POLICY BRIEF

DRAFT

RELEVANCE OF RHINE REJUVENATION FOR INDIAN RIVERS

POLICY AND GOVERNANCE ISSUES

CENTRE FOR POLICY RESEARCH

NAMAMI GANGE

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1. Introduction

The European experience of river rejuvenation is often considered a template for many emerging nations. Europe demonstrated the successful implementation of river restoration programs for some of its most complex and important transboundary river basins, such as the Rhine and the Danube, albeit with its own challenges.

Recent developments suggest that India, too, is inspired by the European model and increasingly aspires for a paradigm shift in its approach to managing its rivers—by recalibrating its existing plans, policies, and programmes to be responsive to the integrated needs of its river system. The National Mission for Clean Ganga's (NMCG) flagship Namami Gange Programme (NGP) under the Ministry of Jal Shakti (MoJS), Government of India (GoI) is one such instance. However, few acknowledge the significant divergence that exists between the two regions in terms of the political economy, sectoral orientations, and historical context of institutions that are engaged in the management of water.

Through this brief, we aim to outline the four key takeaways from the much-celebrated European experience of river rejuvenation using the Rhine as a case study. Subsequently, we contextualise the lessons this model can hold for the Indian model of river rejuvenation and the pivotal role of the NMCG in scripting this story.

2. A Critical Analysis of the European Experience of River Rejuvenation: Collaboration, Cooperation, and Frictions

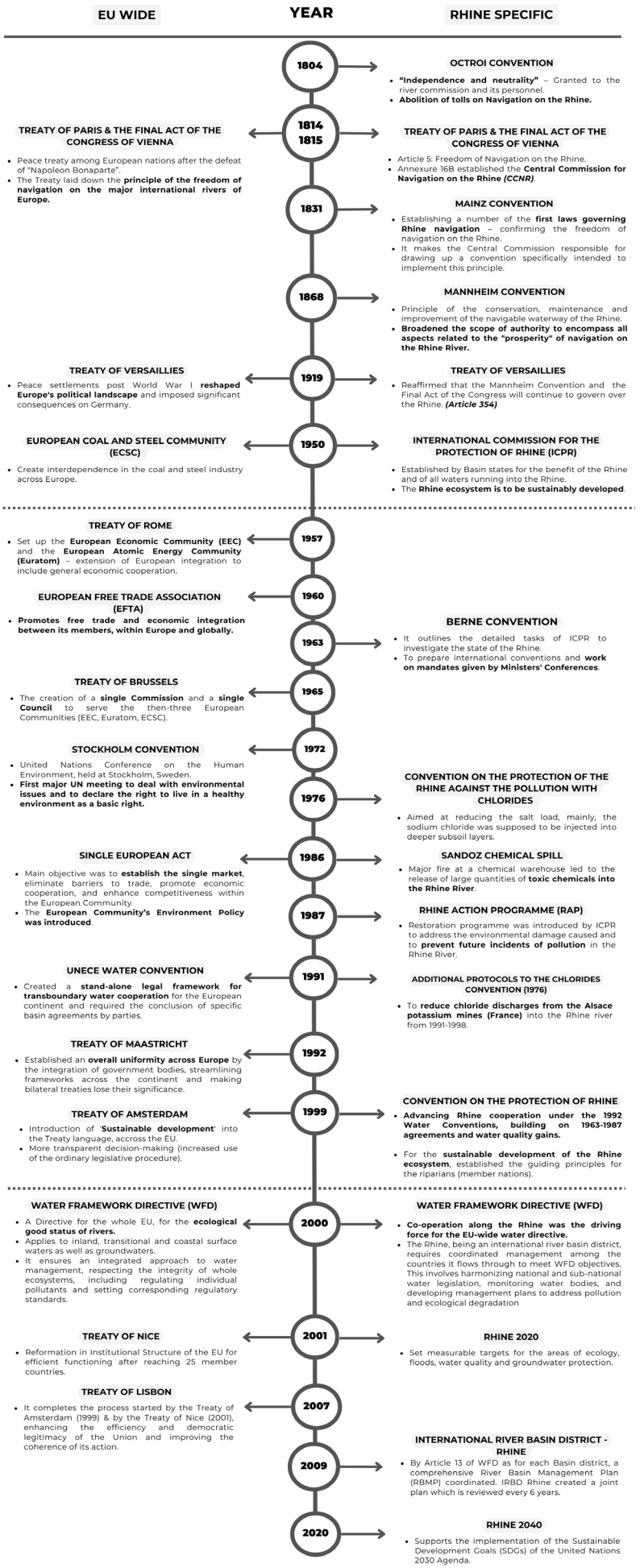
The European model of river rejuvenation is dotted with instances of collaboration, cooperation, and friction. The case of the rejuvenation of the Rhine basin is a good example to illustrate this interplay. Based on a comprehensive literature review, four key takeaways from this largely successful model are summarised below:

The Rhine Basin
Source: ICPR

2.1 A Critical Analysis of the European Experience of River Rejuvenation: Collaboration, Cooperation, and Frictions

The success of the European model of river rejuvenation, and the Rhine in particular, did not happen overnight. It built on a long and rich history of cooperation, building on incremental gains to establish a comprehensive regime of cooperation and collaboration which tackled one issue at a time — starting from navigation and pollution to the declining salmon population and water quality. Another central — and interlinked — aspect of this enduring history of cooperation was to create an incremental incentive structure which persuaded the various stakeholders to build upon the already existing regimes of cooperation and create new ones based on the gains from the previous ones. For instance, the Central Commission for Navigation on the Rhine (CCNR) provided an institutional foundation for the Rhine basin states to build consensus on navigation and, in turn, issues of trade. The shared learnings and incentives from this experience paved the way for the states to cooperate on critical issues like pollution, eventually resulting in the establishment of the International Commission for the Protection of the Rhine (ICPR) in 1950.

Brief Timeline of Europe's History of Cooperation



Source: TREADS generated

Beyond these, Rhine cooperation was also boosted and reaffirmed by some extraneous agreements. It got a massive fillip when European states signed the Treaty of Maastricht in 1992 after the end of the Cold War, going on to establish the European Union (EU) the very next year. It put in place stronger institutional arrangements for both cooperation and dispute resolution, such as the European Court of Justice, that have only helped the Rhine regime. Further, the Rio Declaration on Environment and Development, endorsed at the 1992 United Nations Conference in Rio de Janeiro reaffirmed the principles of the 1972 Stockholm Declaration, thus providing even greater legitimacy for the European cooperative regime on the Rhine.

2.2 Deliberation and Consensus Building

Building on the aforementioned long history of cooperation, the European model also invested in detailed deliberations and consensus building through various bipartisan platforms. These platforms focused on technical aspects of river rejuvenation such as monitoring and sharing of data and setting standards for both. But it was not an easy task to get sovereign nations to agree on sharing data and technical reports with each other without any immediate individual gains. The politicization of technical reports and data by respective sovereign nations and changing technological paradigm necessitated the CCNR to constitute a Technical Committee based on the suggestion from the Prussian Rhine Commissioner — comprising the chief engineers of the respective seven national Water Authorities, the Chief Inspector of the CCNR, and the sub-inspectors of the Rhine districts. This Committee laid the foundation for subsequent committees and commissions established to deal with Rhine's pollution and accompanying problems, ICPR being the most prominent among them. Another such commission was the Salmon Commission, established in 1905.

In 1948, during a Salmon Commission meeting held in Basel, it was determined that the pollution of the Rhine posed a substantial concern, extending beyond the Commission's intended jurisdiction. (Montgomery Jr. and Merklein 1972). As a solution, the Commission proposed the establishment of a new commission that would exclusively address the problem of pollution in the river (Koos and Anne 1997). United by a shared concern for maintaining the cleanliness of the Rhine, preventing further contamination, and enhancing its current condition, these nations recognized the urgency of addressing this environmental challenge (Selin 2015). This proposed new commission took the form of the ICPR in 1950 with an agenda to assess Rhine pollution, propose water protection measures, standardise monitoring, and facilitate the exchange of monitoring data (Dieperink 2011). The 1950 contract was of crucial importance for cooperation in this region since it signalled more extensive coordination of activities concerning tasks regarding the Rhine's water quality monitoring, its salinity, and its contamination with heavy metals (Bernauer 1995). A key point to note here is that none ofthese committees/commissions could issue binding and legally enforceable directives. They were merely advisory in nature. The driving force behind the success of these institutions was the political will of the Rhine basin states and the years of consensus building. A lack of political will is a hurdle that must not be underestimated in dealing with cross-border river pollution and creating an international regime of cooperation.

