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# Soda ash & the environment

How environmental considerations influence both  
soda ash supply & demand

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Chlor-alkali/Soda Ash, IHS Markit

AIGMF, India, May 25, 2018



## How have environmental concerns effected the soda ash market?

- Chinese production and demand effected by environmental restrictions
  - Raw material price changes effect costs
  - Related markets also impacted
- Global soda ash supply/demand dynamics shifting
- New environmentally focused demand sectors
- Old demand sectors driven by environmental concerns



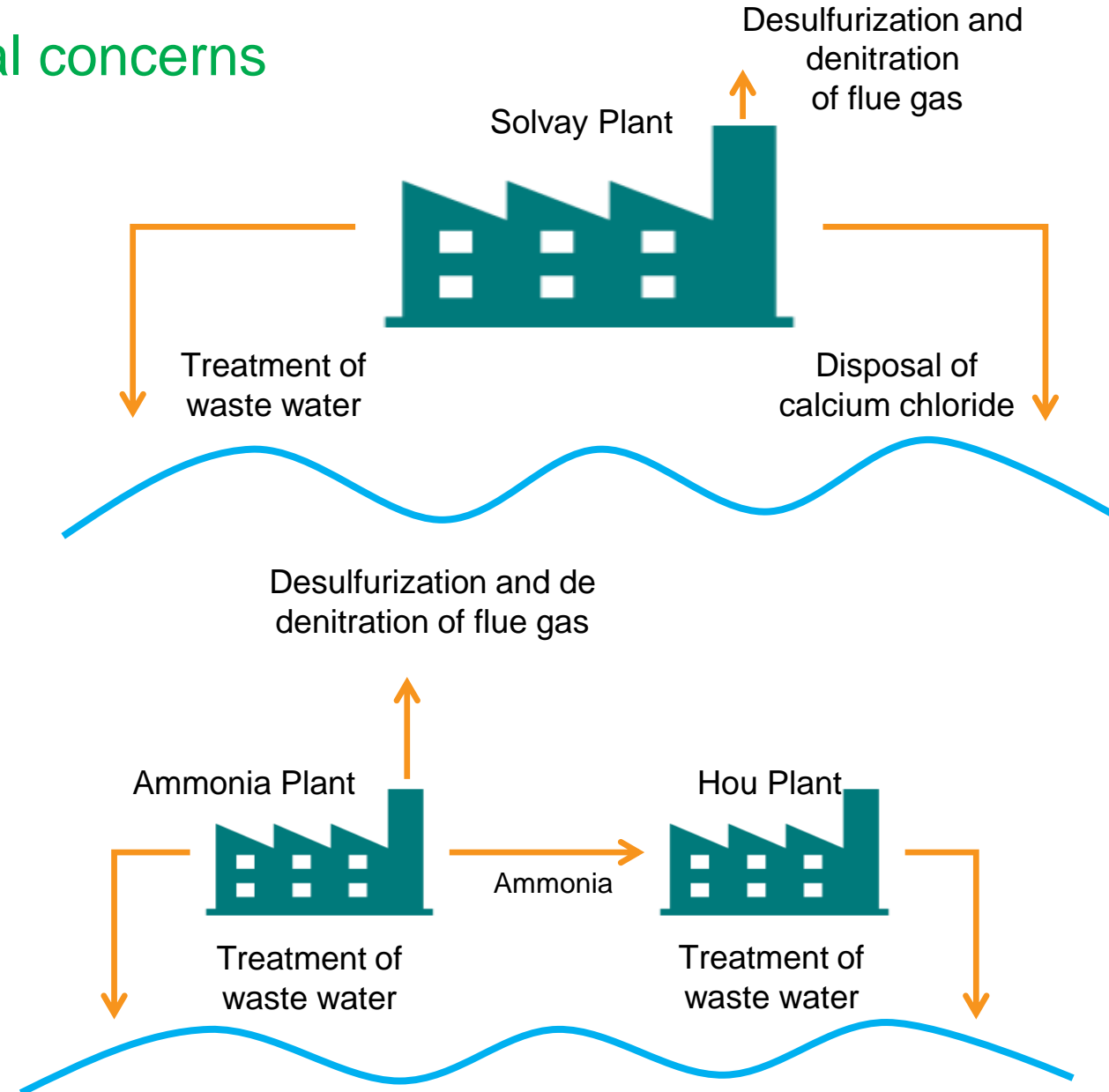
A photograph of an industrial facility, likely a refinery or chemical plant, during sunset. The sky is filled with dramatic, golden clouds, and the sun is low on the horizon, casting a warm glow over the scene. In the foreground, there are complex metal structures, including pipes, walkways, and a large cylindrical tank. Two red emergency lights are visible on a structure in the mid-ground. In the background, several tall smokestacks are visible, with some emitting plumes of smoke or steam. The overall atmosphere is one of industrial activity amidst a beautiful natural setting.

# Supply

Impacts of environmental concerns on supply

## China has been focusing on environmental concerns

- China government's move to greener economy
- Reducing pollution through government checks
- Implementing stricter controls on industrial capacity
- Incentivising air/water waste emission reduction
- Decrease energy consumption by 15% by 2020
- Reduce VOC emissions by 10% by 2020

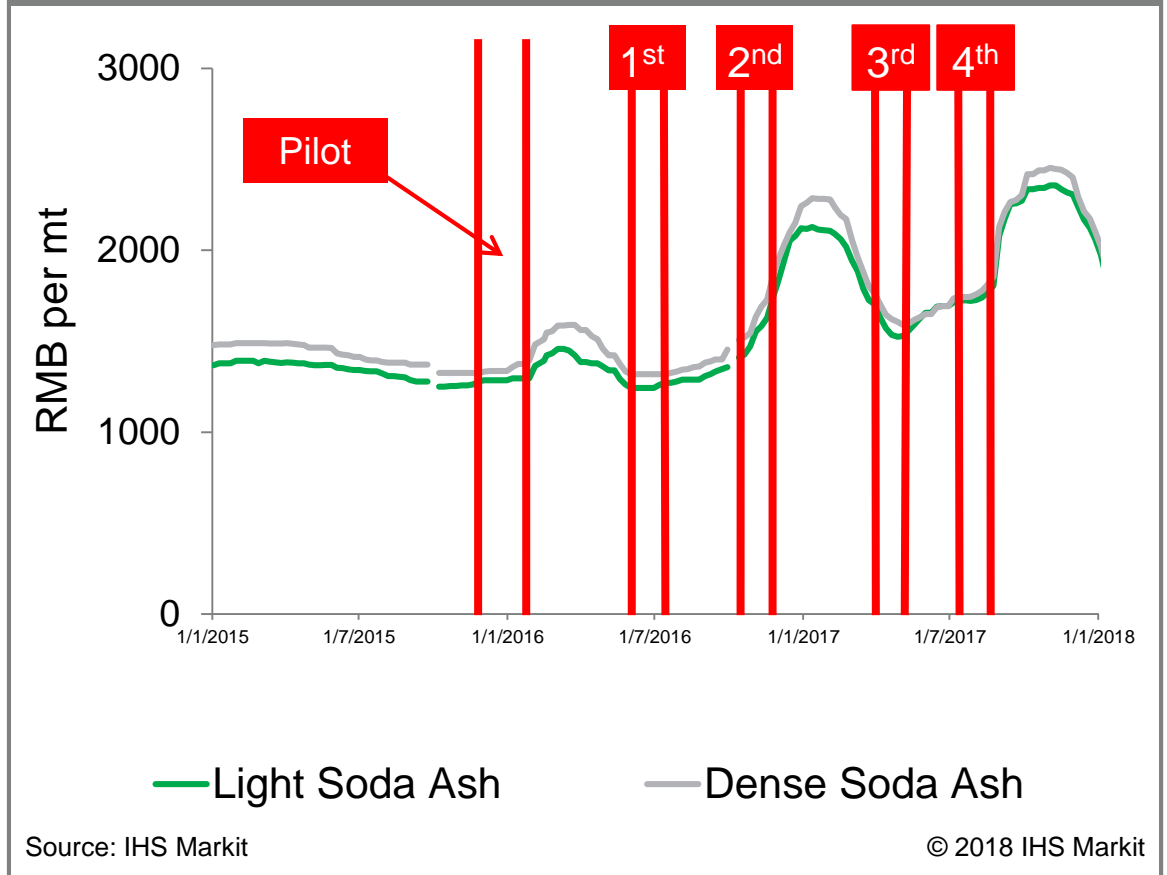


## China has been focusing on environmental concerns

- Pilot round of checks in Hebei province in Dec 2015
- Followed by further checks throughout 2016/2017
- Checks caused impacts to Soda Ash production
- Costs increased: restrictions in raw material output
- Tightness in Soda Ash resulted in price increases
- Effects worse in high demand areas

