Although the Yamuna River has historically been a vibrant center of social activity, culture, and biodiversity, it is now an environmentally degraded and socially neglected space in Delhi’s ecological domain. The environmental degradation of Delhi’s Yamuna has continued despite that the government has spent more than Rs. 20 billion over the last two decades to alleviate the problem. Revitalizing Delhi’s Yamuna is a formidable challenge because of the complexity of the problems that it entails. This essay demonstrates that the complex structure of Delhi’s governing institutions is an important cause of the Yamuna’s degradation, and surmounting the challenges posed by Delhi’s governance is essential to revitalizing the river.

The essay begins by discussing the nature of Yamuna’s degradation. Next, it describes the underlying causes contributing to the problem. It will demonstrate that Delhi’s complex governance is a central cause of the Yamuna’s degradation. Finally, the essay assesses the potential of different mechanisms to promote the coordination necessary to overcome the challenge of Delhi’s complex governance.

I. The Nature of the Problem

The degradation of Delhi’s Yamuna has three immediate sources. Diversion of the river’s waters by upstream states and by Delhi itself has led to a drastic reduction of the Yamuna’s natural flow in the Delhi area that undermines the river’s capacity to dilute pollution, recharge local ground water levels, provide for biodiversity needs and the social needs of people living in the vicinity of the river. An estimated discharge of more than 200 million litres daily of untreated or partially treated sewage, industrial effluents, and solid waste are discharged into the river, in effect, turning the riverbed into a sewage drain for many months during the year. Finally, the physical characteristics of the Yamuna’s flood plain have been destroyed by numerous encroachments which, in addition to the dumping of solid wastes and unauthorized settlements, include state authorized metro complexes, bus depots, sports villages and facilities, crematoria and cultural festivals. These encroachments have diminished the zone’s capacity to channel flood water, recharge groundwater, and support biodiversity.

II. The Underlying Causes

The immediate sources are manifestations of two underlying causes with deep roots in Delhi’s political economy. First, is Delhi’s infrastructural deficit. The city’s rapid population growth creates a formidable challenge to providing adequate infrastructure. From 1951 to 2016, the city’s population grew from 3 million to a projected 19 million by March 2017. India’s capital has been unable to invest in the infrastructure necessary to properly service its proliferating population. Forty nine percent of the Delhi’s population lives in unauthorized colonies, slums and jhuggi-jhonpri clusters or squatters’ settlements. Though the Delhi Water/Jal Board (DWB) it has expanded its coverage in recent years, one-quarter of the Delhi’s population remains without access to treated water. According to one estimate, the DWB is able
to provide just more than 40% of the city’s per capita water needs. Less than half the city’s residents have yet to be connected to the sewage system, and many of the existing sewers have caved in or are otherwise blocked. According to expert, Isher Judge Ahluwalia, only 30% of Delhi’s sewage is treated before it is discharged.

Political impediments have limited capacity of Delhi’s Government of the National Capital Territory (GNCT) to finance the investments necessary to keep up with the city’s population growth. The GNCT has failed to adequately tax what is perhaps India’s most lucrative tax base with the highest per capita income of any Indian state. Consequently, the GNCT’s own revenues as a proportion of GSP is lower than own revenue as a proportion of non-agricultural GSDP for most other states. At the same time, the GNCT provides the highest per capita subsidies of any Indian state, and it has the lowest rate of recovery relative to the cost of its service. Rather than being able to finance the infrastructure necessary to meet the needs of the rapidly growing city, the fiscal position of the Delhi municipal governments is characterized by persistent, large, and growing gaps between its revenues and expenditures. The consequences of the fiscal gap can be seen in the DWB’s budget. Though the funds for water supply and sanitation released to the DWB have grown by 28 percent from Rs. 13.4 billion to Rs 17.2 billion from 2007-08 to 2015-16, in real terms, after accounting for inflation, the value of its budget allocation has declined by more than 15 percent.