A testament to the political will of the Rhine basin states is the constitution of the Rhine Ministers' Conference, wherein regular meetings among environment ministers of the basin were launched in 1970, intended to occur annually. These meetings proved to be the most efficient means of addressing and resolving water quality concerns compared to othermethods. By utilizing the expertise and suggestions of ICPR's Working Groups, along with the discussions held within the Commission itself, these gatherings have successfully circumvented the decision-making deadlock experienced by ICPR. Several promising, although provisional, agreements were reached. For example, it was at the first Rhine Ministers' Conference, held in October 1972, that an agreement was reached on the chlorides issue where The Netherlands offered to pitch in the cost of storing salt on the condition that Germany would contribute as well (Mostert 2008). Eventually, it was decided that all ICPR members would contribute for this arrangement, and a subsequent convention outlining the details of this arrangement would be drafted (Mostert 2008). This arrangement is what eventually led to the signing of two conventions — Convention on the Protection of the Rhine against Chemical Pollution and Convention on the Protection of the Rhine against Chloride Pollution — in 1976.

2.3 Incremental and Responsive Policymaking

A critical lesson from the European experience of river rejuvenation is the focus on incremental gains rather than an overambitious plan to achieve all targets at one go. The end goal remains the same, but the path to achieving that goal was devised with a focus on short-term achievable targets, eventually building up to the larger end goal. This was accompanied by devising policies responding to these specific targets and challenges. This strategy helped in a targeted focus on the immediate problems at hand without being overwhelmed by the larger goal of "good water status" and at the same time, inching towards it incrementally.

The 1970s saw a shift towards a more expansive environmental policy in Europe. With the European Commission/ Union embarking on an ambitious environmental programme in the wake of the first United Nations Conference on the Environment held in Stockholm in 1972 – popularly known as the Stockholm Conference – and termed the First Environmental Action Plan (EAP) in 1973, the conversations around the need for a robust environmental policy became prominent (Hey 2005). The EAP reinforced the idea that the protection of the environment cannot take place in a vacuum as "economic development, prosperity and the protection of the environment are mutually interdependent" (Hey 2005). EAPs became a guiding policy for the European Union, and it was modified and updated regularly with each subsequent EAP being a follow up of the previous one as well as adding something new and specific to focus on. One critical aspect of EAPs is that they are not binding in nature but are "medium-term programmes and strategic policy documents which reflect the fundamental elements of contemporary environmental thinking and problem perceptions, as well as strategic policy orientation" (Hey 2005). These EAPs became a regular feature of European environmental policy and were seen as a dynamic guiding strategy for Europe's environmental agenda. Each subsequent iteration was reflective of the political climate of its time and signalled a shift in priorities as per the changing political and economic climate.

With these big and significant developments at the European level, the Rhine was grappling with its own issues. Even though the Chemicals and Chlorides Conventions were signed in 1976, their implementation and ratification were facing problems. Due to protests in the Alsace region of France, the French government refused to submit the Chlorides Convention to its parliament for ratification which triggered a diplomatic incident with The Netherlands withdrawing their ambassador from France in 1979 (Verweij 1999, Mostert 2008).

The Sandoz accident in 1986 proved to be a turning point in the management of the Rhine and in spurring international cooperation on its protection (Verweij 1999, Mielnik 2018). On 1 November 1986, a fire broke out at Sandoz AG near Basel, Switzerland. The disaster was extensively reported in the media, and within two weeks, on 12 November 1986, a special Rhine Ministers Conference was organized in Zurich, Switzerland. The Sandoz accident forced the Rhine basin states to act with a sense of urgency and provided an impetus to arrive at a working solution to the protection of the Rhine. It spurred the Dutch government to hire a team of consultants from McKinsey-Amsterdam to outline "a comprehensive international agreement on the restoration of the Rhine basin, and to build up the necessary intergovernmental support for this plan" (Verweij 1999). Their main goal was the return of the salmon in the Rhine by the year 2000 as it was the disappearance of the salmon population from the Rhine which became a talking point in the aftermath of the Sandoz spill. This came to be popularly known as the "Salmon 2000" programme. In addition to this, the Rhine basin states would also strive to eliminate a limited list of the most toxic chemicals from the Rhine watershed. The means to reach these goals were left to the governments of the Rhine basin states (Verweij 1999).

The plan prepared by McKinsey was endorsed at a Ministerial Rhine Conference in 1987 and was adopted by the governments under the name "Rhine Action Programme (RAP)". It outlined short-term achievable goals for the Rhine basin states and proposed to "keep intergovernmental agreements concerning the Rhine informal and non-binding" (Verweij 1999). This programme proved to be hugely successful and changed the course of international cooperation on the Rhine (Verweij 1999). As highlighted by various scholars, the Sandoz spill signalled a paradigm shift in the transboundary cooperation on the Rhine (Verweij 1999, Huisman et al 2000, Mielnik 2018) as disasters with international impacts are an opportune moment for strengthening transboundary cooperation (Huisman et al 2000).

