

Using secondary data to assess knowledge uptake and influence of the Rio Doce Panel

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1. Introduction

The Rio Doce Panel (RDP), led by the International Union for the Conservation of Nature (IUCN), is an Independent Scientific and Technical Advisory Panel (ISTAP) with the mission of providing recommendations for the resilient and sustainable reparation of the damages caused by the Fundão tailings dam collapse in 2015 in the municipality of Mariana, in the state of Minas Gerais, Brazil. The disaster caused 19 deaths and released about 39.2 million m³ of tailings into the Fundão creek. The released tailings travelled along the Rio Doce disrupting ecosystems and livelihoods, and eventually reached the Atlantic Ocean in the State of Espírito Santo, about 670 km downstream from the dam (Sánchez et al., 2018).

In addition to the emergency responses to the disaster, Samarco (which operated the dam) and its shareholders (Vale and BHP) came to an out-of-court agreement, known as “TTAC”, with several public authorities to repair and compensate the extensive environmental and socio-economic damage in the Rio Doce Basin. The TTAC also mandated the creation of the Renova Foundation as the organisation in charge of executing the 42 reparation and compensation programmes under the agreement. The TTAC also created a complex deliberative governance system, with the main coordination and deliberation roles falling to the Inter-federative Committee (the CIF, in the Portuguese acronym). The CIF is composed of representatives from the two States affected by the disaster, the Federal Government, several national and subnational technical and regulatory bodies, and the judiciary branch. Representatives of affected peoples and public prosecutors were included as parties in a later version of the agreement, entitled “TAC-Gov” (Maroun et al., 2021; Sánchez et al., 2018).

The RDP was created in 2017 by request of the Renova Foundation (RF) and works to prepare studies with recommendations that seek to provide a long-term view to reparation programmes, by drawing on scientific knowledge and integrative, landscape-based approaches. Although most of the recommendations are meant for the RF, others involve different stakeholders in the reparation process that play crucial roles in achieving the RDP’s vision. To reach those audiences, the RDP has communication and engagement strategies in place to promote stakeholder awareness, understanding and agreement with the recommendations. This communication strategy assumes that by knowing, understanding and agreeing with the recommendations, stakeholders will take action to implement them.

Understanding how these audiences access and use the knowledge produced by the RDP is essential to evaluating the project’s relevance and impact and enabling feedback and timely adaptive management. Nevertheless, the high number of stakeholders involved

in the reparation process and their limited availability for direct interaction with the IUCN staff pose a challenge to the collection of primary targeted data that could provide better information about the uptake of RDP recommendations.

In this paper, IUCN describes how its Monitoring, Evaluation and Learning (MEL) strategy has worked around these constraints in data availability by using secondary data and performing qualitative analyses to answer the following research question: is there evidence that the RDP recommendations are informing and influencing the way key stakeholders in the basin act?

2. Materials and methods

In IUCN's preliminary research design, we aimed to unveil the RDP's potential influence on reparation efforts through direct interactions with stakeholders (interviews and focal groups), during which we would assess their awareness, understanding and use of the RDP's recommendations. Nevertheless, people we contacted often mentioned being overwhelmed by work and unable to participate in such interactions. Additionally, given the significant number of groups involved in the reparation efforts – we mapped more than 30 key stakeholders, including the Renova Foundation, private organisations, federal and state governments and agencies, research institutions and civil society representatives – IUCN staff would need to invest considerable efforts to conduct the study, first in an exploratory manner and then to refine the information acquired by more targeted interviews.

To work around these limitations, we conducted the exploratory phase of the research study using secondary data that is publicly available on the internet or easily accessible by other means.

2.1 Building a database

We compiled a list of documents issued by key stakeholders mapped in the past that had potentially relevant information to address our research question. The documents were records of stakeholder actions (e.g., periodic activity reports), records of their decision-making processes (meeting minutes and deliberations), records of the way they plan their activities (e.g., annual work plans), studies they perform on specific issues (e.g., biodiversity inventories, diagnosis of the disaster's impacts) and other information they share with the public (websites, news, interviews). The documents also included minutes and transcripts of meetings between key stakeholders and the Panel, which are particularly relevant when tracking the RDP's influence pathways.