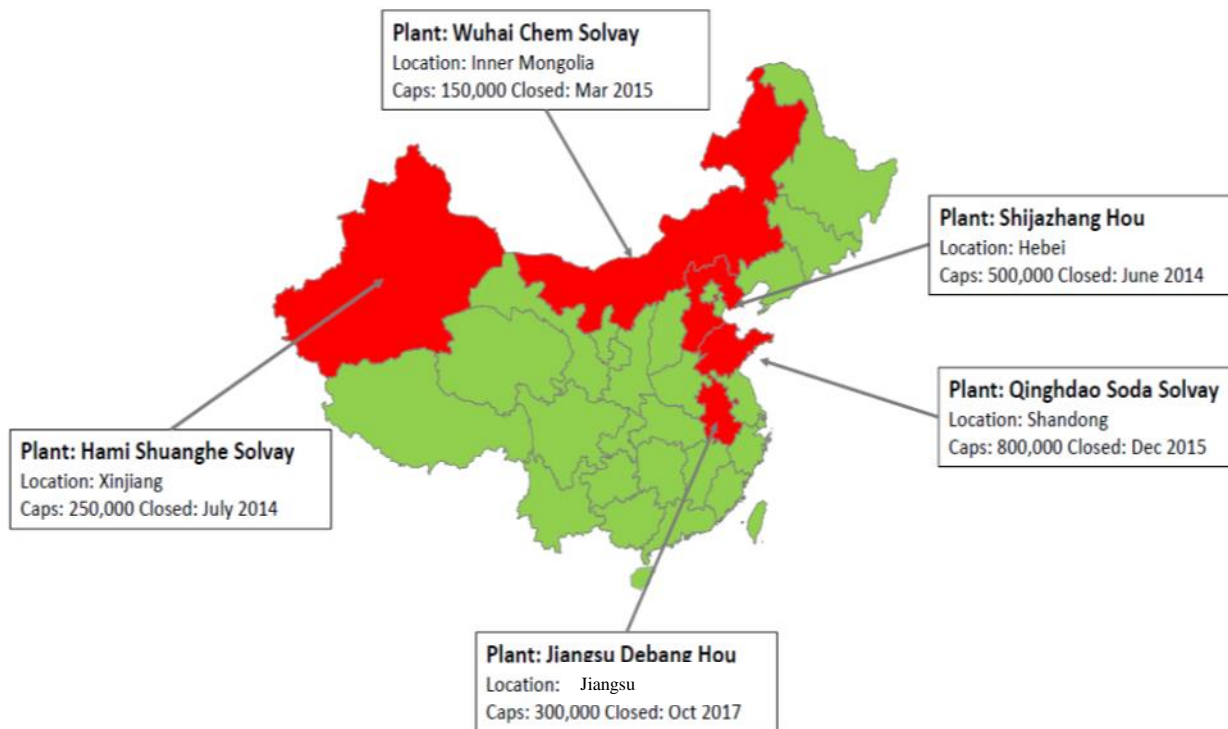
id: 628,000 mt

Soda ash price changes with environmental checks



# In the past, plants in China have closed due to environmental reasons

## Plants Closed for Environmental Reasons

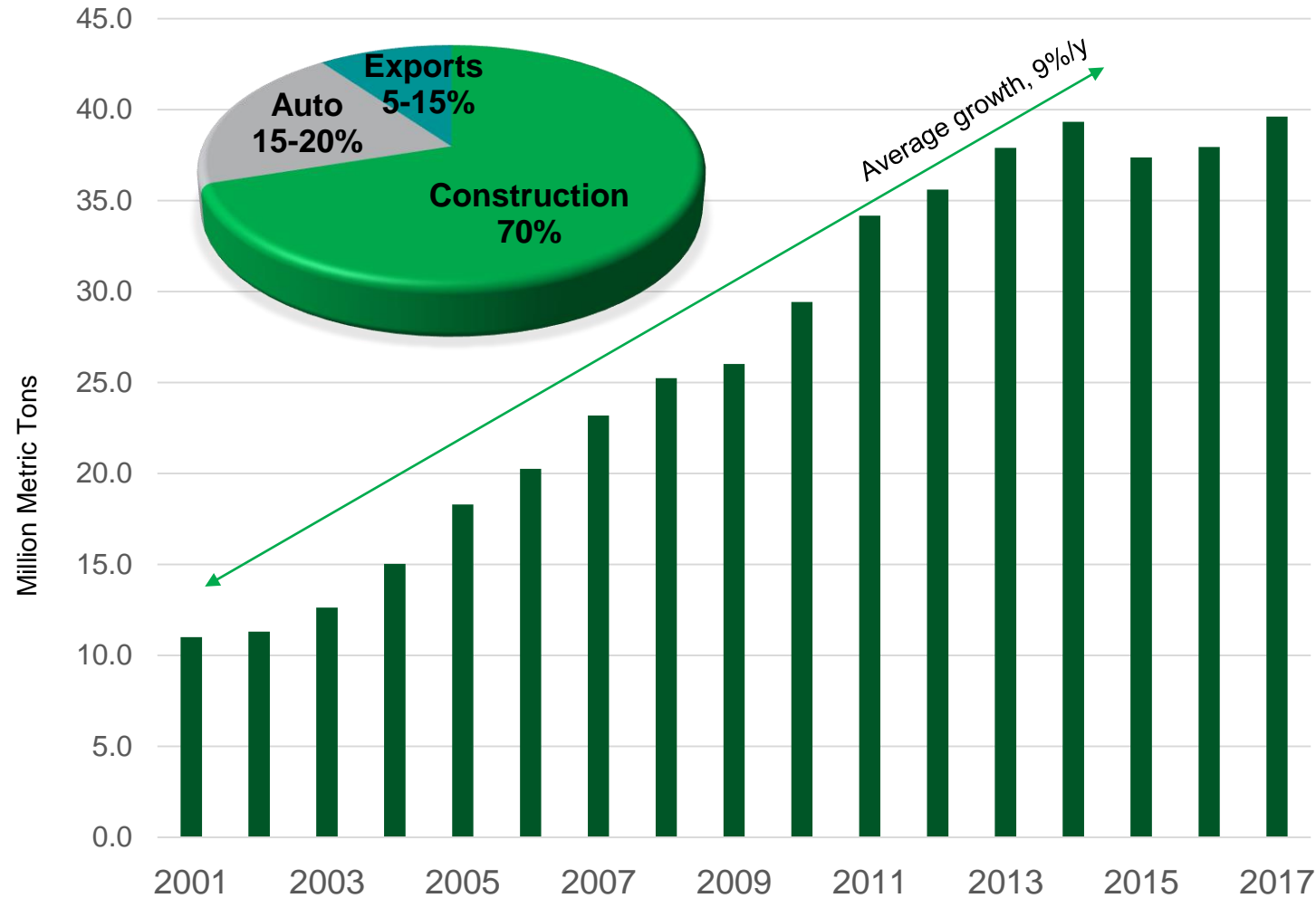


# CHINA GLASS

# Hebei is under great Environmental Pressure

- Shahe, in the city of Xingtai, Hebei province is China's 'glass capital'
- 2.9MMT float-glass capacity closed in Shahe in 2017
- There are still 10~20 float-glass lines facing closure due to the failure to meet environmental standards