The complexity of Delhi’s governance and the resulting difficulties of administrative coordination is another factor contributing to the degradation of Delhi’s Yamuna. As Figure 1 shows, at least 26 different government agencies at four levels of governance have responsibilities affecting the condition of the Yamuna in the Delhi region. One manner in which the complexity of governance affects the degradation of Delhi’s Yamuna is that upstream governments divert the river’s water before it arrives in Delhi. The governments of Haryana, Uttar Pradesh, Rajasthan and Himachal Pradesh redirect large amounts of water for irrigation and drinking above the Hathnikunj (Tajewala) barrage in Haryana. This a classic political economy problem in which these state governments are preoccupied in satisfying the demands of powerful local constituencies at the expense of groups outside their jurisdiction. The problem is made worse because Delhi re-routes still more water above the Wazirabad Barrage through the Western Yamuna Canal in order to enhance the city’s supply of drinking water. Some observers allege that Delhi does not get its fair share of the water despite a 1994 memorandum of understanding agreed to by the state and a 1998 order issued by the Supreme Court. In any case, so much water is diverted that during much of the year, there is virtually no river flow. Increasing the river flow is essential for ameliorating the environmental degradation of Delhi’s Yamuna.

The division of the authority of elected officials into national, state, and municipal levels is another way in which the complexity of Delhi’s governance contributes to the Yamuna’s degradation. Throughout India, state governments have been reluctant to transfer buoyant sources of tax revenues to local governments. In recent years, fiscal tensions have been exacerbated by the fierce political rivalry between the Bharatiya Janata Party (BJP) which controls the national and municipal governments and the Aam Aadmi Party (AAP) which controls the GNCT located between the national and municipal governments. For instance, in
each of the past three years, thousands of sanitation workers employed by at least one of the Delhi municipal corporations have gone out on strike after their wages were not paid. BJP municipal corporation leaders blamed the AAP-controlled GNCT for providing insufficient funds while AAP leaders of the GNCT suggested that the municipal corporations had wasted their funding and had failed to properly raise taxes. An ongoing dispute between the DWB, the Delhi State Industrial Infrastructure Development Corporation, and Delhi’s municipalities contributes to the inadequate regulation of industrial effluents. Tensions also exist between the BJP-led central government and the GNCT as illustrated by Minister of Water Resources, Uma Bharti’s charge that the AAP GNCT is delaying the implementation of plans to revitalize the Yamuna. Part of the municipalities’ weak fiscal position can be traced by to 2012 when Congress Party leader Sheila Dixit, as Chief Minister of the GNCT, decided to divide the Delhi Municipal Corporation into three separate corporations with the unstated goal of improving her party’s chances of gaining access to power. Creating three municipalities tripled salary expenses for political officials and the upper echelons of municipal administration without increasing revenues for the already cash-strapped municipal government.

Lack of coordination between the Delhi Development Authority (DDA), a central government agency responsible for planning and urban development in the Delhi region, and the DWB contributes to the ongoing capacity deficit for treating waste water. When the DDA plans and develops an area, it is responsible for including adequate infrastructure to meet the needs of that community. Often, its plans do not adequately account for population growth, and in some cases, it responds to political pressures to increase the ceiling for local floor area ratios. By the time that the DDA turns areas that it has developed over to the municipalities, the infrastructure is often inadequate to meet the needs of its population increasing the disparity between the waste generated by the population and the capacity to adequately process it.

Delhi’s complex governance also creates multiple regulators whose lack of coordination limits the effectiveness of efforts to protect the Yamuna. In March 2016, the Art of Living Foundation (AoL) chose the Yamuna river plane to hold its World Cultural Festival. The festival attracted 3.75 million people who viewed cultural performances on an immense stage spanning seven acres. According to an expert panel later constituted by the National Green Tribunal (NGT) to conduct a damage assessment, the event extended over 180 hectares. The panel found that the AoL’s event degraded the flood plains topography, dissipated local water bodies and wetlands, and destroyed vegetation and biodiversity. It estimated that it would take ten years to restore the flood plan at a cost of more than Rs. 420 million. The festival was held despite that fact that in January 2015 the NGT had prohibited any new construction on the Yamuna flood plain under the Maily Se Nirmal Yamuna Revitalisation Project, 2017 that it had ordered to rejuvenate the Yamuna. The AoL approached the DDA which reportedly initially denied permission to hold the festival on the Yamuna, but ultimately permitted the use of 24.46 hectares. A month before the festival, the NGT ruled that it was unable to ban the event, but it imposed a Rs. 5 million interim fine. The NGT, after receiving the report of the expert panel, is holding proceedings to determine if there should be an additional fine. Representatives of the AoL contest the findings of the expert panel’s report. AoL leader Sri Sri Ravi Shankar declared that the AoL had obtained all the necessary permissions, and charged “If, at all, any fine has to be levied, it should be levied on the Centre and state governments and the NGT itself, for giving permission.”
III. Mechanisms of Coordination that Might Alleviate the Yamuna’s Degradation