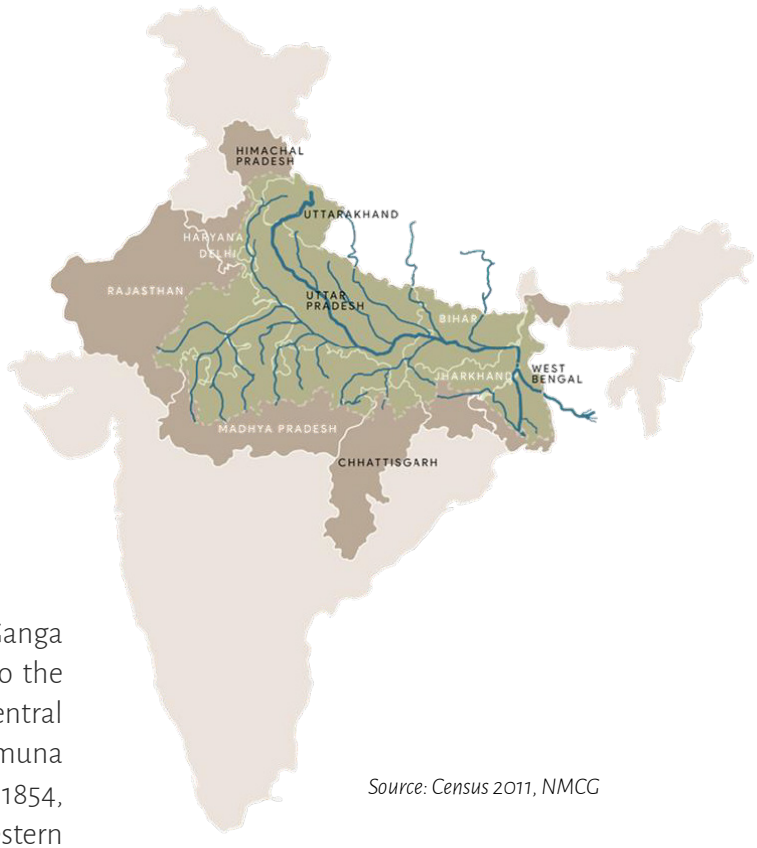
2.4 Enabling Legal and Institutional Architecture

The transition from the CCNR to the ICPR captures the core of the complex history of Rhine cooperation, wherein one institutional framework progressively segued into another in response to specific needs and emerging circumstances like river pollution. The process of enabling legal and institutional architecture of the Rhine showed great agility and adaptability by responding to failures, gaps, and shifts in circumstances. But this process was not entirely autonomous and sector-specific. It was aided by two other processes that unfolded in tandem: the reconstruction in the postwar period and pan-European integration in the decades hence.

CCNR created an autonomous regulatory framework for Rhine shipping right after it came into existence in 1815 that provided a template for institutional building in other large and important river basins across Europe. But CCNR had a critical limitation: it was all but a single-agenda institution. Despite its wide operational latitude, it had little impact beyond the navigation regime. The pollution crisis, like the Alsace potash mines' salt discharges in 1960, forced institutional recalibration. The Chloride convention in 1976 marked a turning point, demonstrating consensus building addressing the transboundary disputes. Post the Sandoz spill in 1987, ICPR gained legitimacy by facilitating science-based negotiations, leading to the Rhine Action Programme setting measurable pollution targets. ICPR's iterative diplomacy made the EU Water Framework Directive (WFD) politically feasible, making it legally binding to every nation. The WFD's binding river-basin approach mirrored the Rhine model, proving that pre-existing trust and institutional frameworks like ICPR's ministerial conferences provided an impetus to EU-wide negotiations. The Rhine's success became a blueprint for integrating ecological and economic goals under the WFD.

3. Finding the Common Ground: Relevance of the Rhine Rejuvenation for the Ganga

The Rhine's economic importance in Europe catalysed cooperation for navigation and later for the management of environmental risks. In comparison, the Ganga experience has been vastly different. Nonetheless, the European experience can provide some key pathways for streamlining the rejuvenation of the Ganga within its own context. A brief snapshot of the long and winding history of the various attempts to rejuvenate the Ganga basin is summarised below:

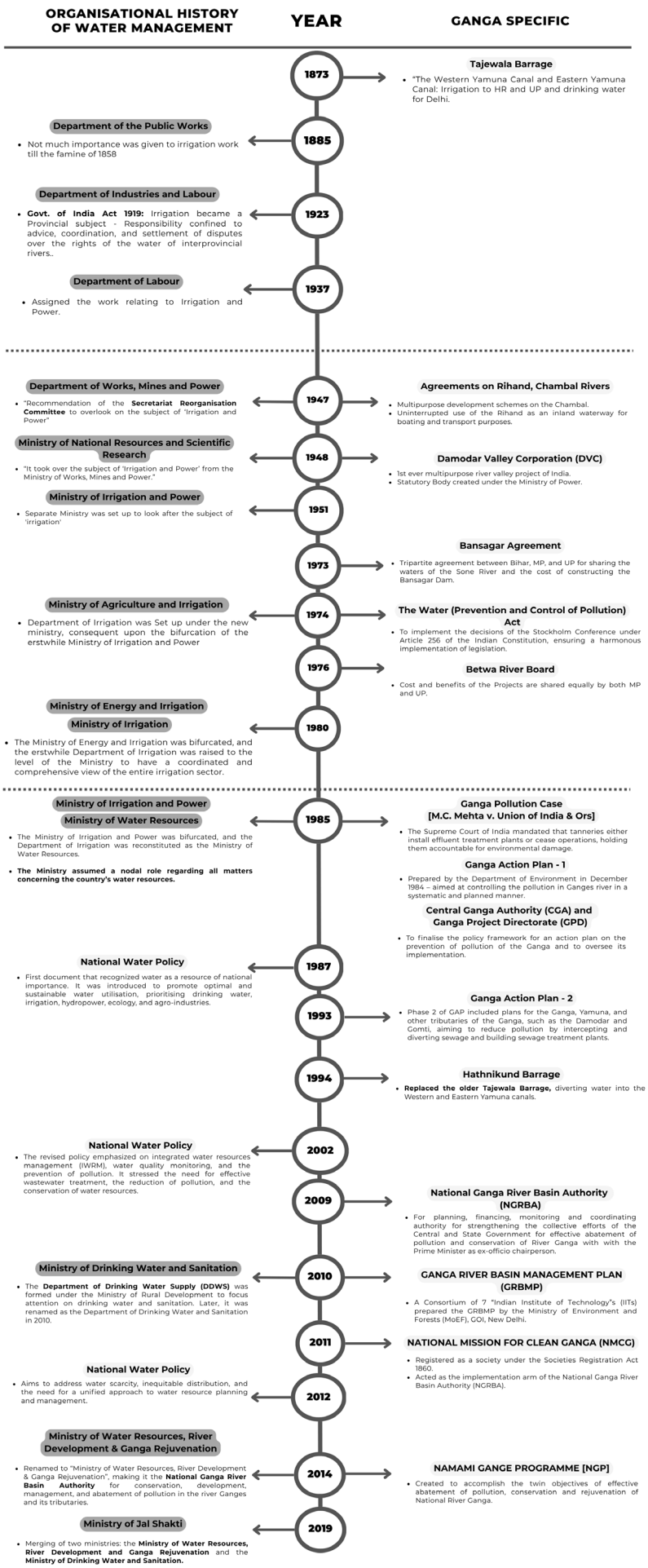


Source: Census 2011, NMCG

3.1 Water Resources Development and Fragmented History of Cooperation in the Ganga Basin

The development and utilisation of the waters of the Ganga basin reflect its historical and current contribution to the development of India's agricultural sector, which is central to India's economy. For instance, the Western Yamuna Canal, beginning in 1817, and the Ganga Canal, in 1854, were instrumental in the growth of agriculture in western Uttar Pradesh. Similarly, post-independence, the newly constituted Planning Commission attached importance to the development of the basin.

Brief History Of Water Management And The Ganga River Basin In India



Source: TREADS generated

In the first Five Year Plan (FYP) projects such as the Damodar Valley, Chambal, Rihand, and Matatila Multipurpose projects were accorded high priority — for irrigation, addressing water scarcity, and flood protection. The large scale of these projects involving regulation and supply of water, however, required cooperative arrangements among various territorial and political units. It began with compacts among British provinces and princely states and later evolved to interstate agreements post-independence — with the State Reorganization Act of 1956 further prompting the need for cooperation among the subnational political units towards the development of water resources. It is interesting to note that of all the major interstate river basins in India, Ganga has one of the highest frequencies of cooperative arrangements. Between 1870s and 2021, there have been 47 agreements with varied functional scope and spatial scale that were entered into by the Ganga Basin states. The analysis, however, shows that most of these agreements were directed towards irrigation, hydropower development, and flood control, and none towards river pollution or mechanisms to improve the basin's ecological health. These agreements further resulted in the emergence of multiple interstate institutions, albeit limited in their scope.