China Flat Glass Production





## Flat glass faces tighter environmental standards

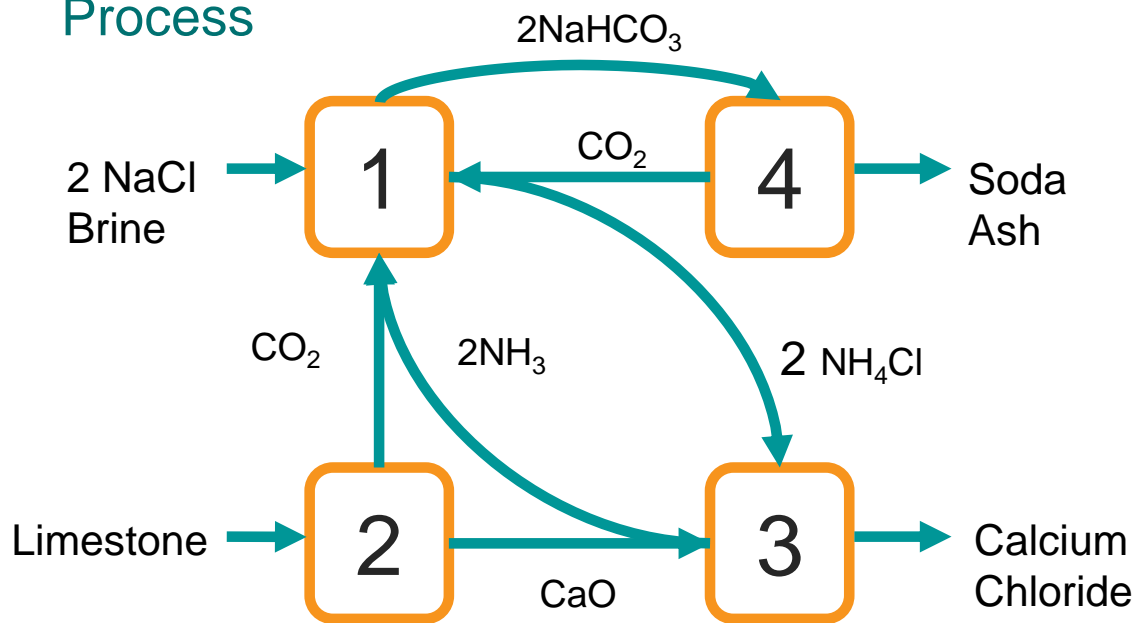
- Flat Glass production was 39.6 MMT in 2017
  - Consumed 7.9 MMT soda ash
- **New, tighter, environmental standards**, with respect to air pollutants, to be imposed **on flat glass producers** from June 1, 2018 in ‘2&26 Cities’

	Unit	Current	From June 1, 2018
Nitrogen Oxides	mg/m <sup>3</sup>	700	400
Sulfur Dioxide	mg/m <sup>3</sup>	400	100
Particulate Matter	mg/m <sup>3</sup>	50	20

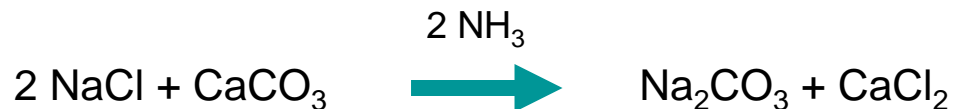
# ENVIRONMENTAL IMPACT ON COSTS

## China restrictions impact on costs

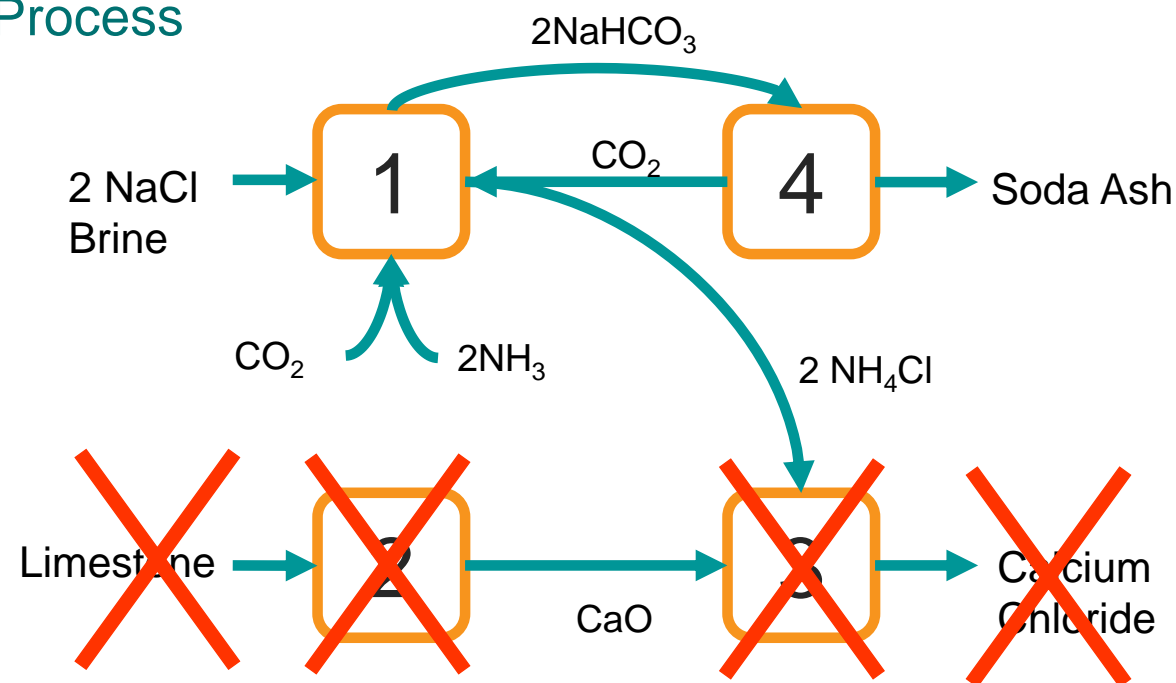
### Solvay Process



Overall Stoichiometric Reaction:



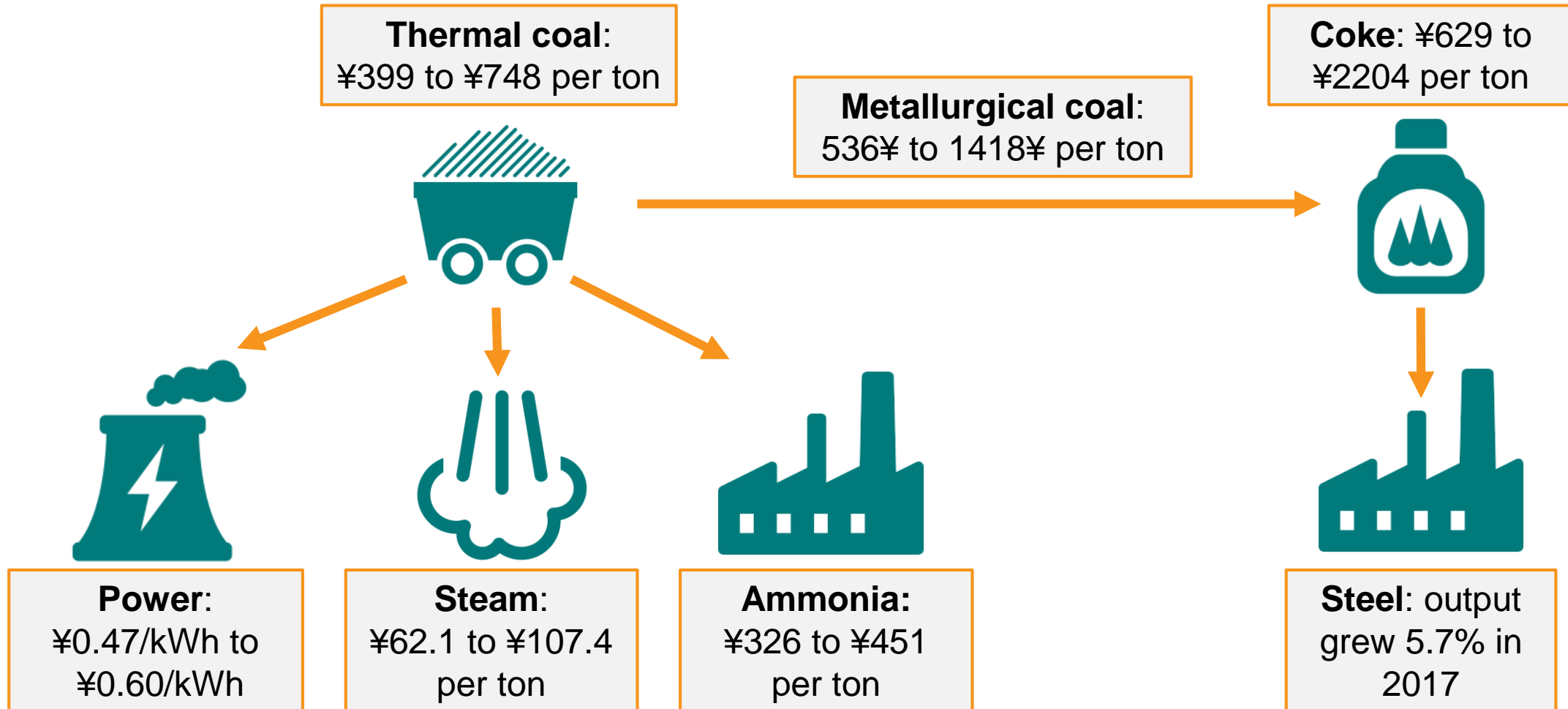
### Hou Process



Overall Stoichiometric Reaction:

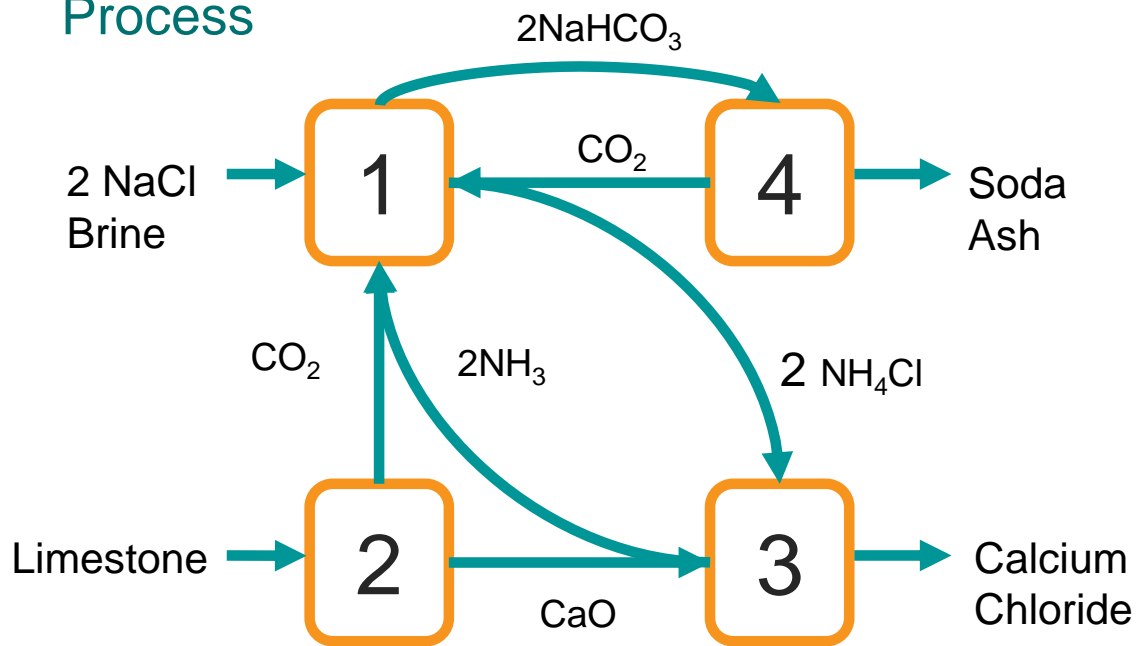


# Environmental restrictions in China helped push up prices from Jan 2016 to Dec 2017

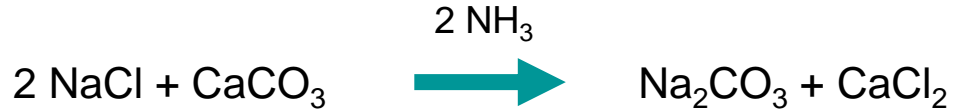


## China fertiliser restrictions impact

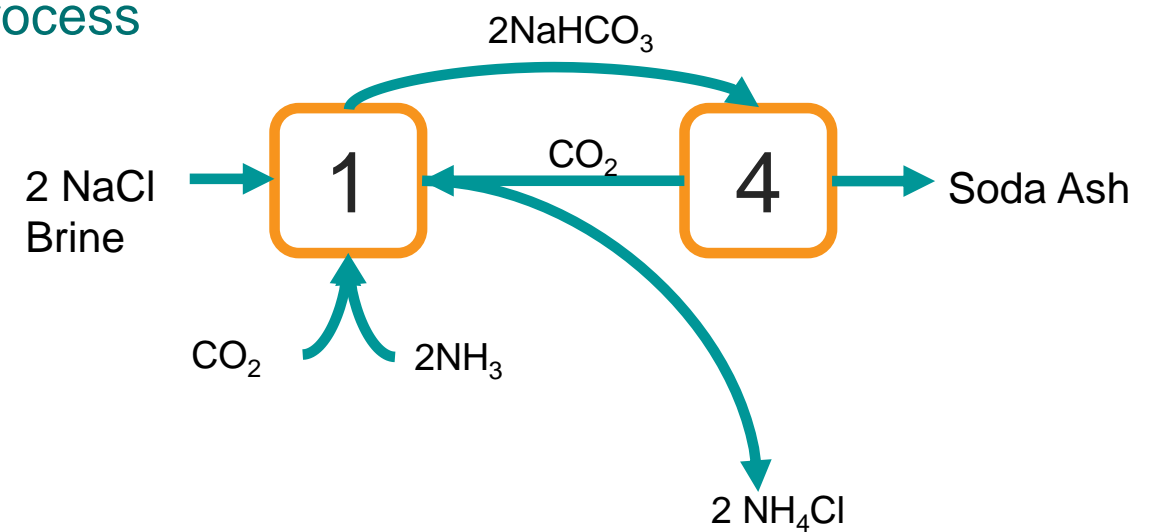
### Solvay Process



Overall Stoichiometric Reaction:



### Hou Process

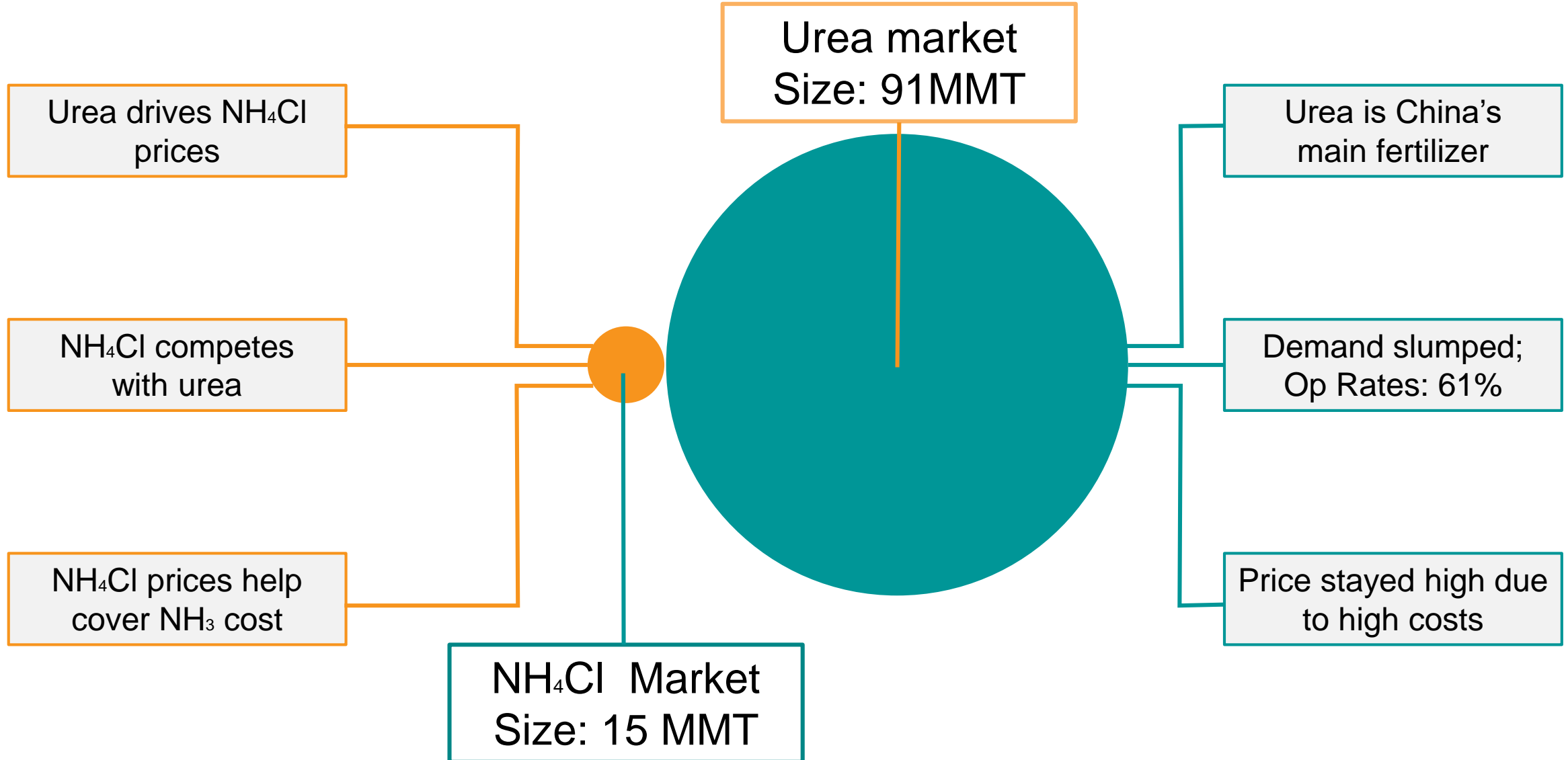


Overall Stoichiometric Reaction:



Ammonium Chloride by-product needs a market

# China is aiming for 0% growth in fertilizers due to eutropification: what's the impact?

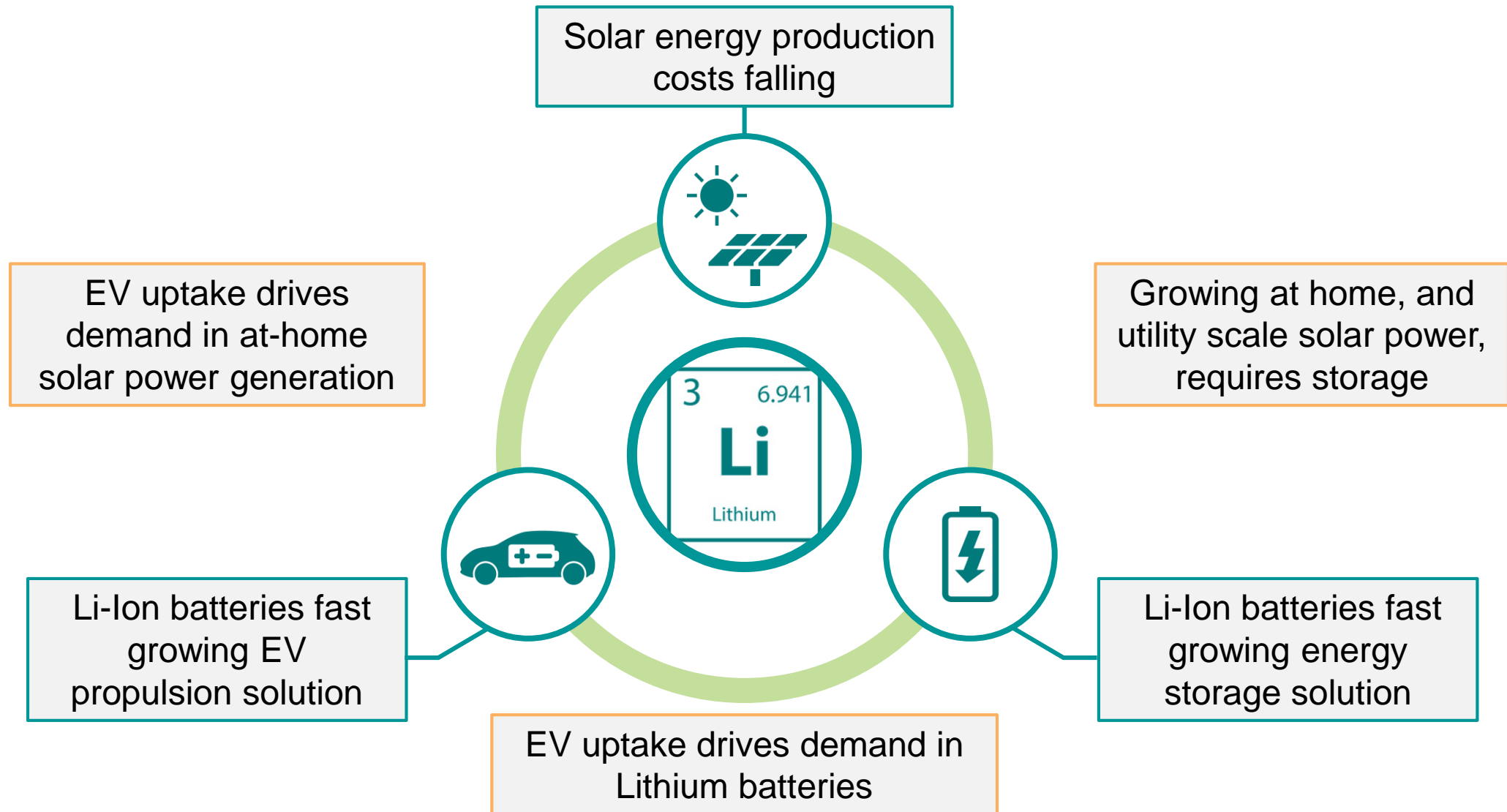


A large array of solar panels is shown from a low angle, looking up towards the sky. The panels are dark blue with a grid of white lines. The sky is a clear, bright blue. A semi-transparent green banner is overlaid on the middle of the image, containing white text.

# Demand

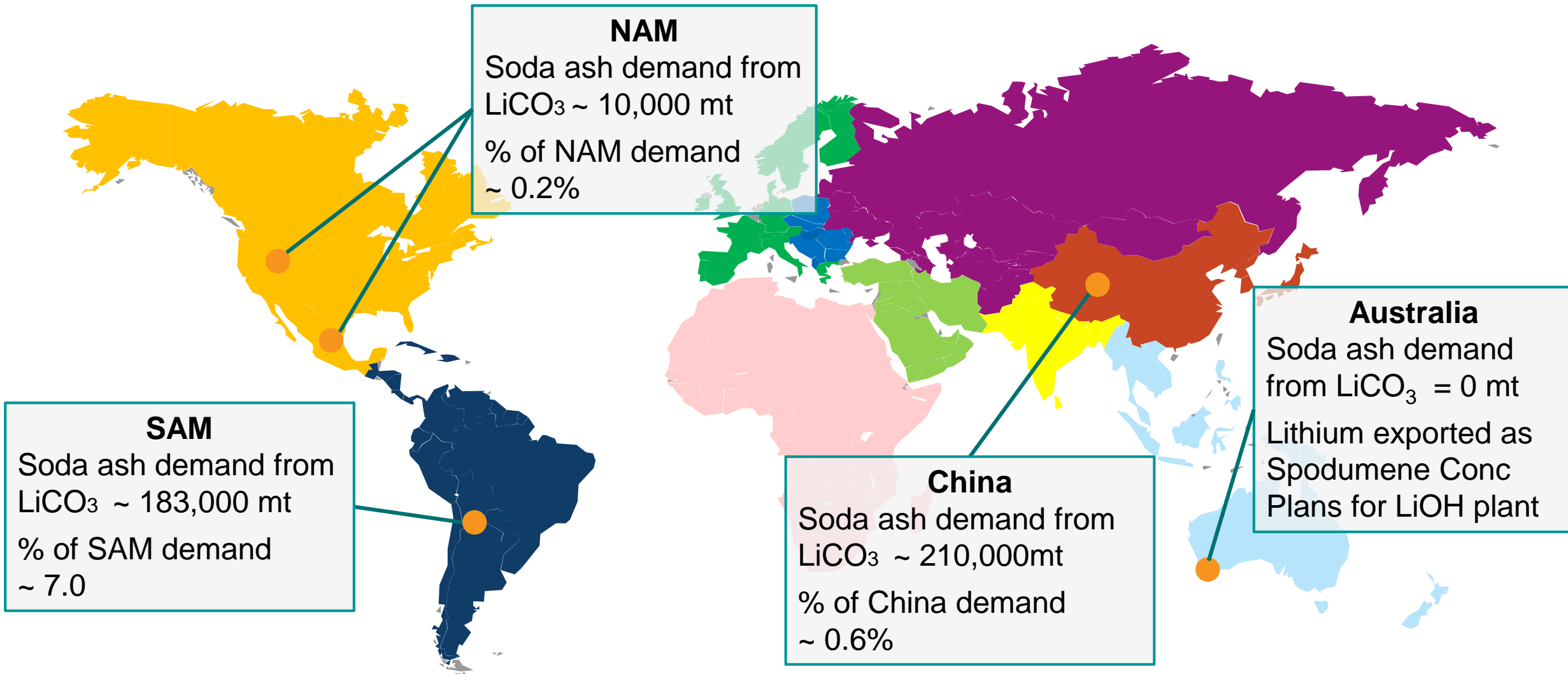
Impacts of environmental concerns on demand

