

Smart Altitude - WebGIS Layers

Content Tree	Dataset	Description	Units	Format	Date	Note
 Ski Resorts → Key Performance Indicators (KPI) 	Ski resorts KPIs are measurable values that demonstrates how effectively the ski resort is achieving key business objectives. For more information see Description ski resort KPIs as output of the Winter Energy Management Tool (WE-EMT) 	This value is designed as average of scores from the 8 following KPIs.	Unit: 1-5 as weighted average of scores regarding following parameters:		For four Living Labs in the Alpine Space	
	Overall Ski-Resort KPI (OV)					
	Energy Efficiency (E_EF)					
	Energy Economy (E_EC)					
	Sustainability (S)					
	Energy Management (EM)					
	Smart Grid (SG)					
	Adaptation to Climate Change (ACC)					
	Self Evaluation (SE)					
	Future Outlook (FO)					
 Ski Resorts → Open Ski Map 	Through the Open Ski Map ski related datasets can be found, which are implemented in the Smart Altitude WebGIS.				Downloaded 09.08.2019	
	Pistes			Line Vectors		
	Aerialways			Line Vectors		
	Ski Resorts			Polygons		
	Pistes length per LAU			Polygons		
	Pistes length per resort			Polygons		
 Ski Resorts → Smart Altitude Study Sites 	The WebGIS offers different border layers concerning the Alpine Space.			Polygons		
	Alpine Space Area					
	Alpine Convention Area					
	Smart Altitude - Case Study Areas (Ski Resort LAU Communities)					
 Renewable Energy Potential → Solar → Global Solar Atlas (GSA Version 2.0) 	The Global Solar Atlas offers long-term yearly/monthly averaged daily totals of several datasets for solar resources and the photovoltaic power potential. The data presented here is only suitable for preliminary analysis.			Raster, 1x1km		
	Photovoltaic Electricity Output (PVOUT)	Amount of energy, converted by a PV system into electricity that is expected to be generated according to the geographical conditions of a site and the configuration of a PV system.	[kWh/kWp]			
	Global Horizontal Irradiation (GHI)	Sum of direct and diffuse components of solar radiation.	[kWh/m²]			
	Diffuse Horizontal Irradiation (DIF)	Solar radiation component that is scattered by the atmosphere.	[kWh/m²]			
	Global Irradiation for Optimally Tilted Surface (GTI)	Sum of direct and diffuse solar radiation falling on a tilted surface of fixed-mounted PV modules. Compared to the horizontal surface, the tilted surface also receives a small amount of ground-reflected solar radiation.	[kWh/m²]			
	Optimum Tilt to Maximize Yearly Yield (OPTA)	Optimum inclination of an inclined and fixed PV module for a specific azimuth (orientation), for which the PV modules receive the highest amount of solar radiation per year.	[°]			
	Direct Normal Irradiation (DNI)	Solar radiation component that directly reaches the surface.	[kWh/m²]			
	Air Temperature at 2m AGL (TEMP)	Air temperature determines the temperature of PV cells and modules. It has a direct impact on PV energy conversion efficiency and resulting energy losses.	[°C]			
	Terrain Elevation ASL (ELE)	Represents terrain elevation (altitude) relative to the sea level. Only data for the land area is shown.	[m]	Raster, 90x90m		
 Renewable Energy Potential → Solar → Global Solar Atlas (GSA Version 2.0) → Median per LAU	The Global Solar Atlas offers long-term yearly/monthly averaged daily totals of several datasets for solar resources and the photovoltaic power potential. The data presented here is only suitable for preliminary analysis.			Polygon		
	LAU median: Photovoltaic Electricity Output (PVOUT)	Amount of energy, converted by a PV system into electricity that is expected to be generated according to the geographical conditions of a site and the configuration of a PV system.	[kWh/kWp]			
	LAU median: Global Horizontal Irradiation (GHI)	Sum of direct and diffuse components of solar radiation.	[kWh/m²]			
	LAU median: Diffuse Horizontal Irradiation (DIF)	Solar radiation component that is scattered by the atmosphere.	[kWh/m²]			
	LAU median: Global Irradiation for Optimally Tilted Surface (GTI)	Sum of direct and diffuse solar radiation falling on a tilted surface of fixed-mounted PV modules. Compared to the horizontal surface, the tilted surface also receives a small amount of ground-reflected solar radiation.	[kWh/m²]			
