

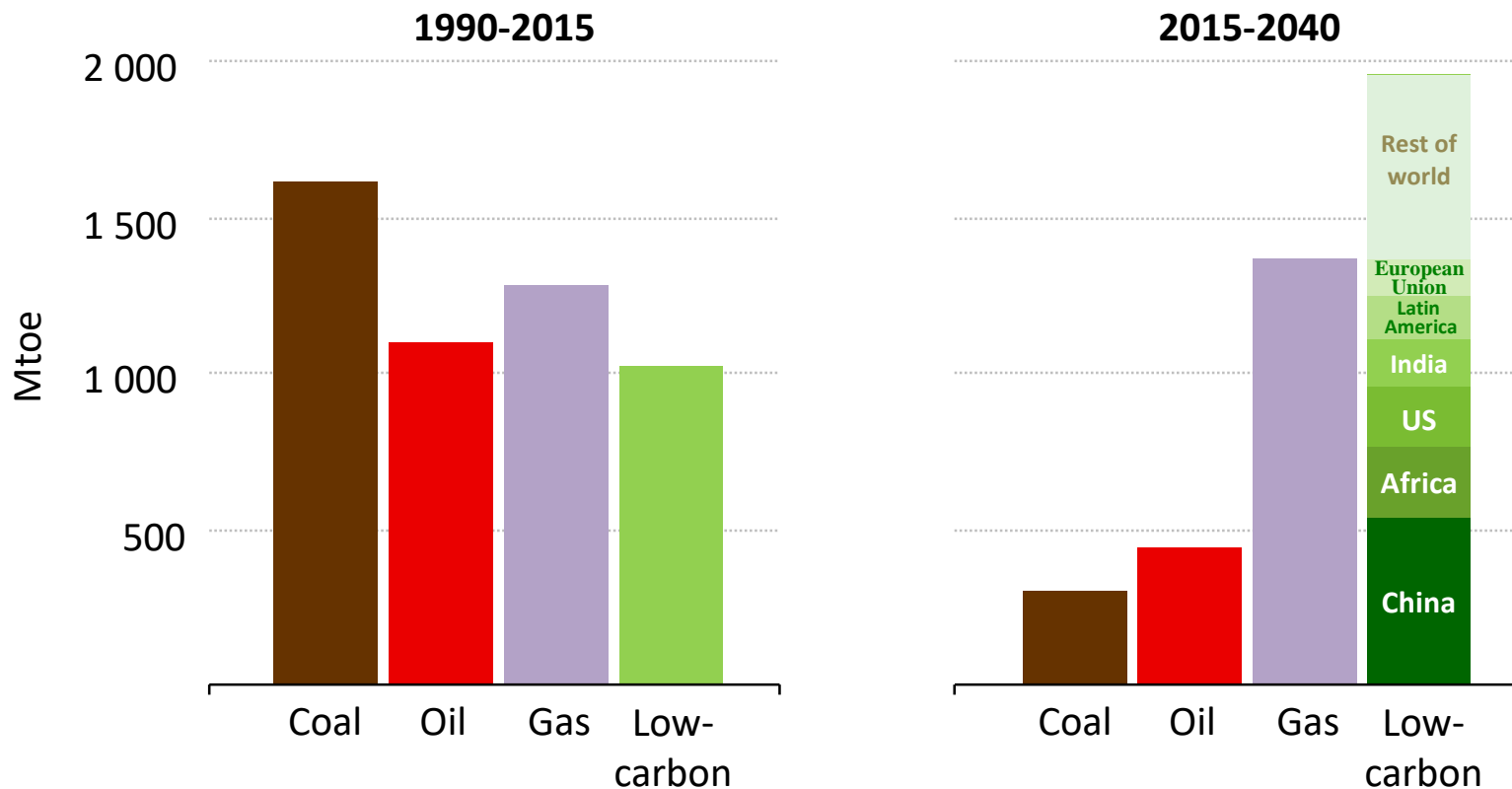
# Gas Security

Keisuke Sadamori, Director

International Gas Summit  
Nice, 28 November 2016

# A new 'fuel' in pole position

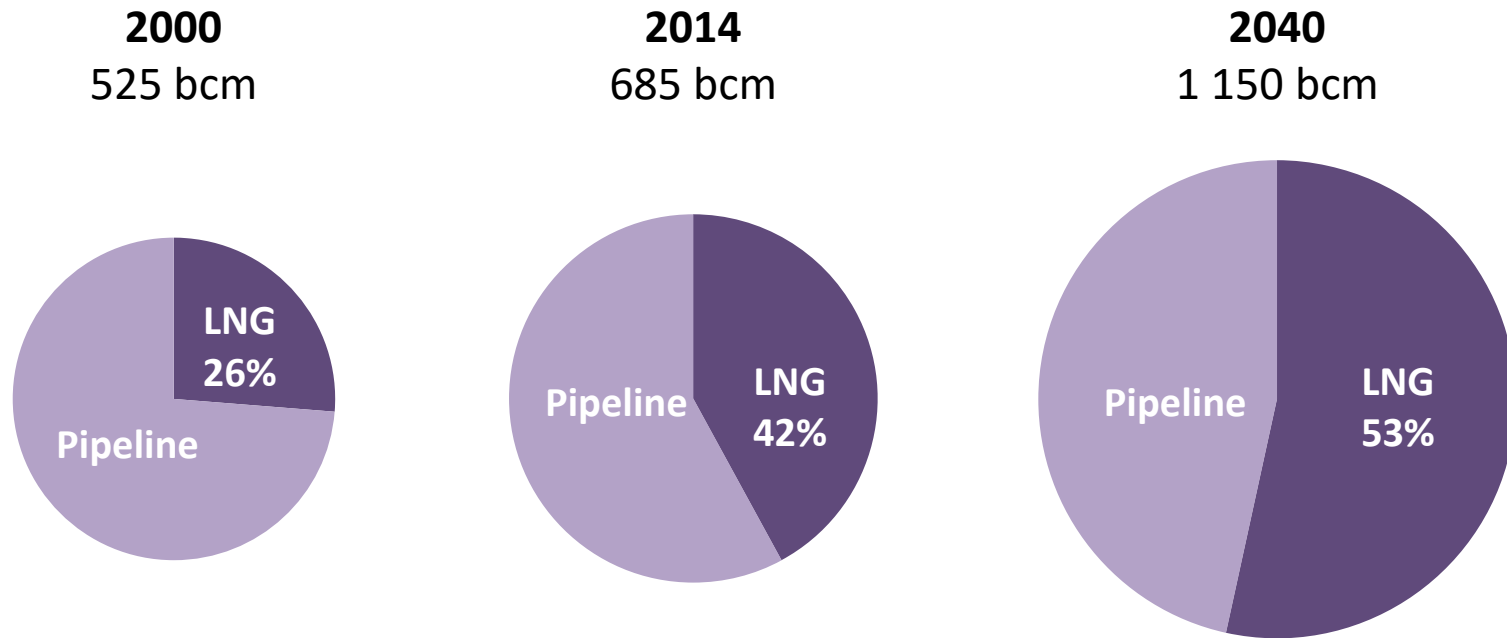
## Change in total primary energy demand



