Strengths and weaknesses	
Measurement procedure and tool	The EDI can be calculated with literature formulations. Rain data are needed.
Scale of measurement	Dimensionless
Data source	
Required data	Metrological data (Model)
Data input type	Quantitative
Data collection frequency	
Level of expertise required	High
Synergies with other indicators	
Connection with SDGs	13
Opportunities for participatory data collection	
Additional information	
References	Byun H.R., Wilhite D.A. (1999). Objective Quantification of Drought Severity and Duration. Journal of Climate, 12, 2747-2756. DOI: 10.1175/1520-0442(1999)0122.0.CO;2

6.50 Standardized Precipitation Index

Project Name: PHUSICOS (Grant Agreement no. 776681)

Author/s and affiliations: Gerardo Caroppi[1,2], Carlo Gerundo[2], Francesco Pugliese[2], Maurizio Giugni[2], Marialuce Stanganelli[2], Farrokh Nadim[3], Amy Oen[3]

[1] *Aalto University, Department of Built Environment, Espoo, Finland (gerardo.caroppi@aalto.fi)*

[2] *University of Naples Federico II (UNINA), Department of Civil, Architectural and Environmental Engineering, Naples, Italy*

[3] *Norwegian Geotechnical Institute (NGI), Oslo, Norway*

Standardized Precipitation Index	Natural and Climate Hazards
Description and justification	Indicators of Drought Risk Resilience sub-criterion will assess the site response to drought phenomena based on

	susceptibility indicators: land use cover, temperature, moisture, wet weather.
Definition	The Standardized Precipitation Index (SPI) is a widely used index to characterize meteorological drought on a range of timescales. On short timescales, the SPI is closely related to soil moisture, whereas at longer timescales, the SPI can be related to groundwater and reservoir storage. The SPI can be compared across regions with markedly different climates. It quantifies observed precipitation as a standardized departure from a selected probability distribution function that models the raw precipitation data. The raw precipitation data are typically fitted to a Gamma or a Pearson Type III distribution, and then transformed to a Normal Distribution. The SPI values can be interpreted as the number of standard deviations by which the observed anomaly deviates from the Long-Term mean.
Strengths and weaknesses	For the operational community, the SPI has been recognized as the standard index that should be available worldwide for quantifying and reporting meteorological drought. Concerns have been raised about the utility of the SPI as a measure of changes in drought associated with climate change, as it does not deal with changes in evapotranspiration (https://climatedataguide.ucar.edu/).
Measurement procedure and tool	The SPI can be estimated with reference to differing periods of 1-to-36 months, using monthly input data.
Scale of measurement	Dimensionless
Data source	
Required data	Metrological data, topography (Model).
Data input type	Quantitative
Data collection frequency	
Level of expertise required	High
Synergies with other indicators	
Connection with SDGs	13
Opportunities for participatory data collection	
Additional information	

References	

6.51 Groundwater level

Project Name: UNaLab (Grant Agreement no. 730052)

Author/s and affiliations: Maria Dubovik, Laura Wendling, Ville Rinta-Hiiro, Arto Laikari, Malin zu-Castell Rüdenhausen

VTT Technical Research Centre Ltd, P.O. Box 1000 FI-02044 VTT, Finland

Quantitative status of groundwater	Water management Natural and Climate Hazards
Description and justification	Water covers ca. 71 % of the Earth's surface but only 2.5 % of it is fresh, stored as groundwater and in glaciers. Water is vital for living organisms, and it enables a multitude of human activities such as agriculture, manufacturing and transportation of goods. Available water resources are being extensively used for a variety of purposes, and ensuring that the water quality is monitored and the degraded water bodies are enhanced is essential for protecting the water resources. EU Water Framework Directive (2000/60/EC) sets forth the framework for integrated management of surface waters and groundwater resources in the EU Member States, which are presented as River Basin Management Plans.
Definition	The degree to which a body of groundwater is affected by direct and indirect abstractions (good, moderate, bad, poor, bad)
Strengths and weaknesses	+ A comparable EU-wide applied assessment - Requires arrangements on Member State-level
Measurement procedure and tool	The following procedure is based off the requirements set by the Water Framework Directive (2000/60/EC): 1. Define groundwater bodies within a river basin area 2. Establish type-specific reference conditions per Annex V 3. Identify significant anthropogenic pressures 4. Identify and estimate significant water abstractions for urban, agricultural, industrial and other uses, including seasonal variations and total annual demand 5. Identify and estimate loss of water in the distribution systems