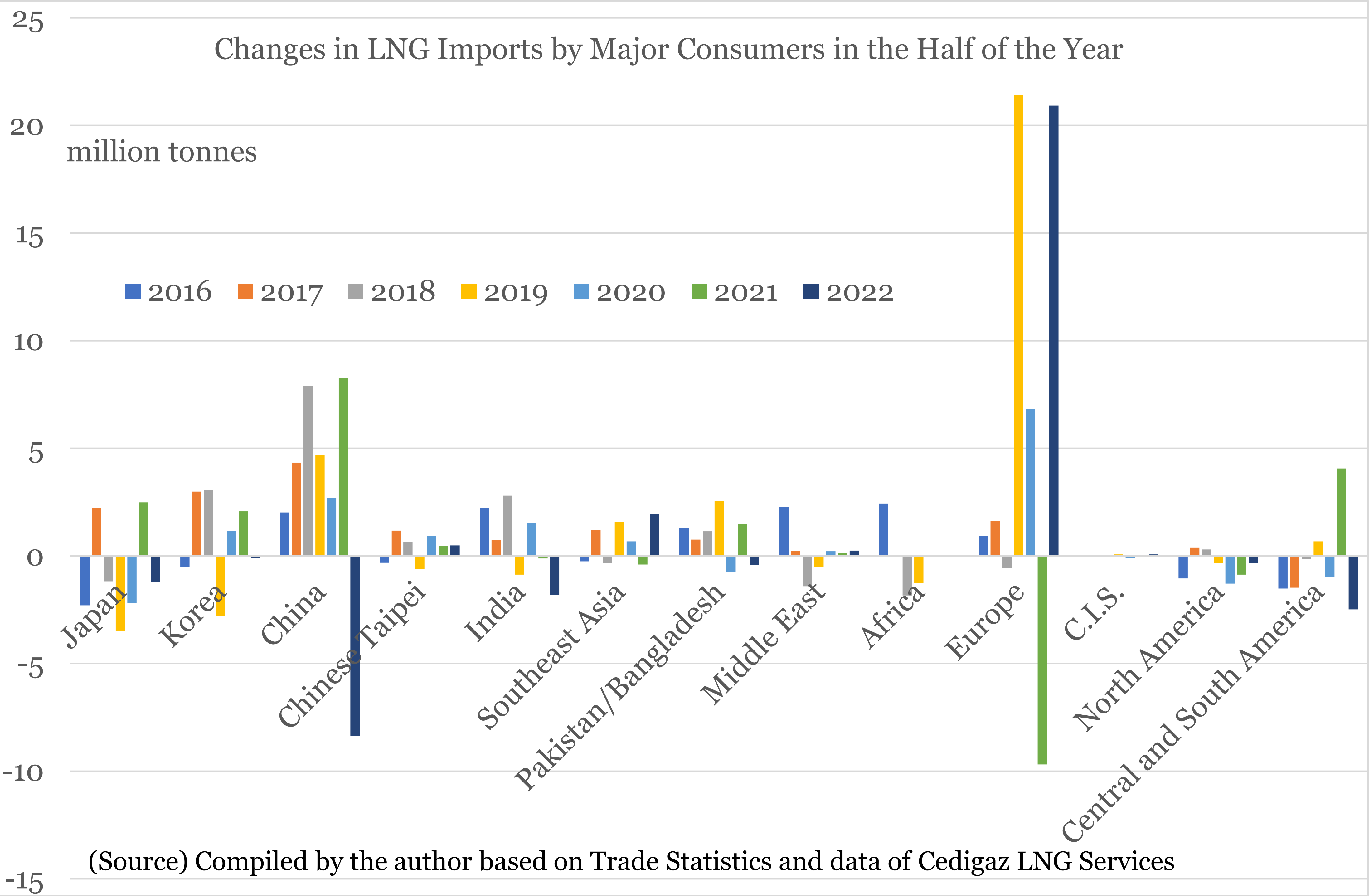
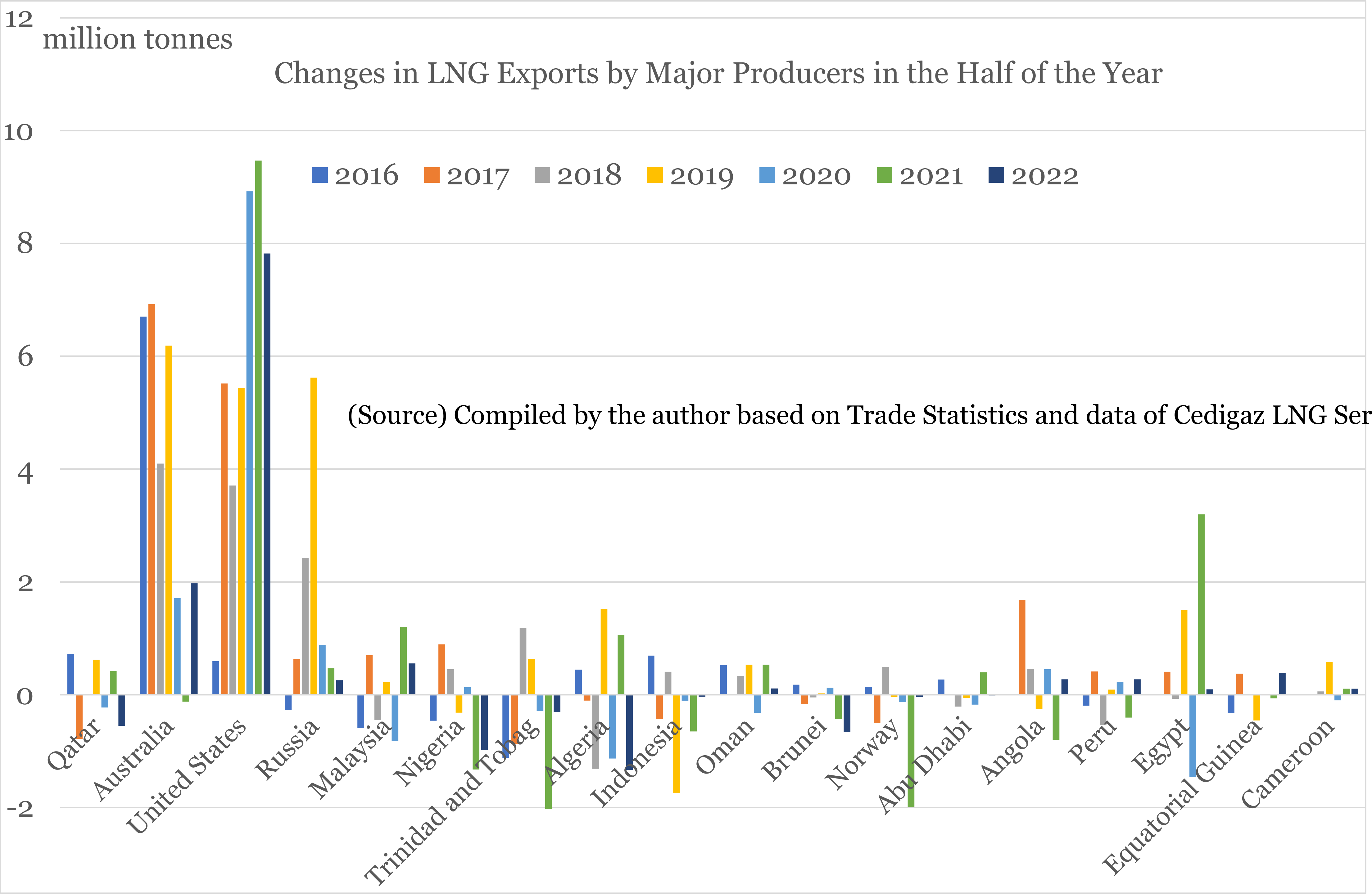
Changing Roles of LNG Market Players

