

# International Salt Trends to 2026

**WSS-18-093**

World Salt Symposium

19-21 June 2018

Wednesday 20 June at 1:00 pm Stein Eriksen Ballroom

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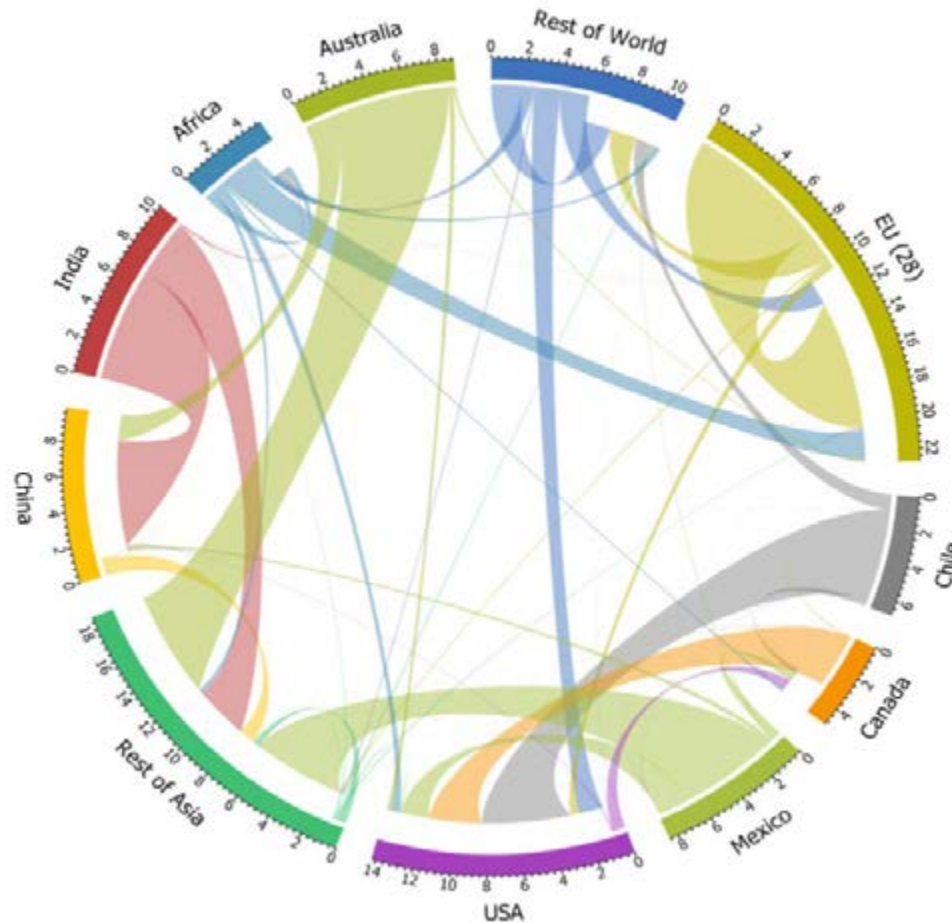
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# Global salt market to 2026

- Salt production
- Salt trade trends and demand drivers
- Roskill forecasts to 2026

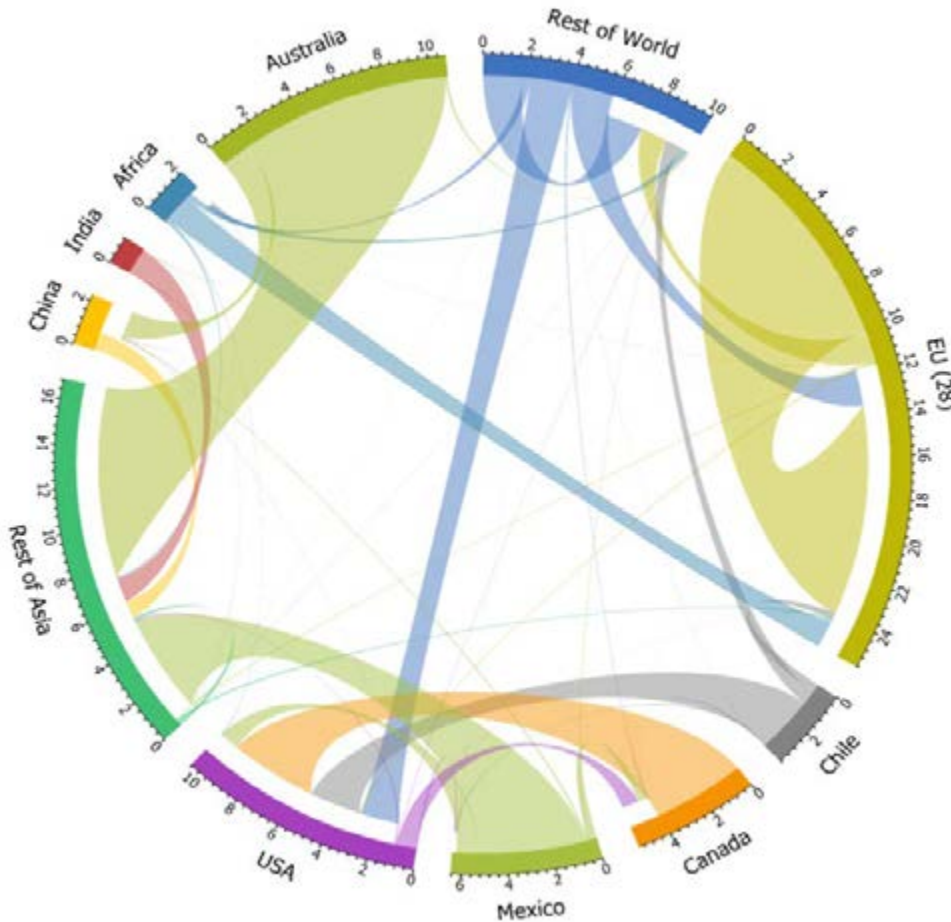
# Major trade flows of salt, 2017 (to Asia)



Source: GTT and Roskill

- The chloralkali industry is a major reason why China (and the whole of East Asia) is such an important destination for salt exports
- Australia, Mexico and India are the top salt exporters to Japan, China, South Korea, Taiwan, Indonesia
- Indian production has risen to support growth in exports, which grew from 2.1Mt to an estimated 11.8Mt (28%py CAGR) between 2010 and 2017

# Comparison with 2006 trade flows



Source: GTT and Roskill

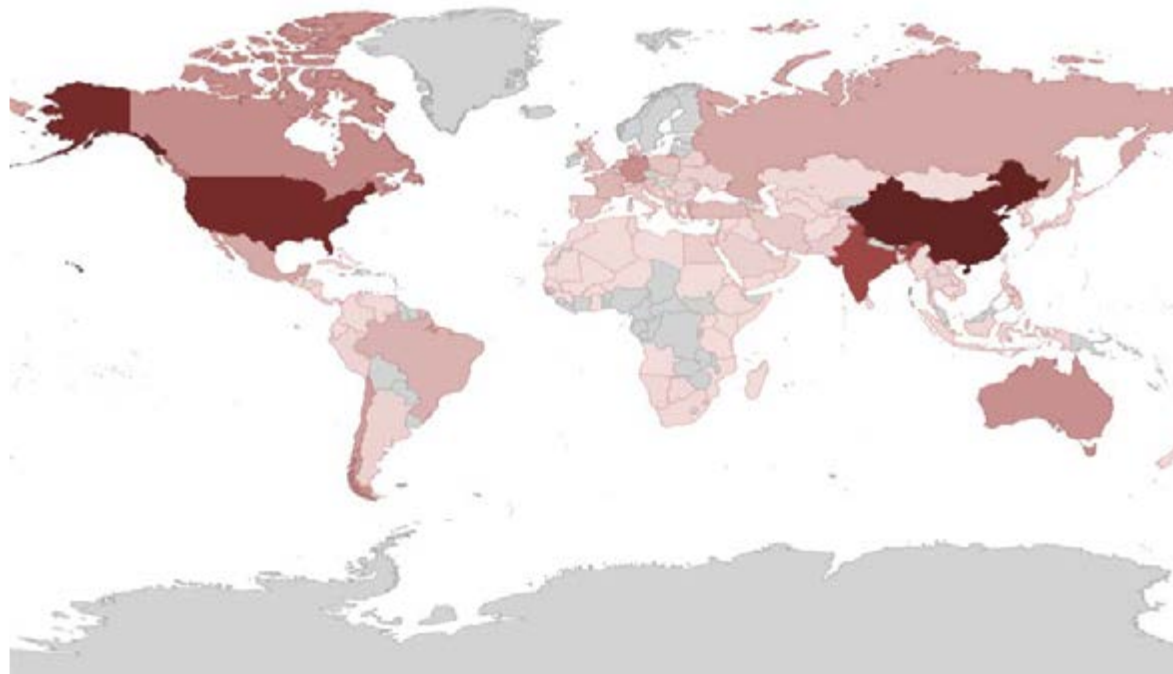
2006-2017 changes include:

