THE RIVER MHADEI: THE SCIENCE AND POLITICS OF DIVERSION

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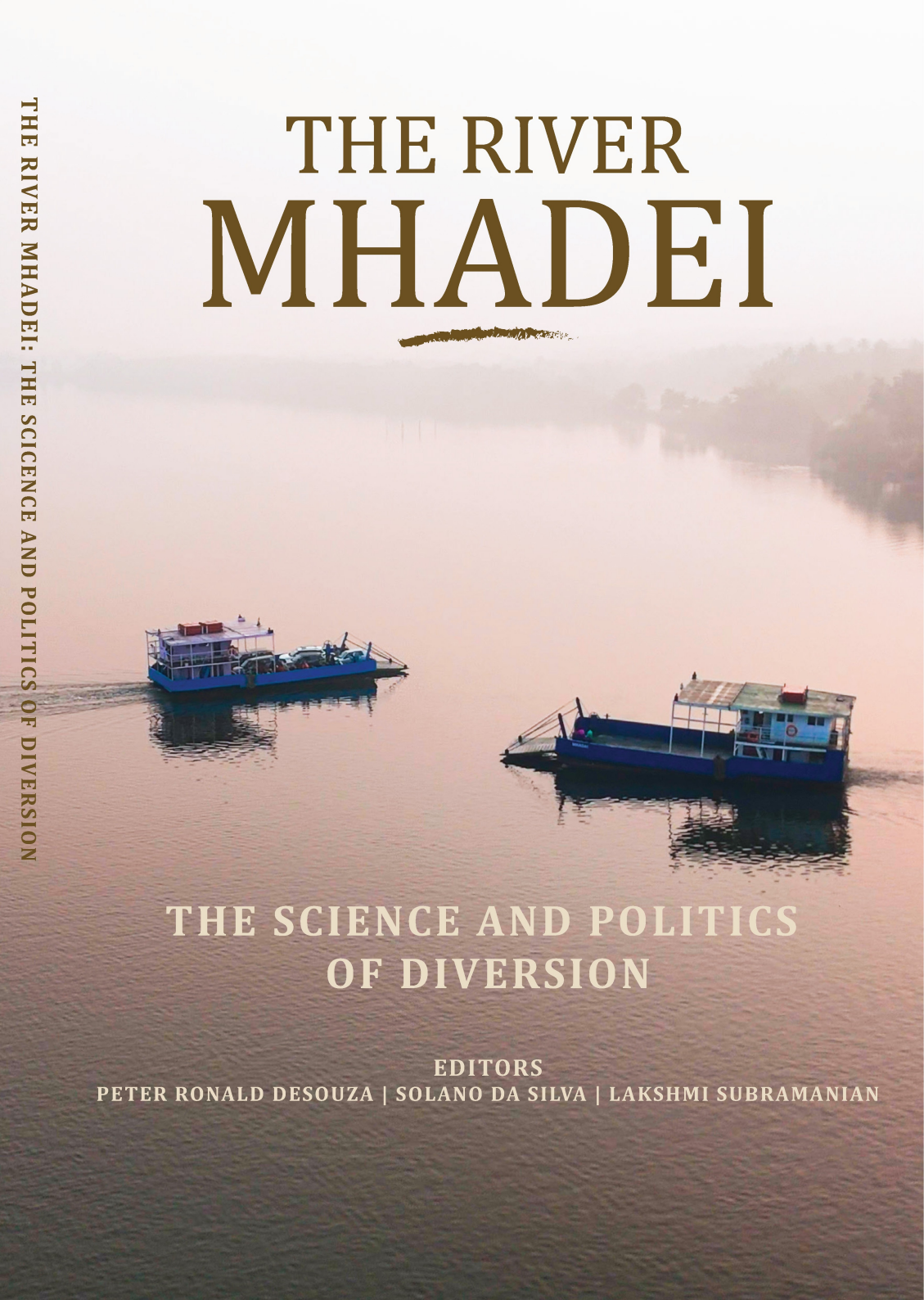

THE SCIENCE AND POLITICS OF DIVERSION

EDITORS
PETER RONALD DESOUZA | SOLANO DA SILVA | LAKSHMI SUBRAMANIAN

The River Mhadei

The Science and Politics of Diversion

Edited by

Peter Ronald deSouza
Solano Da Silva
Lakshmi Subramanian

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Goa 1556 1220

2025

The River Mhadei: The Science and Politics of Diversion

First edition published in 2025 by

Goa,1556, Saligão 403511 Goa, India.
http://goa1556.in
goa1556books@gmail.com +91-9822122436.

This edition was printed and bound in India by SAP Print Solutions Pvt Ltd, Mumbai 400013 sapprinters@gmail.com, www.sapprints.com
Cover design by Gasper D'Souza
ISBN (Print) 978-93-95795-68-5
ISBN (Ebook) 978-93-95795-67-8
Price in Goa: Rs 900

To

the people

of the Mhadei

Contents

7. The Working of the Inter-State Mahadayi Water Disputes Tribunal

Vaishali Kashyap

***Abstract**: Many different parts of the planet are experiencing increasing levels of water stress, which has led to various kinds of water conflicts. These conflicts do not merely arise between nations; indeed, inter-state water disputes are prominent among them, particularly in India. Since the vast majority of Indian rivers transcend the administrative boundaries of states and international borders, water sharing between riparian regions becomes a matter of concern. This chapter will focus on the inter-state water dispute over the sharing of the water of the Mahadayi river among the states of Maharashtra, Goa and Karnataka. The dispute officially began in the 1980s when Karnataka demanded a transfer of the waters of the Mahadayi into the Malaprabha basin. This demand drew criticism from ecologists, particularly in Goa, who argued that compliance would have disastrous consequences for the fragile riverine ecology of the downstream riparian state. Following the failure of the first rounds of inter-state negotiations, the Mahadayi Water Disputes Tribunal (MWDT) was set up in 2010 by the Government of India under the provisions of the Inter-State River Water Disputes Act, 1956. This chapter seeks to unravel the workings of the MDWT, i.e., the processes that led to the setting up of the Tribunal, its constitutive elements, and the major findings and decisions and the debates by the experts following the award. The findings of the MWDT's 2018 report demonstrated that the waters of the Mahadayi were underutilized by the riparian states, who failed to provide sufficient data to justify their water claims. The chapter will try to identify the shortcomings of the legal process as well as the marked absence of the voices of those affected by the Tribunal's decision.*

Introduction

RIVERS do not abide by the administrative decisions of humans on their geographical boundaries without technological and legal intervention. Several rivers in India flow through one or more states,

be it the Ravi, Beas, Kaveri, Narmada, Mahanadi or Mahadayi. Administrative boundaries do, however, complicate the governance of such rivers. Jurisdictional power over water is distributed across many levels, with the states and the centre enjoying power of intervention in the case of disputes. Inter-state water disputes can arise when river water is diverted or stored (Iyer 2011), leading to conflicts between different states.

Here we will examine the timeline of events leading to the formation of the Mahadayi Water Disputes Tribunal, the nature of the dispute it was intended to adjudicate, the role of the experts involved in its working, and the demands of the riparian states concerned, through an analysis of key sections of the reports generated by the Tribunal. The chapter will highlight the contrasting opinions and divergent perspectives of the three states on water sharing while critically examining the so-called expertise mobilised to resolve the inter-state dispute. The first section will look at some relevant inter-state river water disputes in the past as well as the events that led to the Mahadayi water dispute. The next section will throw light on key claims made by each state, the visits to the sites and the experts that were roped into the process. The chapter will then consider the findings of these experts and the reports cited to strengthen the states' major arguments. The chapter will conclude by discussing the award by the Tribunal and its public reception.