- Structural shifts in relationship between LNG market players
  - Behind the recent developments in the LNG market - some of which have been unprecedented and beyond expectations
- Parties have come out of their fixed roles to assume different roles
  - Traditional buyers sell more secondary LNG cargoes to other buyers
  - Traditional sellers buy more LNG cargoes from third parties more regular basis
  - Trading houses assume more roles as project developers on both producing and consuming sides, as well as trading commodities - both LNG and gas-fired power outputs
  - Although traditionally big LNG buyers and sellers continue respecting their relationship with traditional counterparties
- As many players optimise their own positions depending on market conditions, traditional volume and demand adjustment under fixed term contracts have gradually decreased
- Some forms of good-faith arrangements have now been converted into more commercial-oriented deals with prices on them

Further Evolutions Expected and Required

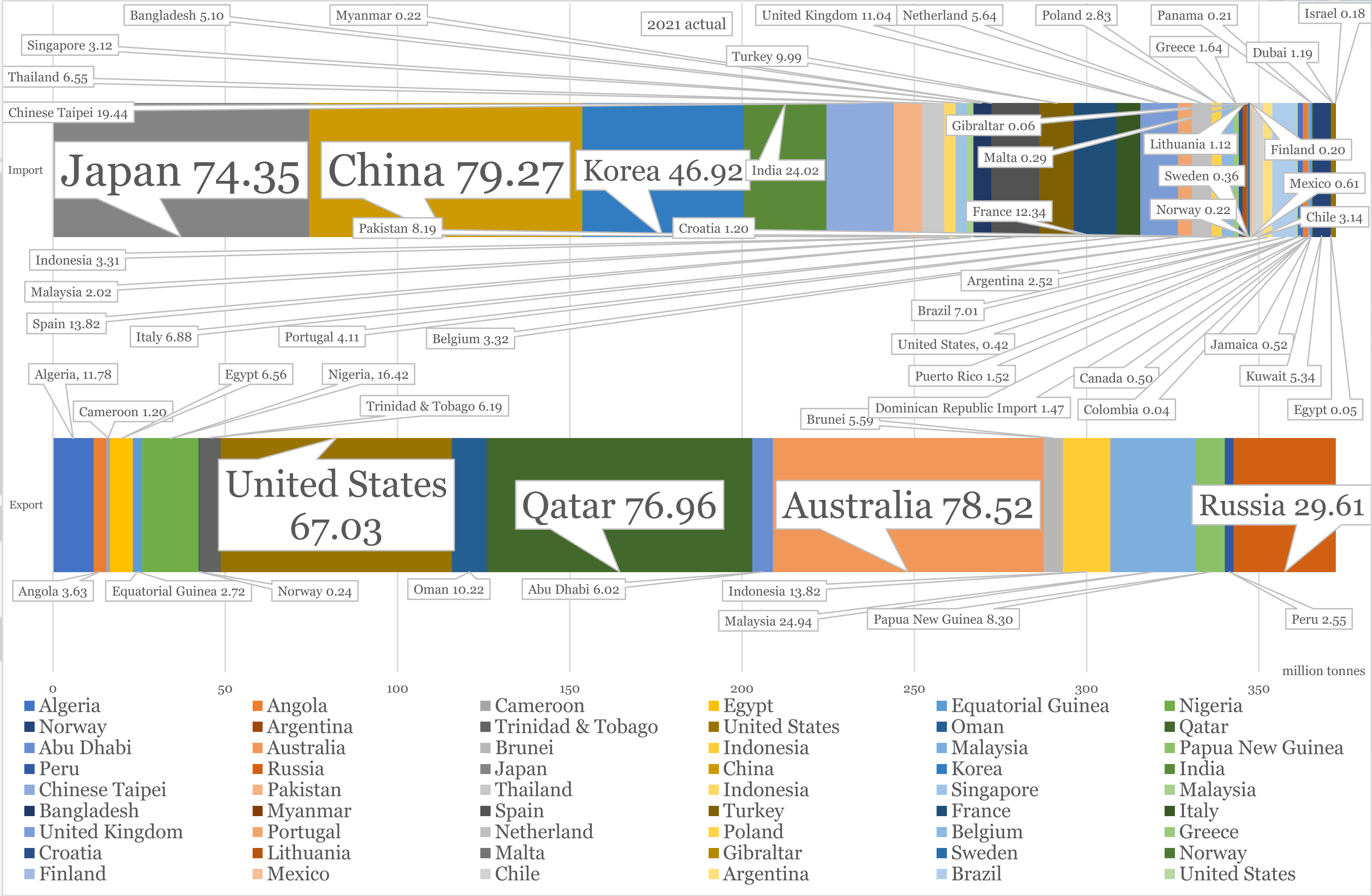
- Structural shifts in the LNG market
  - More flexible volumes and arrangements, expansions and evolutions of LNG supply sources
  - Mushrooming LNG consuming markets in Asia and Europe
- The market needs to find alternative ways to secure funding to develop additional LNG value-chains to meet expected gas demand in the future
  - Traditional LNG project development models of vertical integration from wellhead production to final consumption are about to go
  - Long-term contracts are expected to continue playing key roles to underwrite LNG production projects, although contracts length and final consuming market commitment may differ much from traditional ones
  - To make different arrangements possible, different types of alliances between parties should develop
- Importance for Japanese players
  - The most important players dealing with more than 100 million tonnes
  - Contribution to the healthy development of the global LNG market
  - Alliances with players in other countries
  - Joint procurement arrangements
  - Joint infrastructure development in emerging markets.