# Lithium is one world's hottest commodities driven by environmental imperatives

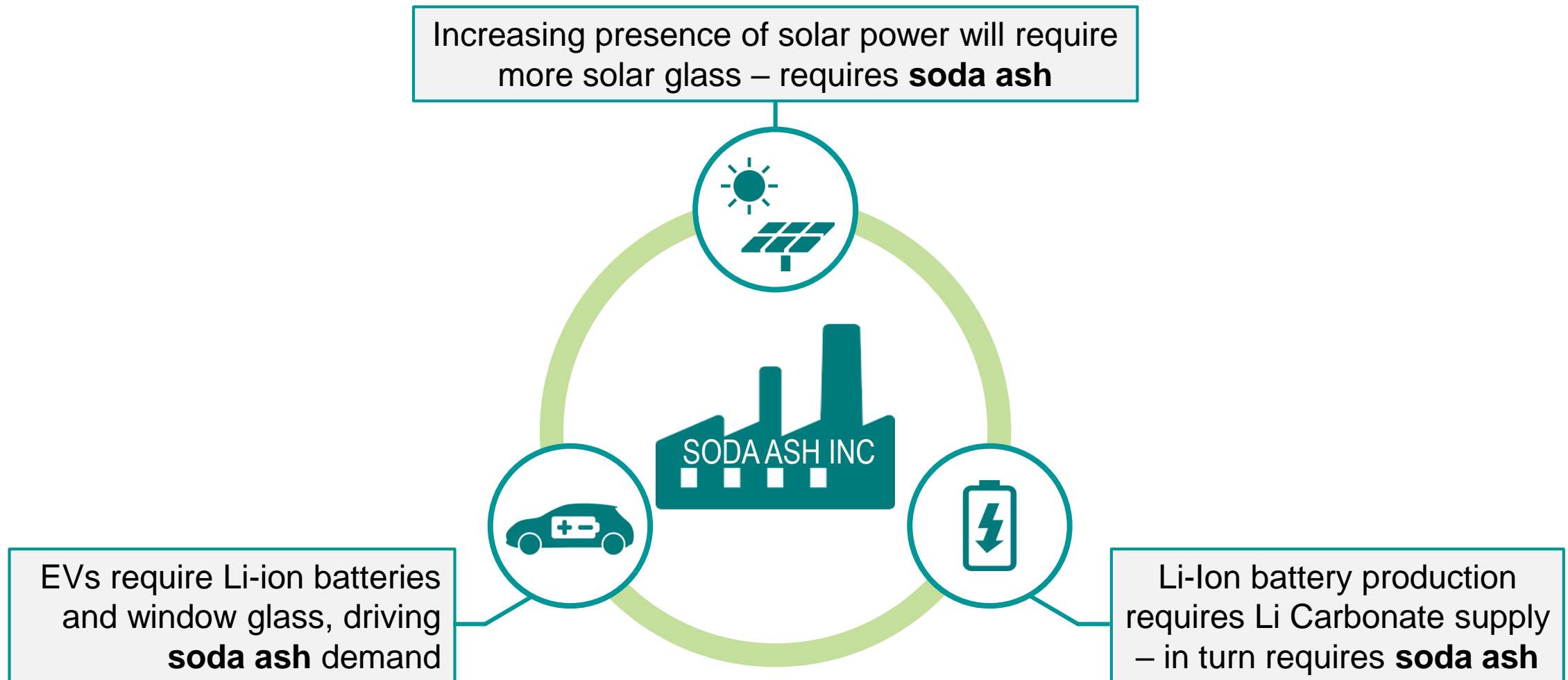




## Soda ash demand from this sector is small and its influence depends on location



## As future of power and transportation changes, it will push demand for soda ash

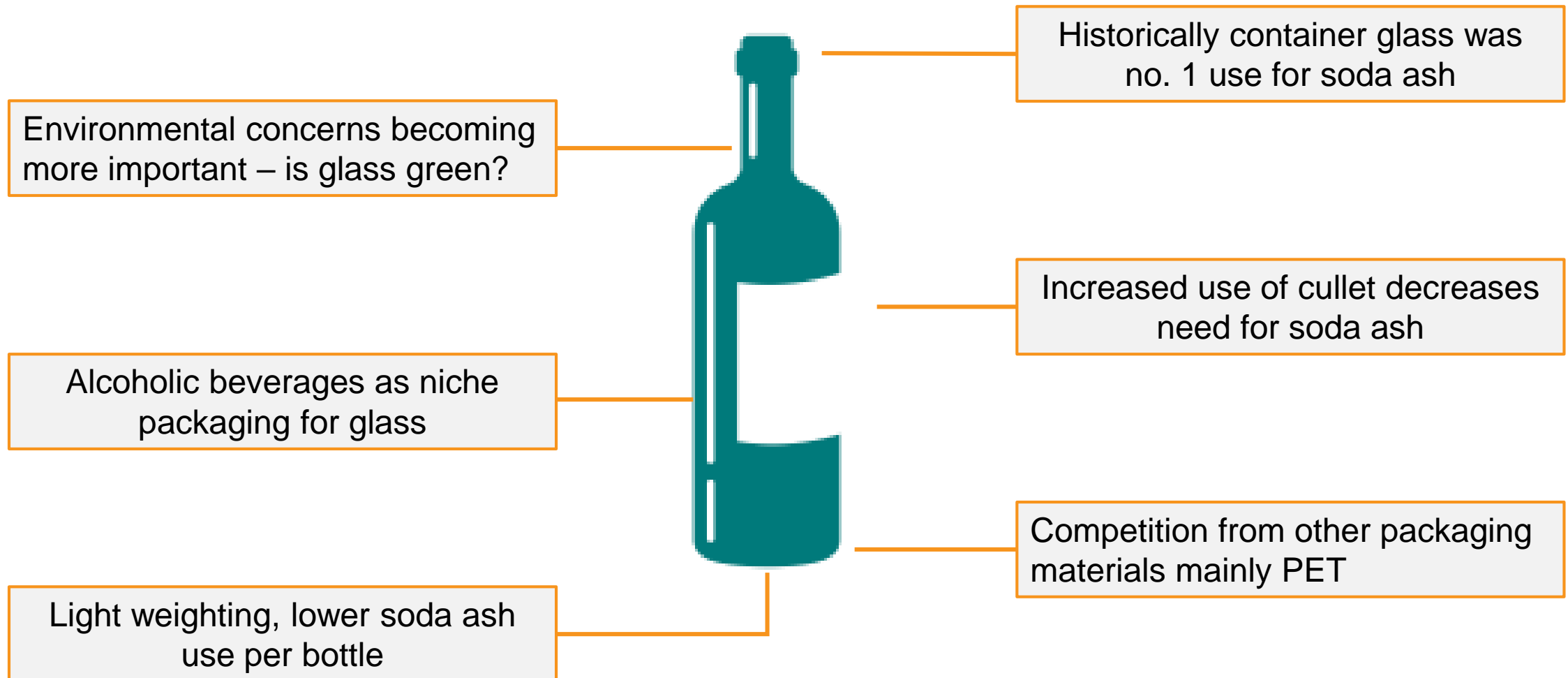


A row of clear glass bottles is shown on a production line in a factory setting. The bottles are arranged in a line, and the background is blurred, showing industrial structures and lighting. A teal banner is overlaid on the image, containing the text.