Previous Inter-State Water Disputes

There have been a number of inter-state water disputes in India although Chokkakula (2014) reminds us that there are instances of amicable water sharing as well. Inter-state water disputes in India are generally adjudicated on the basis of the Inter-State Water Disputes (ISWD) Act of 1956, which tribunalized the processes of investigation and mediation. According to the provisions of this Act, water disputes between two or more states could be settled through an ad hoc water tribunal constituted by the Central Government, upon request from a party state.

A prominent example of an inter-state water dispute in India was the Kaveri water dispute between Karnataka, Tamil Nadu, Puducherry and Kerala, which had its origins in the colonial past. It was a considerably prolonged conflict. Only in 2007 was the final award of the tribunal in that instance given along with the setting up of the Cauvery Management Authority. In the case of the Krishna-Godavari dispute between the lower riparian states of Karnataka and Andhra Pradesh and the upper riparian state of Maharashtra, two separate tribunals were set up for the Krishna and Godavari respectively, but with same membership. The award of the Krishna tribunal

was published in 1976 and that of the Godavari tribunal in 1979. The final award in this case involved the division of the rivers into sub-basins and the allocation of the water from these sub-basins to the riparian states (Richards and Singh 2002). Water disputes generally tended to involve lower riparian states of a river basin who felt themselves at a disadvantage thanks to the increased ability of the upper riparian state to shape river flow downstream. In the case of the Mahadayi dispute, both the upper and lower riparian states (Karnataka and Goa respectively, with Maharashtra playing a more minor role) were at loggerheads over the sharing of water.

Water dispute tribunals can be an effective tool to settle conflicts that arise over the sharing and use of river water by riparian states. Composed of members of the judiciary who are trained to look for and adjudicate conflicts based on the law, tribunals play an important role in deciding the water sharing basis of several major rivers (Vaidyanathan and Jairaj, 2009). However, many experts have emphasized the need for less formal, more consultative and exploratory tribunals with a committee-like style of functioning and periodic reviews, which is also pertinent to our present case of the MWDT, which was exceedingly protracted in its deliberations. (Nariman 2009; Vaidyanathan and Jairaj 2009).

Antecedents of the Mahadayi Water Dispute

The Mahadayi Water Disputes Tribunal (MWDT) came into effect on 16 November 2010, with the purpose of arbitrating disputes between the states of Goa, Maharashtra and Karnataka, which share the waters of the Mahadayi. The Mahadayi river, a short, west-flowing river, drains an area of 1580 sq. km in Goa, 375 sq. km in Karnataka and 77 sq. km in Maharashtra. The total length of Mahadayi is 111 km—35 km in Karnataka and 76 km in Goa. (The Tribunal reports do not mention the length of the river in Maharashtra.) The Haltara nalla is a tributary of the Mahadayi river, which rises in the state of Karnataka and enters Maharashtra near the village Virdi. After flowing for a length of 6.6 km it enters Goa and drains into the river Valvanti near the village of Ghoteli. The Mahadayi has three tributaries in Karnataka—the Bhandura nalla, Kotni nadi and Bail nadi. In Goa, its tributaries are the Surla, Ragda, Dicholi, Mapuca, and Khandepar. A branch or spill pathway of Mahadayi constitutes the Cumbarjuha canal, which connects the Mahadayi to the Zuari river. The last stretch drained by the Mahadayi is an ecologically sensitive zone with high salinity that also provides access to the Panjim and Mormugao ports.

The origins of the Mahadayi river water dispute date to the 1980s when farmers in North Karnataka protested violently against the state government for

not providing sufficient irrigation water. The Karnataka state government conceded to their demands. It had already decided to utilize the Mahadayi's waters for the purpose of providing drinking water in Hubli and Dharwad in 1983 and floated efforts to undertake irrigation projects as well. The state of Goa objected to these irrigation efforts. Government records show attempts at negotiation on the issue of water-sharing from 1985 (Mahadayi Water Disputes Tribunal 2018, vol. I, 1).

At an inter-state meeting in 1992, Karnataka proposed diverting 29 TMC (thousand million cubic feet) of water from the Mahadayi, out of which 9 TMC would be diverted to the Malaprabha and 1 TMC released to Goa post-monsoon. This plan was opposed in its entirety by Goa. A technical committee with officers from both states was formed to study the projects. In 1994, the technical committee approached the National Environmental Engineering Institute (NEERI) to conduct an Environmental Impact Assessment (EIA) for Goa. The conflict reached its peak when Karnataka state decided to divert the water of the Mahadayi to the Malaprabha basin in 2002 after receiving clearance from the Central Government. In response, Goa sought then Prime Minister Atal Bihari Vajpayee's intervention in setting up a water dispute tribunal. The state of Goa made an appeal to the Government of India under Section 3 of the ISWD Act of 1956 to examine what it judged to be an illegal sanction. It requested a stay on the 'in-principle' clearance of the withdrawal of 7.56 TMC water outside of the basin; and it demanded an assessment of the utilization of water resources at different places in the basin, an adjudication of equitable shares of water among the three states, and a decision on the subject of whether or not in-basin needs should be prioritized over extra-basin diversions. Soon after, the Ministry of Water Resources convened inter-state meetings with the Chief Ministers of the states to deliberate on the issue.

Goa's demands were not met and subsequently the state filed a suit in the Supreme Court. Karnataka filed a counter-affidavit in the year 2006. The Government of Goa filed for the establishment of a Water Dispute Tribunal, in addition to filing an Interlocutory Application (IA) to put a stay on construction activities in 2009. These proceedings continued until 2010, when the Mahadayi Water Disputes Tribunal (MWDT) was constituted for adjudicating the dispute in the Mahadayi river valley. The constitution of the MWDT with its headquarters in New Delhi was finally approved by the Government of India and notified on 16 November 2010. The effective date of constitution of the Mahadayi Water Disputes Tribunal was 21 August 2013. The Tribunal generated a twelve-part report, which forms the basis of the

analysis that follows below.

The MWDT in Action: Site Visits, Expertise, and Legal Counsel

The MWDT gave the contending states an occasion to spell out their claims and concerns. Legal pleadings thus constituted a major part of the Tribunal's work, as indicated in Volume II of the report. From the pleadings of the state of Goa, it is apparent that the state opted for a predominantly ecological argument. It stated that the river dispute over Mahadayi was quite different from other river disputes in the past, as the diversion of its waters would have an immense adverse impact on flora, fauna, mangroves, and the overall ecology of Goa. In the interest of protecting the natural beauty of Goa, a major tourist spot, the issue was deemed a "dispute of national importance." Goa pleaded that the final, salinity-affected stretch of the riveris an environmentally sensitive zone that supports unique ecosystems. Any alteration in river profile by Karnataka and Maharashtra would reduce freshwater flow, leading to destruction of the river due to salinity ingress and increase in tidal influence. Moreover, the pleadings pointed out that increased freshwater flow was required to counter the impact of the global phenomenon of sea level rise-driven salinity intrusion, impacting groundwater aquifers and reducing groundwater recharge. The report stated thus, "It has been, thus, asserted that the State of Goa's requirements for water in the Mandovi River are for the human consumption—irrigation, domestic use, industrial use; and also for conservation of flora and fauna, for maintaining the appropriate river morphology for navigation, for sediment flushing, and to prevent salinity intrusion, both in the river and also in the aquifer and these environmental and morphological needs require maintaining an adequate flow in the river" (MWDT 2018, vol II, 113).