***Low-carbon fuels & technologies, mostly renewables, supply nearly half of the increase in energy demand to 2040***

# A wave of LNG spurs a second natural gas revolution

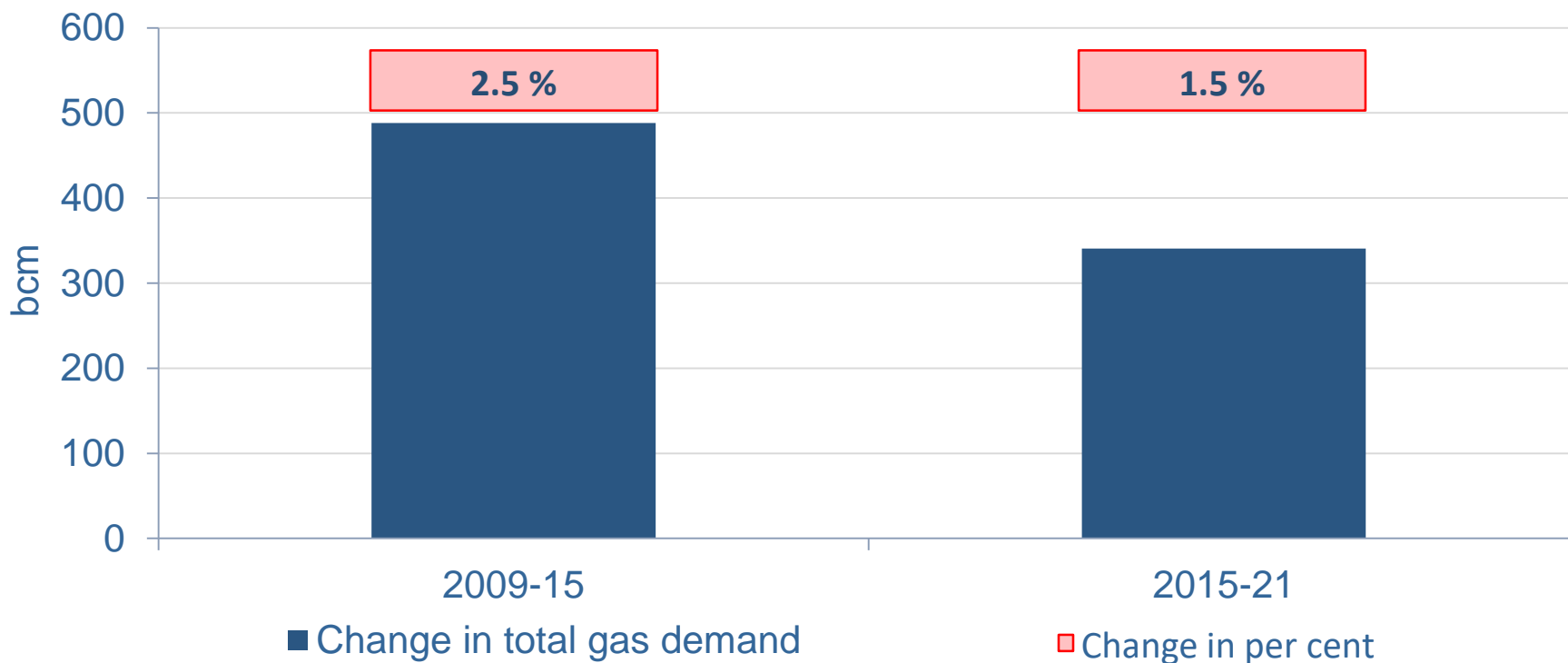
## Share of LNG in global long-distance gas trade



***Contractual terms and pricing arrangements are all being tested as new LNG from Australia, the US & others collides into an already well-supplied market***

