



United Nations  
Educational, Scientific and  
Cultural Organization



UNESCO  
Global  
Geoparks

# Applicant UNESCO Global Geopark

## MËLLERDALL GEOPARK, LUXEMBOURG

### geographical and geological summary



# 1. Physical and human geography

The Mëllerdall Geopark is situated in Eastern Luxembourg near the border to Germany and includes 12 municipalities. It is a rural area with a population of about 23,000. Its area of 256 km<sup>2</sup> covers about 1/10 of the country's total area. Its regional and economic centre is Echternach, a small city founded in 698 by St. Willibrord, with its well-known religious heritage.

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

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 have one of their rare incidences in Continental Europe 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 proposed Geopark 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. Because of the alternation of relative thin strata of hard and soft rocks with an inclination of less than 10°, the area forms a small-scaled cuesta landscape. Escarpments and cliffs developed epigenetically 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 fluvial 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 structures as well as weathering structures like honeycomb weathering can be seen. The continuous long-term discharge and the excellent filtering capacities of the Luxembourg Sandstone allows a nearly fully selfsufficient drinking water supply of the region today.