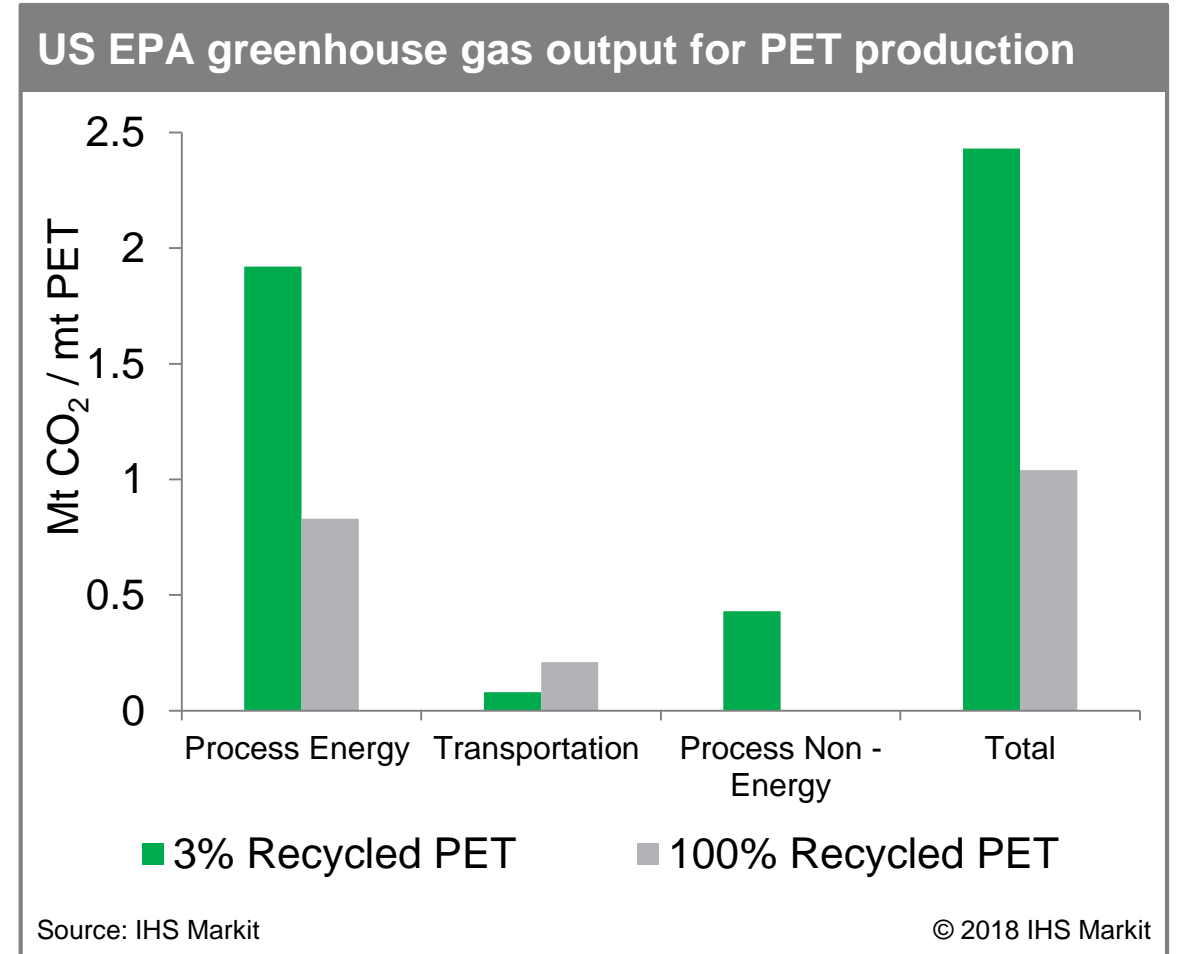
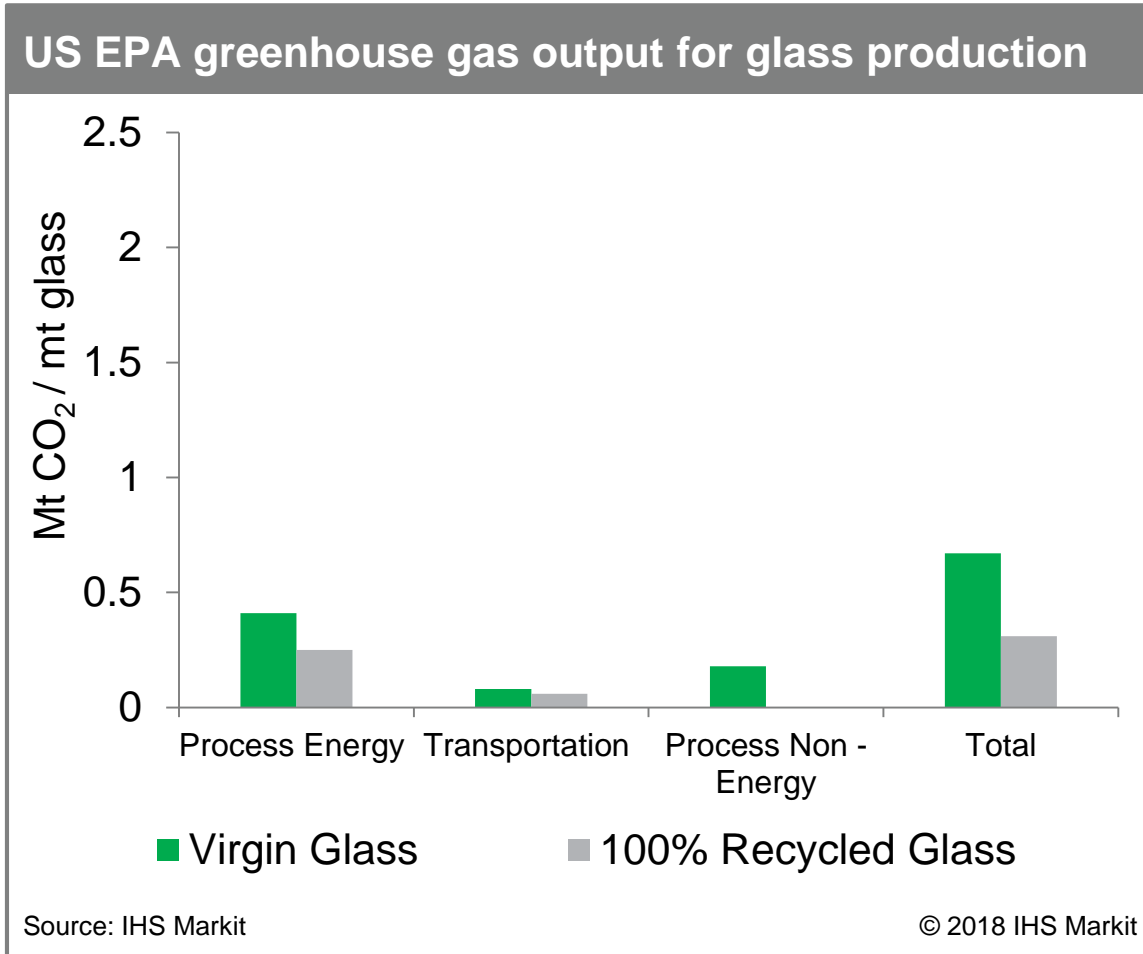
# Container glass