The pleadings further stressed that the entire economic system and the ecological wealth in the form of khazans, mangroves, agriculture, fisheries and navigation would suffer adverse consequences, in addition to salinity intrusion impacting agriculture and potential drinking water supplies. There would be irreparable damage and loss to forests, wildlife, and other organic life in the Mahadayi basin, especially in the upstream areas. The proposed diversion would alter the very hydraulic characteristic of the river, as in the upper reaches, nutrients were added in the food chain, which were eroded and dissolved in the oxygenated water. Regarding the impact on the ecosystem, the report observed, that the State of Goa "mentioned that certain species of fauna such as lepidopterans or butterflies are highly sensitive faunal components in the ecosystem and can react to the slightest variation in the climatic condition in the locality, whereas decrease in the

moisture level in this area would also affect the survival of Malabar tree toads and Malabar gliding frogs thereby leading to local extinction of the species. It referred to the arboreal mammals like slender loris, flying squirrels and giant squirrels that played an important role in the maintenance and disbursal of forest and warned of any measure that would push such 'animals on the verge of local extinction" (MWDT 2018, vol. II, 120). All these consequences were "in gross violation of the provisions of Section 29 of the Wildlife (Protection) Act, 1972 in as much as the same would severely result in destruction, exploitation, damage, diversion of habitat from the wildlife sanctuary and also diversion or stoppage of flow of water into and/or outside the wildlife sanctuary" (MWDT 2018, vol. II, 120).

The state of Karnataka had a different understanding of the matter. According to their authorities, the dependence of Goa on Mahadayi river water for irrigation, navigation, sustenance of ecology, flora, fauna, etc. was negligible because the Mahadayi basin covers an area of 3,702 sq. km and the remaining 2,122 sq. km is drained by other rivers like Terakhol, Chapora, Baga, Zuari, Sal, Saleri, Talpona and Galgibag. Karnataka denied the claims of change in river profile due to diversion stating, "Karnataka submits that the '*trickle in the river during summer months*' *is* one of the existing intra annual behavior/pattern of the river, but not on account of the diversion by Karnataka, because the yield during non-monsoon months is hardly about 2.67% of the monsoon yield in the entire basin. It is submitted that the Mahadayi River is purely and entirely monsoonal in the flow behaviour" (MWDT 2018, vol. III, 462).

The pleadings of the state of Karnataka (Mahadayi Water Disputes Tribunal 2018, vol. III) emphasized its own needs and entitlements. In the Statement of Claims, it argued that it was entitled to divert its own share of water for consumptive utilization—7.56 TMC for drinking water to Hubli-Dharwad under the Kalasa-Bandura nala project, 5.52 TMC for the Kali basin to augment flow for hydro-electric power generation under the Kali Hydroelectric project (KHEP), and the remaining water for power generation under Mahadayi Hydroelectric Project (MHEP) at Kotni. Karnataka also claimed to be entitled to allocate 1.5 TMC for irrigation, drinking water, and other purposes within the Mahadayi basin. In the Detailed Pleadings of the State of Karnataka of the report, it argued that the proposed consumption of 24.15 TMC of Mahadayi water in Karnataka would not affect the interests of the state of Goa. Karnataka cited the findings of the NEERI report of 1997 to justify its position thus: "According to NEERI—'The yield available in Goa after construction of reservoirs in Karnataka is 92.61 % of average flow during mon-

soon (June-October), 251.29% during non-monsoon (November-May) and 94.59% during June-May.' With only 2% of yield being utilized in the form of diversion and evaporation, the balance 98% will be put back in the river in a regulated manner during the operation of the project" (MWDT 2018, vol. III, 350–351) Regarding the ongoing construction of projects on the Mahadayi, the report mentions, "According to the State of Karnataka, a State may unilaterally construct project on the Inter-State River, if there is no agreement or decision of the Tribunal prohibiting such construction, and as there were no impediments or restraint orders, the Government of Karnataka commenced the construction of the Kalasa-Bhandhuri project for diversion of 7.56 TMC of water on 02.10.2006, in the non-forest area but no diversion of any water has taken place" (MWDT 2018, vol. III, 375).

Moreover, Karnataka argued that drinking water had highest priority, despite the needs of the basin. It also stated that trans-basin diversion was not legally barred. According to the report, "There are 18 villages in Mahadayi Basin, in Karnataka, with a total population of 9963. The drinking water requirement of the projected population by 2050 including livestock is 1.35 Mcum (0.05 TMC). Total cultivable area in the basin in Karnataka State is 1369 Ha with sugar cane as the main crop. Water requirement for the cultivable area for sugarcane, which was the main crop grown, was found to be 1.352 TMC for 1228 Ha" (MWDT 2018, vol. III, 414).

To review the demands of the state governments, experts were brought in on the Tribunal's orders. Shamila Monteiro, the Director of Fisheries, for example, commented on the details of the fishery sector and fishing livelihood in Goa, stating that rivers and estuaries act as natural nursery grounds and that any adverse impact can have far-reaching consequences on pelagic and demersal fisheries. According to Dr. Monteiro, the Mahadayi river system included two major ecosystems: the complete freshwater ecosystem from the source up to Ganjim and the estuarine ecosystem from Ganjim to the mouth of the river. She added that during the non-monsoon period, the lower estuaries of the Mahadayi and Zuari become an extension of the sea due to the tidal sea water intrusion. According to Dr. Monteiro, freshwater diversion would negatively affect the nutrient-rich mangroves, thereby impacting the survival of juvenile fish, bivalves and decapod crustaceans, leading to disruption in marine fish catch, shrimp industries and shellfish breeding. She stated that diversion by Karnataka would impact the survival of fish, their natural habitats, and local livelihoods and consumption in Goa. She added that consumption of fish in Goa was higher than the national average, thereby underlining the importance of fish in local diets and food habits.

Dr. Monteiro was cross-examined by experts from Maharashtra and Karnataka with questions and suggestions. Evaluating the oral evidence she had presented, the counsel from Karnataka stated that the Master Plan of Goa mentioned that the water requirement for salinity control in the estuary is mentioned to be 5.58 TMC, which is on the liberal side compared to what is calculated by Karnataka and therefore, the witness, Dr. Monteiro should accept it. The report also mentioned the comments of Shri Nargolkar, Learned Counsel for the state of Maharashtra, who pointed out that Dr. Monteiro's claim that diversion of 2.83 TMC by Maharashtra outside the Mahadayi basin—a relatively small fraction of the total yield of the basin—would change the flow of the river affecting fisheries, biodiversity and aquatic habitat was not ecologically sound. In this manner, the needs of the basin were overlooked by the experts while the Tribunal emphasized more on surveys and studies to be cited by each state to strengthen their respective claims.