# Growth in global gas demand slows

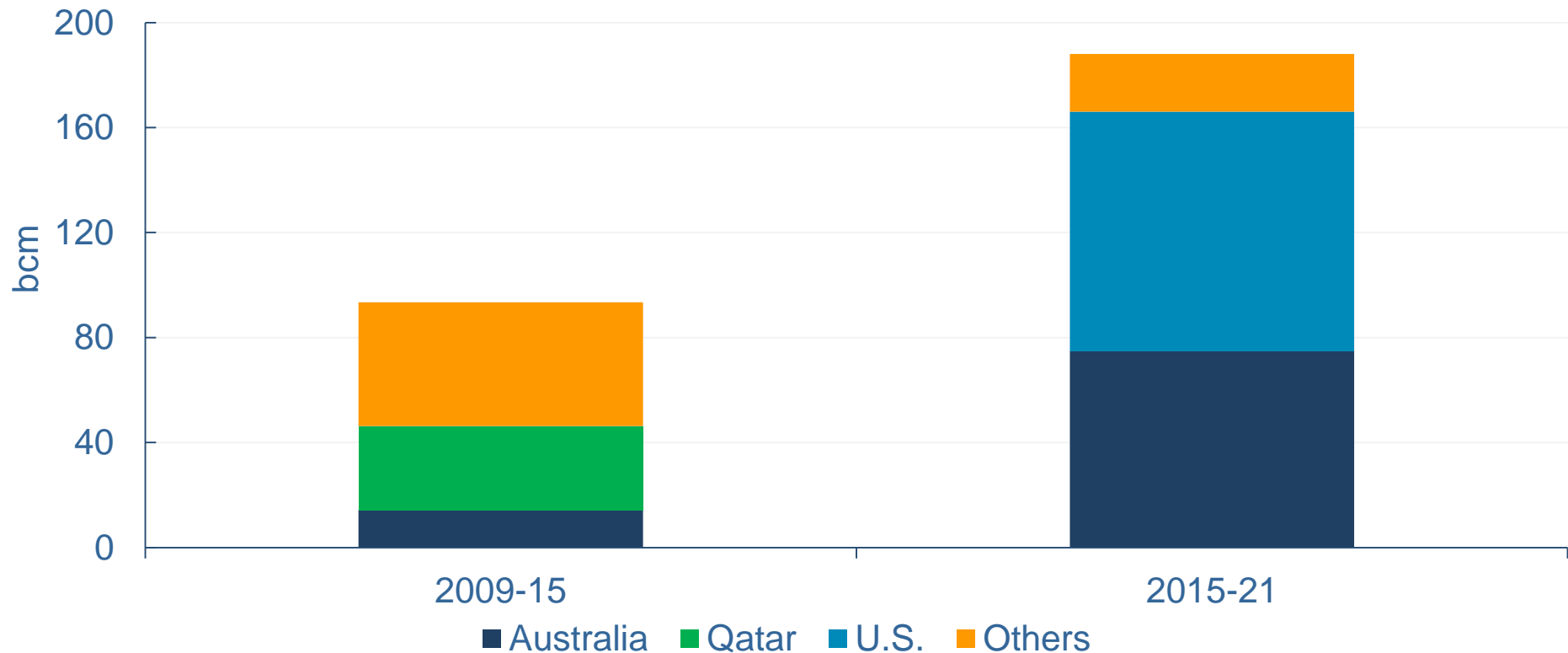
## Change in world natural gas demand



***Growth in gas demand slows as it faces greater competition in the power sector; yet it is the only fossil fuel that does not suffer a decline in its share of the energy mix***

# Global LNG export capacity increases sharply

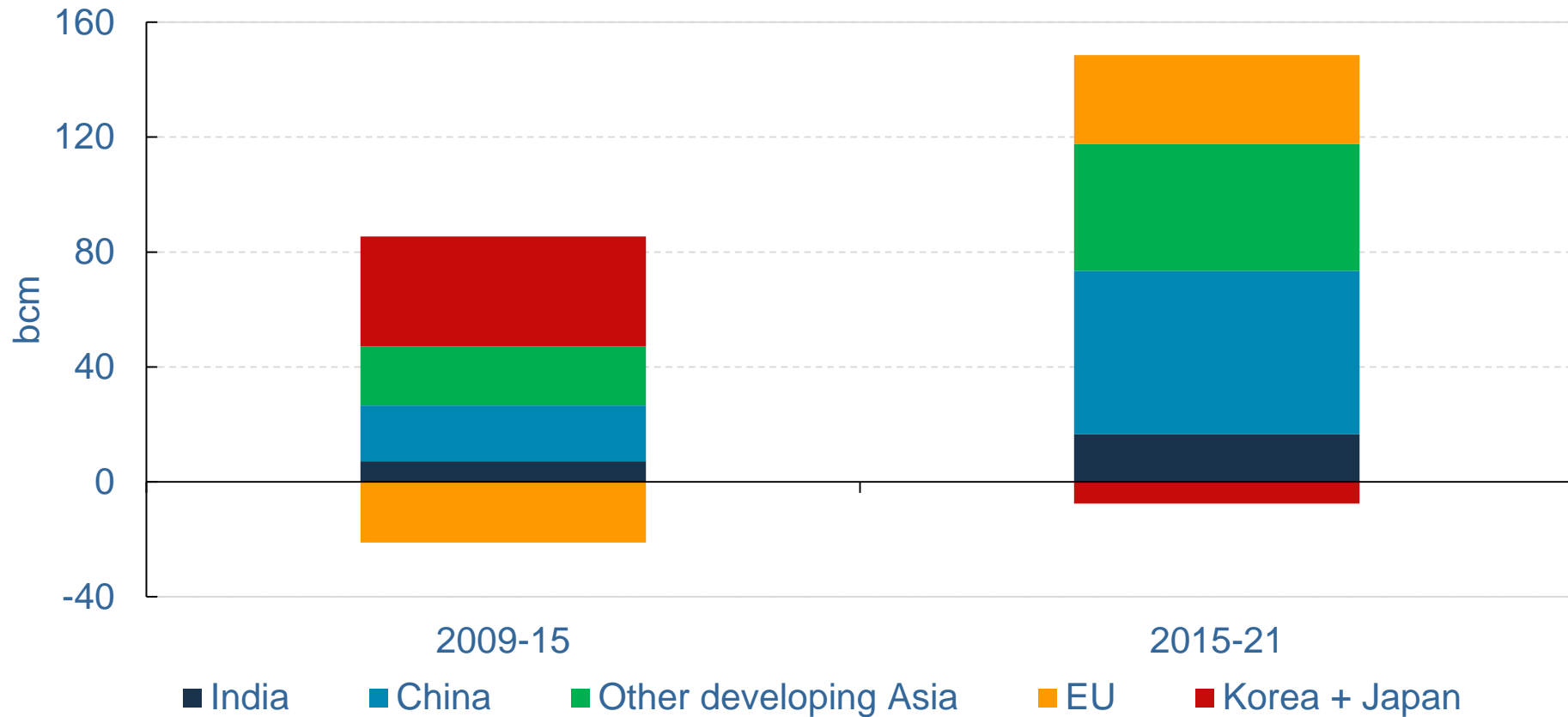
## Liquefaction capacity additions



***LNG capacity additions will be led by the US & Australia over the next five years; projects in Canada & East Africa could also move ahead if demand & prices recover***

