	URBAN GreenUP Deliverable D4.4 – Monitoring program to Izmir https://www.urbangreenup.eu/insights/deliverables/d4-4--monitoring- program-to-izmir.kl URBAN GreenUP Deliverable D5.3: City Diagnosis and Monitoring Procedures https://www.urbangreenup.eu/insights/deliverables/d5-3-city-diagnosis-and-monitoring-procedures.kl The Mersey Forest & The University of Manchester (2011). STAR tools: surface temperature and runoff tools for assessing the potential of green infrastructure in adapting urban areas to climate change. Part of the EU Interreg IVC GRaBS project. www.ginw.co.uk/climatechange.

4.37 Volume of water slowed down entering sewer system

Project Name: URBAN GreenUP (Grant Agreement no. 730426)

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Volume of water slowed down entering sewer system	**Water Management**
Description and cation	The parameters under principle investigation are discharge (m^3 sec^{-1}) and flow velocity (m sec-1), which when plotted on a storm-hydrograph, ought to demonstrate the following changes between the baseline and post GI scenario: • An increased lag-time (L), the time of peak rainfall to peak discharge and, • Reduced peak discharge (Qp)
Definition	Rate change in runoff production at field or plot scale.
Strengths and weaknesses	+ ET represents system losses of groundwater, potentially lowering wetted fringe and water table that is hypothesized to reduce soil moisture and increase infiltration – a useful GI service if permeable paving is installed. - Evapotranspiration (ET) (mm sec-1) and interception rates will not be directly observed under this KPI, through various processes, both are implicit in reducing inflow rates into sewers.
Measurement procedure and tool	Precipitation data will be collected, and water inputs and outputs will be monitored at a number of points of interest throughout the NBS interventions. These data are mapped and evaluated to obtain flow patterns by creating a model. The

	percentage of absorption or retained water will also be taken into account. Some data can be obtained from rainfall stations and gauging stations along the NBS influence area. It will necessary to create a longitudinal chain of continuous discharge observation. Conduct continuous discharge monitoring through the baseline and post-intervention scenario to tests the effects of GI on increased lag-time and reduced Qp
Scale of measurement	Area
Data source	
Required data	Open Pipe • V-notch gauging station weir with stilling well and spot discharge measurement to establish stage-discharge relationship, and therefore continuous discharge, extrapolated from 5 minute water-level (stage). • Non-contact flow measurement – Particle Image Velocity and infa-red height sensors to continually monitor height and velocity, over a known cross sectional area. Together these observations can combine to create a continuous discharge data-series. Closed Pipe • Ultrasonic Flow Meters, see example here: http://www.rshydro.co.uk/liquid-pipe-flowmeters/
Data input type	Numeric data (tables).
Data collection frequency	Pre and post intervention.
Level of expertise required	Technical/expert
Synergies with other indicators	Highly related with KPI Run-off coefficient in relation to precipitation quantities, and KPI Absorption capacity of green surfaces, bioretention structures and single trees.
Connection with SDGs	This KPI is directly related with SDG 6 and SDG 11 and indirectly is related with SDG 13 (promotes a more efficient use of water resources).
Opportunities for participatory data collection	This is not a KPI open to participatory collaboration.
Additional information	

References	URBAN GreenUP Deliverable D2.4 - Monitoring program to Valladolid. https://www.urbangreenup.eu/insights/deliverables/d2-4---monitoring-program-to-valladolid.kl URBAN GreenUP Deliverable D3.4 - Monitoring program to Liverpool https://www.urbangreenup.eu/insights/deliverables/d3-4---monitoring-program-to-liverpool.kl URBAN GreenUP Deliverable D4.4 – Monitoring program to Izmir https://www.urbangreenup.eu/insights/deliverables/d4-4--monitoring-program-to-izmir.kl URBAN GreenUP Deliverable D5.3: City Diagnosis and Monitoring Procedures https://www.urbangreenup.eu/insights/deliverables/d5-3-city-diagnosis-and-monitoring-procedures.kl Hankin B, Craigen I, Chappell NA et al. (2016) Strategic Investigation of Natural Flood Management in Cumbria. Jeremy Benn Associates, Skipton, UK. See http://naturalcourse.co.uk/uploads/2017/04/2016s4667-Rivers-Trust-Life-IP-NFM-Opportunities-Technical-Report-v8.0.pdf (accessed 02/02/2018). https://www.gov.uk/government/publications/flood-risk-maps-for-surface-water-how-to-use-the-map http://desktop.arcgis.com/en/arcmap/10.3/tools/spatial-analyst-toolbox/stream-order.htm http://meetingorganizer.copernicus.org/EGU2015/EGU2015-8582.pdf

4.38 Total surface area of wetlands within a defined area

Project Name: UNaLab (Grant Agreement no. 730052)

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Total surface area of wetlands within a defined area	**Climate resilience Water Management**
Description and justification	Wetlands are unique ecosystems that occur in places where the water table is close to the ground level, or where land is covered by water, either seasonally or permanently. Convention on Wetlands (Ramsar, Iran, 1971), or Ramsar Convention, defines wetlands as "... a wide variety of inland habitats such as marshes, peatlands, floodplains, rivers and lakes, and coastal areas such as saltmarshes, mangroves, intertidal mudflats and seagrass beds, and also coral reefs and other marine areas no deeper than six metres at low tide." Conservation and restoration of wetlands is regarded as one of the critical factors for establishing climate