We accessed all the documents on the list and included them in an *NVivo* (a qualitative research software) project. Given the nature of some of the documents (e.g., monthly meeting minutes), the database is constantly being updated. As of this writing, over 1,100 documents have been added to the database, spanning from 2016 to 2022. These documents originate mainly from the Renova Foundation and the CIF, but also from federal and state governments, the judiciary branch, public prosecutors and representatives of affected peoples, as well as media articles.

2.2 Setting topics and keywords and coding relevant information into topics

We compiled a set of 50 topics addressed by the Rio Doce Panel in its knowledge products and recommendations, and these were defined as ‘nodes’ in our NVivo project¹. We then explored our dataset to find information on how stakeholders were addressing those subjects, and coded relevant information into one or more of the ‘topics’ nodes previously created.

There were two ways of exploring the dataset to find relevant information to be encoded into the topics:

i) We read all the documents with a high potential of containing information relevant to our analysis (e.g., a transcript of a meeting between the Panel and RF staff about an RDP study), and directly coded the identified excerpts into the node for the related topic;

ii) For long documents (e.g., RF’s activity reports, which span several hundred pages) or in case the number of documents was overly high (e.g., hundreds of monthly meeting minutes of all of CIF’s technical chambers), we performed text analytic searches. We defined a list of keywords or expressions related to the mapped topics and used them in those searches. We then read all the results and coded relevant information into the nodes for the related topics.

2.3 Coding evidence of actions related to the implementation of the recommendations

Once the content of the dataset had been coded into topics, we read the contents of the topic nodes related to each RDP recommendation and coded evidence of stakeholder action specifically related to the given recommendation into a corresponding “implementation” node (Figure 1).

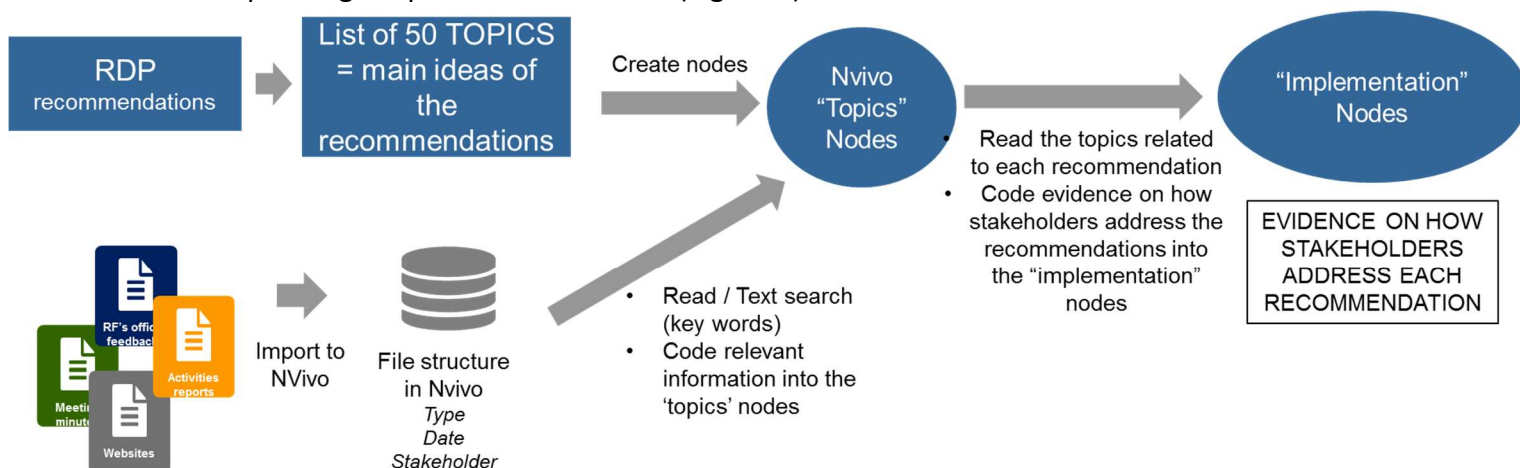


Figure 1. *Illustration of the methods used to code relevant information on what stakeholders are doing to implement each recommendation.*

¹ We decided to use a list of topics to build the nodes instead of the list of recommendations because a recommendation can address more than one topic, and the same topic may be present in several recommendations. This also allows us to use the same NVivo project to answer other relevant questions - for example, how the frequency in which all different stakeholders talk about a given topic – say Nature-based Solutions – varies over time.