# Developing Asia emerges as key engine of LNG import growth

## Change in LNG imports by region



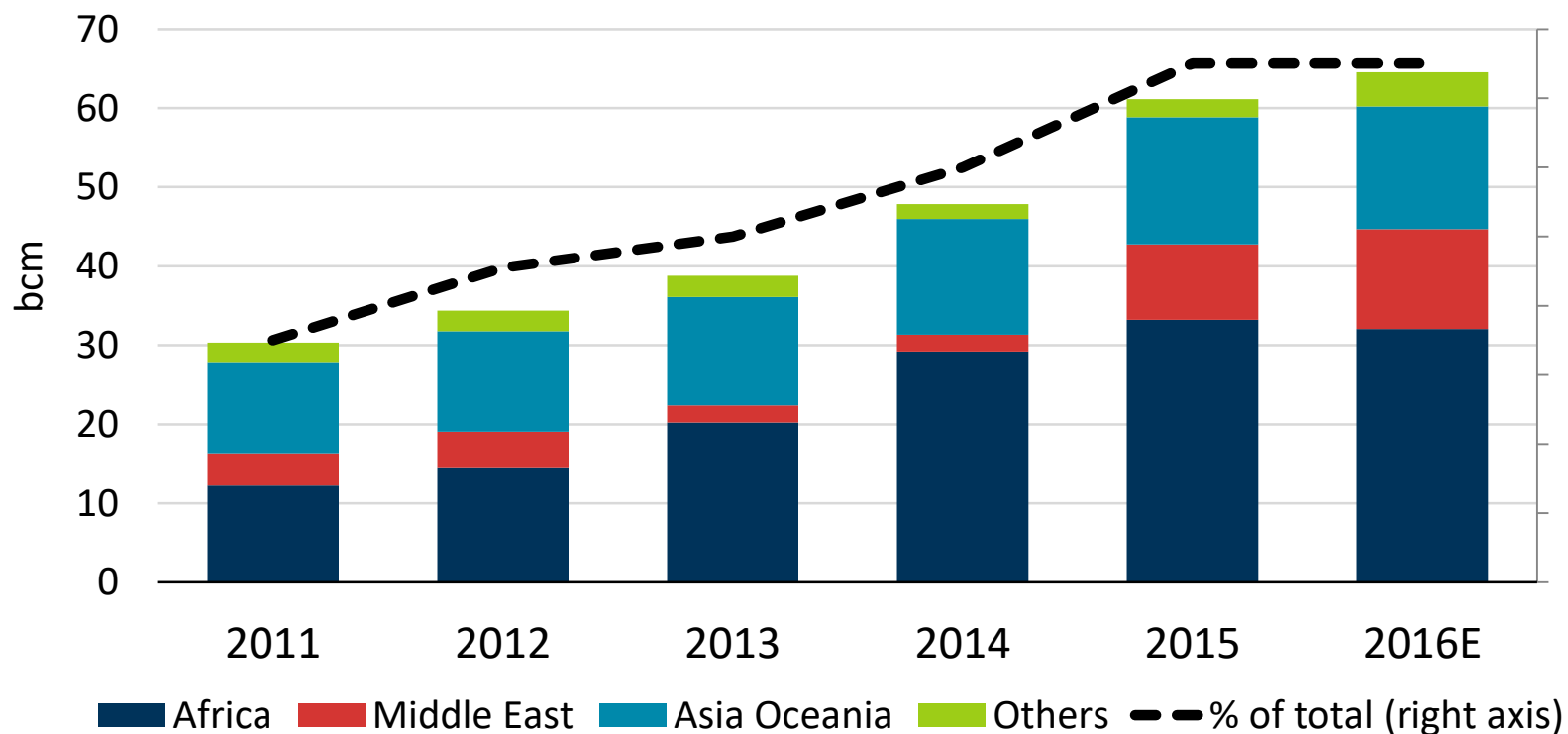
***As imports from Japan & Korea are set to decline, the rebalancing of global markets will depend on the rate of expansion in China & other developing Asia***

# IEA's Global Gas Security Review

- Gas is playing an increasingly important role in the energy mix
- Well supplied markets does not mean gas security can be taken for granted
  - *As markets become more interconnected, shocks in one region can quickly spread*
  - *Disruptions are arising from poor regulation, geopolitical crises & natural disasters*
- In response, the IEA is broadening its role on energy security to include gas
  - *This follows mandates from 2015 IEA Ministerial & G7 under Japanese Presidency*
- IEA will conduct “resiliency assessments” & bring data/analysis to market participants to boost transparency, including:
  - *outages by type & region*
  - *flexible & uncontracted LNG volumes*

