Role of Science to achieve an Inclusive Global Water Quality Monitoring System

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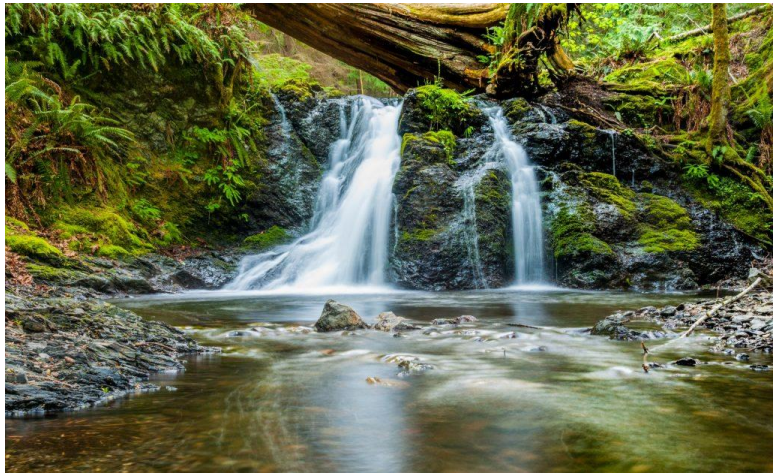
Water Future Vision:

Support the implementation of freshwater related sustainable development through the integrating research, stimulating innovation, and building capacity .

waterfuture
Sustainable Water Future Programme

A Core Water program of Future Earth



KEY FACTS

13 International Working Groups

202 Organisations

550 Core Researchers

5650 Network of Scientists, Policy Makers

Water Future Implementation:

Water Future, through its partnerships with a large number of researchers and stakeholders, work together to harvest and synthesize authoritative sound and a scientific knowledge base to achieve the Sustainable Development priorities associated with water.

A Scientific, Policy Relevant, and Solution Oriented Global Water Research Programme for Sustainable Development

Challenge Issues

Incorporate existing national and regional monitoring data

Interoperability

Validation of results

High cost of monitoring

Time trend is missing

Where Science can contribute?

In-depth assessment of the links between water, phosphorus, nitrogen and carbon cycles and other pollutants,

Assessing the magnitude and the impact of these pollutants on water quality and in determining how these impacts could be reduced and controlled).

Advanced system models generate data, particularly for data-sparse areas.

Produce water pollution risk maps

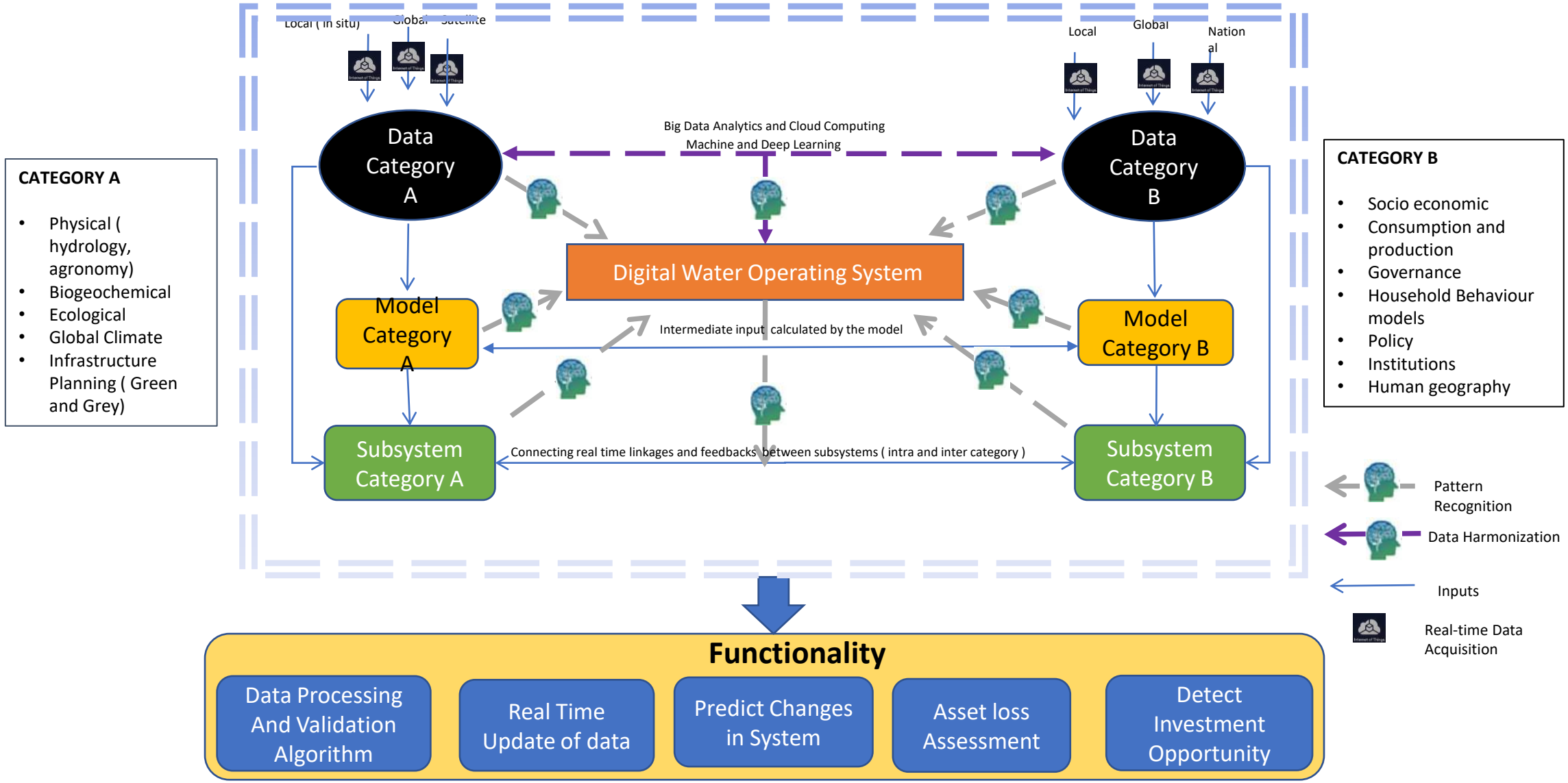
Assess spatial and temporal distribution of water quality on continental scale to get a global picture of water quality situation?