Site visits and reports by experts helped each of the states strengthen its claims. An order dated 16 October 2012 gave directions to the three states to file their respective statement of claims. Goa requested the Tribunal to visit the Kalasa-Bhandura connecting canal project in Karnataka. The Tribunal visited it twice in December 2013. The team visiting the site included the Registrar and Assistant Registrar of the MWDT, the Principal Private Secretary to the Chairman, counsels of the three states, and members of the Tribunal. A report was submitted in February 2014 based on the field visit. The first part of the report detailed aspects of the field findings, including visits to the sites of irrigation projects by the state of Maharashtra, proposed sites of dams like the Kalasa in Karnataka, and water works of Goa and reserve forests like the Mhadei Wildlife Sanctuary (MWDT 2018, vol. I, 20). The idea behind the visits was to evaluate the importance of ecosystems like the khazan lands off the Cumbarjua canal connecting the Mahadayi and Zuari rivers, and also to note discrepancies related to the acquisition of official clearances to build dams. For example, the Tribunal found that the construction of the interconnecting canal to Malaprabha basin was going on without prior clearance. It also found that the construction of the Bhandura dam would disturb wildlife and clearances had not yet been received.

In the course of the visits, the states of Goa and Karnataka had ample opportunity to air their concerns. The state of Goa mentioned that Mahadayi river faced imminent threat of choking because of the reduction in water flow, siltation and disruption of its ecology, and the risk of being reduced to a trickle in summer. Karnataka on its own part quoted the NEERI report to state that,

"the change in salinity values along the various channels is marginal during the pre, and post, project scenario for both extreme situations obtained in summer and monsoon seasons" (MWDT 2018, vol. III, 352). In this way, Karnataka put forward its objections to Goa's arguments about the ecological impacts of the project.

This play of claims and counter-claims resulted in the decision of the MWDT in 2016 to turn down Karnataka's demand to lift temporarily 7 TMC from the Mahadayi basin to the Malaprabha basin. Protests erupted in Hubli and Dharwad, with film stars taking part. The interim decision was given by a three-member bench headed by Justice J.M. Panchal. The Tribunal rejected Karnataka's plea, stating several reasons: for instance, that the lifting of the water would not be temporary as Karnataka had mentioned that drought might persist in the future; that the Mahadayi basin could also be water stressed when the Malaprabha basin was water stressed; that the downstream impacts of diversion had not been studied by Karnataka; and that temporary bunds were misleadingly named since they could cause permanent impacts. Moreover, Karnataka had not sought permission based on the Environment Protection Act, Wildlife Protection Act, Forest Conservation Act, Water Pollution and Control Act till date. The Tribunal's report noted that "The representatives from Govt. of Karnataka could also not satisfactorily clarify as why the works have been undertaken for this component i.e., 'Inter-connecting Canal connecting proposed Kalasa reservoir to river Malaprabha' alone without prior clearances of other components, particularly in view of the fact that the canal by itself would remain unused even after its completion since its utilization is fully dependent on other components which are not yet cleared" (MWDT 2018, vol. I, 36).

Additionally, the report noted that "None of the proposed projects on the tributaries of river Mahadayi for the purpose of diversion of 5.27 TMC of water to augment the flows of Kalinadi for increased hydro-power generation under Kalinadi Hydro-electric Project have been accorded mandatory clearances from the Union Ministry of Environment and Forests" (MWDT 2018, vol. I, 41). The report also mentioned that "Although the 'Virdi Large Minor Irrigation Project' has reportedly been administratively approved by Govt. of Maharashtra and the project is planned to be completed by the year 2015 for utilization of about 0.52 TMC of water, the mandatory clearances by the Union Ministry of Environment and Forests are still awaited" (MWDT 2018, vol. I, 26). Therefore, it was understood that the upper riparian states of Karnataka and Maharashtra had grossly violated the law by commencing infrastructure development work on the Mahadayi river.

The Tribunal advised a closer understanding of the anatomy of the river before leaping to the conclusion that water going into the sea was being wasted. There were irregularities found in the Detailed Project Report (DPR) of the Malaprabha project as the drinking water requirements of the project villages were not met and there was data inconsistency. As the Tribunal pointed out, "It was noted from the information provided by the project authorities during the visit that the revised DPR of Malaprabha project prepared in the year 2012 envisages only 0.216 TMC for drinking water supply purposes and not 7.56 TMC projected as the drinking water requirement for Hubli-Dharwad and en-route villages" (MWDT 2018, vol. I, 42). The report further stated that, "It has also not been explained as to why priority for drinking water has been ignored while preparing the revised detailed project report (DPR) of Malaprabha project. This more so in view of the emphasis of the Government of Karnataka, on drinking water being a right, under Article 21" (MWDT 2018, vol. I, 42). This inconsistency in data from all the three states was noted by the chairman of the Tribunal. The result was a rejection of the proposal of the state of Karnataka.

The Role of Experts and Expertise

It may be pertinent to look at the composition of the Tribunal and the pertinence of its reliance on experts to frame its reports. Mr. Nadkarni was the senior counsel from Goa and Mr. Fali S. Nariman was the learned senior counsel for Karnataka. Goa appointed Chetan Pandit, retired member, Central Water Commission (CWC), and ex-officio Additional Secretary to Government of India, along with Paresh Porob, Shamila Monteiro and Rajendra Kerkar as its experts. Karnataka appointed Prof. Ashwani K. Gosain, a professor in civil engineering at IIT Delhi, and A.K. Bajaj, former Chairman, CWC, as its own experts. Maharashtra, in turn, appointed S. N. Huddar, Secretary, Water Resources Department, Government of Maharashtra. The expertise mobilized for resolving the dispute relied a great deal on judicial counsel, judges and hydrologists. There were almost no activists, representatives of civil society, or members of fishing groups, khazan farmers or villagers who appeared as stakeholders in the dispute. The Tribunal functioned in a silo and the nature of expertise was deeply imbalanced.

In an inter-state meeting convened by the Minister of Water Resources in December 2002, the governments of Goa, Karnataka and Maharashtra and the National Water Development Agency (NWDA) were asked to send representatives to conduct a joint study on the yield of Mahadayi basin. The study report titled 'Study on yield of Mahadayi Basin' was drafted in CWC in March 2003 by the study group consisting of only members from the NWDA

and Karnataka as Maharashtra did not respond to the request and Goa did not participate. The report states, "Goa initially sent a representative but later withdrew him saying that they have to compare the rainfall data received from IMD by CWC with the rainfall data Goa received separately from IMD and also because they were not given access to the raw data of observations by CWC at Ganjim" (MWDT 2018, vol. VI, 1209–1210). The major challenge in the assessment of water availability was authenticating rainfall data, which was collected from various offices of the Indian Meteorological Department (IMD) by the NWDA and the states of Goa and Karnataka. Finally, at the ministerial-level meeting, it was decided that the rainfall data should be collected independently by the CWC. The Tribunal report notes that "The rainfall data used in the study by CWC is the data collected by NWDA from IMD. There are discrepancies in this data and the data collected by Goa from IMD independently" (MWDT 2018, vol. VII, 1356). Therefore, a decision was taken to do the study again after obtaining data directly from IMD Pune.