- A BIG increase in exports from India, mostly destined for China
- An increase in exports from Australia to various Asian markets
- Some changes in market volumes of exports and imports in the Americas

# Why does salt-rich China import so much?

- Despite its position as the largest salt producer in the world, China still imported an estimated 8.5Mt of salt in 2017
- Q1 2018 reports suggest imports may reach 10.9Mt in 2018 - driven by the Chinese chloralkali industry's huge requirement for high-purity salt

**World: Relative salt production rates**

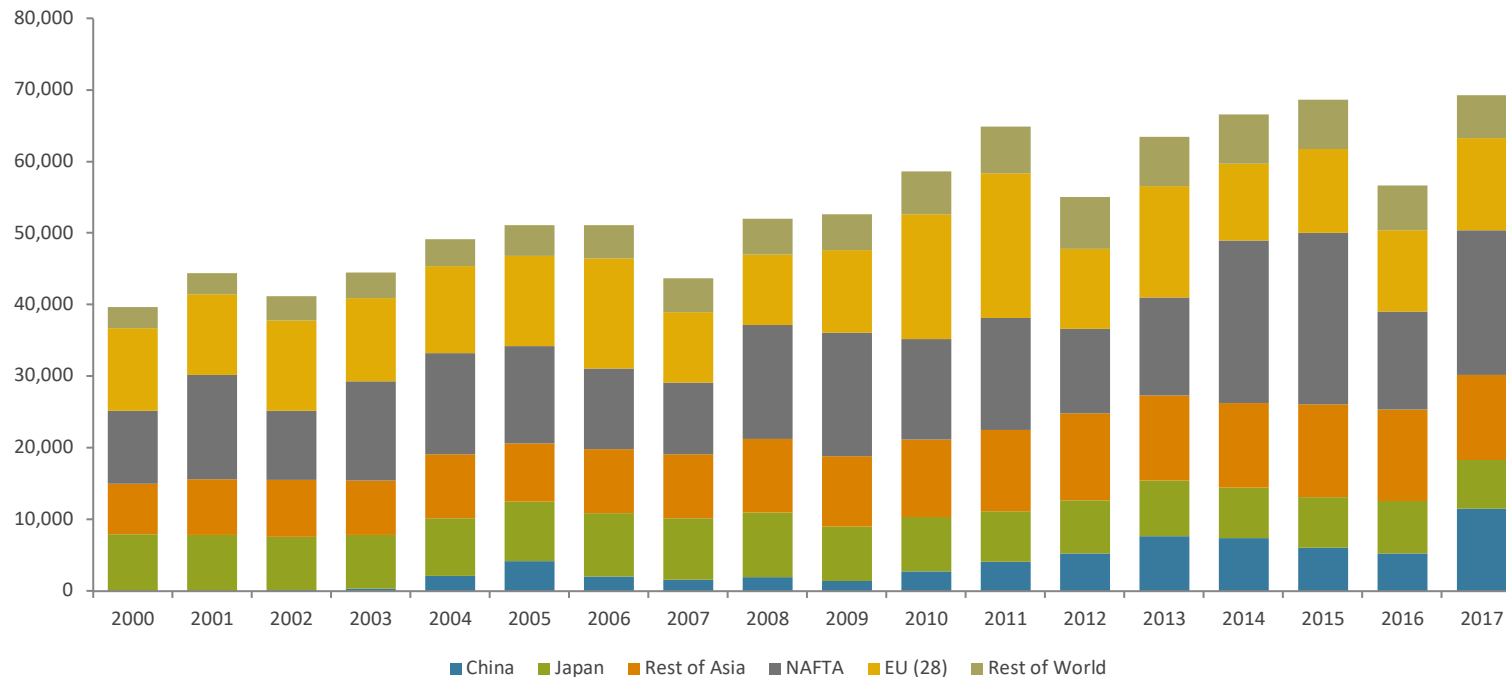


Source: Roskill

# Imports of salt

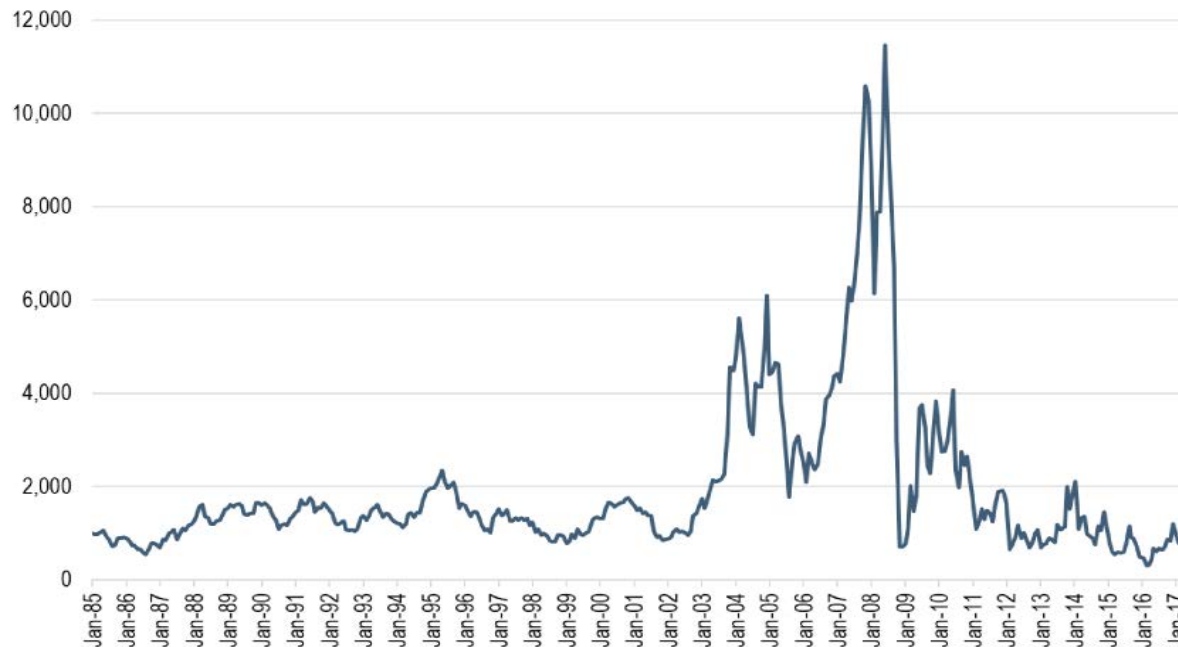
- Chinese salt imports have shown strong growth into Q1 2018
- Indian salt producers are now the most significant source for China!

