

ISI Draft Strategy 2022-2029

A contribution to IHP IX

1. The ISI Flagship Programme

1.1. Towards a new ISI Strategy

Established in 2002, **the International Sediment Initiative (ISI)** is a global initiative to assess erosion and sediment transport to marine, lake or reservoir environments aimed at the creation of a comprehensive approach for the remediation and conservation of surface waters, intricately linking science with policy and management needs.

ISI is one of the fifteen Flagship Initiatives approved by the Intergovernmental Council of IHP, based on the needs of UNESCO Member States. Flagships work on long-term crosscutting themes related to hydrology and water management issues and their global aim is to enhance the management of water resources through science-based recommendations, education, and capacity building. From this inception, ISI has **the aim to increase awareness of erosion and sedimentation dynamics and sediment issues in all spheres of water management**. The initiative promotes sustainable management of soil and sediment resources at local, regional, and global scales.

An evaluation process was finalized in 2022 concerning all Flagship Initiatives, highlighting **ISI as one of the initiatives with best governance and management** during the Eighth Phase of IHP (2014-2021). At the same time, the Ninth Phase of IHP (2022-2029) was endorsed during the 2022 IHP Intergovernmental Council and a new Flagship Initiative Framework was put in place. These new developments require, therefore, a revision of the current ISI strategy and a closer alignment to the new phase of IHP, in accordance with the new Framework.

1.2. Previous ISI Achievements

In order to access to the vision of global sustainable sediment management, ISI has put a lot of efforts since it established in 2002.

Previous ISI achievements are summarized in 5 groups as follows.

1) **Global Evaluation of Erosion and Sediment Transport (GEST Project)**: The website <http://www.irtces.org/isi/> has been established and is in operational use, which provides information on sediment related news, forthcoming events, and technical papers/reports. The ISI Information System is constructed on the purposes of helping to organize and promote international information exchange and providing direct access to policy makers in Member States while activating scientific and professional communities in all regions concerned. Materials, publications and linkages of ISI and sediment related activities can be found there. The quarterly ISI Newsletter provides useful information concerning news, meetings, workshops, conferences, training courses and other events carried-out. Recent publications are

listed and some of them are reviewed. Furthermore information on forthcoming symposia, conferences and training courses related to erosion, sediment transport and deposition is provided.

2) Case Studies of River Basins as Demonstration Projects: Case studies are effective means of raising awareness about erosion and sedimentation problems in different regions and comparing the problems and management response found in different river basins. These provide examples of monitoring and data processing techniques, procedures and methodologies for analysis of environmental, economic and social impacts, and evaluation of management practices. The case studies of the Mississippi, Nile, Rhine, Volga, Yellow, Haihe and Liaohe rivers have been completed. A summarization publication 'Sediment problems and strategies for their management: experience from several large river basins' was published by UNESCO and included in the UNESCO Digital Library.

3) Review of Erosion & Sedimentation-Related Research: A survey of ongoing research is an important contribution to the development of sustainable management of erosion and sedimentation. These publications include - 'Erosion and sediment dynamics from catchment to coast – Northern Perspective', 'Erosion and sediment dynamics from catchment to coast – Southern Perspective', 'The Impact of Global Change on Erosion and Sediment Transport by Rivers: Current Progress and Future Challenges', 'IAHS publication Sediment Problems and Sediment Management in Asian River Basins', 'Case study on sediment in the Mekong River Basin: Current state and future trends', 'CONTROLLING THE YELLOW RIVER: 2000 Years of Debate on Control Strategies', 'Erosion and Sediment Problem: Global Hotspots', and several journal papers.

