



WWF CASE STUDY USING SCENARIOS TO ASSESS FUTURE CLIMATE-WATER RISKS

EXECUTIVE SUMMARY

This case study describes water risk scenario assessments and how a company can use **WWF's Water Risk Filter** (WRF) tool to inform its water stewardship activities. It also explains how AstraZeneca integrated the outputs of a water risk scenario assessment, alongside other assessments from ERM Group, Inc. (ERM), into its internal processes designed to assess and respond to local physical climate-related risks facing some of its critical sites. The case study sets out some of the key lessons AstraZeneca learnt through this exercise.

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INTRODUCTION

CHANGING GLOBAL CLIMATE CONDITIONS WILL HAVE PROFOUND EFFECT ON THE STATUS OF GLOBAL WATER RESOURCES - NOT JUST IN THE PHYSICAL DISTRIBUTION OF WATER BUT ALSO IN HOW WATER IS USED BY BOTH PEOPLE AND NATURE.

However, these potential changes to water resources are complex and the factors driving these changes are uncertain – enter scenario analysis. Scenario analysis is an assessment of a series of potential pathway events using a set of pre-defined assumptions. The assumptions simplify some of the complex uncertainties in climate models. Simply – scenarios are a plausible description of how the future might develop based on a set of consistent assumptions about the key relationships and driving forces being considered. Or you can think of it as creating a set of different possible and plausible future water risk states.

Corporate use of scenario analysis is recommended by the Task Force on Climate-related Financial Disclosure (TCFD) and the EU Non-Financial

Reporting Directive (NFRD). Completing a water risk scenario assessment helps to supplement a more “traditional” water risk assessment by giving companies insights into how water risk profiles could change over time under different climate and socio-economic conditions. This enables companies to plan mitigation activities for the immediate future, while helping to establish the business case for leveraging opportunities for longer term investment.

The WRF scenario assessment alone does not provide a crystal ball into the future and is designed to be applied as a screening tool within a company’s water stewardship journey. Ideally, the outputs of these assessments should be grounded and validated in local knowledge, data and expertise to add value to a company’s long-term resilience planning processes.

ASSESSING WATER RISK SCENARIOS



SO HOW DOES A COMPANY GO ABOUT COMPLETING A WATER RISK SCENARIO ASSESSMENT? THE GOOD NEWS IS THAT IF YOU ALREADY USE WWF'S WRF TOOL YOU DON'T HAVE TO LOOK ANY FURTHER! IN 2020, THE WRF RELEASED ITS SCENARIOS TOOL TO MAKE IT EASY FOR COMPANIES TO ASSESS FUTURE WATER RISKS, BASED ON CLIMATE AND SOCIO-ECONOMIC CHANGES, AND ALIGNED WITH THE TCFD AND NFRD RECOMMENDATIONS.

The WWF published a brief on **Water Risk Scenarios** which covers more details about the tool and how it was built, and the reader is encouraged to refer to this report or to the **WRF methodology** for more specific details on the tool. However, the quick description of the tool is that it applies the same approach as the WRF tool's current basin risk assessment framework but expands it to include quantitative 2030 and 2050 projections of physical water risks such as water scarcity, flooding, water quality, and ecosystem services, as well as regulatory and reputational water risks. For each of the above timescales, the tool provides three scenario pathways based on the most relevant climate projections from the Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathways (RCP) and socio-economic scenarios projections from the International Institute for Applied Systems Analysis (IIASA) Shared Socioeconomic Pathways (SSP). These scenario pathways are described as:

OPTIMISTIC

Represents a world with sustainable socio-economic development (SSP1) and moderate reductions in GHG emissions (RCP 2.6/4.5) leading to a global mean surface temperature rise of approximately 1.5°C by the end of the 21st century.

CURRENT TREND

Represents a world similar to current socio-economic (SSP2) trends and intermediate GHG emission (RCP 4.5/6.0) levels leading to a global mean surface temperature of approximately 2°C by the end of the 21st century.

PESSIMISTIC

Represents a world with unequal and unstable socio-economic development (SSP3) and high GHG emission (RCP 6.0/8.5) levels leading to an increase in global mean surface temperatures of approximately 3.5°C by the end of the 21st century.

IN 2020, THE WRF RELEASED ITS SCENARIOS TOOL TO MAKE IT EASY FOR COMPANIES TO ASSESS FUTURE WATER RISKS

THE OUTPUTS OF THE WRF'S SCENARIO TOOL CAN SUPPORT COMPANIES IN:

- Creating the business case for more in-depth local assessments on specific water risks
- Supplementing the company's broader scenarios analysis (i.e., including also non-water related risks, transition risks, etc.) to support long-term resiliency planning and strategy development
- Disclosing climate and water-related risks, opportunities and resiliency