# LNG markets have less “surge” capacity than commonly thought

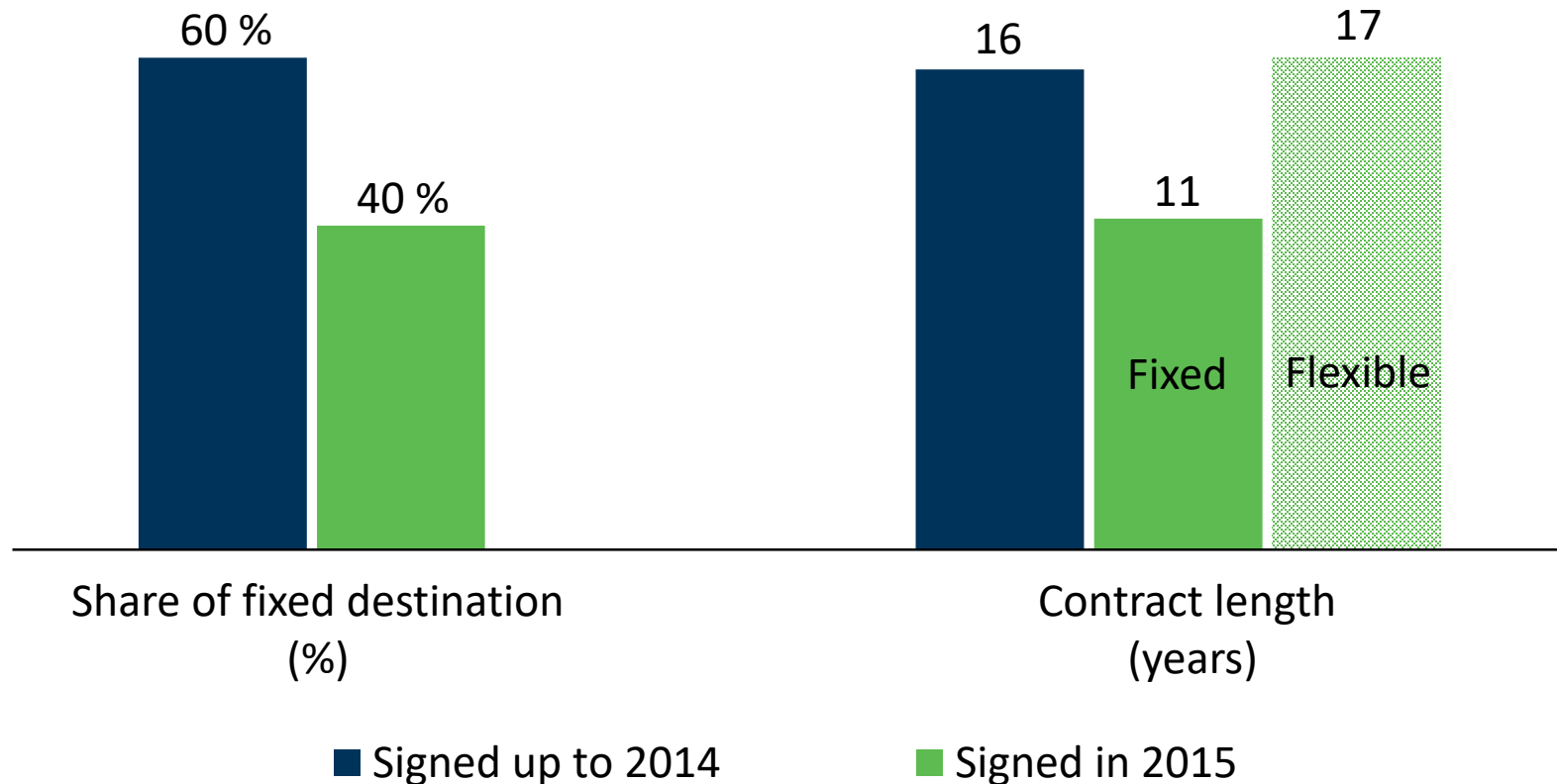
## LNG capacity offline by region



***LNG capacity out of service has doubled over the past five years to 15%, highlighting security & investment challenges in key producer countries***



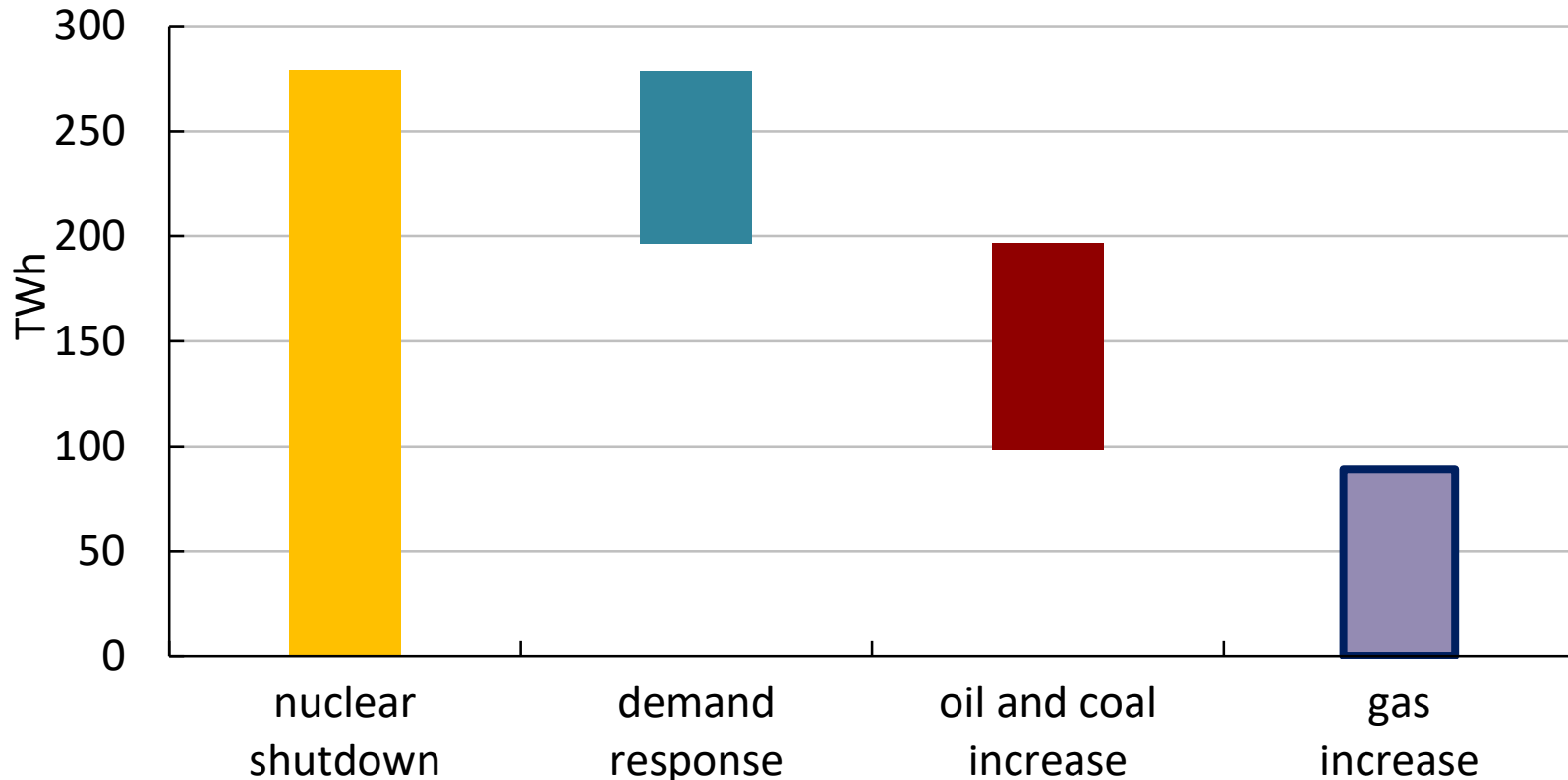
# But LNG contract structures are becoming less rigid – increasing market efficiency



