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UNU and other experts are available for interviews.

Japanese Port Capital Investment Required for Successful Climate Change Adaption

The rise of sea temperatures due to climate change could result in an increase in the frequency and intensity of typhoons.ⁱ Of the ten most economically damaging natural disasters in Asia over the last three decades, eight were due to typhoons in Japan.ⁱⁱ More severe typhoons combined with the loss in productivity due to downtime in the public transportation system or other important industries, such as ports and harbours, could have a negative economic impact on Japan.

As an island state heavily reliant on trade (28.8% of total GDP trade-related), Japan's economic growth is dependent on its port infrastructure (Real Port Capital Stock (RPCS)).ⁱⁱⁱ An increase in typhoons intensity could lead to a decrease in Japanese GDP if heavy investments are not made in port infrastructure, argues Miguel Esteban, a Postdoctoral Fellow at the United Nations University Institute of Advanced Studies. Tropical cyclones with maximum sustained winds speed higher than 30 knots (55.56 km/h) cause a precautionary cessation of many human activities, especially in ports and harbours. If the intensity of typhoons increases, port downtime alone could lead to a 3.4% decrease in Japanese GDP if an additional investment is not made of up to 127.9 billion Yen (over 1 billion EUR) in port infrastructure by the year 2085.^{iv}

Port planners must therefore factor in a possible increase in storm intensity due to global warming when designing port capacities, which must be able to prevent delays and increased downtime due to winds and rain, and sea defenses which can limit damage caused by waves. Failure to do so could lead to bottlenecks in the shipments of products and constrain Japanese economic growth.

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UNU - Institute of Advanced Studies

The [Institute of Advanced Studies](#) is part of the United Nations University's global network of research and training centres, located in Yokohama, Japan. UNU-IAS undertakes research and postgraduate education on leading sustainable development issues, convening expertise from disciplines such as economics, law, biology, political science, physics and chemistry to better understand and contribute creative solutions to pressing global concerns. UNU-IAS works to identify and address strategic issues of concern for all humankind, for governments and decision makers and, particularly, for developing countries.

United Nations University

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Northwards shift of typhoon effects

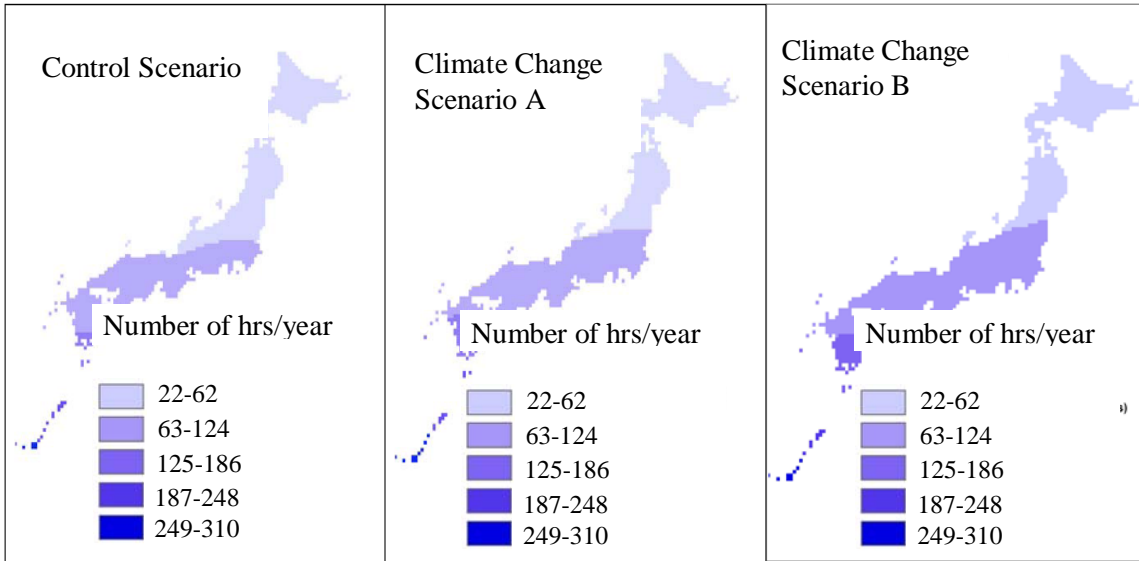


Fig. 1: average hours that different regions of Japan can be expected to be affected by 30 knot winds for both the control and future climate change scenarios. Scenario A and B differ because of the relationship between maximum wind speed and typhoon area.

Japanese GDP could be 0.15% lower by the year 2085 due to downtime caused by 30 mph winds (based on 1990 GDP figures)

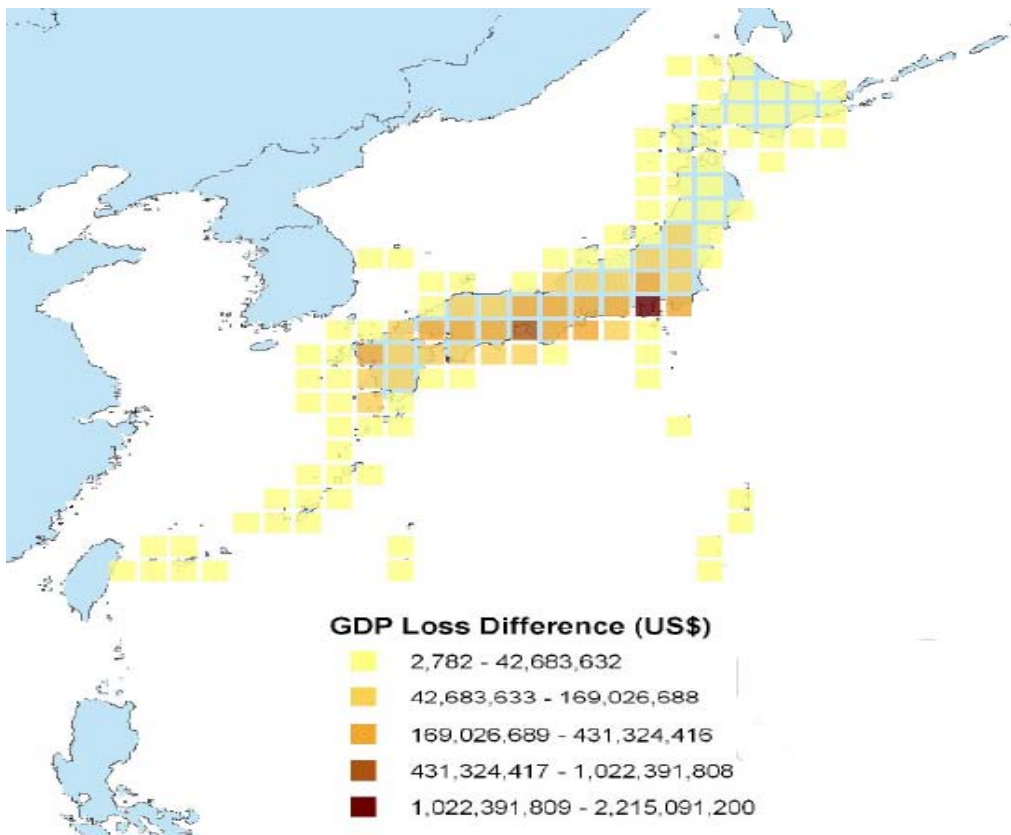


Fig. 2. GDP Loss in 2085 due to an increase in expected downtime

ⁱ Nordhaus, 2006.
ⁱⁱ Munich Re.
ⁱⁱⁱ Kawakami and Doi, 2004.
^{iv} See Figure 1.