**World: Imports of salt by leading countries, 2006-2017e (kt)**



Source: GTT and Roskill

# Baltic Dry Index, 1985-2017



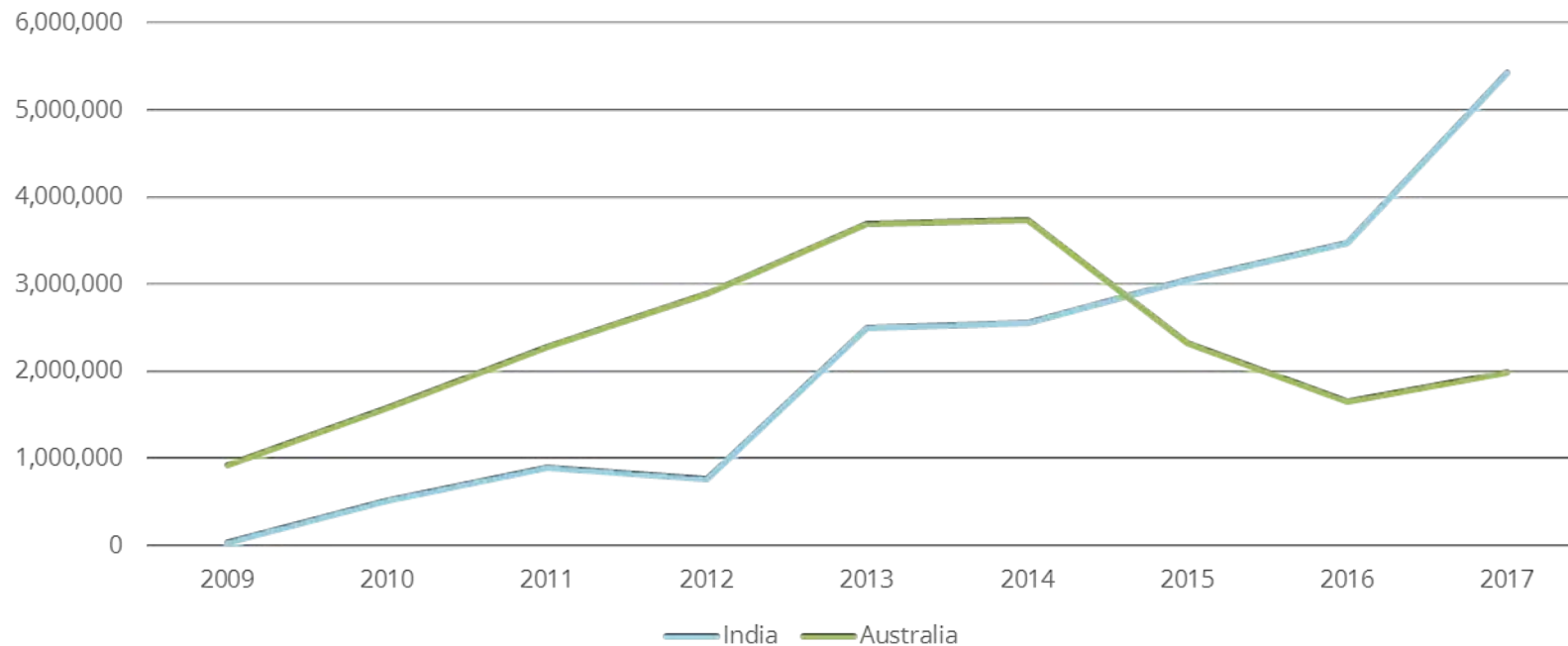
- Shipping rates are crucial for salt
- Shipping reached its lowest point in 2016 when reported bulk vessel shipping rates across the Atlantic Ocean were <US\$13/t for de-icing salt compared to US\$60/t in 2010
- This was during a period when freight rates were more than doubling the cost of shipping de-icing salt from Europe to the East Coast of the USA



# Chinese imports of solar salt

- Cheap shipping rates have facilitated high-purity salt transport from India to China
- India overtook Australia to become China's largest supplier of solar salt imports in 2015

**China: Salt imports from India and Australia, 2008 to 2017 (t)**

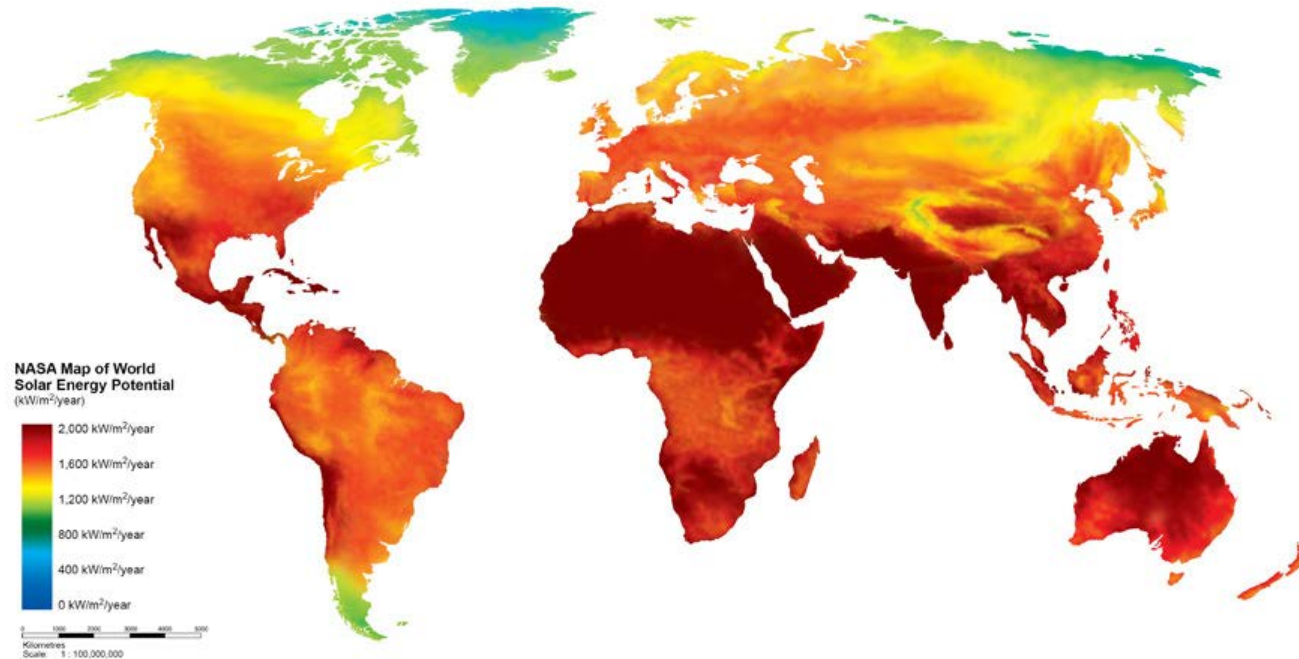


Source: GTT and Roskill

# Other potential solar salt producers

- Ideal conditions for solar salt production include:
  - access to a brine source/hot dry and/or windy climate, preferably with a predictable dry season
  - suitable clean area of flat land for construction of solar ponds

**World: Map of solar energy potential (kW/m<sup>2</sup>/year)**

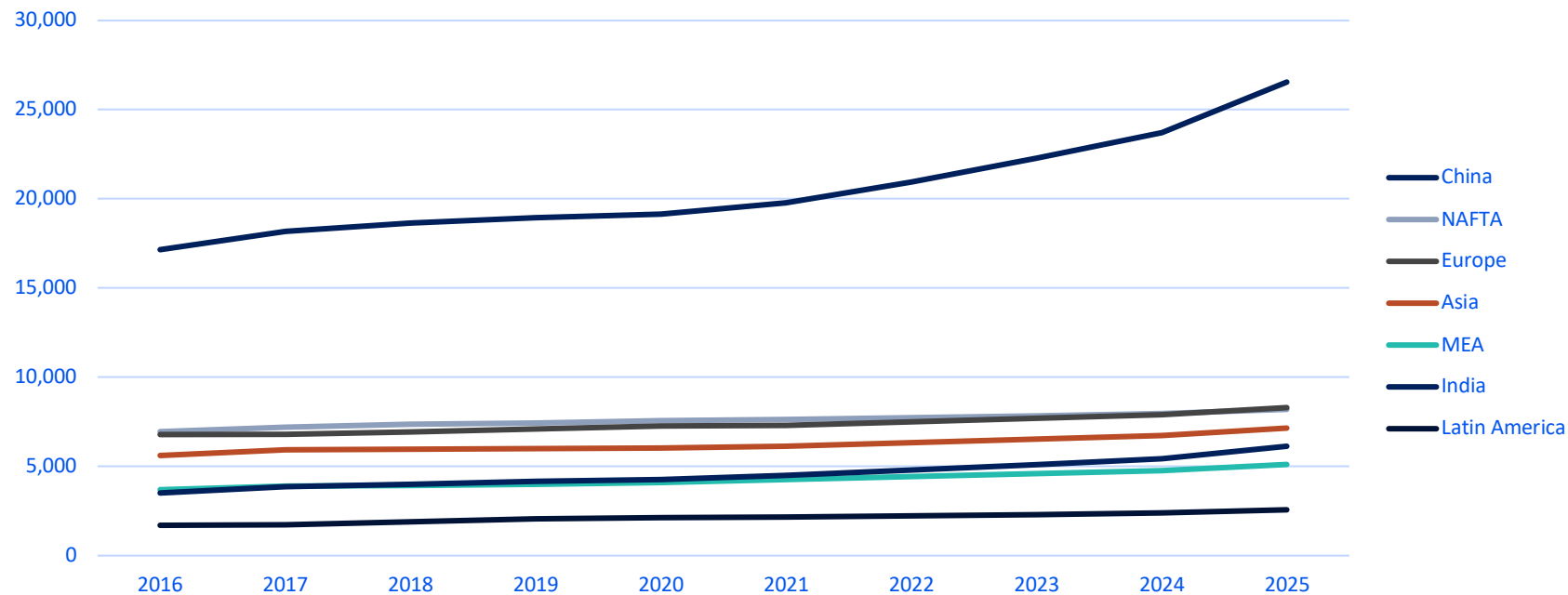


Source: NASA

# Drivers: PVC growth by region to 2025

- World demand for PVC is forecast to rise by 3.4%py between 2016 and 2025
- Chlorine capacity is sufficient to support the forecast rise in PVC demand but the operating rate is expected to increase from 75% to around 95% worldwide