The focus on water resources development and quantity aspects has been reinforced both in the policymaking and institutional culture. This is partially the reason why the trajectory of the Ganga rejuvenation in the initial decades has suffered on account of institutional fragmentations, limited centre-state coordination, and further manifesting in a lack of subnational ownership of the various river rejuvenation programmes. In order to address some of these issues, a new institutional framework was initiated.

3.2 India's Water and Federalism: Potentials and Challenges for River Rejuvenation

The NGP launched in 2014 is one of the first instances where a river basin approach was adopted in addressing the multi-scalar nature of river pollution. However, in contrast to ICPR, NMCG's emergence is rooted in India's environmental legislation and not an outcome of the basin states' building sustained consensus resulting in a cooperative arrangement. The Environmental (Protection) Act 1986 — an umbrella legislation to tackle various pollution related issues — was deployed to constitute the NMCG.

A closer analysis of India's post-independence river basin management reflects that cooperation between the basin states has been a result of the Indian states' concerns toward water, energy, and food security whereas the management of ecological and environmental risks assumed a secondary role. There are multiple federal institutions in the Ganga basin dealing with various aspects of river management. That said, most of these institutions have limited spatial jurisdiction and functional scope. The scope of these institutions has mostly been project based or advisory in nature and emerged through ad hoc means

The larger federal architecture in managing inter-state river basins is still at a nascent stage. For instance, India's River Boards Act 1956 (RBA 1956), legislated with clear objectives and mandates, has never been used to constitute any basin level authority/river board. The River Basin Management Bill, conceived in 2012 to replace the RBA 1956, is still in a draft stage due to lack of a subnational consensus. This is relevant for the NGP as well. NGP is primarily a centrally funded and driven programme. For the Programme to produce enduring outcomes – beyond central assistance – interstate coordination is vital to address some of the most challenging issues, including pollution control, maintaining ecological flows, ensuring navigable waterways, etc. It is also critical that a conducive federal water governance ecosystem is created as well as nurtured for addressing these challenges with improved Centre-state and interstate coordination (Chokkakula et al 2020).

1972

Ganga Flood Control Commission

Established to formulate and implement comprehensive flood management plans for the Ganga Basin through coordinated inter-state measures.

2016

National Mission for Clean Ganga (NMCG)

Formed under the Namami Gange Programme (NGP) to replace the National Ganga River Basin Authority (NGRBA) and oversee the rejuvenation of the Ganga.

1994

Upper Yamuna River Board

An MoU was signed amongst the five basin states of HP, UP, Haryana, Rajasthan, and Delhi for sharing the waters of Upper Yamuna.

1976

Betwa River Board

The December 9, 1973, meeting b/w UP and MP led to the establishment of a tripartite control board, resulting in the creation of the Betwa Board for overseeing the Rajghat Dam and Powerhouse project, funded by both states and responsible for reservoir regulation.

1948

Damodar Valley Corporation

The Damodar Flood Enquiry Committee suggested the creation of an authority similar to the Tennessee Valley Authority, USA. A proposal was accepted by the committee for multipurpose development of Damodar Valley.

1955

Chambal Control Board

To ensure efficient, economic and early execution of Chambal Valley Development projects.

1976

Bansagar Control Board

On September 16, 1973, UP, MP, and BR agreed to utilise the waters of the river Sone, leading to the 1976 establishment of the Bansagar Control Board by the Ministry of Agriculture and Irrigation to oversee the Bansagar Project in MP.

