



### Case Study

# Preparing for a riskier future: Conducting detailed, climate-focused portfolio, and location analyses

**Company:** ECA Vaud

**Headquarters:** Vaud, Switzerland

**Industry:** Public Sector

**Moody's Products:**

- Analytical Services
- Moody's RMS™ Europe Windstorm DLM Model
- Moody's RMS™ Europe Inland Flood HD Models
- Moody's RMS™ Europe Severe Convective Storm HD Model
- Moody's RMS™ Climate Change Models
- Location Intelligence API



## The goal

### ENHANCING CONFIDENCE IN INSURANCE AND RISK STRATEGY WITH IMPROVED DATA INSIGHTS

ECA Vaud (Etablissement Cantonal d'Assurance) is a public body focused on managing, insuring, and mitigating the risk of natural perils to the population of the canton of Vaud, one of the 26 cantons of the Swiss Confederation. Its overriding mission focuses on supporting loss prevention efforts, facilitating effective incident response, and providing comprehensive, affordable insurance.

Given its critical function, ECA Vaud must ensure that not only is it able to meet prevention and response obligations based on the region's current risk profile, but that it is also planning effectively for the potential heightened risk environment created by climate change. In addition, as a nonprofit organization, it must



guarantee that insurance tariffs are both affordable and commensurate with current exposure levels, while also assessing the rate implications of a shifting climate.

## The objective

### **SUPPORTING RISK ASSESSMENT AND TARIFF CALCULATION WITH DETAILED PORTFOLIO ANALYSES**

ECA Vaud maintains an extensive database spanning over 200,000 properties across the canton, including location data as well as information relating to fire exposure by region.

The organization needed to conduct detailed analyses of this portfolio both from a risk assessment perspective and to assess the accuracy of insurance tariffs and create revised tariffs. This would also require granular hazard insights at the location level. ECA Vaud was interested in a complete and consistent perspective on weather and climate risks, including flood (both fluvial and pluvial), windstorm, and severe convective storm (hail, straight-line wind, and tornado).

Further, the analyses needed to deliver a current view of risk extending to 2055 by various time steps. This would help ECA Vaud understand the location-level impact of climate change both from a risk and insurance tariff perspective for flood and wind.

Vaud was the first canton in Switzerland to conduct this type of analysis of natural catastrophe risks, and Moody's bid for and was awarded this project.

## The solution

### **COMBINING MARKET-LEADING EXPERTISE WITH MARKET-ADVANCING CAPABILITIES**

The Moody's Analytical Services team was tasked with conducting a detailed portfolio and location-level risk analysis of ECA Vaud's database of 200,000 locations.

To deliver on this, in addition to the full range of expertise represented by the Analytical Services team, the project also required the use of a number of Moody's RMS™ Models and applications. These included Moody's RMS™ Europe Windstorm DLM Models, Moody's RMS™ Europe Inland Flood Models, Moody's RMS™ Europe Severe Convective Storm Model, and Moody's RMS™ Climate Change Models, which apply a fully probabilistic approach to quantifying climate change risk. Moody's Location Intelligence API, which is designed to integrate improved hazard, exposure, geospatial, and loss data into risk management processes, was also used.

## The process

### **PROVIDING PORTFOLIO AND LOCATION-LEVEL ANALYSES WITH COMPREHENSIVE EXPOSURE DATA PREPARATION**

Moody's compiled a detailed project plan, in conjunction with ECA Vaud, spanning every stage in the process. The Analytical Services team also conducted a detailed session on cat modeling with the client and clarified the datasets required for analyses.

Regular communication was maintained throughout to ensure the organization understood every aspect of the process and the analyses produced.

The first step involved a comprehensive exposure preparation and enrichment process to create an accurate exposure foundation. Data-sharing protocols restricted the available address information, so the team generated street-level geocoordinates for analysis. Further sensitivity testing was conducted on building construction data to apply construction codes that reflected structure materials and other risk modifiers.

To validate the data and ensure that analyses could be easily integrated into ECA Vaud's existing data infrastructure, the team also produced a sample set of exposure and loss results.

With the format of the analysis agreed on, Moody's delivered a complete set of results for the full 200,000 location database. This included portfolio risk assessment analyses for both the current baseline risk and for the complete range of Representative Concentration Pathways (RCPs), developed by the Intergovernmental Panel on Climate Change (IPCC), with five-year increments up to a time horizon of 2055, plus additional baseline analyses based on key historical losses.

In terms of the location-level assessment, Moody's provided average annual loss (AAL) data per location, applying both baseline and climate change-related analyses, that could directly be linked to the tariffication information needed. In addition, the team generated comprehensive, location-specific hazard data, including wind speed and flood depth information, with associated risk scores per region. More information on key return period losses was also provided.

## The outcome

### MOVING FORWARD FROM A POSITION OF ANALYTICAL STRENGTH

The comprehensive analysis and breadth of data produced by the Analytical Services team provided ECA Vaud with an unparalleled level of exposure insight from the entire portfolio down to individual locations.

The empowering nature of this data is enabling ECA Vaud to move forward on multiple fronts. AAL data allows the organization to finalize insurance tariffs, inputting the data into their tariff calculation system to develop rates based on current, accurate hazard data by both peril and geographical location. The climate change analysis has also been applied to generate tariff predictions up to 2055.

ECA Vaud has fully integrated the portfolio hazard data into its geographic information system to enable the continuous monitoring of hazards associated with each particular region. Moody's has worked closely with the organization to optimize its ability to use the hazard information, ensuring it has a working knowledge of the climate factors influencing loss development in different regions within Vaud, while also feeding into risk management decision-making.

On the regulatory front, Moody's AAL figures coupled with return period loss numbers have proved extremely valuable in enabling ECA Vaud to ensure the accuracy of risk capital requirements under its specific regulatory needs.

Moving forward, based on ECA Vaud's satisfaction with the insights generated by Moody's and the strength of the working relationship, the organization is actively promoting to other cantons in Switzerland, sharing the benefits of this analytical-based approach to managing current risks and the impacts of climate change.



As a public interest establishment in western Switzerland, the ECA ensures the safety of the Vaud community in all areas of fire and other natural elements for real and movable property through three missions: prevention, relief, and insurance. The insurance system practiced by the ECA is based on the principles of solidarity and mutuality. As a non-profit, the ECA redistributes its financial resources to the service of the safety of the inhabitants and businesses of the canton.

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