

# Source-to-sea and landscape approaches

## Integrating water quality and biodiversity conservation toward the restoration of the Rio Doce watershed

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Renova Foundation has been investing considerable technical-scientific knowledge and financial resources to mitigate the impacts of the Fundão Dam rupture through the implementation of actions for the mitigation of the socio-economic and environmental impacts resultant from this disaster. In this **Technical Report**, the Rio Doce Panel proposes that Renova Foundation, stakeholder organisations and decision makers operating in the Rio Doce watershed adopt and integrate the source-to-sea and landscape approaches to better evaluate the interactions between water quality and biodiversity conservation at the watershed level and under a long-term perspective.

The Report contextualises the current status of water quality and biodiversity in the Rio Doce watershed, providing selected data and information on the physical, chemical and biological quality of the water and an overview of the terrestrial, freshwater and marine biodiversity since the dam rupture. A review of the integrated approaches already adopted in the Rio Doce restoration actions is also provided, focusing mainly on the TTAC programmes that in some respect embody the source-to-sea and landscape approaches in their conception. The Technical Report suggests pathways toward building a combined approach to restore water quality and biodiversity in the Rio Doce watershed, taking advantage of such actions already implemented by Renova Foundation and its partners.

The Rio Doce Panel understands that the implementation of a combined vision of integrated landscape and source-to-sea framework by the Rio Doce watershed stakeholders is key to restoring the Rio Doce watershed to a healthier and more sustainable state than that which prevailed before the disaster.

Moreover, the adoption of a landscape approach for the restoration of the Rio Doce watershed areas affected by the Fundão Dam disaster can also help address the need for long-term planning and effective engagement of affected parties. It calls attention to the need to integrate distinct actions within the watershed, emphasising not only the essential flow of water but also a flow of actions starting from the headwaters and continuing along the Rio Doce channel, with a focus on riparian vegetation restoration. These actions should not end at the river's mouth but expand to the adjacent coastal waters and include not only processes that occur within the river channel but also reflect the social, economic, cultural and environmental features of the entire watershed.

Finally, with the aim of contributing to ensure an effective restoration process for the watershed as a whole, the Rio Doce Panel proposes five recommendations for consideration by Renova Foundation, Inter-Federative committee (Comitê Interfederativo, or CIF), Federal, State and Municipal governments, and its partners:

**Recommendation 1** – Adopt a source-to-sea framework and an integrated landscape approach in the Rio Doce watershed restoration efforts.

**Recommendation 2** – Ensure a long-term comprehensive evaluation of the systematic Quali-Quantitative Monitoring Programme of Water and Sediment of the Rio Doce watershed (PMQQS) data to prioritise actions for the continual improvement of Rio Doce's environmental conditions.

**Recommendation 3** – Use the existing water monitoring programme to build the capacity in the region to monitor potential impacts on water quality and biota associated with the emergence of synergistic pollutant compounds.

**Recommendation 4** – Strengthen technical support to municipalities for the implementation of a comprehensive, innovative and modular basic sanitation programme for the watershed.

**Recommendation 5** – Expand the existing monitoring plan in order to inform and prioritise biodiversity restoration activities.

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