During a technical committee meeting in September 1994, it was decided that NEERI, a national-level public institute, would be approached to undertake Environmental Impact Assessment (EIA) studies about the ecology of Goa. In September 1997, NEERI submitted its report on Goa, which examined the scope of the Mahadayi Hydroelectric Project, the baseline status of the environment, identification of impacts and prediction of impacts on the environment due to the construction of the project. An environment impact assessment study was done by NEERI in 1997 for the Mahadayi Hydroelectric Project, which was submitted to the Tribunal by the state of Karnataka. It is revealed in the report that total submergence area of the multiple dams planned by Karnataka is 2915.5 hectares, which is mentioned as forest lands but is actually also land under Mahadayi Wildlife Sanctuary. NEERI has worked out the yield in the Mahadayi basin for the pre-, post-, and construction scenarios (i.e., how river yields might changed before, during, and after the construction of a reservoir), based on the preliminary water balance study of the Mahadayi basin conducted by National Water Development Agency (NWDA) in July 1989. NEERI has also given the annual yield of Mahadayi basin as measured in Ganjim and Collem. According to the NEERI Report of 1997 Vol. I, the catchment area of the Mahadayi and its tributaries in Karnataka is 375.11 km. The NEERI report is quoted to state observations about the physiographic features of the Mahadayi basin and its hydrometeorological characteristics. The report quotes NEERI findings to state that the yield available in Goa after construction of reservoirs in Karnataka is 92.61 percent of average flow during monsoon (June-October), 251.29 per-

cent during non-monsoon (November-May) and 94.59 percent during June-May (MWDT 2018, vol. III, 351). A mere 2 percent of the yield is being utilized in the form of diversion and evaporation, and Karnataka will put the remaining 98 percent back into the river in a regulated manner during the operation of the project.

Karnataka maintains that the revised proposed consumption of 24.15 TMC of Mahadayi water in Karnataka will not affect NEERI's findings based on the earlier diversion of 9 TMC of water. The report mentions that the change in the water regime calculated by Karnataka is same as the change in water regime calculated by NEERI (MWDT 2018, vol. III, 355). Karnataka quotes the NEERI report in an Amended Statement of Claim, to state that there will be no significant impact on the phenomenon of sand bar formation at the mouth of the river, or on the associated navigational activities and the beach ecosystems of Goa as anticipated due to post-project changes in the flow regime of the Mahadayi.

Goa has objected to the findings of the NEERI report, claiming that it was based on "highly unreliable hydrological data" (MWDT 2018, vol. III, 356). The Tribunal report states that it is difficult to accept the NEERI report of September 1997 which was completed a very long time previously at the request of the Karnataka Power Corporation Limited and did not accord with the "Standard Terms of Reference (TOR) for EIA/EMP Report for Projects/Activities requiring Environmental Clearance under EIA Notification 2006" issued by the Ministry of Environment, Forest and Climate Change.

State Claims and Contestations

The pleadings of the three states reflect that Goa had a fairly ecological argument while Maharashtra's concerns related to the mining industry and arresting migration and Karnataka focused on hydroelectricity and drinking water needs. Goa claimed that the trans-basin diversion of 24.15 TMC of water would cause severe damage in the form of salinity ingress. Goa also maintained that the diversion would violate the Wildlife (Protection) Act of 1972 as the river drains an area of 208 sq. km within the Mahadayi Wildlife Sanctuary. Goa claimed that the Mahadayi is a deficit basin where water demand exceeds supply and furthermore that Hubli in Karnataka is a sugarcane growing area and hence prone to drought in any case. The pleadings of Goa also mentioned that the people involved directly and indirectly in the shipping and barge industry were yet to recover financially from the mining ban imposed by the Supreme Court in 2018, and that further diversion of the Mahadayi would negatively impact the industry. Crops grown in Goa like co-

conut, cashew, and areca nut would also take a hit if irrigation was affected by Mahadayi water diversion. Khazan lands reclaimed by ancestors of local people might be affected as well. It stated that there were a total of 30,225 fishermen in Goa and that fishing, which was both an important economic activity and a source of sustenance for many Goans would be negatively affected by diversion of water by Karnataka and Maharashtra. Goa argued that Karnataka had violated Article 14 of the Constitution (which provides for equality before the law and equal protection of the law to all) and termed Karnataka's urgency to commence work at the site without an EIA as "inconsiderableness, arbitrariness and unreasonableness." It invoked Article 48A—a Directive Principle of the State to protect and improve the environment and safeguard wildlife—to plead its case of protecting the environment.

Maharashtra meanwhile argued for diversion by stating that it would be possible to develop the mineral industry in the Mahadayi basin which would help minimize population migration from the area if irrigation needs were sufficiently met. It accordingly justified the development of Virdi Large and Minor Irrigation Project at Tillari, an adjoining basin of the Mahadayi, by pointing to the natural occurrence of manganese ore. The determined and proposed needs of Maharashtra from the Mahadayi river were calculated to be 6.37 TMC.

Karnataka justified its demand to lift 7 TMC of water, stating that surplus water would be available for Goa. Karnataka denied that vast tracts of land would be submerged and forest cover would be threatened by the Kalasa Bhanduri project. It also maintained that 200 TMC water were just being wasted, draining into the sea. It demanded 24.15 TMC of Mahadayi water for consumptive use outside of the basin and 13.34 TMC water for generating hydropower at Kotni. Karnataka stated that in accordance with Article 21 of the Constitution (which states that no person shall be deprived of life or personal liberty, except according to procedures established by the law), drinking water had the highest priority, and therefore did not require any clearance. Moreover, it argued that as a riparian state, it had both legislative and executive competence and the right to construct without the consent of co-riparian states, as trans-basin transfer of water was not illegal.

Findings and the Final Report

The final report of the MWDT was submitted in August 2018 to the Union Water Resources Ministry by the three-member tribunal headed by chairman Justice J. M. Panchal, Justice Vinay Mittal and Justice P. S. Narayana. The report states that the water available in the river including all tributaries is 188.06 TMC at 75 percent availability in the total catchment area

of 2,032 sq. km. This does not include water imported to the Tillari irrigation project in Maharashtra through the Tillari river. The report concludes that the current utilization of the river water is not more than 5 percent of water accessibility at 75 percent availability. The Tribunal also notes that the demands of each state are not justified because they are not based on consistent data or scientific studies, do not adequately take social, ecological, and economic considerations into account, and do not examine the sustainability of the resource. According to the report, the states have not provided the information necessary for equitable apportionment of water as specified in the Helsinki Rules;[1] their demands therefore are unachievable. For instance, expert witness Chetan Pandit observed that there were no CWC gauging stations along the tributaries of Mahadayi where projects were proposed by Maharashtra and Karnataka. The Tribunal indicated inconsistencies in the information provided by the senior counsel for Goa and expert witness Nadkarni and said that details concerning six projects in Goa had not been furnished. The Tribunal also enumerated various inconsistencies in the pleadings of the states. The final decision of the Tribunal emphasized on water availability and needs of the project sites along with sustainability.

That being said, the MWDT granted Karnataka 1.5 TMC for drinking and irrigation within the Mahadayi basin through the Mahadayi Hydroelectric Project. Karnataka was permitted to divert 2.18 TMC at Bhandura dam and 1.72 TMC at Kalasa dam. However, this award was subject to fresh planning and preparation of Detailed Project Reports after technical appraisal. The Tribunal found hydropower generation as a non-consumptive use advantageous for Karnataka and allowed it. However, it rejected Karnataka's demand to divert 5.52 TMC water to the Supa reservoir of the Kali Hydroelectric Project and 7 TMC to Kotni dam. The Tribunal authorized Maharashtra to use 0.56 TMC for Virdi LMI project for consumptive use, after preparation of a DPR. It also permitted Maharashtra to utilize 0.77 TMC for the proposed Dhangarwadi and Ambadgaon minor irrigation projects. It basically only allowed the utilization of a total of 1.33 TMC water by Maharashtra and rejected its other demands. For the state of Goa, the Tribunal mentioned that the 59 sites identified for utilizing water needed to be studied more. It allowed the state a maximum utilization of 24 TMC of water for consumptive as well as non-consumptive purposes, as against the current utilization of 9.39 TMC water, contingent on an EIA and DPRs.