	LAU median: Optimum Tilt to Maximize Yearly Yield (OPTA)	Optimum inclination of an inclined and fixed PV module for a specific azimuth (orientation), for which the PV modules receive the highest amount of solar radiation per year.	[°]			
	LAU median: Direct Normal Irradiation (DNI)	Solar radiation component that directly reaches the surface.	[kWh/m²]			
	LAU median: Air Temperature at 2m AGL (TEMP)	Air temperature determines the temperature of PV cells and modules. It has a direct impact on PV energy conversion efficiency and resulting energy losses.	[°C]			
 Renewable Energy Potential → Solar → Hotmaps Project 	The EU project Hotmaps collected data on energy potential of renewable sources and re-elaborated them on national level, in order to build datasets for all EU28 countries at NUTS3 level. Several renewable sources have been considered. All Hotmaps data must be interpreted as indicators.			Raster, 100x100m		
	Solar Energy Potential	Data on annual global radiation on globally inclined surfaces were retrieved from the PVGIS as a 1km x 1km raster layer and clipped by considering the building footprint with a resolution of 100m x 100m from Copernicus Services.	[kWh/m²]		Downloaded 10.08.2019	

Content Tree	Dataset	Description	Units	Format	Date	Note
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Wind Energy Layers 	The Global Wind Atlas is a free, web-based application developed to help policymakers, planners, and investors to identify high-wind areas for wind power generation, and then perform preliminary calculations. A high value indicates a high potential for renewable energy from wind.			Raster, 1x1km	Simulation period 2008-2017	
	Capacity Factor IEC Class 1	High wind				
	Capacity Factor IEC Class 2	Medium wind				
	Capacity Factor IEC Class 3	Low wind				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Wind Energy Layers → Median per LAU 	The Global Wind Atlas is a free, web-based application developed to help policymakers, planners, and investors to identify high-wind areas for wind power generation, and then perform preliminary calculations. A high value indicates a high potential for renewable energy from wind.			Polygon	Simulation period 2008-2017	
	LAU median: Capacity Factor IEC Class 1	High wind				
	LAU median: Capacity Factor IEC Class 2	Medium wind				
	LAU median: Capacity Factor IEC Class 3	Low wind				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Wind-Speed at a height of 	Mean wind speed at a specific height is a measure of the wind resource. Higher values normally indicate better wind resources, but mean wind power density gives a more accurate indication of the available wind resource.			Raster, 1x1km	Simulation period 2008-2017	
	10m	[m/s]				
	50m	[m/s]				
	100m	[m/s]				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Wind-Speed at a height of → Median per LAU 	Mean wind speed at a specific height is a measure of the wind resource. Higher values normally indicate better wind resources, but mean wind power density gives a more accurate indication of the available wind resource.			Polygon	Simulation period 2008-2017	
	LAU median: 10m	[m/s]				
	LAU median: 50m	[m/s]				
	LAU median: 100m	[m/s]				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Power-Density at a height of 	Mean wind power density at a specific height is a measure of the wind resource. Higher values indicate better wind resources.			Raster, 1x1km	Simulation period 2008-2017	
	10m	[W/m²]				
	50m	[W/m²]				
	100m	[W/m²]				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Power-Density at a height of → Median per LAU 	Mean wind power density at a specific height is a measure of the wind resource. Higher values indicate better wind resources.			Polygon	Simulation period 2008-2017	
	LAU median: 10m	[W/m²]				
	LAU median: 50m	[W/m²]				
	LAU median: 100m	[W/m²]				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Air-Density at a height of 	Mean air density at a specific height is a measure of the wind resource.			Raster, 1x1km	Simulation period 2008-2017	
	10m	[kg/m³]				
	50m	[kg/m³]				
	100m	[kg/m³]				