4) Education & Capacity Building for Sustainable Sediment Management: ISI scientific conferences conduct workshops and seminars focusing on the most important issues of erosion, transport and sediment deposits. International and local experts discuss local problems at these conferences and develop proposals for solving them. Over 40 international conferences and over 10 training workshops that ISI involved in has been organized. The first International Sediment Initiative Conference was held in Sudan in November 2006. Most recently, the 7th International Conference on Estuaries and Coasts was held in Shanghai, China from October 18-21, 2021; the ISI Online Expert Meeting on Global Databases of Sediment Loads in Rivers was held on May 25 and June 10, 2021; the ISI training workshop "River Basin Sediment Monitoring and Management" was held online from September 6- 10, 2021; and the ISI Online Training Workshop on Sediment Transport Measurement and Monitoring was held from July 5-9, 2021.

5) Networking: ISI is open to collaboration with all interested institutions – international, regional or national associations – in the interest of promoting sound and sustainable sediment management policies. Collaborative links have been established with IAHS, WASER, ICCORES, ICOLD, GEMS/WATER, IAHR, FRIEND, IFI, IDI, WLRI, GEOSS, SedNet, ICHARM, ICWRGC among others.

2. Objectives of the ISI Programme

The objective of ISI is to increase awareness of erosion and sedimentation dynamics and sediment issues in all spheres of water management by linking science with policy and management needs and supporting the global agenda for sustainable sediment management.

ISI also has the mission to organize and promote international information exchange and provide direct access to policy makers in Member States while activating scientific and professional communities in all regions and countries concerned. ISI will promote the elaboration and monitoring of sediment data to develop appropriate methods and procedures in sediment management.

This overall objective is also aligned with the priorities of the current IHP-IX phase, as well as the overall UNESCO-IHP mission, which concerns mobilizing scientific and policy-relevant expertise, knowledge and tools for informed decisions in addressing water challenges, as well as strengthening transdisciplinary water research by supporting research on methods for stakeholder involvement and knowledge integration.

To achieve this objective, the programme aims to realize its intended impact by 2029, as presented in the **ISI Theory of Change Diagram (Figure 1)**.