There are four mechanisms that have the potential to address the challenge of coordinating Delhi’s complex governance to effectively alleviate the Yamuna’s degradation. The first involves creating administrative mechanisms of coordination between different government agencies. The Yamuna Actions Plans are one example. Despite the fierce rivalry, the National Democratic Alliance (NDA) central government led by the Bharatiya Janata Party and the Aam Admi Party (AAP) which runs the GNCT, the two governments have joined together to launch the phase 3 of the Yamuna Action Plan in May 2016. The new plan follows two earlier phases that achieved very limited success. Phase 3 consists of eight schemes including rehabilitating parts of the sewer system, enhancing the efficiency of sewage treatment plants, bringing in a garbage skimmer, and renovating Chhat Ghat where pilgrims worship alongside the river.22 However, this “hardware approach” has critics who point out that among other things it fails to address the problem of waste coming from the almost 50 percent of Delhi’s population that is outside of the sewage system.23

Extending the authority of key administrators across the boundaries of government agencies is a second strategy for administrative coordination. By the spring 2017, this approach has played an important role in addressing the challenges of administrative coordination in the GNCT. Keshav Chandra served as the Chief Executive of the Delhi Jal Board, Secretary of the Department of Irrigation and Flood Control, and Secretary, Environment and Forest, in Department of Environment. He is also serving as chairman of the Delhi Pollution Control Board, though he holds this position on an ad hoc basis. By exercising authority in these positions, he will play a key role in coordinating the efforts of these GNCT departments who play a key role in the efforts to vitalize Delhi’s Yamuna.

Judicial institutions, in particular, India’s Supreme Court and the National Green Tribunal (NGT), comprise a third mechanism for coordinating government agencies and redressing the deficiencies in their efforts to protect Delhi’s Yamuna. The Supreme Court has periodically issued rulings on efforts to revitalize the Yamuna ever since 1995 when it responded to public interest litigation by directing the Union Ministry of Forests and Environment to sanction sewage treatment plants for the river. In response to public interest litigation, the Supreme Court continues to intervene in an effort to make the government’s efforts to ameliorate the Yamuna’s degradation more effective. For instance, in February 2017, it ordered all industrial units in the Delhi area to have their primary effluent treatment plants operational within three months,24 and it directed the DWB to draft a comprehensive report on the operation of interceptor sewage projects and sewage treatment plants.25

The NGT was established in 2010 as a forum that combines judicial, administrative, and technical expertise to address environmental matters. Usually in response to public interest litigation from NGO’s, the NGT has issued many orders impacting efforts to revitalize Delhi’s Yamuna, including penalizing religious groups for the environmental damages that their events have inflicted, imposing fines on individuals dumping garbage into the Yamuna, issuing orders requiring the improvement of STP efficiency, etc.26 In response to a plea brought before it by the NGO, Yamuna Jiya Abhiyaan, the NGT authorized the Maily Se Nirmal Yamuna...
Revitalisation Project, 2017 -- a promising initiative that mandates cooperation among the DWB, DDA, Ministry of Urban Development, and National Mission for Clean Ganga to curb pollution by banning on construction on the Yamuna’s flood plain and setting up 15 sewage treatment plants. Implementation of the plan has been frustratingly slow with very little impact on the Yamuna as of the end of spring 2017. The NGT has repeatedly convened hearings on the plan and formed investigative committees in an effort to expedite its progress.

The Supreme Court and NGT -- usually in response to public interest litigation -- have made valuable contributions in ensuring that environmental interests are taken into account. Without their actions, these interests would likely remain mere externalities for powerful political groups and government agencies. These judicial institutions take actions that attempt to narrow the gap between policy objectives and policy outcomes that so often characterize policy implementation in India. However, they frequently face difficulties in spurring dynamic action by government agencies, and they have had limited success in promoting their coordination. Like all judicial institutions, the Supreme Court and NGT respond to problems rather than preventing them, and their agenda is limited by the capacity of social groups to secure effective legal representation.

