Case study 3

High wind speed at the manufacturing site in Puerto Rico

IPR Pharmaceuticals is an AstraZeneca facility located in Canóvanas, Puerto Rico and is a major manufacturing site for some Cardiovascular, Renal and Metabolism brands. The site contains several production lines, quality control laboratories, engineering and facilities maintenance, offices, and warehouses.

In September 2017, the site was impacted by Hurricane Maria. This hurricane was a Category 4 storm with sustained winds of 250km/hr that impacted the whole island. The National Oceanic and Atmospheric Administration (NOAA) estimated the cost of the hurricane to Puerto Rico and the U.S. Virgin Islands to be approximately $90bn.

Actions to reduce the impact of future hurricanes

After Hurricane Maria, the building code for Puerto Rico was reviewed to ensure greater resilience to future events of a similar nature. Government (local and federal) also took action to strengthen local infrastructure. To increase energy transmission and distribution, a $10.4bn investment was approved and a new strategy to clear roads and transport networks following hurricane events was introduced to ensure business continuity.

The AstraZeneca site has renovated two of its main manufacturing and warehouse buildings to comply with the latest building code at a cost of $9m. The site has also taken proactive steps to increase its resilience to climate-related impacts through the installation of a cogeneration plant using Liquid Natural Gas (LNG), complemented with on-site solar panels and emergency generators, reducing reliance on the local power network ($12m). The site has increased its water storage capacity by 1 million cubic meters to mitigate flood risk associated with storm waters. Water can also be sourced from three different places and additional water re-use projects are being implemented to reduce water demands on the region ($350K investment).

Impacts of Hurricane Maria included:

- Lapsed power distribution and communication networks
- Interrupted water, gasoline and diesel distribution and supply
- Wood structures destroyed, but concrete structures mostly intact
- Localised flooding
- Interruption in utility and service provisions for businesses and communities (water, fuels for transportation, ports services)

The impacts to the site itself were also severe including:

- No power or communications, flooding to the site perimeter, site damage to the fence and illumination poles
- Severe damage to all the forest at the site (most trees were lost)
- Minor structural damage to the roof and walls
- Repairs to GMP facilities required
- Within 24 hours, some personnel were able to access the site to help to get the facility back up and running. Despite the significant impact to the site, a well-structured recovery plan led by the Site Crisis Management Team and support from other AstraZeneca sites enabled a return to operations within three weeks. Federal funding was allocated for the reconstruction of power distribution and for individual home repairs, helping to build resilience within local communities

Climate changes, RCP 8.5[1]

	2030	2050
Projected Change in Hurricane Max Sustained Wind Speed (%) **Currently: 287 km/h**	+ 4	+ 7
Projected Change in Maximum Daily Rainfall (mm) **Currently: 417mm**	+ 4	+ 4

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

Looking at climate scenarios, we can expect increased exposure to high wind speeds and hurricane events. A potential direct and indirect result is physical damage to building infrastructure, impacting materials or equipment stored within the buildings. Based on experience from Hurricane Maria, we know that damage may disrupt operations for up to three weeks depending on the extent of the damage and which buildings are impacted.

Based on previous experience there is no overall impact on AstraZeneca financially, as sufficient levels of inventory are held to mitigate up to a three-month outage.

Plans to control future risks

- Since Hurricane Maria, comprehensive Business Contingency Plans have been implemented, alongside technical and strategic actions for disaster recovery. To a large extent, the site has been future proofed.
- To ensure alignment with the updated building codes in Puerto Rico, renovations are planned on two more building roofs in 2023/24 ($5m).
- Additional PV solar power installations are also planned, to continue to decrease site dependence on imported power.
- The onsite generation of heat and power from LNG is helping to reduce reliance on imported power. The site is now exploring opportunities to shift to Renewable Natural Gas to contribute to our Ambition Zero Carbon goals.
- Standby contracts with local third-party water suppliers have been established.
- To proactively anticipate and mitigate potential risks, and ensure infrastructure is robust, we are actively involved in local power and water authority stakeholder meetings.

The Canóvanas manufacturing site in Puerto Rico.

References

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