Source: TREADS Analysis

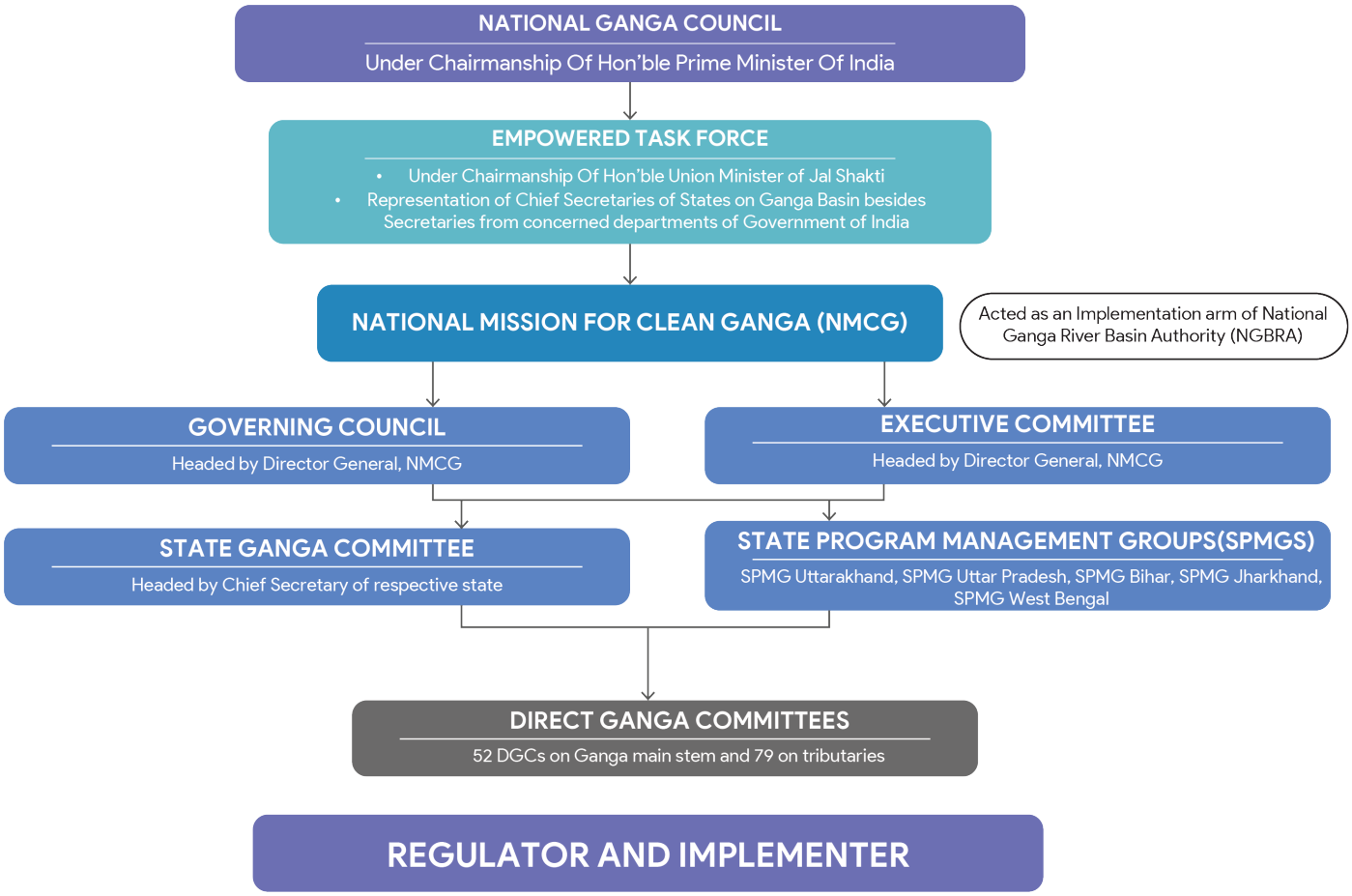
3.3 National Ganga Programme: A Mission to Reclaim and Restore India's River Systems

The recent policy and institutional innovation however holds promise. Ganga is both an inter-state and an international basin with significant spatial and temporal variations in terms of its hydroclimatic conditions and socio-political dynamics — requiring extensive inter-state coordination. Beyond the budgetary allocation, the NMCG, as an institutional framework, has been conceptualised to address various institutional and legal inadequacies in the earlier programmes in addressing river pollution. For example, as recommended by the Ganga River Basin Management Plan (GRBMP) Report prepared by a consortium of seven IITs, the erstwhile Ganga Action Plans (GAPs) did not take into account various policy dimensions such as the center-state relationships, implementation of the 74th Amendment, and State Government-ULBs relationships as well as the convergence of policies adopted for implementing GAP with the broader developmental policies. However, there has been a gradual improvement in the design of the NGP. The distinct characteristics that emerge from this experience of NGP are outlined below:

- The key focus areas of the river rejuvenation programme - the basin management planning strategies - builds on a robust and comprehensive assessment of the river conditions that sets out priority areas and methods of intervention. In the case of the Ganga, it is the Ganga River Basin Management Plan. In recent times, the experience is replicated in other inter-state river basins — for instance, the Condition Assessment and Management Plan (CAMP), an initiative of the National River Conservation Directorate (NRCD), Ministry of Jal Shakti (MoJS), Government of India, for conducting research, gathering technical data and guiding management strategies for six river basins, namely, Mahanadi, Godavari, Krishna, Cauvery, Narmada and Periyar.

- A multi-level institutional framework for the NGP where political representation is ensured under the National Ganga Council (NGC) and an Empowered Task Force (ETF) on river Ganga with a strong implementing arm as NMCG at the centre and the State and the District Ganga Committees at the subnational scale. It is important to note that NMCG has been conceptualised both as a regulator and implementer under the NMCG Authority notification 2016.