This process culminated in a document where all the recommendations were linked to a list of pieces of evidence showing how stakeholders were perceiving, discussing, and acting in relation to RDP recommendations.

3. Results and conclusions

Table 1 provides an example of the results of these analyses (analysis of the first Thematic Report 1 recommendation).

We found relevant evidence of stakeholder action aligned with RDP recommendations in the fields of impact assessment, rural development, and alternative livelihoods. We also found that some of the recommendations – about human health, fishing bans, or the management of water flows from the Juparanã lagoon – could not be implemented as envisioned by the RDP because of judicial decisions. Implementing the recommendations required lengthy discussions and consultations among stakeholders, especially regarding more complex issues such as the future of the Basin's governance system and the creation of Climate Action plans. Because these stakeholders do not always agree on their role or do not perceive these issues as priorities in reparation efforts, the implementation process is hindered.

Table 1. Example of the results from the analysis, with evidence of how stakeholders act in relation to the disaster's impact assessment, the main topic of the first recommendation of Thematic Report 1. The results were simplified for brevity.

RDP recommendation	IUCN Analysis - Implementation	IUCN Analysis – Gaps / Challenges
<p><u>TR01- Recommendation 1:</u> Prepare a comprehensive assessment of the impacts of the dam failure considering for each valued environmental and social component the baseline at some point in the past prior to the failure as well as trends in the state of those valued components.</p>	<ul style="list-style-type: none"> • The RF showed interest in receiving more details on how to implement the recommendation, which culminated in the creation of IP04 by the Panel. • The RF created an Impact Curatorship and hired independent external consultants to assist in structuring a detailed approach to systematically assess impacts. • The RF conducted several participatory "Diagnosis workshops" to determine the baseline for social, economic, and environmental indicators to be used as a reference in reparation action plans. • Some RF programmes conducted studies to assess the impacts of the disaster on specific components. • The judge of the 12th Court and the Public prosecutors commissioned specific studies into the impacts of the disaster on environmental, economic and social components. 	<ul style="list-style-type: none"> • Although IP04 was launched in October 2019 and the Impact Curatorship department was created later that year, the efforts to systematise the information on impacts began only very recently. The capability of the pilot system under implementation to build a comprehensive assessment of the dam failure's impact on all relevant components is unknown. • Implementation of the recommendations requires robust data, information and knowledge that, so far, has been scattered not only across the several departments of RF but also across other stakeholders • Essential points of the recommendation depend on the outcomes of the ongoing efforts by the Impact Curatorship.

The results allowed for a more efficient and targeted primary data collection in the search for evidence of the RDP's contribution to the process. The results helped us filter

the list of stakeholders to interview, prioritising cases where we identified behaviours aligned with the RDP's recommendations, and to strategically plan the scripts for the interviews to focus on topics the stakeholders had acted upon. This process allows for fewer and shorter interviews that provide more relevant information. Interlocutors who were not inclined to participate in exploratory interviews or provide specific information on their work when first contacted by us felt encouraged to do so after seeing the results of the analysis, thus providing valuable information to our research.

This approach allowed us to assess that a RDP recommendation was pivotal to the creation of the Impact Curatorship within Renova Foundation. The aim of this newly created sector is to identify the impacts of the disaster and collaborate closely with the RDP. We also tracked an important unintended influence of the RDP vis-à-vis the inclusion of chapters addressing Impact Assessment and Climate Change in Paraopeba's watershed Reparation Plan, compiled in response to the disaster caused by the failure of a tailings dam owned by Vale in Brumadinho.

In addition to unveiling the knowledge uptake pathways and the contributions of the RDP to the Rio Doce reparation process, this analysis can also help us identify and understand the reasons why knowledge uptake has failed, thus providing relevant information to inform and drive the projects' adaptive management efforts.

Finally, our findings may also be useful as a learning tool for similar projects in the future or as a case study for researchers interested on how audiences access, perceive, understand and use scientific knowledge related to environmental issues. This is particularly important for advisory panels such as IUCN's own ISTAP, which are meant to be an impactful tool for addressing controversial and complex environmental issues, as well as for other scientific panels that produce and share knowledge to influence policies and bring about behavioural changes. In the current context of accelerated biodiversity decline and climate crisis, understanding how those processes occur is critical to leveraging the transition from knowledge production to action and impact.

References

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