***Contracts with flexible destinations & shorter terms are becoming more common; buyers will accept longer contracts in exchange for increased destination flexibility***

# Flexible LNG volumes played a role in safeguarding energy security after Fukushima

Power system response to Fukushima 2010-13\*

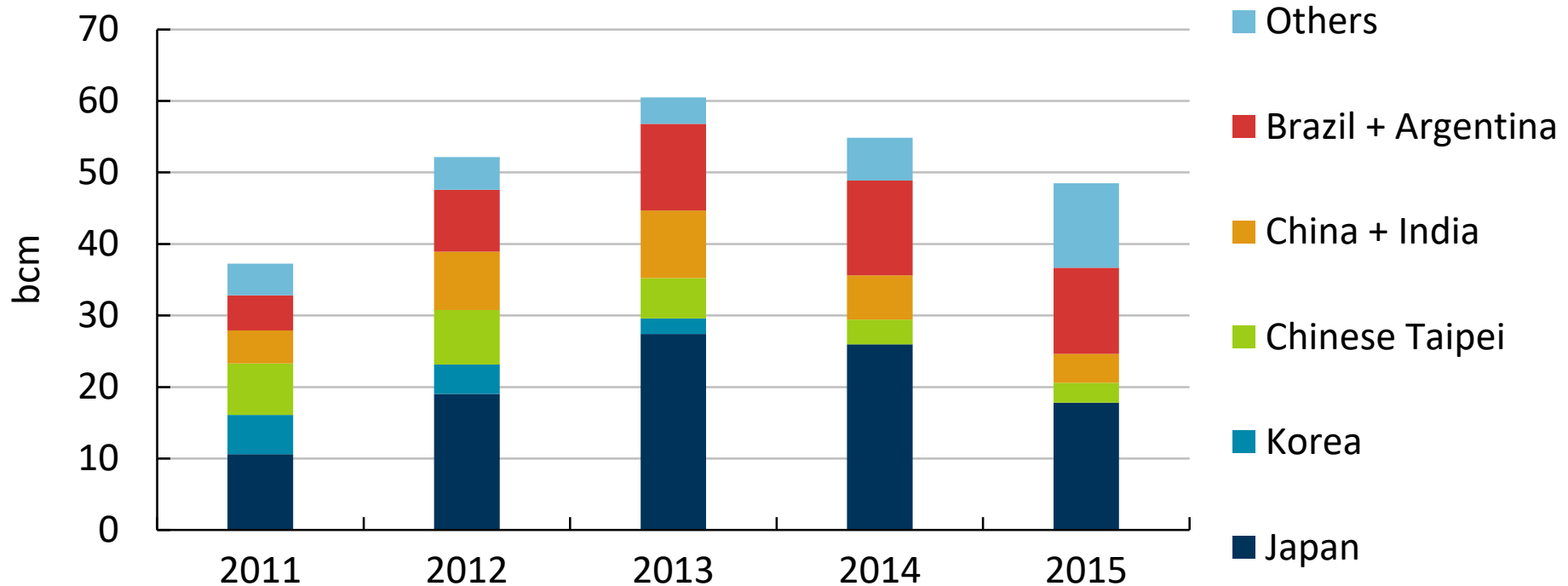


\*data refers to Japan's Fiscal Year.