Changes in LNG Imports by Major Consumers in the Half of the Year
million tonnes
25
20
15
10
5
0
-5
-10
-15
2016
2017
2018
2019
2020
2021
2022
Japan
Korea
China
Chinese Taipei
India
Southeast Asia
Pakistan/Bangladesh
Middle East
Africa
Europe
C.I.S.
North America
Central and South America
(Source) Compiled by the author based on Trade Statistics and data of Cedigaz LNG Services

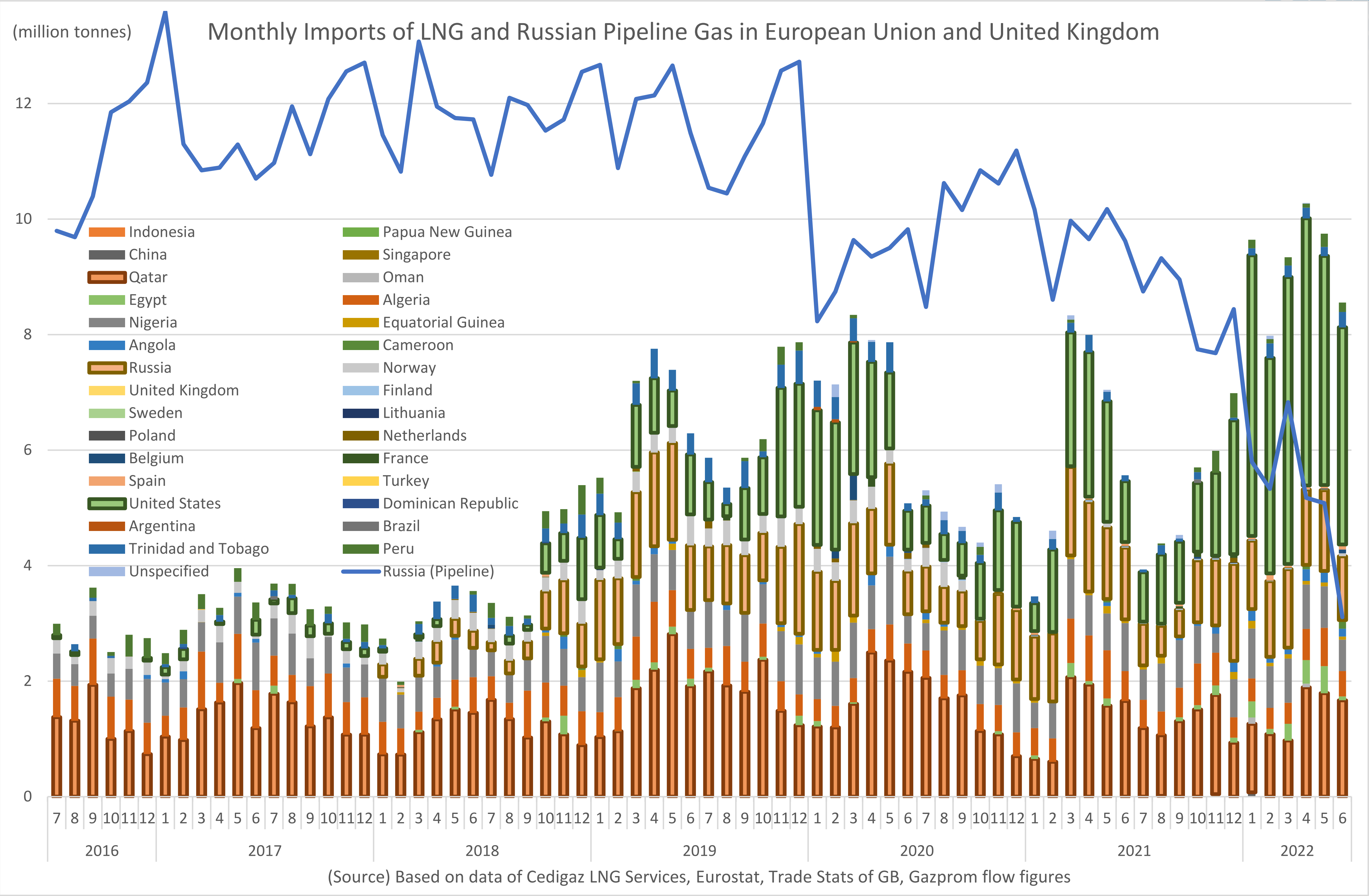

million tonnes
Changes in LNG Exports by Major Producers in the Half of the Year
2016
2017
2018
2019
2020
2021
2022
(Source) Compiled by the author based on Trade Statistics and data of Cedigaz LNG Services
12
10
8
6
4
2
0
-2
Qatar
Australia
United States
Russia
Malaysia
Nigeria
Trinidad and Tobag
Algeria
Indonesia
Oman
Brunei
Norway
Abu Dhabi
Angola
Peru
Egypt
Equatorial Guinea
Cameroon