[1] The Helsinki Rules established the principle of "reasonable and equitable utilization" of the waters of an international drainage basin among the riparian states as the basic principle of international water law. It applies to groundwater too. It was adopted by the International Law Association in 1966.

The Tribunal also suggested the constitution of a Mahadayi Water Management Authority by the Central Government. The Central Government notified the Tribunal's award in the official gazette in February 2020. To implement the award of the Tribunal, a body was constituted by the Central Government in 2023, namely, the Progressive River Authority for Water and Harmony (PRAWAH). The members were from each of the three states, with Goa appointing Subhash Chandra, IAS, Secretary of Water Resources; Karnataka appointing Rakesh Singh, IAS, additional chief secretary of Water Resources Department; and Maharashtra appointing Milind Naik, chief engineer of Water Resources Division, Konkan division. The members of PRAWAH visited Kalasa-Bandura project site on 7 July 2024. The PRAWAH team was accompanied by engineers from Goa during the visit. Discussion was also carried out on the Virdi large and minor irrigation project in Maharashtra during the meeting at Bengaluru. Goa complained about the illegal extraction of Mahadayi water by Karnataka. (It had already filed a contempt petition against Karnataka for illegal diversion of Mahadayi as early as October 2020, after the Tribunal's award.) The PRAWAH team inspected the site for illegal construction and gathered information about water flow and distribution and presence of tigers in the area.

It is evident from the MWDT reports that the process of tribunalization of the Mahadayi water dispute between the states of Karnataka, Maharashtra and Goa resulted in an extensive exercise of legal battles, contests, debates and deliberations. These conflicts were not resolved by the Tribunal's award, which proved, yet again, to be unacceptable to the states, thus leading to the persistence of the dispute and a failure to arrive at a consensus.

Discussion and Conclusion

As can be seen in the case of the Mahadayi water dispute, the process of arbitrating the claims and demands of the riparian states has been a lengthy one. The ideal condition would have been to minimize water disputes among states. Iyer (2011, 205–206) puts forward some principles in the context of minimizing inter-state water conflicts that are worth noting. These include accepting the fact that states in a river basin do not own a river but rather have user rights. There is no hierarchy among the various user states. Moreover, states must holistically and prudently use river water in a unified manner, failing which segmentation of a river is proposed, implying water sharing. It is emphasized here that water sharing should be equitable and that upper riparian and lower riparian states should recognize each other's rights. In such an arrangement, principles for water sharing during low flows must be clearly laid out. In case of an inter-state water dispute, negotiations, me-

diation and conciliation are suggested, with an Interstate Council at the centre. Adjudication with the aid of Article 262 of the Constitution (by which Parliament may provide for the adjudication of any inter-state water dispute), and the Interstate Water Disputes Act, 1956 is said to be the last resort. Additionally, the adjudication process must be pursued in good will, without being adversarial in spirit. The award by the tribunal also must be accepted in good spirit by all sides. Appeal to the Supreme Court is also mentioned as worthy of consideration. It is stated that the parties to adjudication must be state governments although agriculture, industry and citizens are highlighted as water users who should be acknowledged in the adjudication process. The functioning of the tribunal is also offered flexibility with a committee-like problem solving method rather than court-like procedures. The principles also leave room for the need for amendments to the Act and conclude by stating that dispute resolution may not be a one-time settlement but a continuous process of conformity to the spirit of settlement.

Nevertheless, it is true that that the politicization of inter-state water disputes further complicates matters and sets limits on possible legal responses (Chokkakula 2014). In the case of the Mahadayi dispute, the role of political leaders and public figures like actors has gained such traction in the media that attention has been diverted the fundamental issues at stake. It is also essential to understand and learn from instances where cooperation rather than competition has paved the way for better sharing of resources. A new approach that foregrounds cooperative federalism and inter-state water governance becomes essential in cases like this one (Modak and Ghosh 2021).

As can be gauged from the claims of the three states, the concerns largely focus on utilizing river water for infrastructure development and irrigation, at the expense of environmental flows and ecological needs. Only the state of Goa, as a lower riparian, consistently stresses the need to consider sufficient flow to the sea and the environmental needs of the Mahadayi basin, a point of view that is reiterated by the findings of the experts in the Tribunal. It is true that Karnataka and Maharashtra have paid some lip service to the environmental impacts of diversion. While pleading its case, Karnataka mentioned the need to utilize some of the Mahadayi's water for ecological purposes: "Since the area consists of ecologically sensitive, bio-diverse flora and fauna, certain water requirement will be essential for irrigated forestry, wildlife conservation and tourism etc., the water required is 0.378 TMC." This is based on a Project Report for *'In-basin utilisation of Mahadayi Waters in Karnataka.'* Similarly, Maharashtra highlighted ecological needs in the context of water diversion, pleading that "in the event of trans-basin di-

version being allowed to the State of Karnataka, this Hon'ble Tribunal may be pleased to direct the State of Karnataka to maintain minimum flows in Haltara nalla in the post monsoon period so that the sustenance of the inhabitants, flora and fauna in the State of Maharashtra is not jeopardized." Apart from these brief mentions, however, Karnataka and Maharashtra have paid very little attention given to environmental requirements. This omission has been noted by the Tribunal, which states, "The DPRs filed by the State of Karnataka are mostly devoted to preparation of estimates of the projects. The aspects of planning, particularly the ecological aspects have not been addressed in proper perspective. This is more so as the scheme involves inter-State issues and the diversion of water from one river basin to another and the schemes are required to be implemented in forest areas." Goa, on the other hand provided details of yield assessment studies and hydrological data and spoke of about commissioning a study to understand environmental flow requirements: "As a matter of fact, State of Goa has already commissioned one more study for ascertaining the water requirement for environmental flow, salinity control, inland navigation and river morphology. The State of Goa craves leave to refer to and rely upon copy of the said study report once the same is completed."

It is worth noting that the deliberations around the issue of inter-state dispute over the Mahadayi have been predominantly voiced by legal and technical experts, with zero representation of concerns from other stakeholders like ecologists and social scientists. This has had a significant bearing on the issues prioritized in the ensuing debates and has resulted in the near-omission of topics such as biodiversity and societal implications. According to Iyer (2011), ecological flows and minimum flows are misleading concepts; minimum intervention must be the motto rather minimum flows. Catering to anthropocentric needs often results in myopic decision-making, leading to irreversible damage to natural resources like rivers.