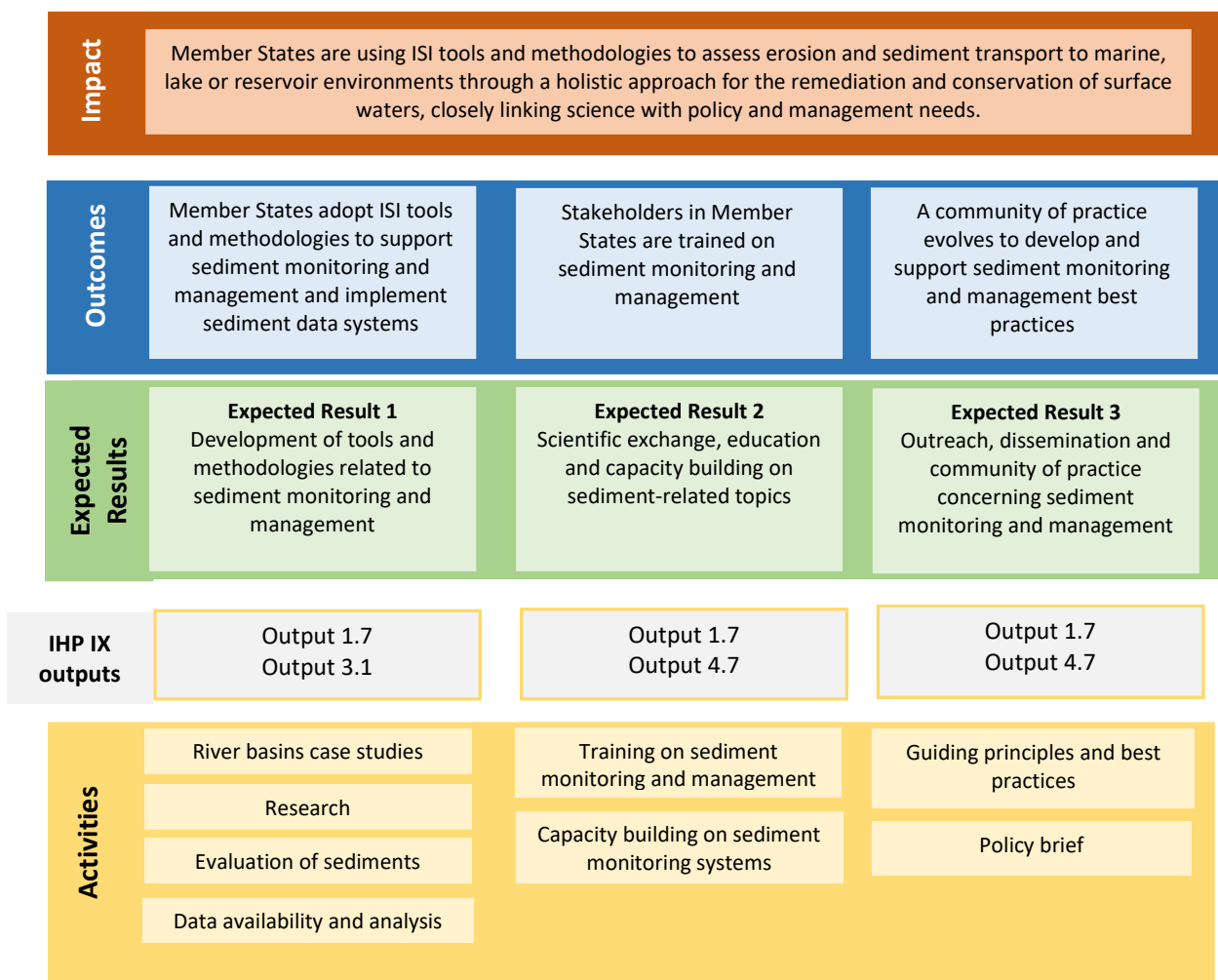


Figure 1 The ISI Theory of Change Diagram

To reach the overall objective of the Programme, three specific objectives were identified:

- 1) Develop tools and methodologies and facilitate access to open data related to sediment monitoring and management
- 2) Develop education materials and build capacity related to sediment monitoring and management
- 3) Facilitate outreach and scientific exchanges related to sediment monitoring and management and facilitate the development of a community of practice

These specific objectives are directly aligned with, and will contribute to, the outputs of **IHP-IX ‘Science for a Water Secure World in a Changing Environment’**, including the following:

- i. ISI aims to conduct research and case studies considering assessments, enhance knowledge and practices related to sediment issues, as well as outreach and dissemination on sediment issues, which aligns with **Output 1.7**, which concerns the development and sharing of knowledge on the impacts of global change and human usage on river and lake basins, aquifer systems, coastal areas, and cryosphere and human settlements by the scientific community supported to embed it in water resources and services management plans.
- ii. ISI will also develop data systems on sediment and related information, that links with **Output 3.1**, related to the development and use of scientific research methods by the scientific community supported to correctly collect, analyse, interpret, and exchange data.
- iii. ISI will enhance the community of practice on sediments and water management, that is closely linked to **Output 4.7**, which concerns undertaking assessments and developing and sharing of methods to monitor changes in the cryosphere system (snow, glacier, and permafrost), runoff formation from melting glaciers erosion and sediment transport, glacier fed reservoirs such as mountain lakes, and aquifers, by the scientific community supported for improved understanding of their potential use to inform decision makers at all levels

1.3. Implementation Plan

The ISI strategy and Theory and Change is accompanied by a detailed Implementation Plan, which elaborates on the specific objectives and the activities that ISI expects to implement over the course of the IHP Phase IX. It also highlights the performance indicators and targets the Programme has identified. A summary of the implementation plan will be provided here, while the full implementation plan can be accessed through the IHP shared workspace.

The plan is presented along its three expected results, which are aligned with the specific objectives of the Programme.

