Climate Threats
- Japan on average is hit by 20 typhoons per year but Tokyo is less exposed.
- Typhoon Hagibis (2019), the worst storm in 60 years, caused US$15bn of economic losses in Japan.
- Hagibis also raised sea levels in Tokyo Bay by 1m; filled Tokyo’s underground retarding basin to 95% of its capacity; and almost overflowed Tama river levees (which can withstand a 1-in-200 year flood).
- High SLR risks as >1.5mn people live below sea level.

Government Actions
- Built sea walls with 3.5m-7m height along Tokyo Bay that can withstand the worst storm surge in its history.
- Installed new flood gates, drainage pump stations & a 2nd storm surge management centre for Tokyo Bay.
- Has Japan’s largest underground retarding basin that can hold up to 170mn tonnes of water but already filled to 95% in 2019 by typhoon Hagibis.
- 1st city in the world to have a emissions cap-and-trade program and achieved in 20% reduction since 2010.

THE ECONOMY AT STAKE

Economy Overview
Home to well-known names such as Sony, Honda and Mizuho, Tokyo is the biggest economy in terms of city GDP according to the World Economic Forum. Its stock exchange, the Japan Exchange Group, has 3,766 listed companies with a combined market capitalisation of US$5.8tn, making it the 3rd largest in the world. It is also the 2nd largest exporter in Japan with major products such as semiconductors and electronic devices. Tokyo is also famous for tourism and it was ranked the 9th most visited city (13mn) by the Mastercard Global Destination Cities Index 2019. The service industry accounts for over 90% of its GDP and specific economic activities that generate most GDP in Tokyo are wholesale & retail trade, real estate, professional, scientific & technical activities and information & communication.

GDP by Sector
- Wholesale & retail trade 20%
- Real estate 12%
- Professionals, scientific & technical activities 11%
- Information & communication 10%
- Others 47%

Import & Export = 42% of GDP

Airport Ranking (Cargo volume in metric ton)
- Hong Kong, Shanghai, Tokyo, Seoul, Singapore, Guangzhou, Shenzhen, Osaka, Manila, Ha Noi, Chi Minh, Taipei, Auckland, Boston, Yangon, Manila

Port Ranking (Cargo volume in TEU)
- Shanghai, Singapore, Shenzhen, Guangzhou, Hong Kong, Tokyo, Osaka, Bombay, Singapore, Shenzhen, Jakarta, Shanghai, Ha Noi, Chi Minh, Taipei, Singapore, Guangzhou, Tokyo, Osaka, Shanghai
**PEOPLE, LAND & ECONOMY AFFECTED BY LOCKED-IN SEA LEVEL RISE (SLR)**

**CWR**

**LOCKED-IN SLR IN TOKYO PREFECTURE AT 1.5°C – GLOBAL ELEVATION DATA (SRTM - 30M)**

**1.5°C Warming: 2.9m SLR**

- **What’s at risk…**
  - 1.2mn Affected (9%)
  - 99km² Affected (5%)

- **What’s at risk…**
  - Airport (NRT)
  - Airport (HND)
  - Port
  - Stock Exchange
  - CBD

**Note:** Narita International Airport (NRT) is located outside of the Tokyo area, it will not be flooded at 1.5°C of warming.


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**CWR**

**LOCKED-IN SLR IN TOKYO PREFECTURE AT 4°C – GLOBAL ELEVATION DATA (SRTM - 30M)**

**4°C Warming: 8.9m SLR**

- **What’s at risk…**
  - 3.4mn Affected (25%)
  - 257km² Affected (12%)

- **What’s at risk…**
  - Airport (NRT)
  - Airport (HND)
  - Port
  - Stock Exchange
  - CBD

**Note:** Narita International Airport (NRT) is located outside of the Tokyo area, it will not be flooded at 4°C of warming.


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**Note:** The NASA SRTM-30m elevation data maps were used to benchmark coastal threats across the 20 cities to build the CWR APACCT 20 Index. Since our analyses show that impacts worsen when higher granularity maps (5m) are used, for more in-depth analysis, please use such maps where available. The median level of the locked-in SLR range was used for both the 1.5°C and 4°C scenarios above so impacts could be worse at the higher end of the ranges. To see SLR low/median/high range impacts and differences in mapping granularity – please see our report “Avoiding Atlantis: The CWR APACCT 20 Index”. Such permanently submerged areas have implications for financial tail risks – for more on this see “Sovereigns at Risk: APAC Capital Threats”. Local tide adjustments were not made.

This factsheet is part of the CWR Coastal Capital Threat Series. For methodologies see Avoiding Atlantis: The CWR APACCT 20 Index – Benchmarking coastal threats for 20 APAC cities with finance sector input © China Water Risk. All rights reserved, 2020 | Contact: info@chinawaterrisk.org