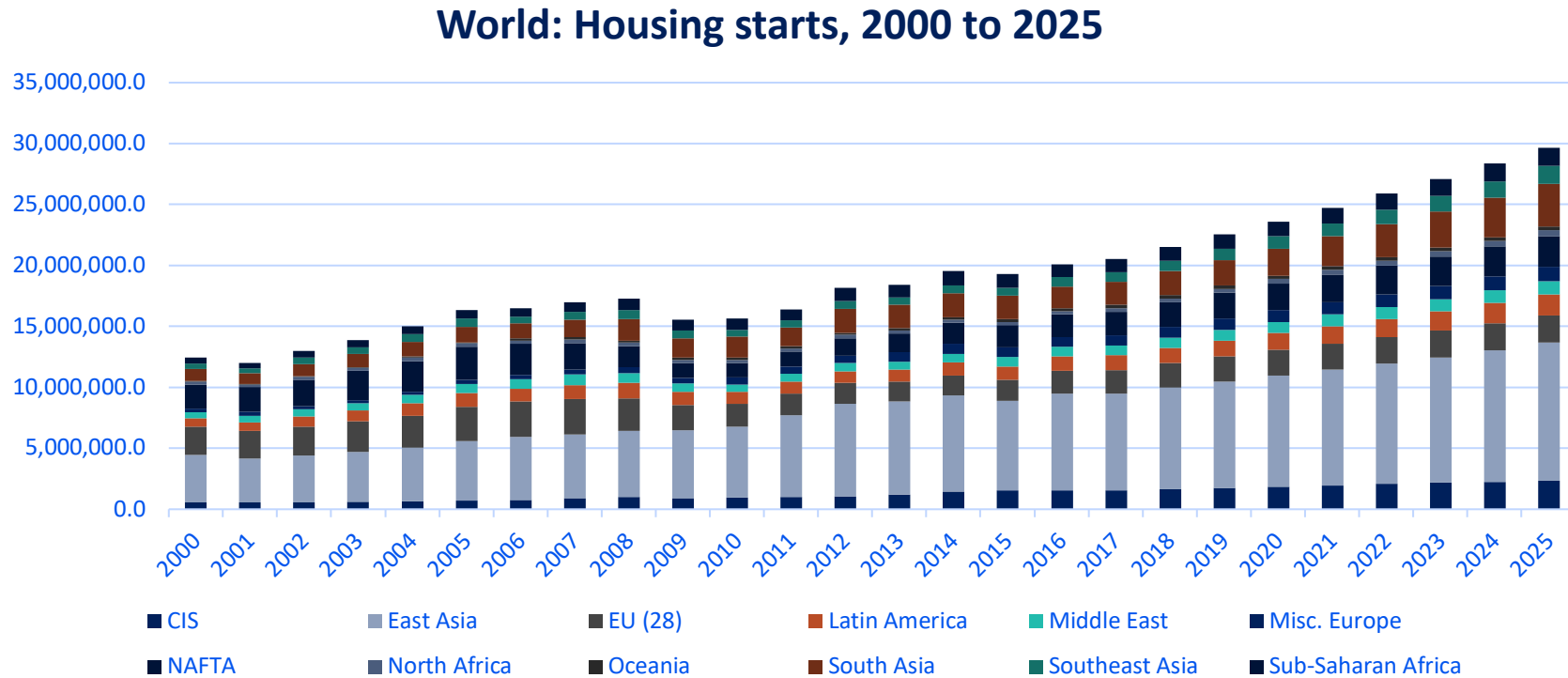
**World: Forecast demand for PVC by region, 2016 to 2025 (kt)**



Source: Roskill

# Drivers: World housing starts to 2025

- Much of the world's chloralkali capacity is built to supply feedstocks for ethylene dichloride (EDC), which is then used to make vinyl chloride (VCM)
- PVC demand correlates with construction activity. Roskill has models to forecast this.

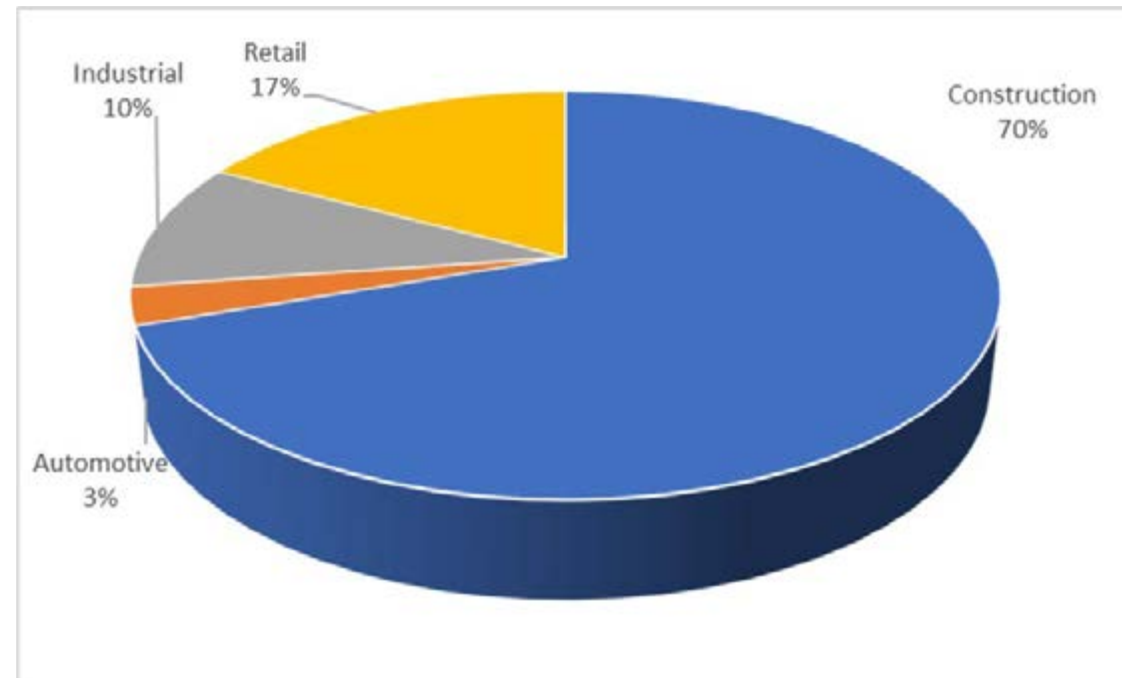


Source: Roskill model sourcing UN MBS, OECD, US Census, Federal Reserve of St Louis, Canada Stats, Eurostat and others