Expected Result 1: Development and sharing of knowledge related to sediment monitoring and management

The first expected result has the following two subcomponents:

Key Activity 1: Research and case studies considering assessments

Case studies are an effective means of raising awareness about erosion and sedimentation problems in different regions. These will provide examples of monitoring and data processing techniques, procedures, and methodologies for analysis of environmental, economic, and social impacts, and

evaluation of management practices. Case studies of the Danube, Mississippi, Nile, Rhine, Volga, and Yellow River basins have been prepared. Other case studies will follow. The data available from the case studies will be incorporated into the global database.

This expected result consists of four activities: Summarizing the guiding principles and experiences as an outcome from the large river basins case studies, Review of sediment related research, Case studies for river basins as demonstration projects, and evaluating the environmental, economic, and social value of sediment. The outputs include two reports on previous case studies and evaluation of values on sediments, as well as two publications related to research on sediment and case studies for river basins.

Key Activity 2: Development of studies on available data of sediments and related information systems

A survey of ongoing research is an important contribution to the development of sustainable sediment management, given the lack of knowledge concerning many aspects of erosion and sedimentation needed to address key sedimentation problems. Associations such as the International Coordinating Committee on Reservoir Sedimentation (ICCORES) and the World Association for Sedimentation and Erosion Research (WASER) could play substantial roles in this endeavour.

This expected result consists of four activities: Maximizing the extraction of information from the available data on sediments and water management, Global erosion and sediment information system, Global repository of data on soil erosion and sediment transport and the exchange of sediment data and information making use of UNESCO's network and setting up the global database in IRTCES, China. The outputs include reports and a global database platform.

Expected Result 2: Scientific exchange, education, and capacity building on sediment-related topics

This expected result tentatively focus on sharing knowledge and experience about sediment with stakeholders, with the possibility of recruiting more contributors.

Key Activity 3: Enhancement of skills, knowledge and practices related to sediment issues of stakeholders

ISI promotes scientific conferences, workshops and seminars focusing on critical issues relating to erosion and sediment transport at the local, regional, and global scale.

Within the medium term, the initiative will focus on identifying the modes of education at all levels while also considering regional priorities and interests in different socio-economic, ecohydrological and physiographic settings. This activity should consider the information assembled by the GEST Project and the survey of sedimentation-related research. In line with its commitment to education and capacity building, ISI will encourage young scientists to become involved in its activities.

To achieve the expected result, a series of training courses will be initiated in local languages, supported by international experts about sediment monitoring and management. Besides, education and capacity building will be enhanced for sustainable sediment management. The outcome of this key activity includes regularly recurring training courses, with support from IRTCES, China.

Expected Result 3. Outreach, dissemination, and community of practice concerning sediment issues

The third expected result is supported by two key activities:

Key Activity 4. Outreach and dissemination on sediment issues

Under this activity, ISI will strengthen outreach activities related to erosion and sediment-related programmes and develop at least a policy brief on sediment management.

Key Activity 5. Community of practice on sediments and water management

ISI is open to collaboration with all interested institutions – international, regional, or national associations – in the interest of promoting sound and sustainable sediment management policies. ISI is eager to establish closer working relationships with international, regional, and national projects, programmes, and networks, such as IAHS (International Association of Hydrological Sciences), WASER, ICCORES, ICOLD, GEMS/Water, IAHR, FRIEND, HELP (Hydrology for the Environment, Life and Policy), IFI (International Flood Initiative), G-WADI, GEOSS and SedNet among others.

To achieve this, ISI will first identify stakeholders interested in erosion and sediment processes, then build a network of professionals, academics and practitioners linked to sediment management or issues. A community with around 15 members is planned to be achieved in the long term.

1.4. Governance

To support the implementation of the ISI Programme, a governance structure has been set up. The programme is managed by the IHP Secretariat through the ISI Technical Secretariat, which is located at the International Research and Training Centre on Erosion and Sedimentation (IRTCES) in Beijing, China. The secretariat is supported by an Advisory Board, which is composed of representatives of each of the six regions and is composed of a set of Category 2 Centres, Chairs, and other Water Family members. In Figure 2, an overview of the governance structure of ISI is presented.

