

Case study 2

Precipitation-induced landslides near the manufacturing site in Japan



The manufacturing site in Maihara, Japan and the Sediment Disasters Prevention Plan.

The Maihara site employs 200 people and is home to packing production, laboratories and warehouses supporting the supply of 38 brands to the Japanese market. In 2021, the site conducted a risk assessment of physical climate-related risks to understand what a worst-case scenario (RCP 8.5) could mean for the site, with a focus on a 2030-time horizon. The most material risk identified was exposure to precipitation-induced landslides that could impact the structures on the site.

The area to the south of the Maihara site is elevated (small hill/mountain) and has a water body running through it. Historically, due to its high location above the river and water being drained off site along the streets, the site has not previously experienced flooding or landslide events.

Over the past decade, Japan has experienced an average of almost 1,500 landslides every year, an increase of almost 50% compared to the previous decade. In 2018, Japan was hit by a record 3,459 landslides, triggered by torrential rain in western Japan and a major earthquake in Hokkaido. In 2019, Typhoon Hagibis and other torrential rain-fall events triggered 1,996 landslides.

Actions to reduce the impact of floods

The Japanese Government is aware of the risks posed by climate change and is coordinating activities in the area to help mitigate the consequences of extreme weather events. Since the increased risk of landslides was detected, the Government has tightened legal restrictions on further development in red-zone areas, where residents' lives are at greatest risk. A system for municipal governments to offer relocation has also been introduced. For the AstraZeneca manufacturing site, a local hazard map has been developed to track the risk of precipitation-induced landslides.



The Sediment Disasters Prevention Plan

- Disaster special alert area
- Disaster alert area

Climate changes, RCP 8.5¹

	2030	2050
Projected Change in max daily rainfall (mm) Currently: 232mm/day	+ 3	+ 9
Precipitation induced landslides	High susceptibility	

Mid- to long-term consequences (if no action is taken)

- The extent and duration of potential damage to site infrastructure from mud flows is highly uncertain. Estimates suggest such damage may result in a supply interruption exceeding two months.
- Impact of a three-month interruption: \$15m from loss of revenue.
- Further industrial development restricted inside the identified landslide zone.

Plans to control the future risks

The local Government in Maihara has initiated a project to control the water body running through the industrial area and reduce the risk and impact of precipitation-induced natural events downstream of the construction. The local Government investment is an example of how society can mitigate the risks of climate change on businesses operating in regions prone to flooding and landslides, and in this case help to increase the resilience of medicine supply to patients.



A sand control dam is installed on the mountainside of the site to help prevent landslides impacting the industrial area located downhill.

References

¹ Representative Concentration Pathway (RCP) provided by ERM, based on Climate Model Intercomparison Project 5 (CMIP), used in the IPCC Assessment Report 5.