India’s democratic elections are the third mechanism that may help to overcome the coordination problems. The centrality of development issues in the 2014 general elections and the apparent support among the Delhi electorate for anti-corruption politics are two indications that elections might motivate government agencies to more effectively protect Delhi’s Yamuna. At the same time, the mounting electoral power of privileged interests might lead to continued degradation of the Yamuna. Even if its political leaders are motivated to make serious efforts to revitalize the Yamuna, it is not clear that Delhi’s governance institutions have the fiscal ability to provide the necessary infrastructure or the administrative capacity to manage it efficiently.

IV. Conclusion

Although policy authorities attempted to alleviate the degradation of Delhi’s Yamuna for two decades, their efforts to alleviate the problem have met with limited success. The complex nature of the problem is one reason for the efforts’ shortcomings. Effective solutions require increased river flow; curtailing the dumping of sewage, industrial effluents, and solid wastes; and ending encroachments on the Yamuna’s flood plain. The recent activism of NGO’s, the judicial institutions, and more dynamic leadership both within the elected institutions and the government agencies raises hopes that efforts to revitalize Delhi’s Yamuna a priority will be more successful. The government has allocated more resources to addressing the problem than ever before. However, revitalizing the Delhi’s Yamuna will require not only a substantial investment of resources, but a multi-pronged effort coordinating agencies across multiple levels of the government. It will also require sensitivity to a range of political interests, including those groups without effective legal representation. The success of the most recent initiatives hangs in the balance.
Endnotes

1 Preliminary draft. Not for public circulation or quotation. Comments are welcome.
3 “AAP govt 200-cr-Yamuna river-front plan,” Indian Express (October 27, 2016).
5 This statistic was cited by India’s Supreme Court. See Dhananjay Mahapatra, “Half of Delhi’s population lives in slums,” Times of India (October 4, 2012).
8 Report of the Fourth Delhi Finance Commission, (Delhi, March 2013) p. 56.
10 Isher Judge Ahluwalia, “Cities at crossroads: When an open door policy is not enough,” Indian Express (March 29, 2017).
11 Ibid., p. 156.
12 Om Prakash Mathur, “New Delhi, India,” pp. 144-150.
13 The structure of Delhi’s local urban government has always been complex. Governance occurred through the Delhi Municipal Corporation (DMC), the New Delhi Municipal Corporation, and the Delhi Cantonment Board until 2012 when the DMC was divided into three municipal corporations. For an insightful study of municipal finances in Delhi see, Simanti Bandyopadhy, “Local government finance: challenges in revenue raising at the Municipal Corporation of Delhi,” Commonwealth Journal of Local Governance (Delhi, March 2013) pp. 60-84.
14 Author’s calculations using DWB budget data from Economic Survey of Delhi 2016-17 p. 196 and data on the wholesale price index for all commodities from Reserve Bank of India, Handbook of Statistics on Indian Economy 2015-16, Table 40.
16 For instance, see: “Sanitation workers strike: AAP-BJP fight as Delhi stinks,” Indian Express January 8, 2017; “East, North Delhi Municipal Corporations Call Off 16-Day Strike,” NDTV (February 11, 2016); and Tarique Anwar, “Garbage politics 2.0: Delhi’s sanitation workers to go on another strike from 26 June,” First Post (June 20, 2015).
20 Interview with Om Prakash Mathur, Institute of Social Sciences, New Delhi, July 20, 2016.
21 The best account of these events can be found in Sowmiya Ashok, “Hardlook: A look at the troubled waters of Yamuna floodplains one year after World Culture Festival,” Indian Express (May 1, 2017).


Ritam Halder, “2 new committees to oversee Yamuna cleaning,” Hindustan Times (August 6, 2016); “Times of India (August 5, 2016); “NGT meets govt agencies to discuss Yamuna revival plan,” (August 4, 2016); and NGT meet to check STP plan growth,” The Times of India (August 3, 2016).