LNG Importers and Exporters in 2021

Source: based on data of GIIGNL

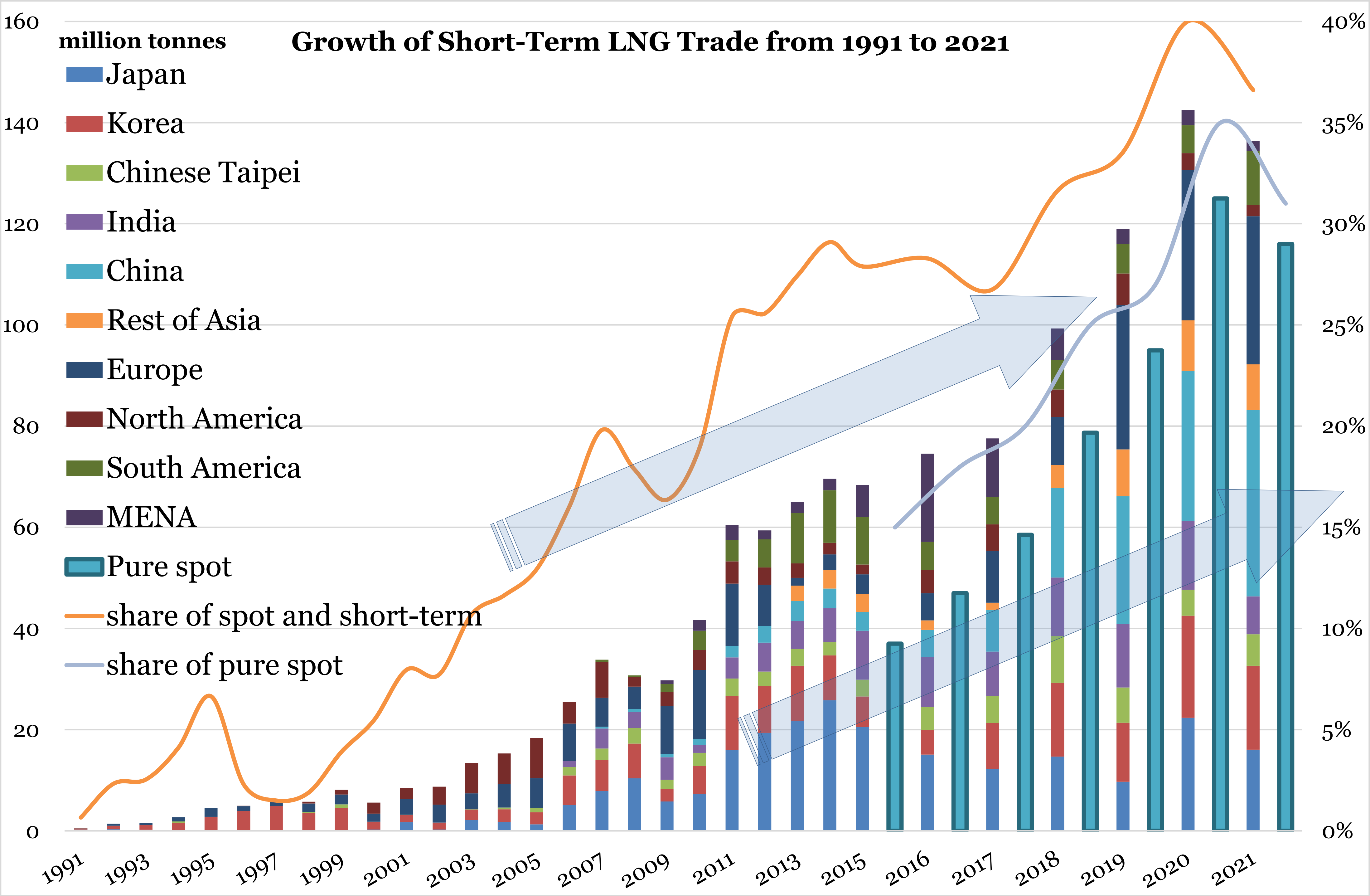


Europe's great shift to LNG



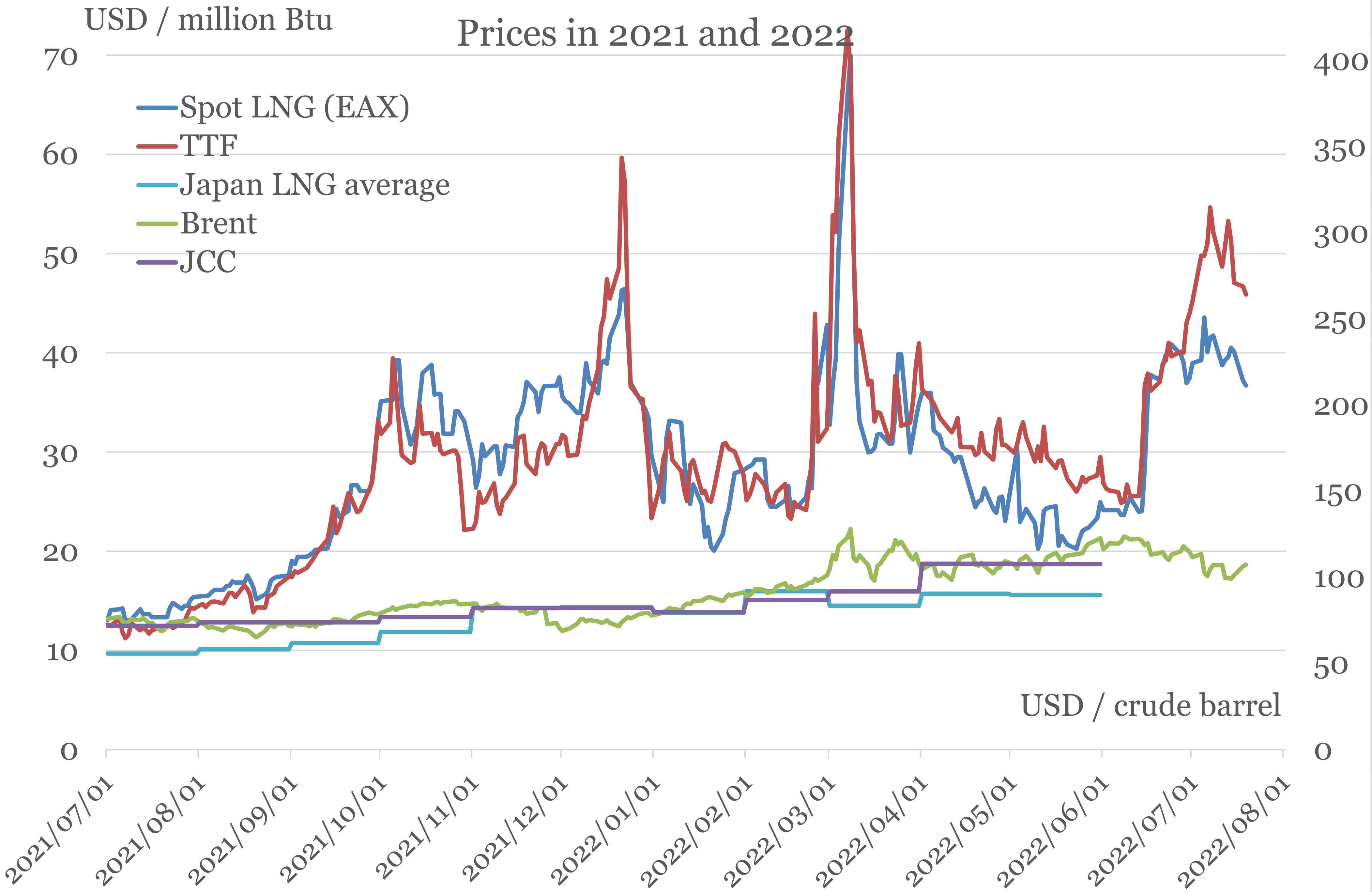
Short-term and spot LNG volumes did not grow in 2021