# A note of caution on PVC drivers

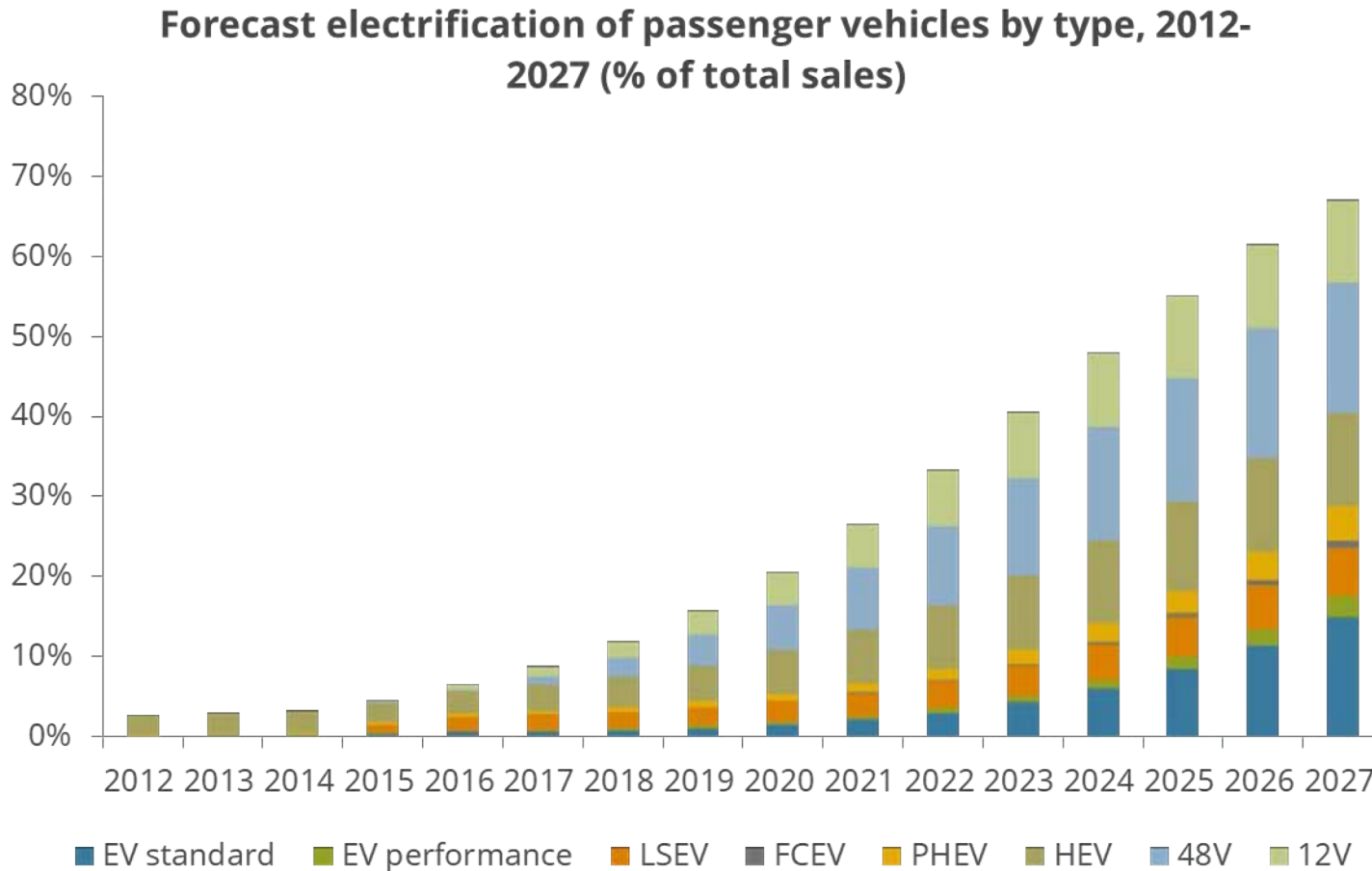
- The construction industry is notoriously cyclical
- PVC is unusual for a commodity polymer in that its major end use is construction

**World: PVC markets in 2018 by end use category**



Source: Roskill

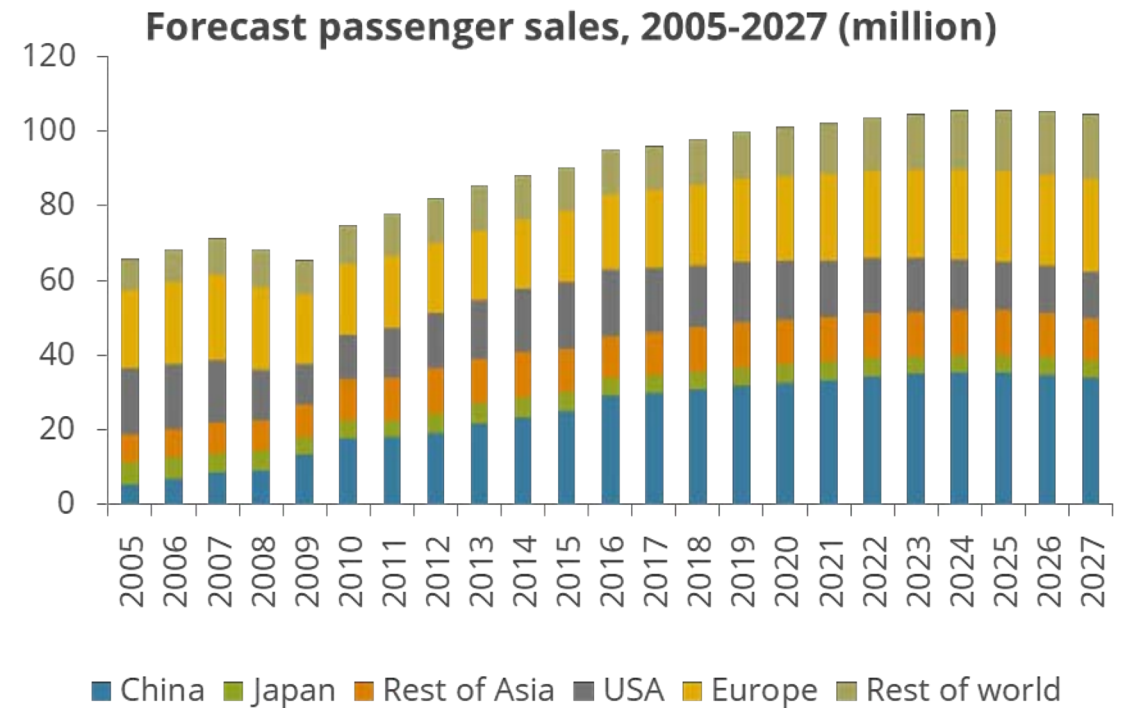
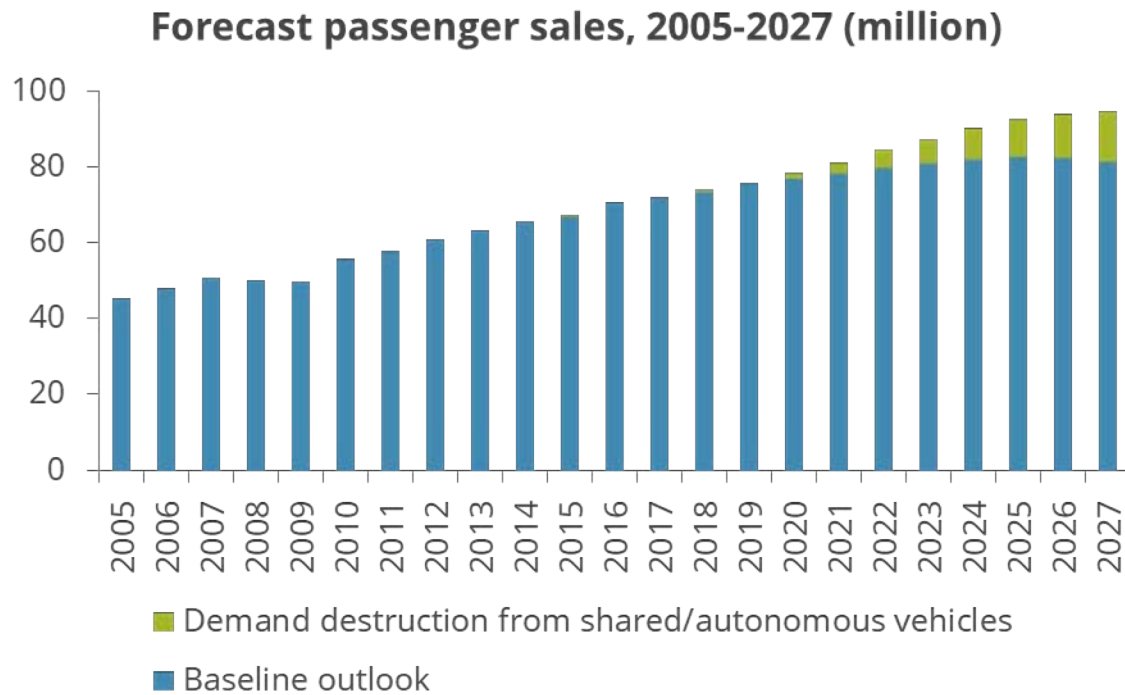
# Automotive drivers for PVC



- Thus far, much of this has been accounted for by hybrid vehicles (HEVs) like the Toyota Prius
- Specific targets for electrification have now been announced by more than a dozen countries
- But, levels of commitment and legal support vary, and few of the plans may prove realistic
- Nonetheless, Roskill forecasts fully-electric vehicles to account for as much as 26% of total sales by 2027, and 45% by 2030
- The EV landscape will remain diverse. Mild, micro and full hybrids will gain market shares overall, albeit being overtaken by plug-in and full EVs