- The new institutional structure adopted a river basin approach in addressing the Ganga pollution and has encouraged inter-state and inter-sectoral coordination for river rejuvenation. The NMCG Authority notification has further accorded significant financial autonomy to NMCG's Executive Committee headed by the Director General — having the power to approve up to INR 1,000 crore at least once every three months.



Source: NMCG

3.4 India-EU Water Cooperation: Assessing Gaps and Drawing Insights from the Rhine Experience

The Ganga rejuvenation programme has come a long way with significant improvements in the river water quality. This institutional evolution too has been innovative and holds significant promise. However, to transform into a basin-level river management institution, the NMCG requires further calibration of some of its strategies. At the same time, the programme still suffers from multiplicity of Water Resources Management institutions across governmental and private players — impacting various Ganga-related decisions such as flood management, river bank erosion and sediment management in addition to the entrenched institutional culture of supply augmentation in the State WRDs and subnational ownership of the programme. This limits progressive policy pathways for river rejuvenation.

Concomitantly, India is contemplating expanding the Namami Gange Programme experiences into a policy ecosystem. The MoJS recently commissioned a large-scale study on assessment and management plans for six river basins in the country along the lines of the Namami Gange Programme. India and the EU are key partners in exchanging knowledge on water management. The exchange of knowledge has been formalised through the India-EU Water Partnership (IEWP), which has established a space for political dialogue between the two regions on matters related to water. These developments suggest the importance of river rejuvenation as a policy priority in India, and, at the same time, pursuing innovative and mutually beneficial partnerships with EU nations to tackle wide-ranging problems from climate change to water management. Yet, there have been structural differences in water management between India and Europe and how institutions in both geographies evolved and are currently functioning. The differences between ICPR and NMCG highlight the same. This is critical to moving away from simple "policy transfer" solutions to producing plans of action that are relevant to India's federal polity and its river basin conditions.

4. Catalysing Institutional Advancement: Medium- and Long-Term Strategic Approaches for River Basin Management in India (For Consultation)

We propose the following recommendations:

- Leveraging existing political avenues such as the State Water Minister's Conference/Inter-State and Zonal Council meets to amplify and reinforce subnational commitment — through appropriate legal, financial, and institutional instruments and ownership of the programme.

- Developing a framework at the NGC and ETF on how states would finance the program once the NGP's mission life ends and how the central government and NMCG can support this through various financial, technical, and regulatory instruments.

- NMCG could consider sharpening incentives for state action through investment-linked reforms for the states in addressing pollution management in the agricultural and industrial sectors.

- Tackling non-point solutions such as agriculture as well as institutional mechanisms for engaging with the agricultural and industrial sectors.

- A uniform protocol for data gathering and seamless coordination between NMCG, CPCB, and SPCB.

- There is scope for enhancing India–EU engagement through subnational partnerships, especially with federal nations such as Germany, focusing on policy and institutional frameworks.

- Legislation of the RBM Bill 2017 or its variants to set a uniform water management framework across the country.

Inputs for the RBM Unit

Thematic Expert Group (TEG)

Thematic Expert Group

A Thematic Expert Group (TEG) comprising members from academia, policy, government, legal and technical fields both from Europe and India which can serve as experts to advise, provide feedback and guidance to the different areas of research pertaining to the EU Project. The tasks to be undertaken in the setting up of TEG are briefly outlined below:

- Prepare a long list of members with inputs from NMCG and TREADS.
- Prepare a concept note and ToR for the TEG.
- Propose a biannual commitment and the option to consult members oneonone on their areas of expertise.
- NMCG can serve as a facilitator for the TEG and maybe the IEWP can serve as a starting point to take this conversation forward since it is already an established network involving Indian and European partners.

Terms of Reference for the TEG:

The objective of this thematic expert group is to deliberate on the various aspects of river rejuvenation and transboundary water governance in Europe and in India. The expert group would provide guidance to identify the following:

- Inputs for a consultation process with relevant European institutions which will include key institutional actors and resource persons focusing on Rhine River basin states.
- Potential institutional collaborators for the knowledge exchange programme.
- Outline broad strategies for specific programme design by identifying the challenges and opportunities at the national and the subnational level.
- It is expected that TEG will convene twice a year.
- The opportunity to consult the TEG, both as a group and as individuals in their areas of expertise.
- A detailed minutes of the meeting shall be prepared and circulated among the members of the TEG after each of its convening.

Note: As the research progresses, the mandate for the TEG shall also evolve as per the ToR

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