Source: based on data of GIIGNL

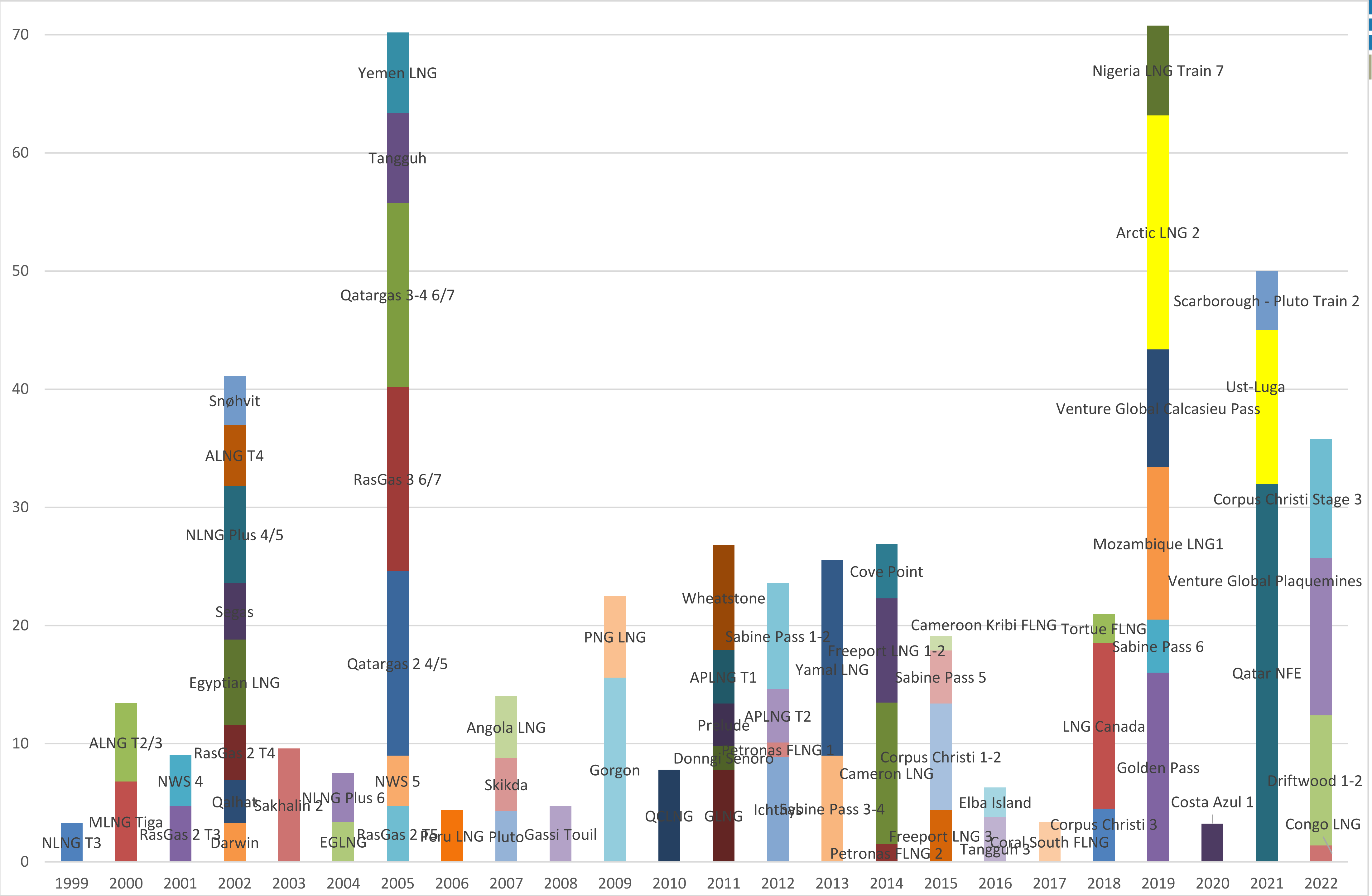


LNG prices are the highest in the history

Source: based on data of exchanges and ICIS

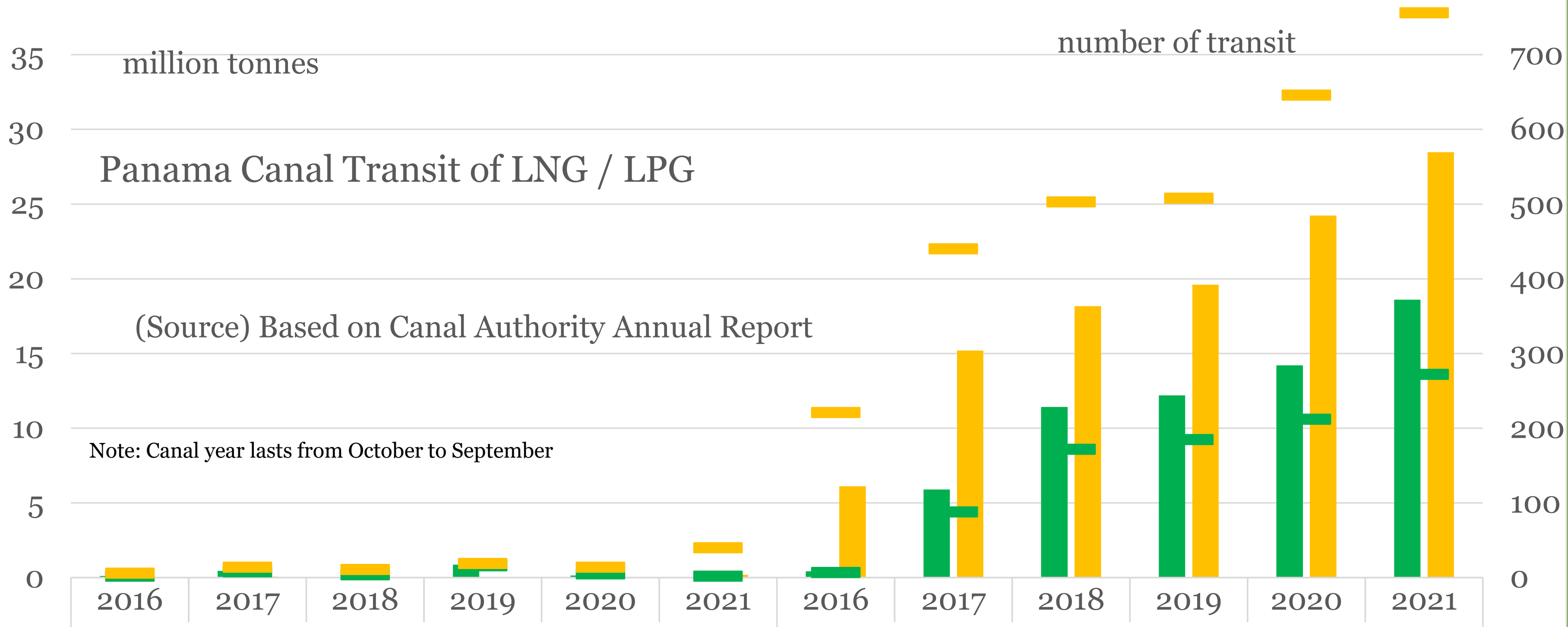


Uncertainly Continues on Investment and project realisation



(Source) Based on company information

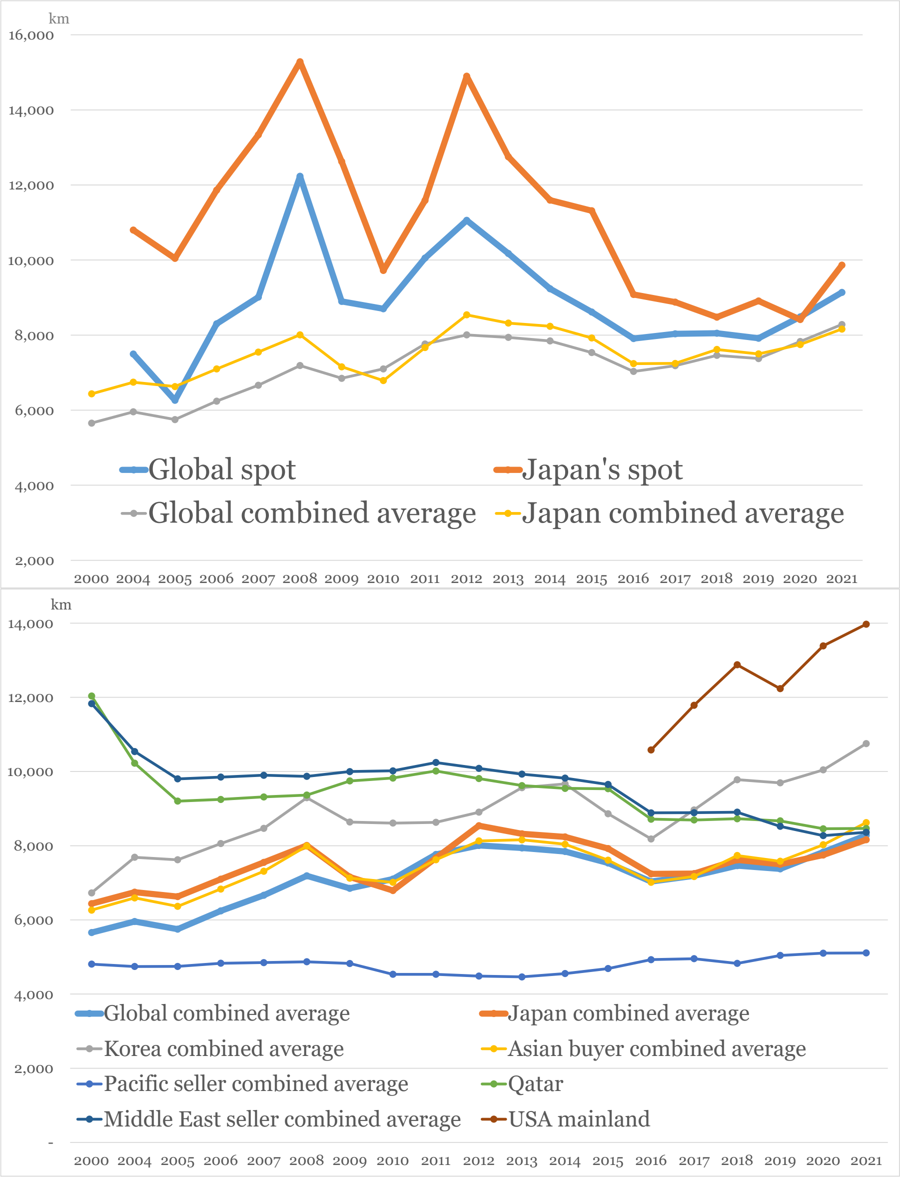
Panama Transit Grows Steadily



	Northbound (Pacific to Atlantic)						Southbound (Atlantic to Pacific)					
	2016	2017	2018	2019	2020	2021	2016	2017	2018	2019	2020	2021
LNG Tonnes	0.12	0.46	0.06	0.87	0.15	0.02	0.43	6	11	12	14	19
LPG Tonnes	0.05	0.08	0.06	0.05	0.06	0.20	6	15	18	20	24	28
LNG Transit	2	8	4	16	5	2	7	88	172	185	212	272
LPG Transit	6	14	11	19	14	40	221	440	503	508	646	756