APPLYING SCENARIO ASSESSMENT DATA WITHIN ASTRAZENECA

ASTRAZENECA IS AWARE OF THE CONNECTIONS BETWEEN A CHANGING CLIMATE AND WATER RISKS AND THE POTENTIAL RISKS TO ITS BUSINESS. IN 2020, ASTRAZENECA BEGAN A PROCESS TO UNDERSTAND HOW PHYSICAL CLIMATE-RELATED RISKS COULD IMPACTED CRITICAL ASTRAZENECA SITES, INCLUDING MANUFACTURING, R&D HUBS AND INFORMATION TECHNOLOGY CENTRES. THIS PROCESS, COMPLETED IN PARTNERSHIP WITH ERM, HELPED CONDUCT PHYSICAL CLIMATE-RELATED RISK SCREENING STUDIES AT 61 CRITICAL SITES USING TWO CLIMATE SCENARIOS, ALIGNED WITH REPRESENTATIVE CONCENTRATION PATHWAYS 4.5 AND 8.5, FOR THE YEAR 2030 AND 2050. THIS SCREENING WAS THEN APPLIED TO 350 OF ASTRAZENECA'S STRATEGIC SUPPLIERS.

In parallel to this effort, AstraZeneca began a process to deepen its understanding of current water risks faced by AstraZeneca's network using WWF's WRF. AstraZeneca did this by moving beyond just completing a basin risk assessment for all its sites to conduct operational water risks assessments for its critical sites with the help of WWF. The insights from the combined basin, operational and scenarios water risk assessments provided a more holistic picture of the water risk profiles for these prioritised sites.

Water is a highly localised resource and both the assessments by ERM and WWF's WRF played a critical role in helping AstraZeneca screen its site portfolio to identify which strategically relevant sites are likely to face increased water risks in the short- and long-term. Following the screening process with ERM and drawing on water risk and

scenario insights from WWF, AstraZeneca held detailed climate and water risk workshops at 12 sites during 2021.

The objective of these workshops was to validate the identified short- and long-term climate-water risks from the screening exercises, including physical water risks such as flooding and scarcity. Using local insights, more specific localised water scenario assessments and other local sources of data, the risks expected to be most material to its sites were identified and scored for present day and out to 2030. Following the workshops, the material risks are managed locally, embedding into existing business processes at site level and escalated as appropriate.

The success of these workshops relied on the participation of a diverse representation of stakeholders drawn from the site (including Facilities Maintenance and Engineering, Safety Health and Environment (SHE), Procurement, Quality, and Risk Management), support from the Global Sustainability team and external expertise (ERM). This diversity allowed for the validation of the identified risks from multiple perspectives. While the workshops were primarily focused on physical climate-related risks, another critical success component was to introduce the regulatory and reputational water risk scenario dimensions that were specifically generated using WWF's WRF Scenario tool. This helped to ensure that the connections between physical, regulatory and reputational risks were also considered in both the validation and subsequent mitigation planning processes.

WORKSHOP AGENDA

DAY 1

SITE CONTEXT REVIEW

Holistic review of the site, how it operates, movement of materials, and surrounding community

CLIMATE DATA REVIEW

Review list of identified climate-related risks from multiple sources and validated using local insights and knowledge

APPLYING RISKS TO SITE REVIEW

Determine which identified climate-water risks represent the most material impacts to specific site aspects using voting and facilitated discussions

DAY 2

RISK SCORING

Identified climate-related risks from day 1 scored based on likelihood and impact to the site and operations for present day and out to 2030

RISK MITIGATION

At the end of the session, the ownership of the risks are passed to the team to embed the identified risks into local risk mitigation plans, business continuity plans, internal process for justifying investments in technical mitigations and corporate level TCFD disclosures

MINI CASE STUDY

VALIDATING SCREENING WATER RISK SCENARIO ASSESSMENTS WITH LOCAL INSIGHTS

Across multiple scenarios and tools, including the WRF Scenario tool, flooding was identified as a potential physical climate-related water risk for AstraZeneca's Maihara site in Japan. At the site-level workshop this risk was reviewed in the context of the site and its operations. While the site is located near a river that is projected to face increases in heavy rainfall and flooding risk, the local assessment indicates that water would naturally drain away from the site and elevated river levels are unlikely to reach the site. However, while assessing this risk, and using local government hazard maps, precipitation induced landslides were identified as future water-related risks facing the site. Here the scenario assessments helped to screen for and focus attention on a specific physical climate-related water risk but then provide a mechanism for local insights and local data to translate this into a more tangible and actionable local response. [Read more here.](#)





KEY LESSONS LEARNT

THE KEY LESSONS THAT WERE LEARNT THROUGH THE APPLICATION OF CLIMATE-WATER AND SOCIO-ECONOMIC RISK SCENARIOS TO ASTRAZENECA'S PROCESS TO BETTER PREPARE FOR A CHANGING FUTURE INCLUDE:

- Water risk scenarios are an important water stewardship tool to enable a company to screen and prioritise sites or parts of its operations that are likely to face high climate-water risks in the future
- Applying multiple climate and socio-economic scenarios across multiple timescales allows a company to get a more balanced perspective of possible future states
- Local validation of scenario assessment results using multiple data sources and local staff insights is critical to create meaningful mitigation plans
- Engaging a diverse group of stakeholders (internal and external) in the process of validating scenario assessments' results bring a more balanced perspective to the validation process and creates more local buy-in
- Outputs of water risk scenario assessment processes can support broader corporate climate disclosures (e.g., TCFD)

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