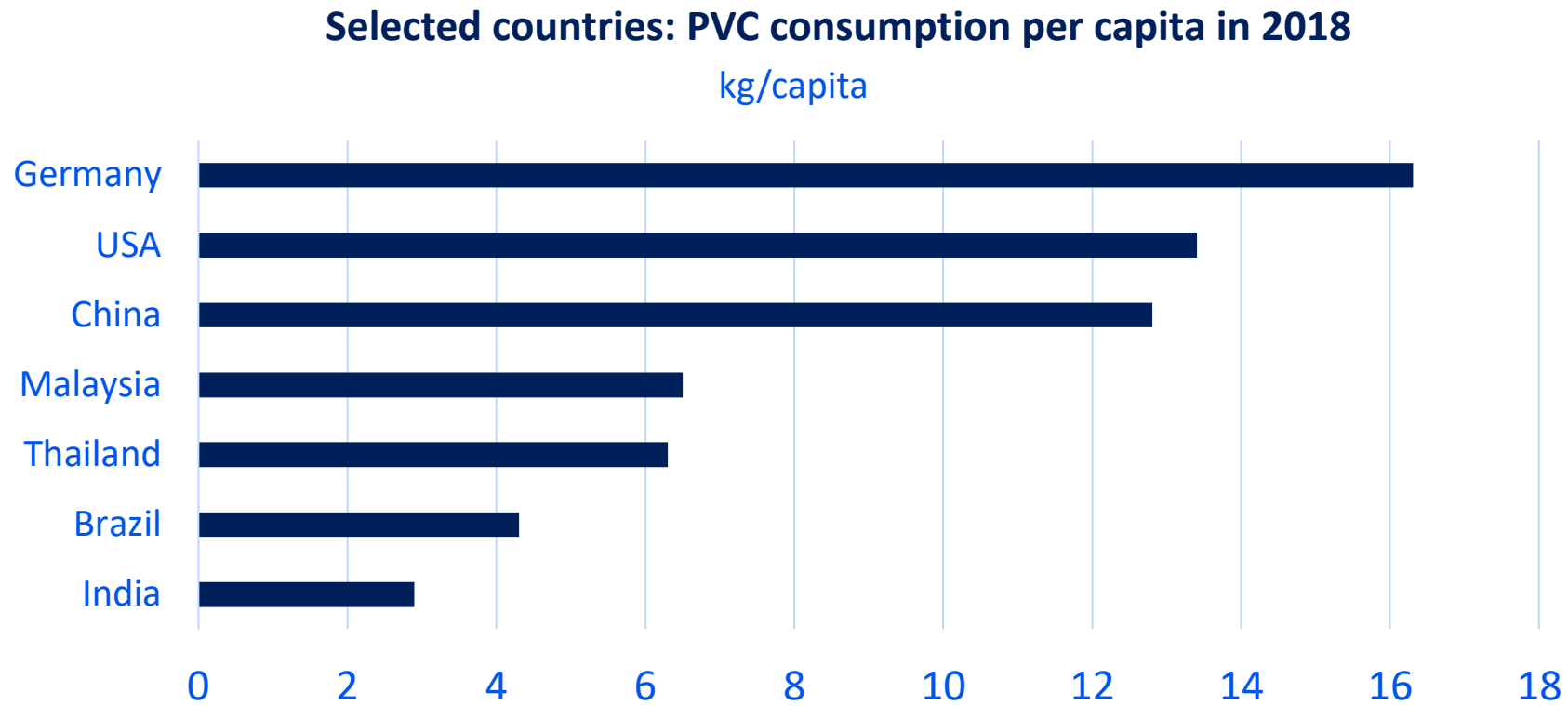
# Three revolutions in automotive: electrification, autonomy and driveshare

- The rapid rise of shared driving vehicles, and the faster-than-expected introduction of autonomous vehicles are both supporting the EV revolution
- However, with on-demand services (such as Uber) gaining ground, and set to benefit greatly from electrification and self-driving vehicles, will the automotive market as a whole begin to shrink?



# PVC consumption per capita in 2018

- Scope for growth in Asia -pipes are the largest application- water infrastructure is a major driver
- Electric vehicles use 4x as much PVC insulated cable as internal combustion vehicles



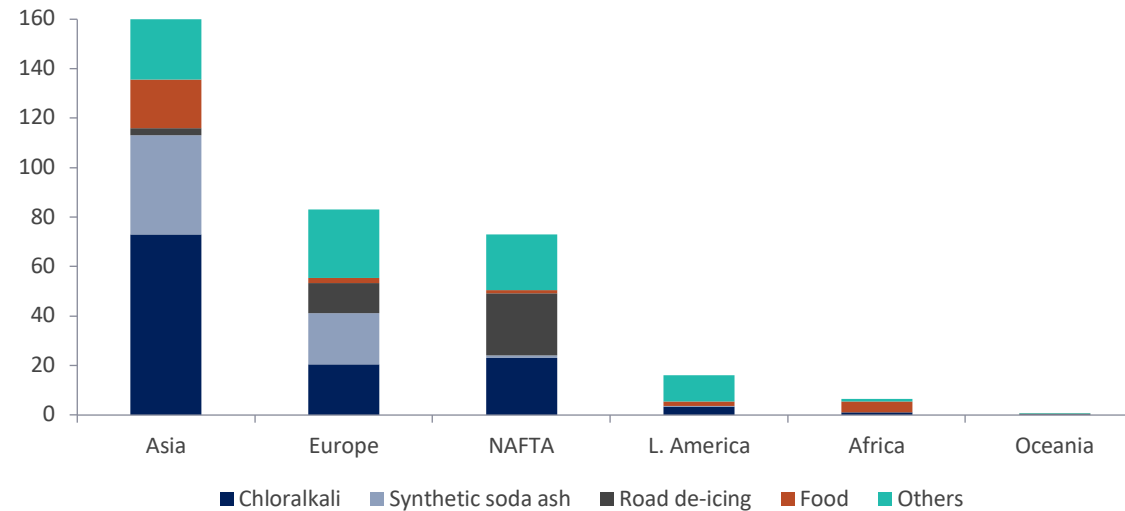
Source: Roskill



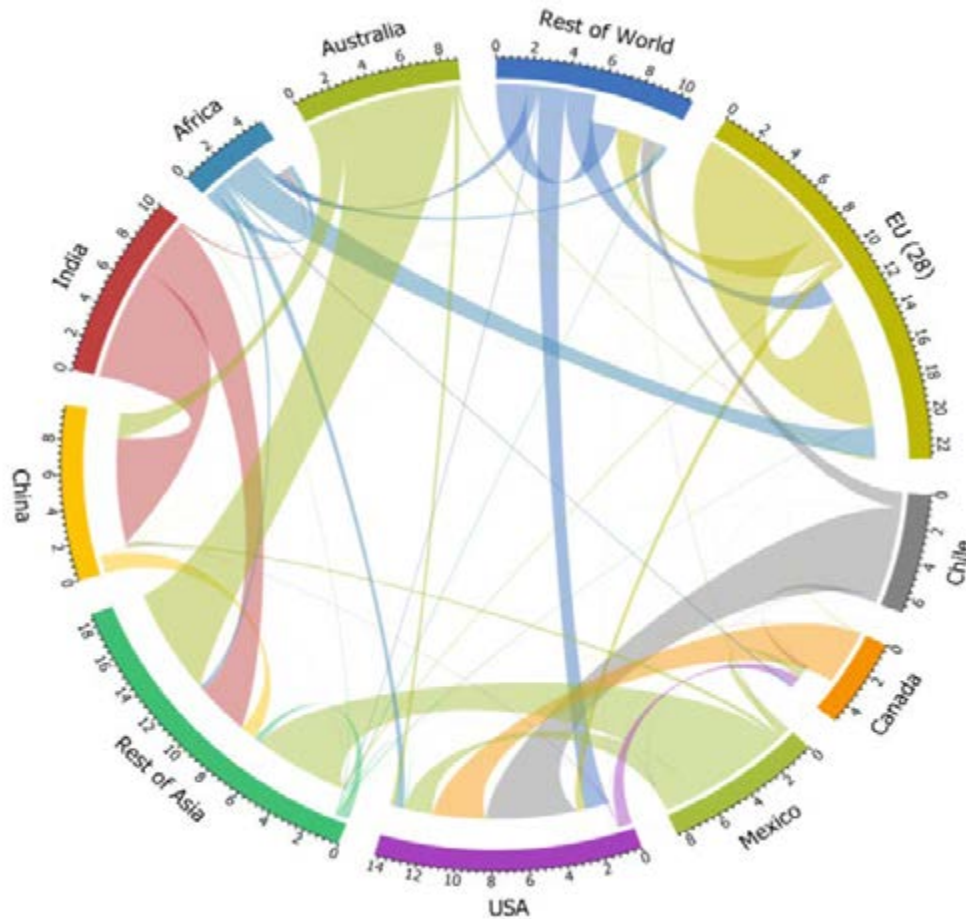
# World salt consumption variation by region