- Panama transit is the preferred route from Gulf of Mexico to Asia
- LNG and LPG transits have expanded quickly after canal expansion
- Nearly one laden LNG transit per day lately
- The authority has expressed intension to expand LNG traffic

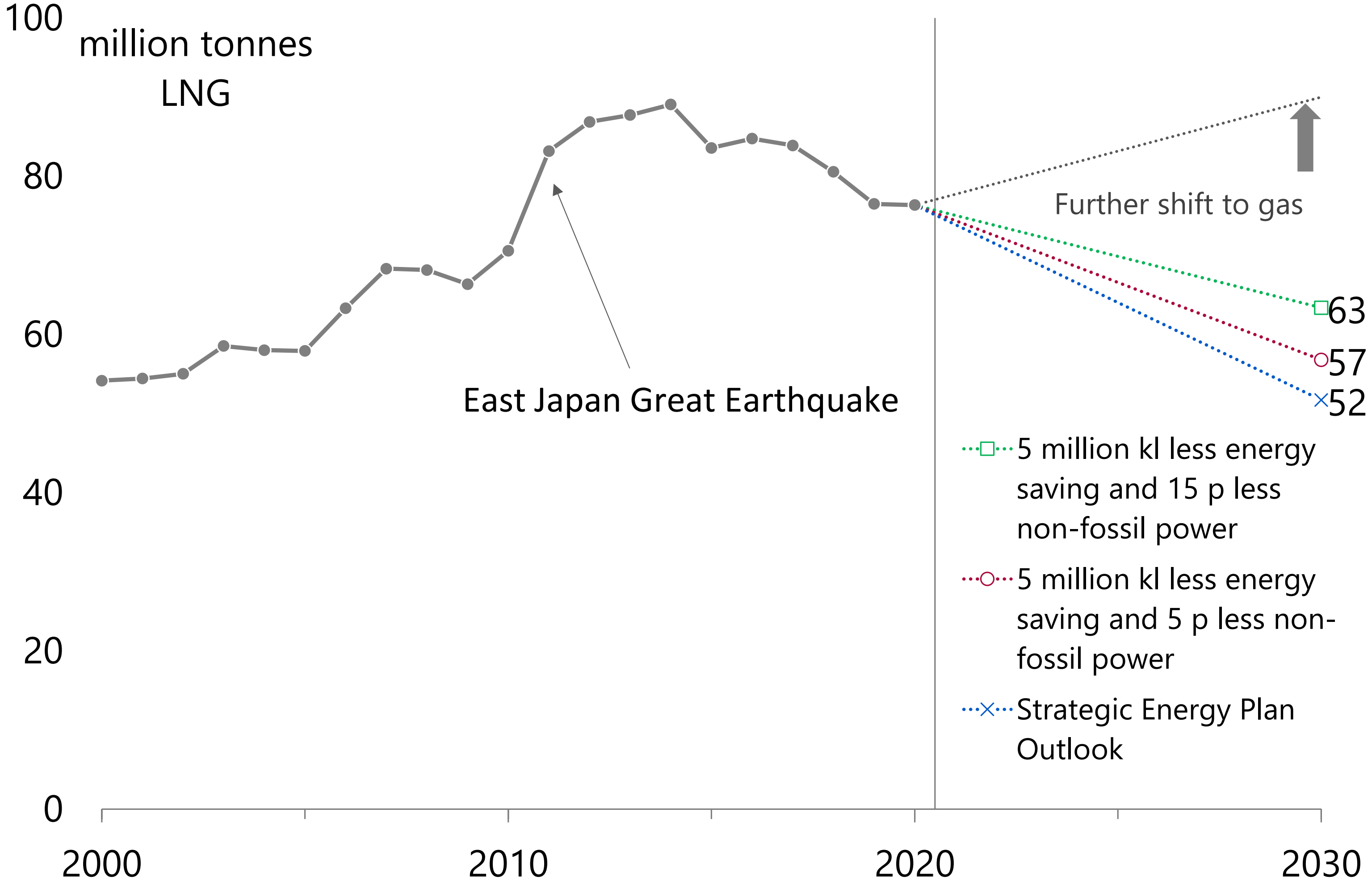
LNG Transportation Distances Are Longer When Demand Surges



- Spot and short-term transportation distances have been longer
  - ✓When Japan suddenly imported more cargoes to fill the gaps caused by lost nuclear power in 2007-2008 and 2011-2014
  - ✓With more cargoes were transported from West Africa and South America, as well as Qatar and other Middle Eastern sources
- Overall LNG transportation distances have stabilised in recent years
  - ✓However, LNG from USA travels longer
  - ✓As volumes are expected to increase, more optimization of transportation is desirable

(Source) Based on trade data from GIIGNL and shipping distances between countries