Impacts of environmental concerns on demand for soda ash

## Container glass demand for soda ash is impacted by the environment

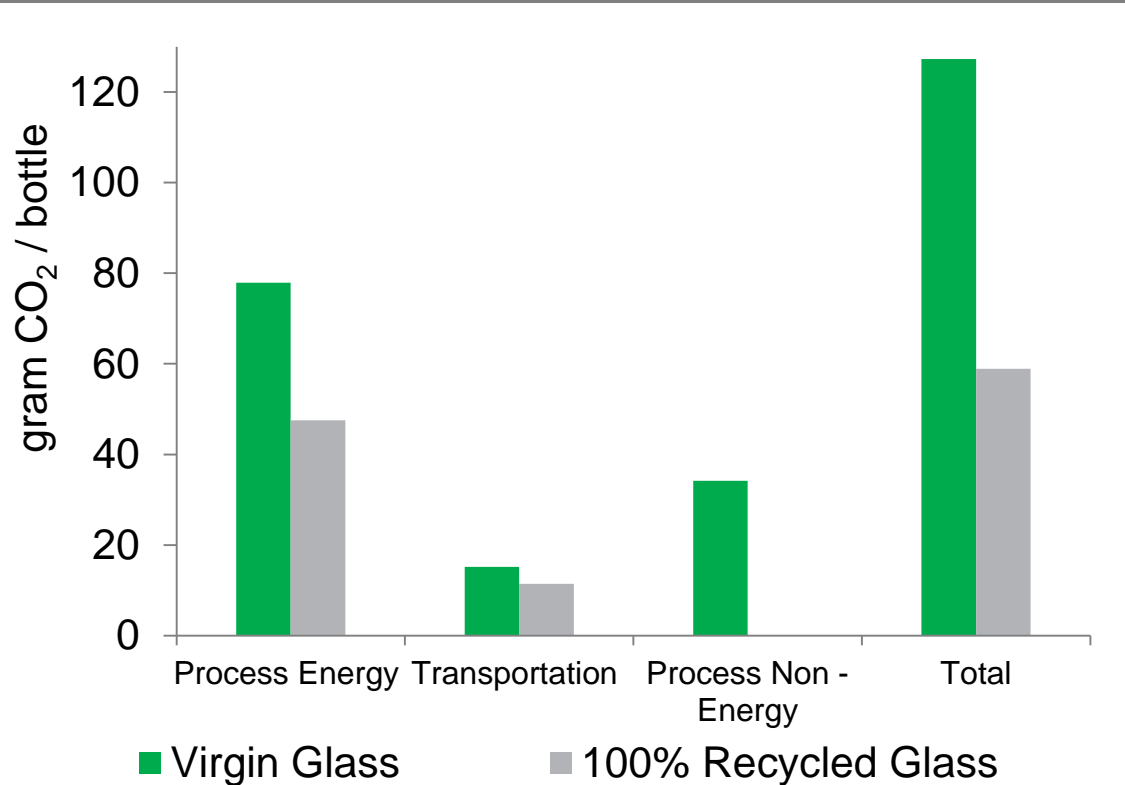


# Weight for weight glass production produces less CO<sub>2</sub> than PET production



# Bottle for bottle, PET production produces less CO<sub>2</sub> than glass production

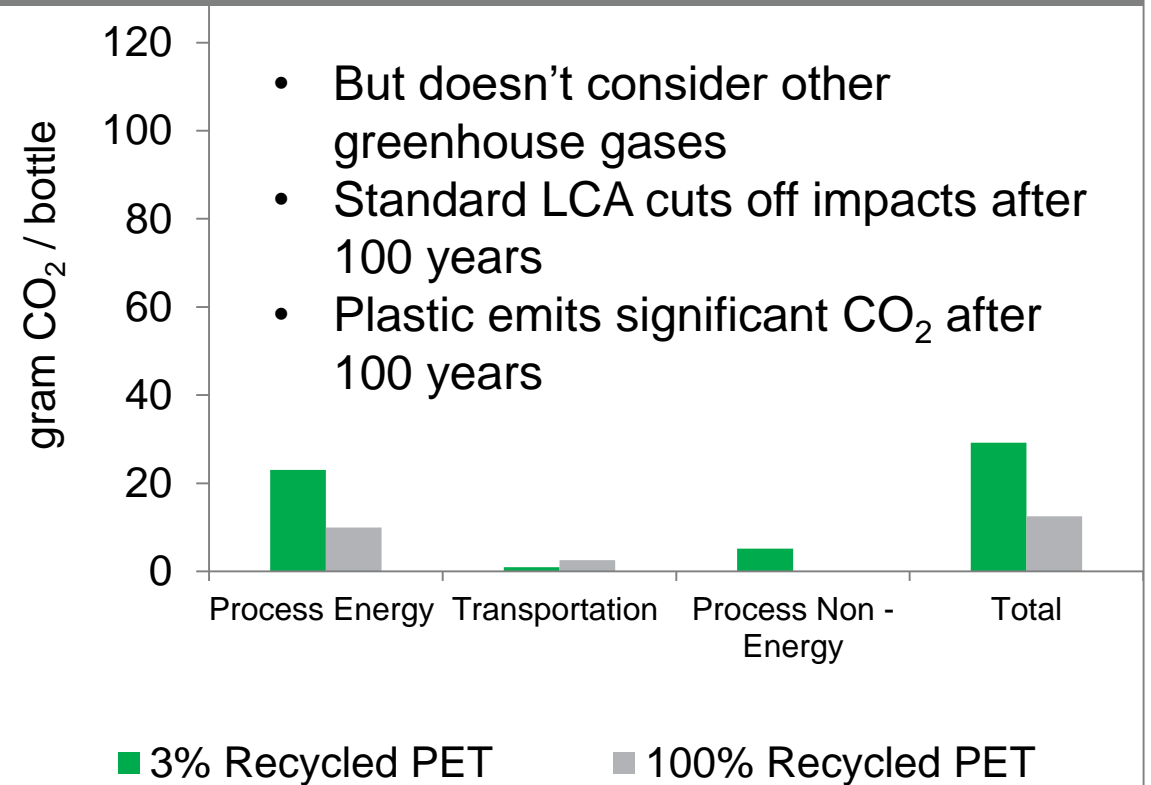
US EPA greenhouse gas output for glass production



Source: IHS Markit

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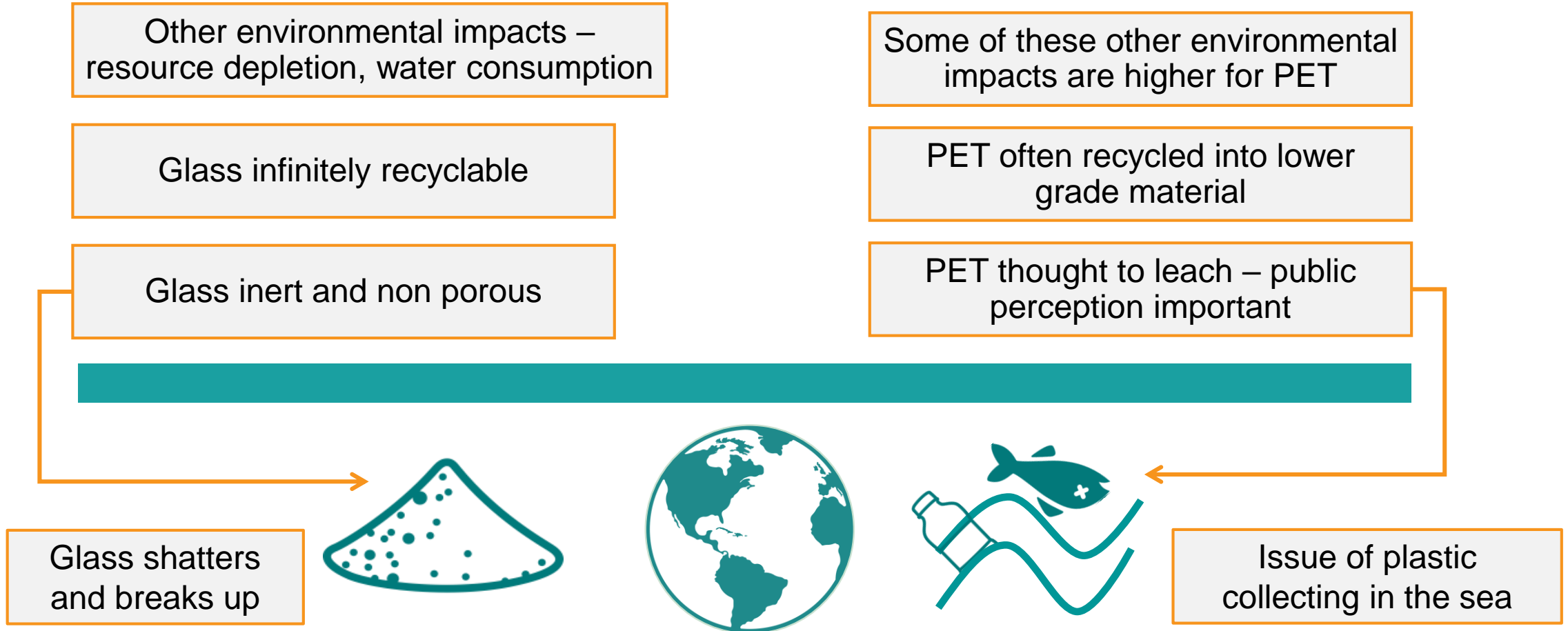
US EPA greenhouse gas output for PET production



Source: IHS Markit

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# So why is glass seen to be better for the environment?



## Good example is FEVE's view of Europe's circular glass economy







Close

## Conclusions



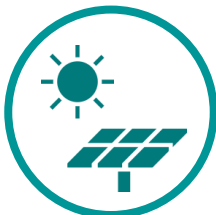
2017 – 2018 saw significant shifts in soda ash supply-demand dynamics

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Outcomes of these shifts were not as expected due to new drive for environmental stability in China

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New environment-driven demand sectors are altering soda ash market

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Cultural changes to environment are also having an impact on soda ash demand