***Gas replaced one-third of the nuclear loss, similar to the contributions of oil and coal, highlighting the importance of a diversified demand-structure***

# Demand for flexible LNG volumes remains above pre-Fukushima levels

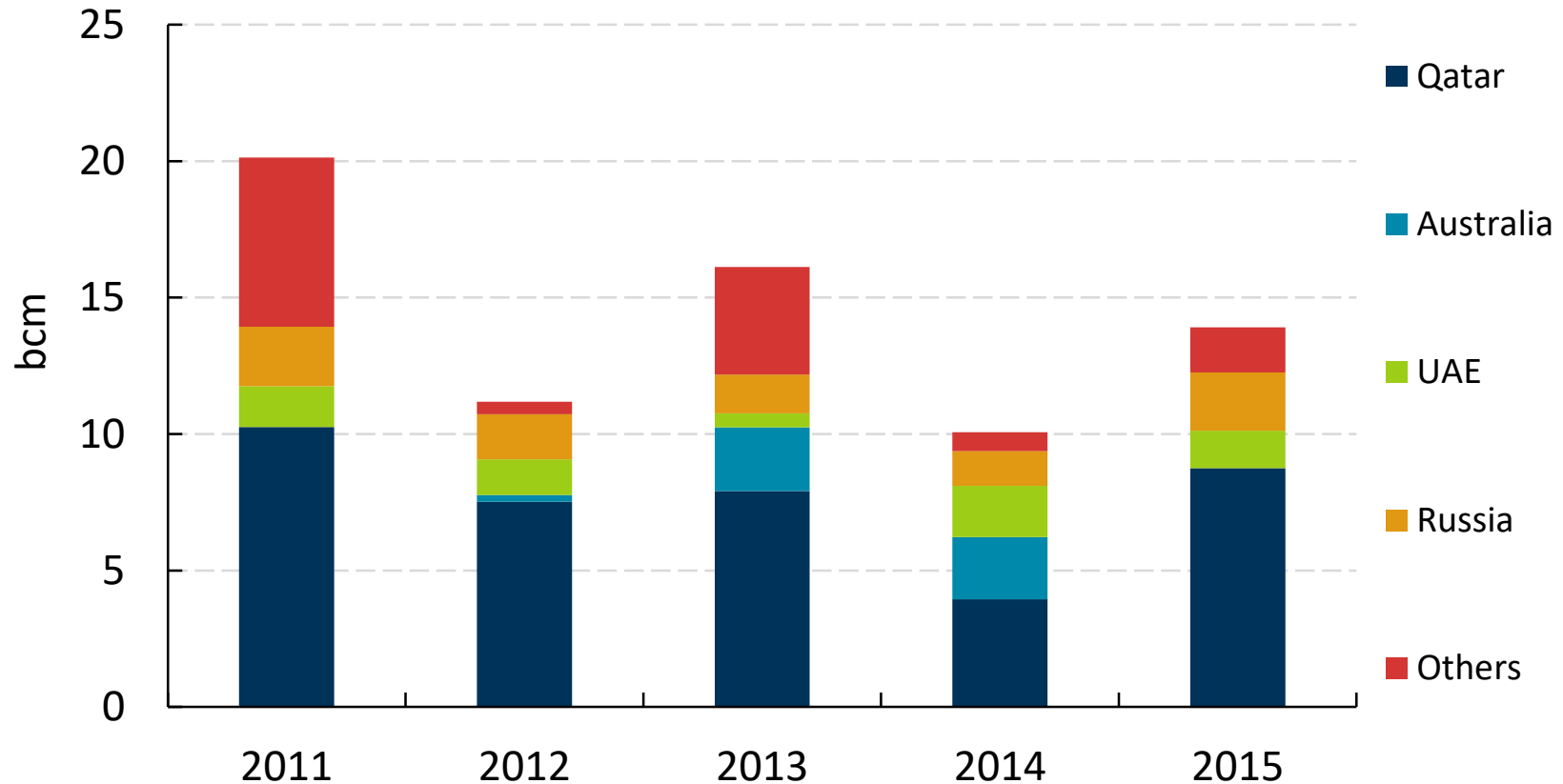
## Demand for flexible LNG volumes



***Demand for flexible LNG volumes peaked in 2013 at around 20% of global LNG trade; new buyers are offsetting some of the slack left by Japan***