According to a newspaper report by *The Hindu* dated 22 Feb 2020, celebrations took place in several regions of Karnataka after the notification in the gazette about the Tribunal's order and allocation of water between Maharashtra, Karnataka and Goa (Desai 2020a). Irrigation officials termed the celebration premature as actual work on the project would take some time to start, with approvals being required at different levels. Permissions are needed from the Central Forest Ministry and Central Water Commission. Moreover, the DPRs need to be reworked as they are more than twelve years old at this point. Some of the people quoted by the newspaper report have termed the notification as a mere formality, saying that the real debate will

take place only when Goa presents its objections to the Tribunal's award before the Supreme Court. The Karnataka state budget allocated Rs 500 crore for the Kalasa-Banduri nala, allowing the state to go ahead with works in the basin after getting the necessary approvals. This has brought cheer to farmers, according to a report by *The Hindu* on 8 March 2020 (Desai 2020b). A report by *India Today* reveals that all the three states filed petitions in the Supreme Court against the Award (Kulkarni 2023). Fresh disputes arose after Karnataka Chief Minister Basavaraj Bommai announced that the CWC had approved their DPR to divert 1.72 TMC water for the Kalasa dam and 2.18 TMC for the Banduri dam. The opposition parties of Goa, i.e., AAP, Congress, and Goa Forward Party (GFP), attacked the state government for going soft on Karnataka as both were BJP-ruled states at the time.

In conclusion, it seems that a conflict like the Mahadayi river dispute has been complicated by the stances adopted by experts adjudicating the matter, the technical agencies consulted, and political figures who pursue their own agenda. Furthermore, anomalies and inconsistencies in data collection garnered a lot of debates in the process of adjudication. There were discrepancies reported in the hydrological and hydro-meteorological data provided, which was also flagged by the Tribunal report. The conflicting interests of the states also made it difficult to arrive at a common conclusion. And finally, by focusing almost exclusively on the claims and demands of the riparian states, the Tribunal has shut out the voices of many other stakeholders who have a major role to play in the process of seeking legal recourse to settle the dispute.

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Contributors

Peter Ronald deSouza was the Director, Indian Institute of Advanced Study (IIAS), Rashtrapati Nivas, Shimla, for two terms (2007–2013). Prior to that he was a Senior Fellow at the Centre for the Study of Developing Societies (CSDS), Delhi (2003–2007) and even earlier was Professor and Head, Department of Political Science at Goa University (1996–2003). After serving as Director at IIAS he returned to CSDS as Professor in 2014. He is Senior Research Associate, African Centre for Epistemology and Philosophy of Science (ACEPS), University of Johannesburg. Professor deSouza has served as a consultant to UNESCO, International IDEA, Stockholm, UNDP, the World Bank, Inter Parliamentary Union (IPU), Ford Foundation etc. His recent publications are with Mohd Sanjeer Alam and Hilal Ahmed *Companion to Indian Democracy: Resilience Fragility, Ambivalence,* Routledge, New Delhi, 2022; and with Rukmini Bhaya Nair, *Keywords for India: A Conceptual Lexicon for the 21st Century*, Bloomsbury, London, 2020,

Solano Jose Savio Da Silva is Assistant Professor, Department of Humanities and Social Sciences, BITS Pilani, Goa, where he teaches courses in development and political theory. His research has looked at electoral politics, urbanization, and land use planning with a special focus on Goa. Before joining BITS, he worked at Goa University and at the Centre for the Study of Developing Societies (CSDS), Delhi. He completed his PhD on the dynamics of land-use planning in Goa in 2019. He has an M.Phil. in Development Studies from the University of Oxford as well as a Master's in International Studies and a BA in Economics from Goa University. Professor Da Silva is also deeply involved with Goan social issues, occupying himself in particular with overseeing, analysing, and sometimes agitating against variants of the Goa Regional Plan—an attempt to develop a broad strategy for Goa's development, which includes preparing a land-use plan.

Lakshmi Subramanian is retired Professor of History, Centre for Studies in Social Sciences, Calcutta, and BITS Pilani, Goa. She has had a long and distinguished research and teaching career and is credited with making major contributions to the fields of Indian business history and music history. She has many publications to her credit, the latest ones being *Singing Gandhi's India: Music and Sonic Nationalism* (2020) and *India Before the Ambanis: A History of Indian Business, Market and Economy* (2024). She has been the recipient of several international fellowships including the prestigious Mellon fellowship and Adam Smith fellowship.

Rajendra P. Kerkar is involved in environment education, protection, and conservation in Goa for the last three decades. He has been instrumental in initiating the movement for notifying the Mhadei and Netravali Wildlife Sanctuaries. He serves as the General Secretary of the Mhadei Bachao Abhiyan, as a member of the National Board of Wildlife, Goa State Biodiversity Board and other organizations involved in protecting the history, heritage, ecology, and wildlife of the Western Ghats.

Parineeta Dandekar is an environmental advocate and Associate Coordinator for the South Asia Network on Dams, Rivers, and People (SANDRP), where she works to ensure that India's last free-flowing rivers remain protected. Her research uncovers the failures of large-scale water projects while amplifying the voices of communities, cultures, and ecosystems that depend on these rivers. She is pushing for policies that prioritize both people and the planet, ensuring a future where rivers continue to sustain life.

Meera Mohanty is Editor at *The Economic Times.* A financial journalist with twenty years of experience, she covers politics, business, and closely covers the business of mining.

Rahul Tripathi is Professor in Political Science at the D.D. Kosambi School of Social Sciences and Behavioural Studies, Goa University. He specialized in South Asian Studies at the School of International Studies, Jawaharlal Nehru University, New Delhi. He teaches and researches in the area of international relations, global political economy, and South Asia and has published in *International Studies, South Asian Survey* and *Economic and Political Weekly.* He is also the co-convenor of the Multidisciplinary Cluster on Mhadei, a knowledge cluster at Goa University that brings together diverse perspectives on the river. His popular writings on Goa and Mhadei have appeared in national and local newspapers including *The Indian Express, Times of India, Navhind Times* and *O Heraldo.*

Rishikesh Bahadur Desai is an award-winning Senior Assistant Editor at *The Hindu,* covering northwestern Karnataka. With experience at *The Times of India, Vijay Times,* and *The Asian Age*, he reports on governance, decentralization, agriculture, and social welfare. His 2024 Karnataka State Media Academy award highlights the impact of his journalism. Some of his best regarded stories include a series on the Siddi African tribe getting ST certification, an inquiry into the alleged sale of a poor widow, and restoration of the Surang Bavi Karez, an ancient heritage structure in Bidar. He has extensively covered Hyderabad-Karnataka's backwardness, farmer distress, and infras-

tructure projects like Bidar's multi-arch dams. His reporting on the kidnapping of actor Rajkumar gained wide attention. As India coordinator for BBC Radio, he worked on projects about the tobacco industry, Kaveri dispute, and the IT revolution. Fluent in English, Kannada, and Hindi, he holds degrees in English Literature, Political Science, and Law. He also edits and translates, organizing initiatives like a Wikipedia editathon in Bidar.

Vaishali Kashyap is a doctoral research scholar at the Department of Humanities and Social Sciences, BITS Pilani K.K. Birla Goa Campus. Her ongoing research explores factors behind livelihood change in a traditional fishing community in Assam. She holds a post-graduate degree in Water Policy and Governance from TISS, Mumbai. In the past, she has been a part of organizations like Tata Trusts and INREM Foundation, engaging with the development space with a particular focus on public health, nutrition, and water quality.

Vasudha Sawaiker trained in law at V.M. Salgaoncar College of Law, Goa University and has a post-graduate degree in social work from the Tata Institute of Social Sciences (TISS), Mumbai. At TISS, she was awarded the prize and shield for being the best student in Dalit and Tribal Social Work. As a lawyer, she represented clients in cases on social justice and inclusion in public employment. Her legal research encompasses diverse areas such as organ donation, forest rights, and construction workers. She was awarded the UGC-JRF Fellowship in Social Work in 2016 and is presently a research scholar at the School of Sanskrit, Philosophy and Indic Studies, Goa University.