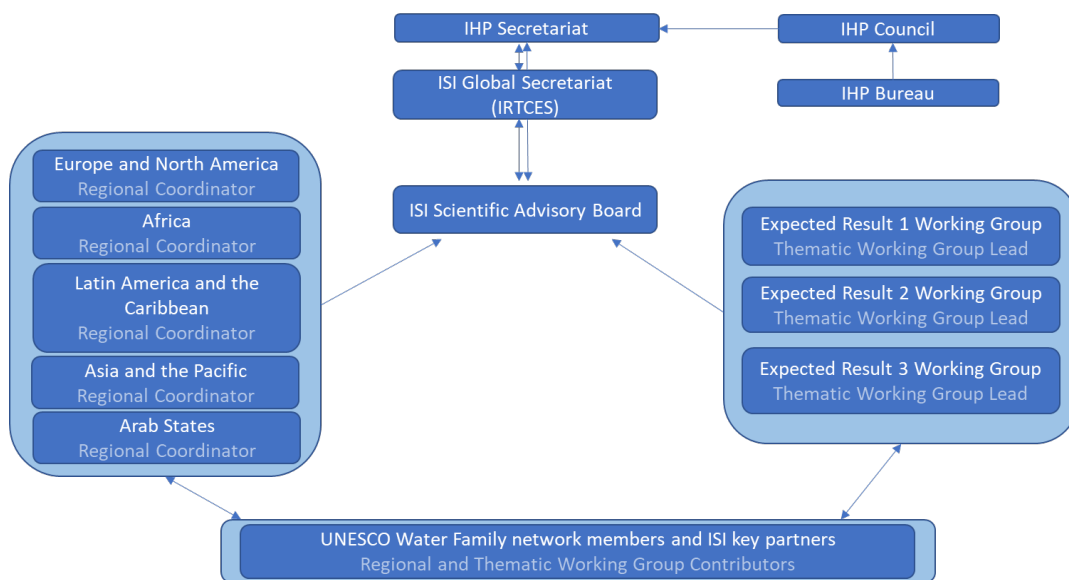


Figure 2 Governance structure of ISI

ISI Global Secretariat

In close cooperation with the IHP Secretariat, the ISI Global Secretariat supports the implementation of the Flagship Initiative. Its tasks include the planning, delivery, and reporting of all the Initiative's activities in collaboration with the regional secretariats and focal points and guided by the Advisory Board. The Secretariat also develops and implements the outreach and communication strategy of the ISI network, prepares brochures, posters, and other materials, in consultation with other members of the ISI Advisory committee and IHP.

Regional Coordinators

Regional coordinators setup and maintain a network of regional experts and stakeholders that are related to the ISI objectives. They seek information and news from all members of the regional network to be published as news item in the web of the Global ISI network and maintain the record of the members of the network, their activities including the pilot basins, and lead the implementation of the approved global workplans adapted to the regional setting.

Thematic Working Groups

For each of the expected results (outputs) of the Programme, working groups are put in place to track the progress of the Implementation (Figure 2). These working groups are overseen by a working group lead and a set of collaborators, that include the Regional Coordinators, key partners, and UNESCO IHP Water Family network members.

Advisory board

The Advisory Board is composed of the representatives of the IHP Secretariat, the Global and Regional Coordinators and the thematic working group leads. The Advisory Board holds meetings at least once a year and reviews the progress made and the activities implemented. The Advisory Board members discuss the activities for the future period and ensure that each person/institution in charge will be able to carry them out accordingly.

Key partners and network members

The ISI programme has a network with active members that play a key role in the Initiative. These are persons or organisations working on themes related to the ISI main area of interest, and who contribute to and benefit from the Initiative by participating in workshops, training sessions and conferences and/or contribute to publications and the content of workshops and/or training on specific themes. They will be involved through the work of the Secretariat and working groups.