Validate local conditions using Earth Observation that includes the collection of chlorophyll a, turbidity, transparency and temperature data.

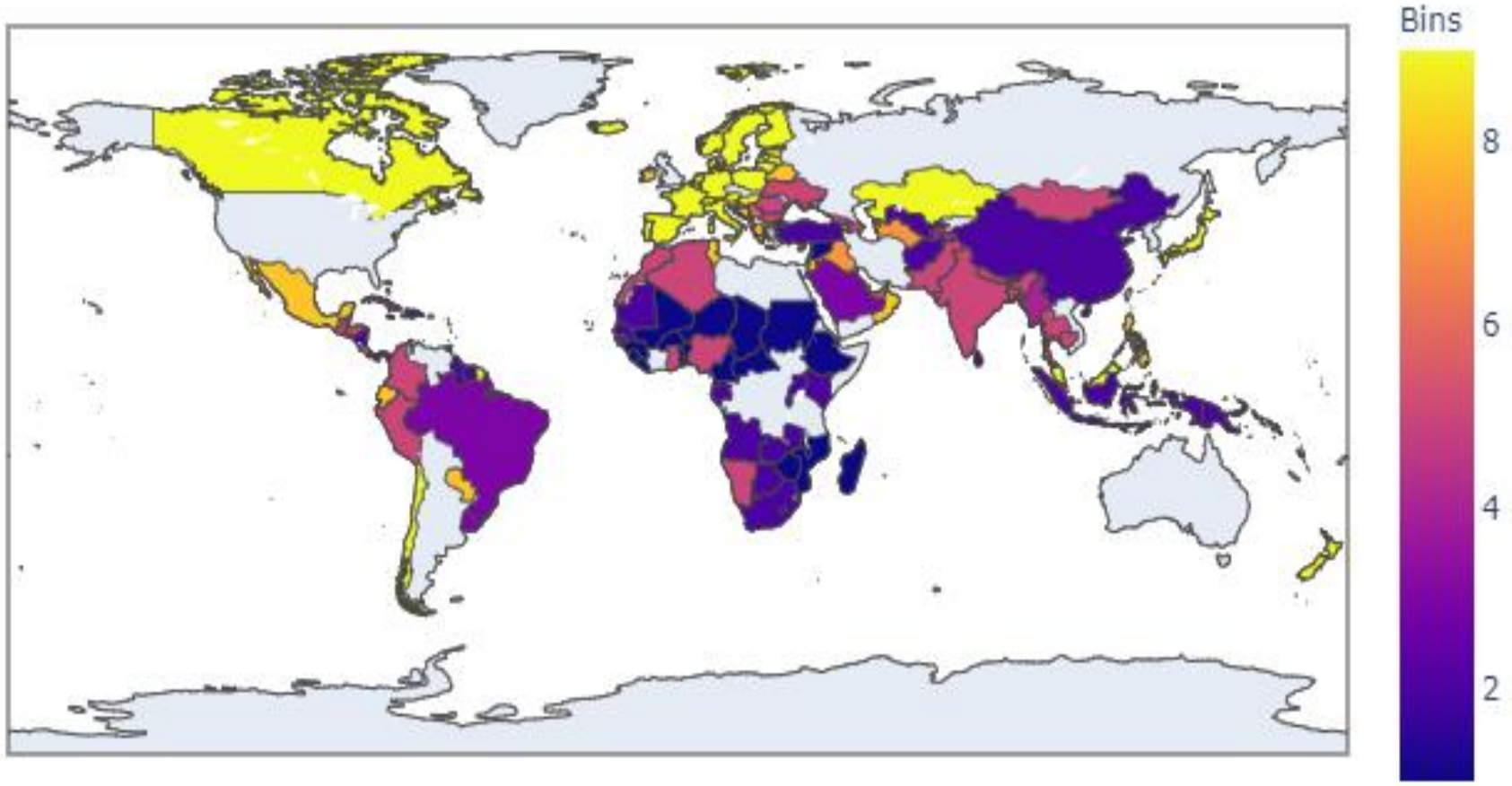
Establish a relationship between green and grey investment and improved surface water quality in near real time?

