

Box 25.1: Republic of Korea embracing autonomous ships

The Republic of Korea's *Master Plan for Cultivating Marine Science and Technology* (2018–2022) focuses on strategic industries where private-sector engagement will be essential. The plan's goals include developing 50 innovative start-ups, generating 800 experts annually and raising the country's technical capacity in specific areas, such as marine forecasting and polar research, to over 80% that of the most advanced nation. Another goal is to expand the share of marine sources in new and renewable energy production to 5.2% by 2022.

Alongside smart shipping and ports, the Republic of Korea plans to foster autonomous ships to nurture new growth engines and create jobs. Although it may seem counterintuitive, reducing the human presence in navigation will create new jobs in the maritime industry, such as for port-side management, technicians and engineers.

A 2018 report suggests that career prospects for sailors remain positive over the next decade, which may help to alleviate seafarers' anxieties about job security (Johns and HSBA, 2018).

Pilotless vehicles will not be 'fully automated', the highest level on the six-part scale for vehicle autonomy, whereby no human attention or interaction is needed. Most ships will be semi-autonomous and still need sailors.

Some aspects of maritime navigation have been automated for years, helping sailors and port authorities to reduce the margin for error and simplify the manoeuvres of massive ships and movement of cargo.

The Republic of Korea conducted a technology assessment on maritime autonomous surface ships under its Marine Science and Technology Cultivation Act (2017). Its efforts are in line with one of the International Maritime Organization's (IMO) seven strategic directions for 2018–2023, to integrate new and advanced technologies in the regulatory framework. In June 2018, IMO launched a Regulatory Scoping Exercise to determine the extent of adoption of autonomous surface ships.

Autonomous ships should ensure greater safety at sea for seafarers and reduce risks to the environment from spills, collisions and other disasters.

This will be vital to cleaning up the shipping industry, which moves 90% of global trade and accounts for 3% of global CO₂ emissions. The industry's emissions are even projected to more than double by 2050, according to the IMO. Shipping also accounts for 18–30% of global nitrous oxides and over 10% of sulphur oxide emissions.

As of January 2020, IMO regulations demand that vessel fuel contain no more than 0.5% sulphur, a significant drop from the 3.5% average in 2018, which may prove difficult for some countries to achieve.

These changes come at a time when countries are actively updating their fleets to comply with the requirements of the *Ballast Water Management Convention*, adopted in 2004 and entering into force in 2017, which requires water treatment systems on all vessels to be retrofitted by 2024 (IMO, 2017).

By 2025, the IMO wishes all new ships to be 30% more energy-efficient than those built in 2014. For the Republic of Korea, autonomous ships are part of the answer.

Source: compiled by Tiffany Straza