- Growth led by Asia, mainly the chloralkali and synthetic soda ash industries in China
- Asian consumers are also the largest regional users of salt in food
- In NAFTA, road de-icing is usually the largest market at 20-40Mtpy

**World: Consumption of salt by region and end-use, 2017 (kt)**



# Major trade flows of salt, 2017 (to USA)

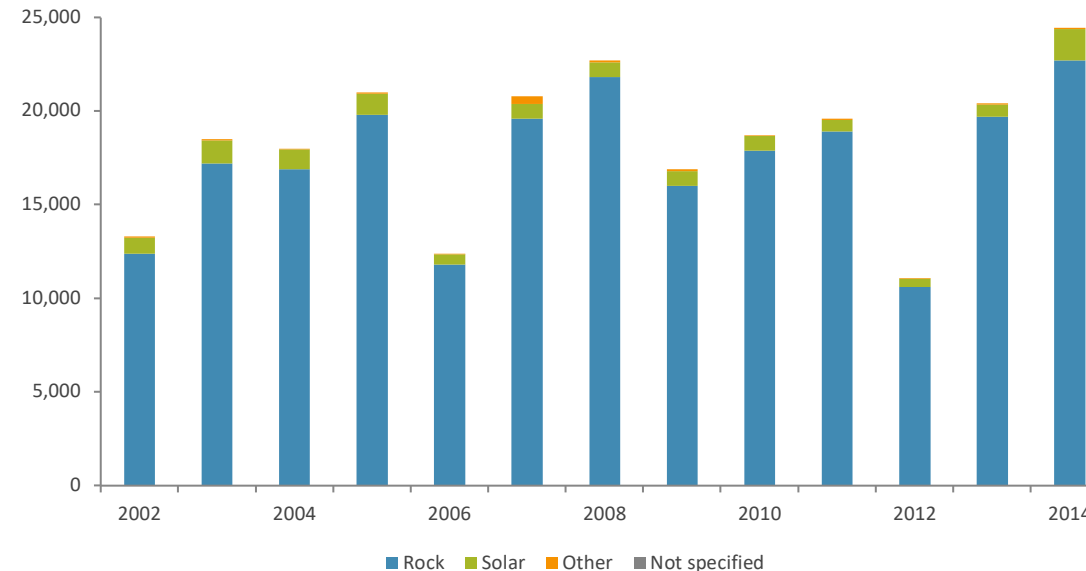


- The USA is the world's second largest importer of salt
- Chile and Canada were the top salt exporters to the USA in 2017
- Economically viable in 2017 for Mexican salt to travel the distance to Asia – but will this last?

# Drivers: North American de-icing

- In 2016, salt imports into the NAFTA region fell but early figures suggest a recovery in 2017E to around 20.3Mt. Exports of salt fell from 14.8Mt in 2015 to 11Mt in 2016, with recovery to an estimated 12.6Mt in 2017
- Large cross-border trade between the USA, Canada and Mexico

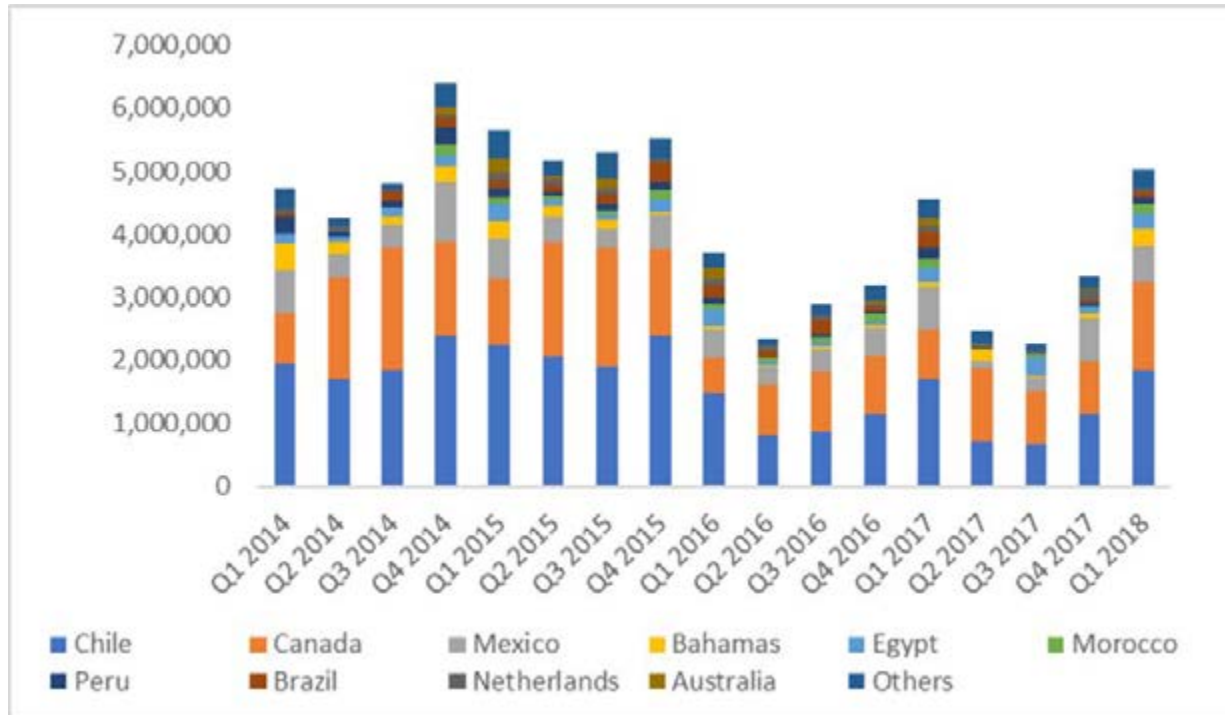
**USA: Consumption of salt in de-icing by type, 2002-2014 (kt)**



Source: USGS

# Drivers: North American de-icing

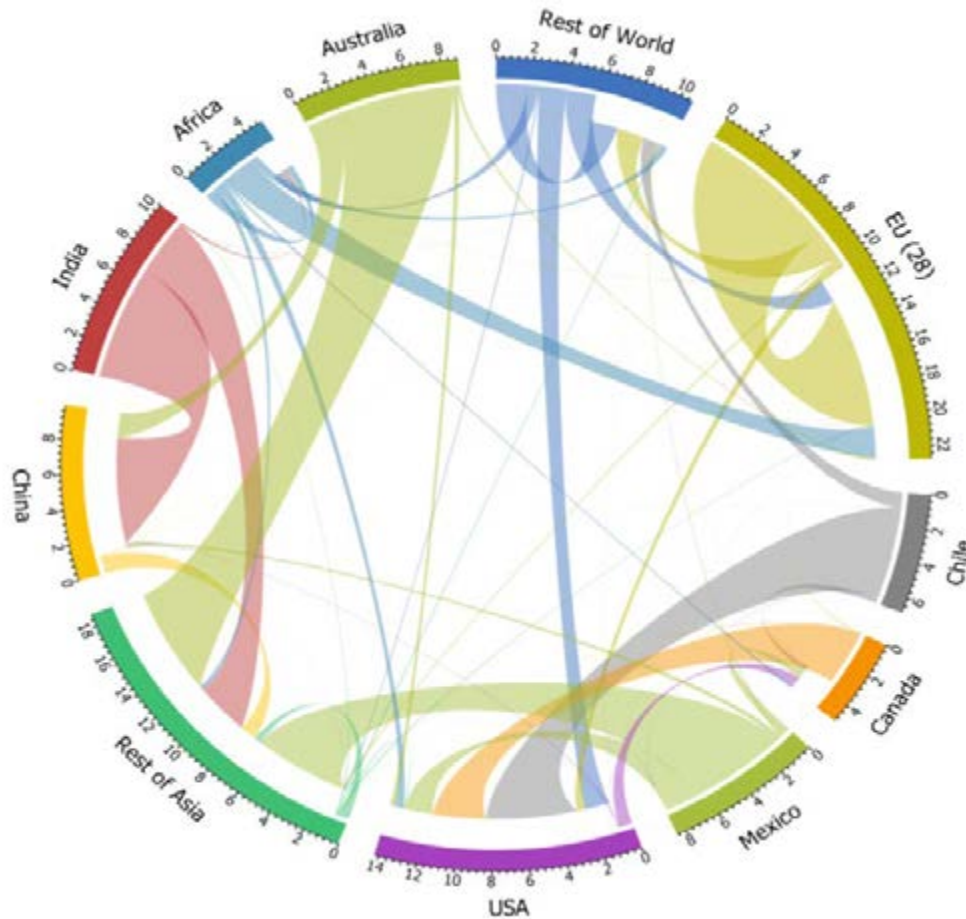
USA: Salt imports by country, Q1 2014 to Q1 2018 (t)