Provide a scientific basis for sound water management practice through analysis of (primarily stable) water isotopes;

System of systems



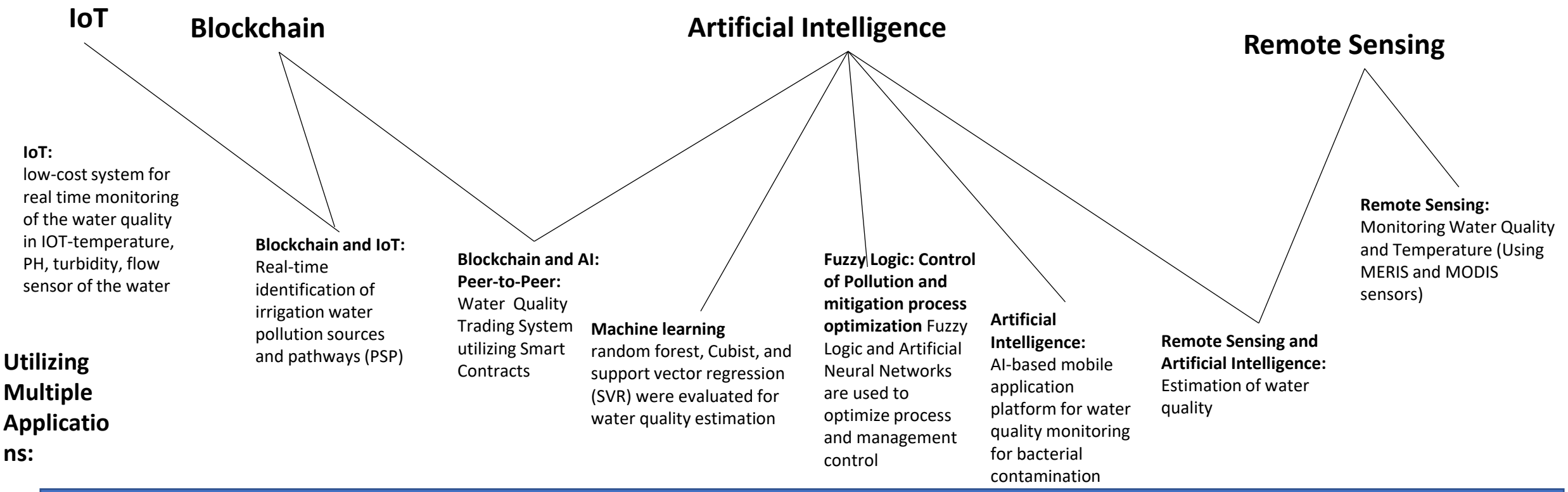
Digitalization and SDG 6



	SDG Low	SDG med	SDG High
DAI Low	1	4	7
DAI med	2	5	8
DAI High	3	6	9

Digital Water Management:

Utilizing Multiple Applications for Water Quality Monitoring and Management



Potential Optimization :

- Real time water quality tracking
- Data records and Recordkeeping
- Data Reconciliation
- Pollution source tracking

- Data analysis and Collection
- Addressing; Non-stationarity, Non-Linearity and Uncertainty
- Modelling and Simulation capabilities
- System operations and management

- Large scale monitoring and spatial analysis
- Higher spatial resolution images
- Enhanced Land Cover/Land use Analysis
- Optimizing process and management control

Summary

Monitoring are mainly based on in-situ or data -**Problem in countries with lack of data** (In GEMStat, 71 out of the 110 river basins with data have a density of 0.5 stations per 10,000 km² or less)

Monitoring is designed for current and past times. (availability of data makes it difficult to determine rates of progress Limited availability of data limits the possibility to deter- mine time trends)

Limitations in Implementation-Forcasting different investment plans

Validation issues: that countries report data or advances that cannot be corroborated.

Innovative combination of advance science models and digitalization can help countries to cope with these challenges