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## Applicant UNESCO Global Geopark

*Mëlldall, Luxembourg*

### Geographical and geological summary



database: Arbeitsgemeinschaft Kataster und Kartographie der Großregion, [www.gis-gr.eu](http://www.gis-gr.eu)

## **1. Physical and human geography**

The Mëllerdall is situated in Eastern Luxembourg and includes 11 member municipalities. It is a rural area with a population of about 25,500 inhabitants. Its area of 256 km<sup>2</sup> covers about 1/10 of the country's total area. The region has a rich geological, natural, cultural and intangible heritage. The largest town is Echternach, founded in 698.

The region is part of the cuesta landscape at the north-eastern rim of the Paris Basin. Plateaus with elevations of about 400 m, deeply incised by rivers, alternate with gently undulating hillsides. Its lowest point is at an altitude of 140 m.

Annual mean temperatures in the region are between 8-9.5°C, with 17°C in the summer and 0°C in the winter. Annual precipitation is about 700-800 mm. The transitional Atlantic-continental climate is convenient for agriculture on the hillsides and deciduous and mixed forests on the steep slopes. The region is highly regarded for its occurrence of a large variety of ferns and mosses in locations with extreme microclimatic conditions along the high rock faces and in narrow gorges. Some of these are extremely rare in Continental Europe but are found here.

Natural resources like drinking water and building stones have been used by man since prehistoric times. Archaeological findings show the Mëllerdall to be an important archive of the early history of Luxembourg. The touristic tradition of the region dates back to the late 19th century and is mainly based on its picturesque sandstone landscapes.

## **2. Geological features and geology of international significance**

The Mëllerdall is situated in the centre of the "Trier-Luxembourg Basin", a syncline structure of Triassic and Lower Jurassic sediments extending from the Paris Basin into the Rhenish Massif. Due to the alternation of relative thin strata of hard and soft rocks, the area forms a small-scaled cuesta landscape. Escarpments and cliffs developed by the incision of the rivers and creeks, and the valley slopes were formed by gravitational mass movements like rockfalls. On the edges of the plateaus, where marly units are exposed below the hard sandstone and dolomite layers, processes of gliding or tilting opened up joints and created small passageways and caves. These and other geomorphological forms like uvial terraces, a meander shortcut and mardels tell the geomorphological story of the region and illustrate the vividness of geological processes that were active especially during the Cenozoic.

In the centre of the syncline, the up to 100 m thick unit of the Luxembourg Sandstone Formation (a quartz sandstone with calcareous cement) of Lower Liassic age forms one of the most spectacular sandstone landscapes in Western Europe. The two main escarpments limiting the plateaus are only about 10 km apart. On the rock faces, an abundance of sedimentary as well as weathering structures like honeycombs can be seen. The Luxembourg Sandstone is the most important aquifer supplying drinking water to the region, with a long-term continuous discharge and excellent filtering capacities.