The Porto Protocol
More than just a commitment.

Caso de Estudo

Living PlanIT – Monitoring Douro River Water

Water is one of the most important elements for the existence of life. The importance of water for the sustainability of our planet has resulted in it becoming a core focus in many countries, mainly with the goal of finding solutions to improve access to water and ensuring its quality. It is reported that only 3% of the world's existing water supply is fit for consumption by humans and animals (United Nations – 2016). However, this water is not only for drinking, it has to support many other essential activities such as agriculture, industries and cleaning. Preservation of natural resources is increasingly discussed by international organizations (United Nations - 2018). With the expanding global population and the resulting increase in human driven pollution and contamination of water sources the problem is becoming more acute. A lack of sanitation systems and industrial waste being dumped into rivers and lakes are increasingly reducing the amount of clean water available for drinking. Environmental pollution directly affects the volume of potable water and contributes to the destruction of critical ecosystems in water as the concentrations of pollutants increase. The anthropic actions of a growing population combined with a reduction in clean water resources are leading towards a crisis that must be mitigated through integrated water resources management programs.

There is an increasing need to monitor water from source (lakes, rivers, ocean) to tap (urban infrastructure and treatment plants), and to drive interventions to support the delivery of safe water to help sustain life on our planet. To help deliver sustainable water solutions, Living PlanIT's bioscience team, based in Porto, has created what we believe to be the world's most comprehensive and affordable water quality sensors. Our technology combines artificial intelligence (neural network) and specialized bio-sensors that enables us to improve techniques for monitoring water quality in several scenarios. Our solution takes billions of disparate data inputs from the Douro River in Portugal and uses these to create a neural network to extract meaning from the data, and to visualize that meaning via simple dashboards, so that water operators are better placed to manage the water supply chain and deliver quality-controlled water to consumers. Our autonomous and real time water quality sensor has been installed in the Douro River, and it allows continuous water quality measuring including physical, chemical and biological parameters, which can be seen in real time. Data is easily available over the Internet to water managers, companies, research institutes and other interested users so that those parties can monitor, and when necessary take mitigating actions against, many environmental and urban-related dangers. As an example, we are currently able to gather water nutrient related parameters and our artificial intelligence is used to identify and support the prevention of various eutrophication events (consequences of sewage, fertilizers and industrial discharges) that are normally very harmful for aquatic ecosystems. The technology is designed to enable prevention and/or early intervention when contaminants and pollutants are identified, reducing harm and risk in the water system, and reducing the risk and impact of degradation to the natural environment and disruption of urban infrastructure, which ultimately provides better quality of life for many communities of people.

We have developed a reliable technology that is particularly important for defining clean water strategies, enabling operators to prioritize interventions, and with a more focused approach to save cost.

We believe that the work we have completed is a significant scientific contribution that will improve the design and development of state-of-the-art water systems by effectively delivering autonomous and continuous monitoring to provide insights about the real time state of water, unexpected changes, integrated with geospatial mapping and supported by a complete layer of advanced analytics.

Our sensors work with each other to pinpoint where contamination occurs within a water system, identify pollutants in rivers, discover disinfectant decay in pipe networks and microorganisms that can compromise the integrity of our water supply. We will soon deploy our systems in other regions of Portugal to help monitor critical water resources and help to protect numerous aquatic environments.