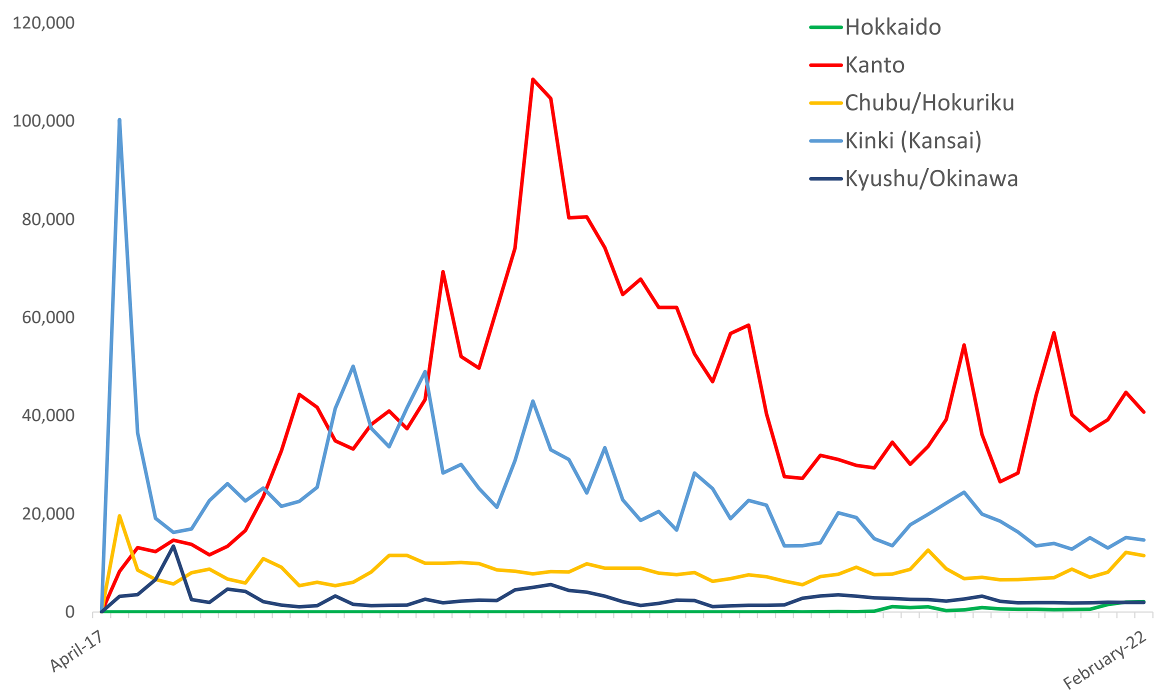
Strategic Energy Plan - Implication on LNG

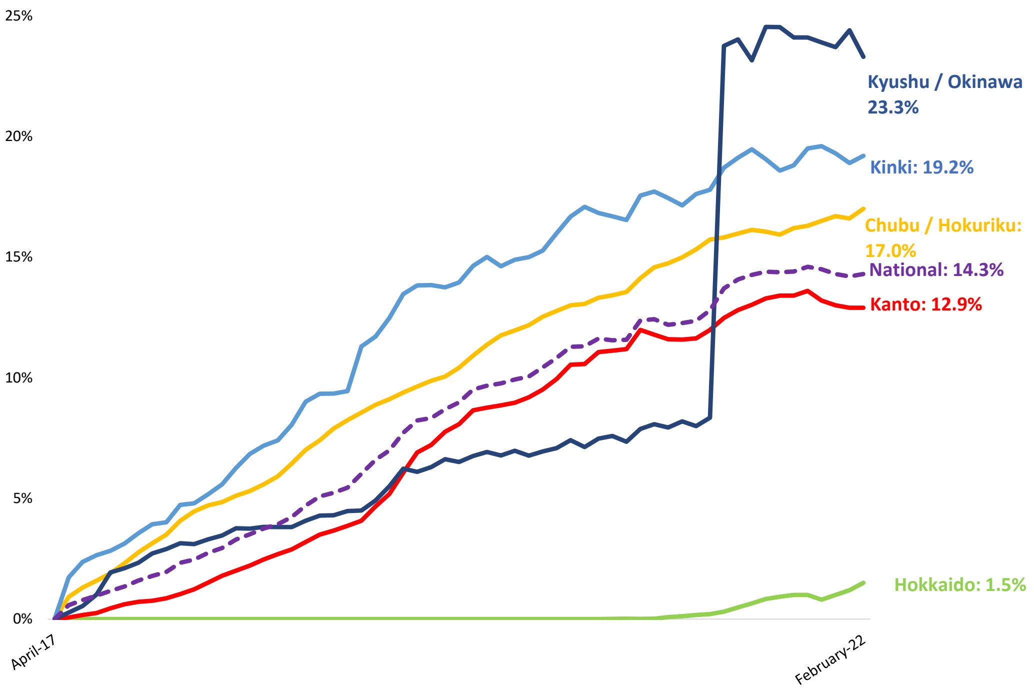


(Source) IEEJ Outlook 2022, October 2021

- Ambitious GHG reduction goal - 62 million kl crude oil equivalent energy savings and 59% share of non-fossil power generation accompanied with significant reduction of LNG requirement.
- But if the energy saving performance falls short by 5 million kl and non-fossil power falls short by 5 p - 15 p percentage points, LNG import demand should go up to 57 - 63 million tonnes from the base case of 52 million tonnes. Further shift to gas should add more LNG demand (up to nearly 90 million tonnes).
- In order to take care of fluctuation in LNG demand, especially in the power generation sector, substantial flexibility in LNG supply will be more important.
- Contractual flexibility, including destination flexibility and elimination of destination restriction may not be sufficient.
- In addition to securing more medium-term deals from flexible LNG supply sources, basic demand with certain prospects should be covered by term contract with relatively longer durations with more competitive conditions. Not only contractual commitment (from suppliers) but also effective physical control of LNG volume and logistic management, accompanies by third-party marketing ability should be more important.

Progress of Gas Retail Competition





(Source) Compiled by the author based on data from the METI

- Cumulative residential customer switchings had reached 4.61 million by February 2022 since the opening up for competition in April 2017. Recently more switching-backs to the incumbent retailers have been observed.
- Competition has been the fiercest in Kanto and Kinki (Kansai) where 13.68 million and 6.44 million retail customers subscribe to gas services, respectively.

Focal Points - Japan and Internationally

- 2022/2023 Northern Hemisphere winter market balance is again expected to be tight and highly dependent on weather and LNG production performances
- Low inventories at the end of 2021/2022 demand season (March) in Europe maintains firm prices from early 2022 around the world
- Players move earlier to procure volumes (to take care of loss of Russian supply)
- More long-term deals are expected as players assess demand in detail
- Players are exploring ways to secure upstream investment as the role of LNG will regain more importance
- Ways of finding more appropriate spot prices should be reviewed
- More mutual influences between regions and energy sources are observed
- Ways of energy transition should be carefully examined
- Changes of recognition and more understanding of natural gas by general public should be carefully analysed