 Renewable Energy Potential → Wind → Global Wind Atlas (GWA Version 3.0) → Air-Density at a height of → Median per LAU 	Mean air density at a specific height is a measure of the wind resource.			Polygon	Simulation period 2008-2017	
	LAU median: 10m	[kg/m³]				
	LAU median: 50m	[kg/m³]				
	LAU median: 100m	[kg/m³]				
 Renewable Energy Potential → Wind → Hotmaps Project 	This data shows the total energy potential of wind in the EU28 at NUTS3 level. The original dataset is the Wind Global Atlas, which was aggregated at NUTS3 level, through the CORINE Land Cover and by excluding urban areas, bird connectivity corridors, mountain peaks over 2500m and protected areas from the Natura 2000 framework.			Raster, 300x300m		
	Power Density Potential at 50m height		[W/m²]		Downloaded 10.08.2019	
 Renewable Energy Potential → Geothermal → Thermomaps Project / Hotmaps Project 	Data on very shallow geothermal energy potential (up to 10 metres) were retrieved from the project Thermomaps as a vector layer and presented in the Hotmaps project without further elaboration.			Polygon	Downloaded 10.08.2019	
	Thermomaps (Geothermal Energy Potential)		[W/m K]			
	Average per LAU: Geothermal energy potential		[W/m K]			
 Renewable Energy Potential → Geothermal → GEOLEC Project 				Raster	Downloaded 15.10.2020	
	Basal Heat Flow	The here presented layer shows the basal heat flow for whole Europe.	[mW/m²]			
	Surface Heat Flow	The here presented layer shows the surface heat flow for whole Europe.	[mW/m²]			
	Theoretical Potential 2030	The theoretical potential for 2030 is the maximum possible (theoretical) technical potential.	[MW/km²]			
	Economic Potential 2030	The economic potential for 2030 is calculated from the realistic underground technical potential, accepting only those subvolumes where the levelized cost of energy is less than a given threshold.	[MW/km²]			
	Theoretical Potential 2050	The theoretical potential for 2050 is the maximum possible (theoretical) technical potential.	[MW/km²]			
	Economic Potential 2050	The economic potential for 2050 is calculated from the realistic underground technical potential, accepting only those subvolumes where the levelized cost of energy is less than a given threshold.	[MW/km²]			
 Renewable Energy Potential → Biomass → Hotmaps Project 	Data concerning biomass developed within the EU project Hotmaps.			Polygon		
	Energy Potential from Agricultural Residues	Considered agricultural residues are crop, cereals, maize, oilseed rape and sunflower, sugar beet, rice, olives, citrus and grape.	[PJ]			
	Energy Potential from Forest Residues	Energy potential have been spatialized by using the CORINE Land Cover. Forest biomass includes two categories of residues: Fuelwood and roundwood.	[PJ]			

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	Energy Potential from Livestock Effluents	Considered livestock effluents for the energy generation are solid and liquid manure from breeding of cattle, pigs and poultry.	[PJ]			
Renewable Energy Potential → Biomass → Global Forest Watch Project 	Presents data concerning biomass potential from the open data portal Global Forest.		[Mg ha-1]			
	Aboveground Biomass			Raster, 30x30m		
	Aboveground Biomass per LAU			Polygon (LAU)		
Renewable Energy Potential → Biomass → AlpES Project 	The calculated indicator represents the mapping of biomass production supply and was created within the AlpES project. For more information see Biomass production from grassland 					
	Grassland Biomass Ecosystem Service		[t DM ha-1 y-1]	Polygon (LAU)		
Renewable Energy Potential → Hydro 	The dataset contains all potential hydropower plant locations for micro to large hydropower plants based on the GMTED2010 breakline dataset (elevation) and runoff data from the Global Runoff Data Centre.				Coverage time 2010	
	Hydropower Potential Locations			Point Feature		
	Total Hydropower Potential per LAU	The Total Hydropower Potential per LAU shows the sum values of all hydropower potential locations on municipality level.		Polygon (LAU)		
Energy Infrastructure → Power Plants - Global Power Plant Database 	Database covers approximately 30000 power plants around the world. Beside thermal plants also renewable plants are included.					