A. G. Chachadi, former Professor, Goa University, Goa completed his M.Tech. and PhD from IIT Roorkee. Before joining Goa University as teaching faculty, he served as a scientist at the National Institute of Hydrology, Government of India for seven years. His research interests and works are related to the fields of hydrogeology and water resources management, environmental science and exploration geophysics. He has published several research publications in national and international journals and has worked as a consulting hydrogeologist for several mining companies.

Nirmal U. Kulkarni is a herpetologist and nature photographer with over two decades of experience in conservation science and field herpetology in tropical forests of Western Ghats and North East India. He has served as an Expert Member of the Goa State Biodiversity Board and Goa State Wildlife Advisory Board for two terms, besides being part of various state and national committees on wildlife and research. Nirmal is currently Chairman

of the Mhadei Research Centre, Goa, India and is leading research projects on the Leith's soft shell turtle in Karnataka, a snake bite awareness project in Goa, and a monitor lizard project investigating illegal trade in India. As an ecologist, Nirmal is involved in long term monitoring of the Chorla Ghats forests and the adjoining Mhadei bio-region. His research interests include field herpetology in tropical forests, tackling the organized illegal wildlife trade and conservation education.

Vidyadhar Atkore is a freshwater ecologist by training, interested in quantifying the anthropogenic and environmental factors on freshwater biodiversity across different scales. Currently he is a faculty member at the Salim Ali Centre for Ornithology and Natural History (SACON), South India Centre, Wildlife Institute of India, Coimbatore. He teaches wetland ecology and management, ichthyology, landscape ecology, GIS, human ecology and ecohydrology.

Nandini Velho is a wildlife biologist working on the human-dimensions of forest management. She has completed her PhD from James Cook University and was an Earth Institute Fellow at Columbia University. She has worked as a Policy Fellow with the Minister of Environment and Forests, and with multiple forest departments and communities across India. She is interested in the intersection of art, science and action.

Helga do Rosario Gomes is a Research Scientist at Lamont-Doherty Earth Observatory, Columbia Climate School. She graduated with a PhD in Biological Oceanography from University of Bombay and has held research positions in Japan and Maine. Dr. Gomes is interested in large-scale climatic questions such as the impacts of the new and unusual planktonic blooms in the Arabian Sea, the effect of Arctic warming and ice melt on the American lobster, the impact of urbanization on wetland systems, and ocean acidification and deoxygenation of waters from harmful algal blooms. With her colleagues she has been developing ocean monitoring and decision support systems tailored to meet needs for sustainable management of coastal resources in tropical countries experiencing climate change. She mentors postdoctoral, graduate, and undergraduate students, but her passion lies in providing guidance and support to high school students, some of whom have won national and international awards. She is a trustee and Science Advisor for Goa Chitra, an anthropological museum in Benaulim, Goa that preserves and showcases the culture and lifestyle of the people of the west coast of India.

Dhirendra M. Deshpande has nearly four decades of experience in Indian higher education, starting as a Lecturer in a degree college in Goa, working in various capacities in reputed institutions such as Symbiosis, Pune, KLE Society, Bengaluru, as Faculty, Principal, Director and finally retiring as the Vice Chancellor of ISBM University in Chhattisgarh. As a columnist for a leading daily newspaper in Goa, he has rich experience in writing on a range of economic and policy issues such as budgets, monetary policy, reforms and liberalization. As a faculty in Symbiosis, he was associated with guiding and evaluating various finance-related projects that included building economic models for producing hydroelectricity, long-range demand and sales forecasting.

Leon Morenas is the Principal of the Goa College of Architecture. He was Associate Professor of Architecture at the School of Planning and Architecture, Delhi. He was also a Fellow at the Indian Institute of Advanced Study, Shimla where he worked on a project entitled "Mohallas and Smart Cities: Post-Colonial Development in Delhi." He was a World Social Sciences Fellow in Sustainable Urbanization (2014) and Programme Coordinator of the Masters in Social Design at Ambedkar University, Delhi (2013). He is an architect with a Master's in Urban Design from the School of Planning and Architecture, Delhi and a PhD in Architectural Sciences—with a specialization in Informatics—from Rensselaer Polytechnic Institute, Troy, New York. Professor Morenas's research uses the disciplinary lens of Science and Technology Studies (STS) to understand the relationship of technology with contemporary design, architecture and urban planning. His most recent writings have focused on urban governance through technology with a focus on smart cities and their command centres. He is also working on a set of essays that attempt to answer the question: "Is there an Indian way of thinking about technology?" using the foils of history, metaphysics and literature.

Manisha Rodrigues is an architect based in Goa. She holds a Bachelor's degree from the Goa College of Architecture and a Master's in Architecture with a specialization in architectural conservation from CEPT University, Ahmedabad. With over a decade of experience in practice and more than three years as an assistant professor at her alma mater, the Goa College of Architecture, her work often explores the intersections of water, heritage, and the built environment. She was part of projects like the Serampore Initiative led by the National Museum of Denmark, which documented Indo-Danish heritage along the Hooghly River. Her academic and professional work reflects a deep connection to water and cultural landscapes—from the Sabarmati and Hooghly to the Sal and Mandovi rivers in Goa. As a fellow of the Goa Wa-

ter Stories fellowship by the Living Waters Museum, she explored "What is a river?" through the lens of the built environment of the Mhadei–Mandovi–Mahadayi River. She currently leads her practice in Margao and continues to engage with architectural education as visiting faculty at the Goa College of Architecture.

Aurobindo Gomes Pereira is an Advocate, with an L.L.M. in Constitutional and Administrative Law, and a resident of the city of Panjim, Goa. He can be contacted at thegoanphilosophicalsociety@gmail.com.

Narayan Desai is a teacher and translator, columnist in local languages—Marathi and Konkani. His interest areas are language and culture. He can be reached at narayanbdesai@yahoo.com

Sujata Noronha is an educator specializing in early literacy and enjoys working with children and books. She is deeply interested in the power of the printed word and the pathways to access and growth emerging from it. In Goa, she works out of her organization called Bookworm, that provides resources and facilitates libraries and reading within the community of Panjim and in schools around the state. She consults with the Tata Trusts within the education portfolio.

Maya de Souza has an inter-disciplinary background with over twenty years' experience in public policy and the law. She graduated from Oxford University in Philosophy, Politics and Economics before studying and practising law. After an L.L.M. (London), graduating with distinction, she joined the Department for the Environment, Food and Rural Affairs in the UK Government Legal Services and later moved to policymaking. She headed various teams on better institutional structures for flood risk and integrated water management where she led a project on holistic approaches to water management in the climate risk context. She has also headed the Business Environment Council Hong Kong's Policy and Research Team, leading projects on climate resilience; and served on the BITC–UK Circular Economy team as Co-Director, Environment. Maya has been an elected Green Party councillor in London, playing an active role in town and country planning and scrutiny of the environment among other policy areas. Currently, Maya lives and works in Goa, and is a co-director of Act for Goa, co-founder of Materia Verde (a new biomaterials industry accelerator powered by Quicksand). She was previously with Bangalore-based think tank, CSTEP. She also works with various consultancies on future-proofing and strategic insight.