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| **Connection with SDGs** | SDG 13 Climate action, SDG 14 Life below water |
| **Opportunities for participatory data collection** | Participatory data collection possible under supervision |
| **Additional information** | |
| **References** | Allen Burton, G., Jr., & Pitt, R.E. (2010). *Stormwater Effects Handbook. A Toolbox for watershed Managers, Scientists, and Engineers*. Boca Raton, FL: Lewis Publishers, CRC Press.<br>European Parliament, Council of the European Union. (2000). *EU Water Framework Directive: Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 Establishing a Framework for Community Action in the Field of Water Policy*. Retrieved from http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02000L0060-20140101<br>United States Environmental Protection Agency (US EPA). (2017). *Water Quality Standards Handbook: Chapter 3: Water Quality Criteria*. EPA-823-B-17-001. Washington, D.C.: EPA Office of Water, Office of Science and Technology. Retrieved from https://www.epa.gov/sites/production/files/2014-10/documents/handbook-chapter3.pdf<br>Zumdahl, S.S., & DeCoste, D.J. (2012). *Chemical Principles*. Seventh Edition. Boston, MA: Cengage Learning. |

## 4.50 Water Quality: basic physical parameters

**Project Name:** PHUSICOS – According to Nature (Grant Agreement no. 776681)

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| **Water Quality: Basic physical parameters** | **Water Management** |
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| **Description and justification** | Indicators of Effects on Water Quality sub-criterion will assess the effects of project scenarios on water quality, in terms of physical, microbiological, biological and chemical parameters. |
| **Definition** | Physical parameters of water, together with chemical and microbiological properties, determine the water quality. Main quality characteristics of natural waters include |

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| | temperature; colour; taste and odour; turbidity; total solids; conductivity; pH, and dissolved oxygen. All of these must be evaluated to obtain a comprehensive assessment of the water quality of the waterbodies.<br><br>**TEMPERATURE**. Responds to inflows, water releases and industrial discharge pressures, and is of crucial importance for the assessment of biocenoses. Temperature is influenced by daily changes due to respiration (with lower variation in fast flowing rivers).<br>Monitoring should consider seasonal stratification and mixing (in deep water) and cold water releases. Sampling should be performed in-situ using submersible probe, fortnightly/monthly during all seasons, by a single measurement or water column profile.<br>**COLOUR. C**olour in water is primarily a concern of water quality for aesthetic reason. Coloured water gives the appearance of being unfit to drink, even though the water may be perfectly safe for public use. On the other hand, colour can indicate the presence of organic substances, such as algae or humic compounds. More recently, colour has been used as a quantitative assessment of the presence of potentially hazardous or toxic organic materials in water.<br>**TASTE AND ODOUR.** Taste and odour are human perceptions of water quality. Human perception of taste includes sour (hydrochloric acid), salty (sodium chloride), sweet (sucrose) and bitter (caffeine). Relatively simple compounds produce sour and salty tastes. However sweet and bitter tastes are produced by more complex organic compounds. Human detect many more tips of odour than tastes. Organic materials discharged directly to water, such as falling leaves, runoff, etc., are sources of tastes and odour-producing compounds released during biodegradation.<br>**TURBIDITY.** Turbidity is a measure of the light-transmitting properties of water and is comprised of suspended and colloidal material. It is important for health and aesthetic reasons.<br>**TOTAL SOLIDS.** The Total Solids content of water is defined as the residue remaining after evaporation of the water and drying the residue to a constant weight at 103 °C to 105 °C. Total solids include Total Suspended Solids (TSS) and Total Dissolved Solids (TDS) |
| **Strengths and weaknesses** | + These are basic measures of river condition and important influences on natural river systems. It<br>- Some of these parameters may vary locally |

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| **Measurement procedure and tool** | Model/Survey. In situ sampling. |
| **Scale of measurement** | Various |
| **Data source** | |
| **Required data** | Various |
| **Data input type** | Quantitative and semi-quantitative |
| **Data collection frequency** | |
| **Level of expertise required** | High |
| **Synergies with other indicators** | |
| **Connection with SDGs** | 6 |
| **Opportunities for participatory data collection** | |
| **Additional information** | |
| **References** | http://echo2.epfl.ch/VICAIRE/mod_2/chapt_2/main.htm<br>http://wgbis.ces.iisc.ernet.in/energy/monograph1/Methpage1.html |

### 4.51 Total polycyclic hydrocarbon (PAH) content of NBS effluents

**Project Name:** Connecting Nature (Grant Agreement no. 730222)

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| **Total polycyclic aromatic hydrocarbon (PAH) content of NBS effluents** | **Water Management** |
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| **Description and justification** | Polycyclic aromatic hydrocarbons (PAHs) are a group of more than 100 chemicals that are persistently toxic in the environment. In areas of contamination, PAHs can be found in water, soils, sediments and plants.<br><br>Bioremediation is one of the mechanisms that has been identified as a potential method for reducing/removing |