- Much of the variability in US imports results from changes in weather conditions, which dictate the amount of de-icing salt required. Imports are mostly of de-icing salt and are highest in the 1Q and 4Q of a year during winter.

Source: Roskill and GTT

# Major trade flows of salt, 2017 (Europe)



- European Union exports destined mainly for other European Union countries
- Europe quite self-sufficient
- African exports to European Union countries have increased over the last decade

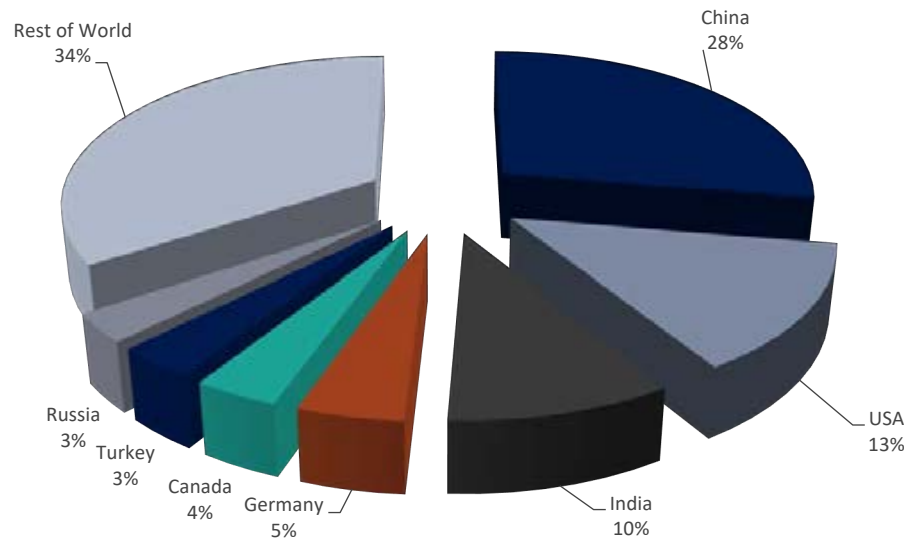
# Salt megatrends to 2026

- Over the past ten years, world recorded imports have ranged between 51.1Mt (2006, when dry bulk shipping rates were at record high levels) to 68.7Mt in 2015, when they slumped to their lowest level for decades. The economic viability of shipping salt affects salt trade volumes. Shipping rates are increasing. This trend is expected to persist to 2026 and is likely to affect salt trade
- The four main markets for salt; chloralkali production, synthetic soda ash production, road de-icing, food; have very different requirements. There are thousands of end-uses for salt. This lack of dependence on one market/one type of market is a strength
- Of the >30 salt expansion projects identified by Roskill worldwide in 2018, >20 are solar salt projects. Solar evaporation is the cheapest salt production method – but only a few regions are endowed with the prerequisites that allow it

Source: Roskill

# Salt megatrends to 2026

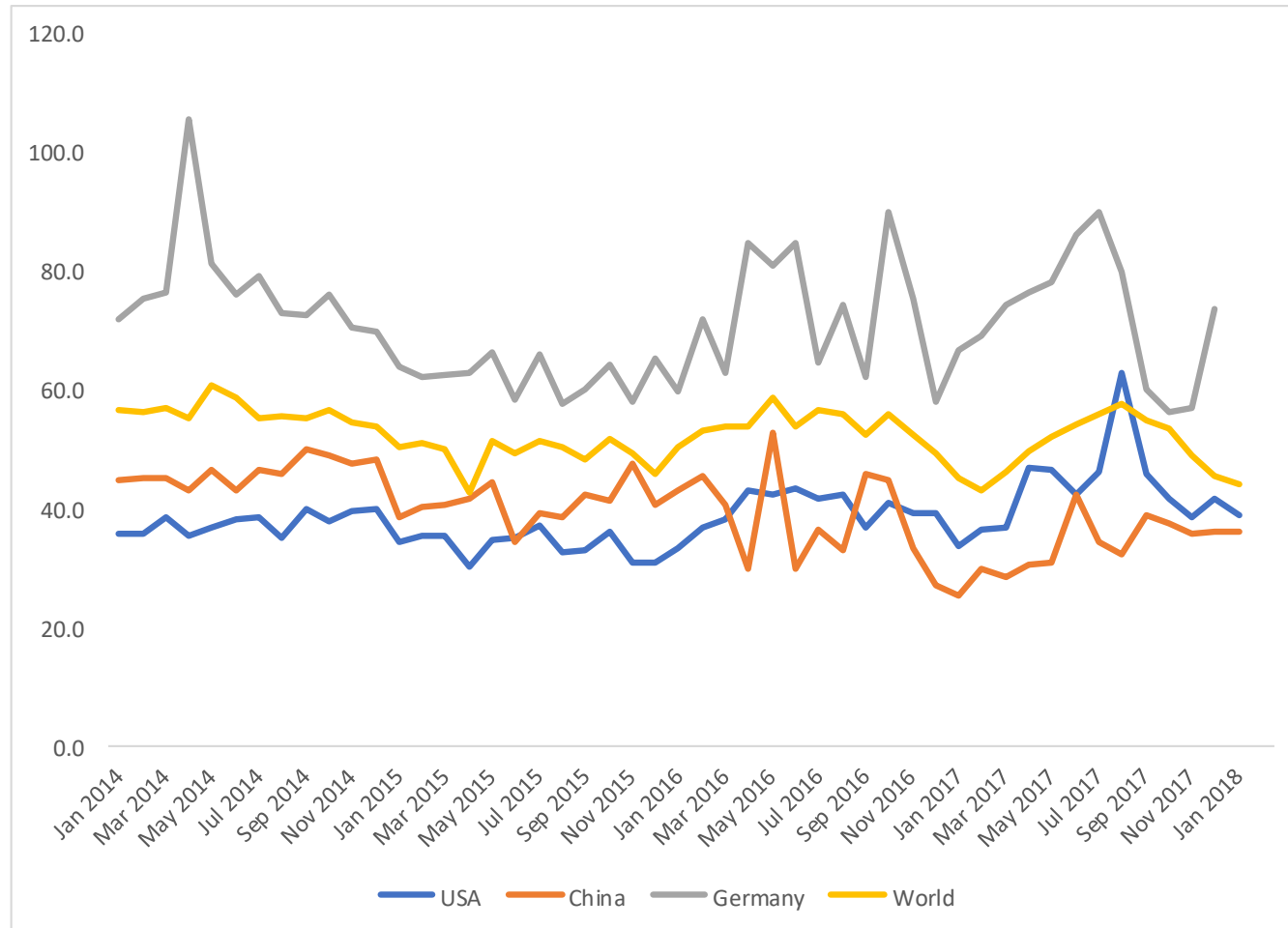
## World: Salt production by leading producers, 2017



- Roskill has identified at least 34Mt of potential new salt production
- Solar projects dominate
- A number of interesting new projects in Africa
- Indian production expected to expand significantly. Only 60% of the land in India assigned for salt production was in use during 2015/16

# Average values of traded salt

Major importers: Average values of salt imports, 2014-2018 (US\$/t)



Source: GTT and Roskill



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# International Salt Trends to 2026

**Thank you for listening!**

World Salt Symposium

19-21 June 2018

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