	Power Plants, incl. Renewables					
Energy Infrastructure 						
	Charging Points	Open Charge Map is a non-commercial, non-profit, electric vehicle data service hosted and supported by a community of businesses, charities, developers and interested parties around the world. The aim is to work with the community to develop and provide a high quality, public, free, open database of charging equipment locations globally.		Point Feature		
Land Use and Land Cover 	Land use and land cover mapping for all EEA39 countries (2018). 25 ha minimum mapping unit, 100m minimum mapping width, 100m positional accuracy, >85% thematic accuracy.			Raster, 100x100m		
	CORINE Land Cover (CLC)	CORINE Land Cover (CLC) was specified to standardize data collection on land cover in Europe to support environmental policy development.			downloaded 08.08.2019	
	European Forest Areas	This dataset shows the European forest area for 2012 and 2015 covering EEA39 countries. 1 (forest), 0 (non-forest)			downloaded 11.08.2019	
Political-Geographical Boundaries → Administrative Units 	Euro Boundary Map provides a European geographic database for administrative and statistical regions. EBM offers the combination of detailed European administrative units and linkages to the corresponding LAU and NUTS codes.			Polygons	Data delivery: Mai 2019	
	Admin Unit/Boundary Level 1	National borders/ states				
	Admin Unit/Boundary Level 2	Federal states				
	Admin Unit/Boundary Level 3					
	Admin Unit/Boundary Level 4					
	LAU - Local Administrative Units	Municipality level				
Political-Geographical Boundaries → Statistical Units 	The database includes relations between the European-wide unique identifiers of administrative units and their corresponding statistical codes and units (NUTS) maintained and published by Eurostat.					
	NUTS 1 - Major socio-economic regions					
	NUTS 2 - Basic regions for the application of regional policies					
	NUTS 3 - Small regions for specific diagnoses					
Political-Geographical Boundaries 	The WebGIS offers different border layers concerning the Alpine Space.			Polygon		
	Alpine Space Area					
	Alpine Convention Area					
Political-Geographical Boundaries → Protected Areas → World Database on Protected Areas (WDPA) 	Protected Planet is a source of information on protected areas, updated monthly with submissions from governments, non-governmental organizations, landowners and communities.				Downloaded 12.08.2019	
	WDPA Areas			Polygon		
	WDPA Points (Addition only for Slovenia)			Point Feature		
Political-Geographical Boundaries → Protected Areas 						
	Natura 2000	Natura 2000 is the key instrument to protect biodiversity. It is an ecological network of protected areas, set up to ensure the survival of Europe's most valuable species and habitats.		Polygon	Downloaded 08.08.2019	
	Nationally Designated Areas (CDDA)	The dataset contains data on nationally designated areas and corresponding protected site for spatial features in EEA member and collaborating countries.		Polygon	Downloaded 08.08.2019	
Political-Geographical Boundaries → Protected Areas → Protected Areas - IGF curated 				Polygon		
	Biosphere Reserves					
	National Parks					
	Natural Parks					
	World Heritage Sites					
Digital Elevation Model & Hillshade 	DEM and Hillshade are resampled (250m, 1000m) from EU-DEM, which is a 1:100 000 scale digital elevation model providing height data for 40 European countries and territories. It describes the distribution of terrain, not including vegetation and man-made structures.					
	Digital Elevation Model (DEM)		[m]			
	Hillshade		[°]			
	Combined DEM & Hillshade					

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