




A detailed analysis of climate risks

While actively reducing its emissions and in line with the TCFD's recommendations, ENGIE anticipates the physical impacts of climate change, assesses the financial consequences and analyzes its adaptation needs.

In 2019, ENGIE worked on the transition with the development of a 2°C trajectory that was certified SBT. The Group has also adapted its governance policy and continued its dialogue with investors on their specific expectations regarding the TCFD.

Four priorities have been identified for 2020:

- 1/ **Continuation of the partnership with the Pierre-Simon Laplace Institute** for the definition of climate curves and the assessment of the financial impacts on the Group's facilities
- 2/ **narrative description of 2°C and 4°C climate scenarios** specifying the risks and opportunities for ENGIE as well as the adaptation plans considered
- 3/ **Review of risks that could impact the Group's industrial assets worth more than €50 million** and analysis of the current exposure of assets to floods, rising sea levels, extreme winds and temperatures and forest fires
- 4/ **overall statistical and financial evaluation** of the physical impacts on all the Group's assets

IDENTIFIED PHYSICAL RISKS	POTENTIAL IMPACTS	IMPLEMENTED ACTIONS
<p>Storm Intensification</p> 	<p>High winds can directly or indirectly damage solar panels, wind turbines, power lines, depending on their type and resistance, and/or generate service interruptions.</p>	<ul style="list-style-type: none"> ▶ Maintenance campaigns, and consideration right from the design stage of the use of more resistant materials, taking into account the exposure of the installations ▶ Development of contingency plans to provide for continuity of service, including in the event of supply chain difficulties ▶ Insurance coverage
<p>Increasing rainfall intensity</p> 	<p>Heavy rainfall can increase the risk of flooding and affect dam flows - triggering disruptions and affecting the capacity of dams to generate power. The operation of certain other types of assets can also be affected (cogeneration, gas storage, gas transmission networks, heating and cooling networks). Landslides can also damage gas networks.</p>	<ul style="list-style-type: none"> ▶ Ongoing monitoring of assets to accurately assess their degree of exposure and adjust their insurance coverage ▶ Development of nature-based solutions to better manage floods, such as natural dikes, mangrove replanting, river or wetland restoration
<p>Increasing frequency and magnitude of droughts</p> 	<p>Water capacity is likely to be affected, which could lead to a reduction in production in some regions. Some thermal and nuclear power plants that use river water for cooling may have to reduce their operation if the temperature of their discharged water becomes too high. Some equipment may not be able to withstand excessively high temperatures.</p>	<ul style="list-style-type: none"> ▶ Development of contingency plans to provide for continuity of service ▶ Study of the implementation of alternative production technologies to make up for possible shortfall ▶ Development of nature-based solutions to better preserve water resources and reduce evaporation ▶ Identification of sites under high water stress and associated action plans
<p>Sea level rise</p> 	<p>A rise of more than one meter can impact assets located on exposed coasts.</p>	<ul style="list-style-type: none"> ▶ Sensitivity studies for rises more than one meter in height ▶ Continuous monitoring of assets ▶ Study of protection solutions
<p>Increasing frequency of forest fires</p> 	<p>Specific asset exposure in South Africa, Australia, North America and Europe.</p>	<ul style="list-style-type: none"> ▶ Development of contingency plans to provide for continuity of service ▶ Deployment of a policy of systematic clearing of the surroundings of production assets