# Qatar plays a pivotal role in LNG security

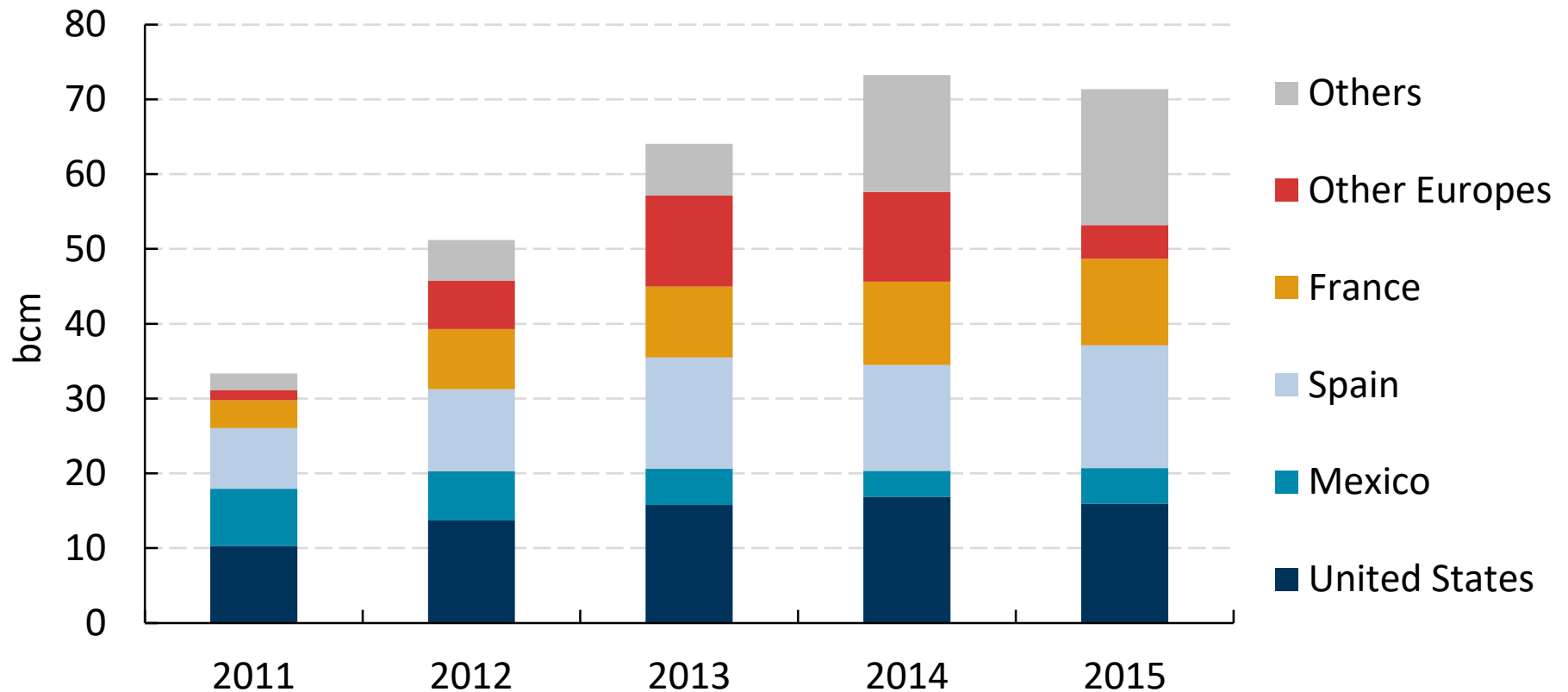
## Uncontracted volumes by exporter



***Qatar provides more than half of global uncontracted LNG volumes; Flexibility comes from uncontracted LNG, diversions, re-loads & contracts with open destinations***

# Europe key provider of volume flexibility to the market

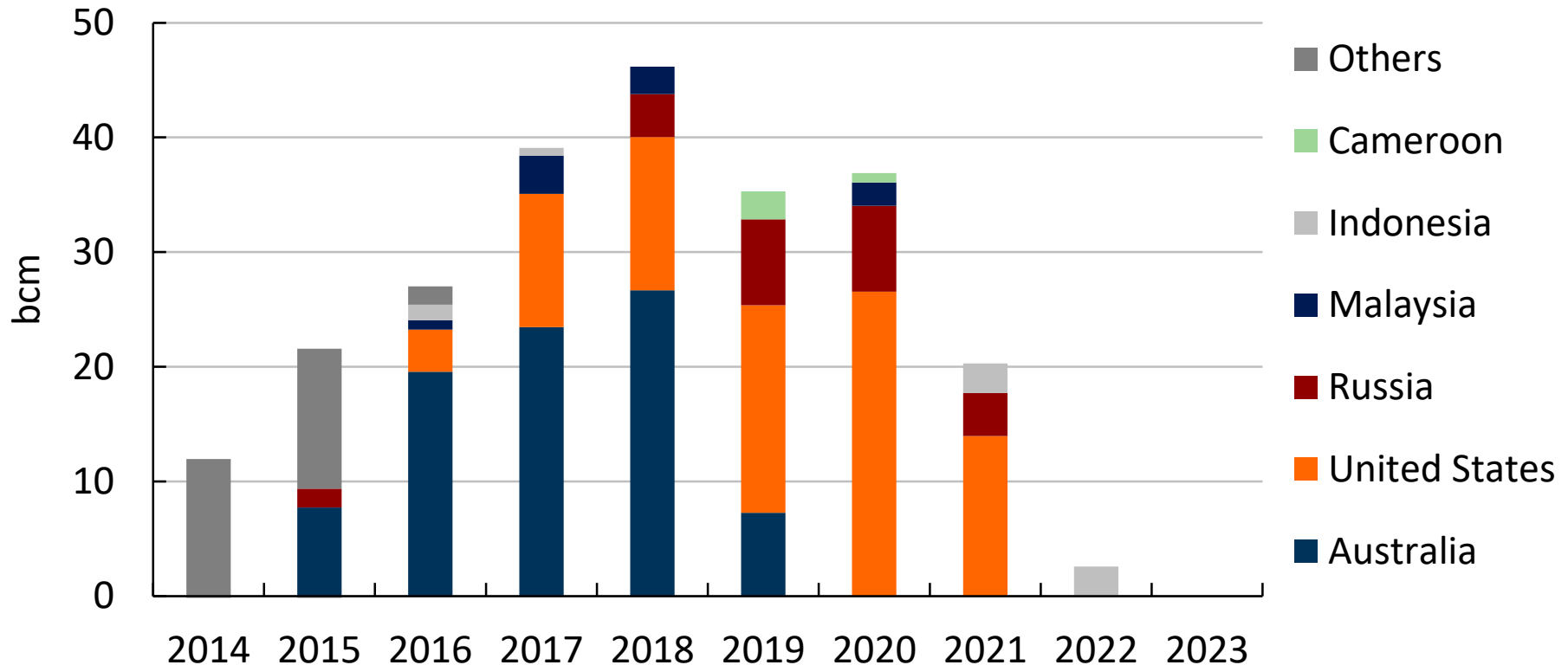
## Over-contracted position of LNG importers



***Europe and the United States have accounted for much of the flexibility provided by the demand-side over the past 5 years.***

# Lack of investments risk tightening the market next decade

## Incremental liquefaction capacity under construction



***By the early 2020's the current wave of new production additions will run out.  
New investments needed to avoid future market tightness.***

- Gas's share in the energy mix is set to increase
- A wave of new LNG capacity is prompting increased flexibility in contractual structures.
- Although contracts are becoming more flexible, the ability of LNG markets to respond to disruptions is not as great as many believe
- The keys to gas security are diversity of supply, the ability to “fuel switch” and robust infrastructure, including adequate storage
- The current downturn in LNG investment puts the prospect of tighter markets on the horizon
- The IEA will pursue its mandate on gas security by conducting “resiliency assessments” & improving market transparency