

Dynamics of Agenda-setting: Institutions, Media and Electoral Impacts in the Creation of Policy Windows in India

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1. Introduction: Does systemic patterns of agenda building exist in governmental policy dynamics?

Agenda setting is the first and a crucial step of the policy cycle, whereby important issues are highlighted and begin to receive government attention. This has a critical influence on the entire trajectory of their policy process. Activities in this initial phase, for example, may determine whether an issue would be addressed by the government or abandoned at later stage (Howlett et al. 2009). Therefore, it is important to study the mechanisms and patterns of agenda setting in different countries or regions to gain insight into the means by which social, economic, and environmental issues are highlighted in government action plans.

Pressure to act on certain agenda often comes from domestic or international actors, and this is usually cited as why government takes an issue up for further consideration (Princen, 2007; Eshbauch-Soha and Peake, 2005). But what is the exact pattern and sequence of the interactions which lead governments to choose one or few issues out of a possibly large cluster? Who are the key players influencing agenda-setting and how do they co-ordinate this dynamic? What circumstances facilitate such co-ordination? This is indeed a fascinating area of inquiry. Identification of a characteristic chain of events that leads to successful issue attention may be useful for understanding and managing future agendas. It can also help academics or policy practitioners better formulate policy tools in bringing important issues to the government's attention.

Various theoretical explications of the 'agenda setting' process have been suggested by different proponents (Laswell, 1956; Downs 1972; Jones, 1984; Kingdon 1984). Empirical studies to support such heuristic models have been mostly conducted in United States, Canada and some European nations, as evident from works of McFarland (1991), Baumgartner and Jones (1991),

Sabatier et al (1993), Howlett (1997), Howlett (1998), Birkland (2004), Guldbbrandsson and Fossum (2009), Vliengenthart et al. (2016) and few more. While these studies deal with aspects of various procedural parameters of agenda setting dynamics mostly in western nations, there is a dearth of similar research in Asian countries. To bridge this gap, my article investigates dynamics of agenda setting in India, specifically the roles played by media and institutions. In addition, I also look into how political interests are instrumental in opening up of policy windows in the Indian case-study.

There exist numerous schools of thought dealing with different angles of the agenda setting process. While Down's (1972) model assigns media or public agenda as a key player that governs government policies; Cobb Ross and Ross (1976) develops three models of agenda setting based on political regimes. Baumgartner & Jones (1991) indicates interaction between policy actors (state or non-state) through policy venues as the crucial determinants of agenda-setting. Again Kingdon (1984) proposes that opening of policy windows for short terms opens up a favourable platform where important agendas can get addressed.

It is to be noted here that none of the above hypotheses provide a universal framework to explain how agenda setting process progresses in different political systems. Available research findings can effectively explain only certain specific case studies as examined by respective researchers. Indeed Cobb, Ross and Ross (1976) rightly comment, *"Agenda building, then, is a problem particularly appropriate for comparative analysis. It occurs in every political system from smallest to the largest, from simplest to the most complex, while at the same time there are important variations in its form and structure"*. Hence to formulate a more generalizable and accurate model, we need to study more cases to understand mind-sets, motivations and priorities of policy actors and their internal interactions (Howlett, 1997).

Based on the above theoretical premises, this paper intends to add to existent knowledge regarding the nature of issue-attention dynamics in developing countries by investigating patterns of agenda setting addressing Ganges river pollution in India, over a span of two decades (1996-2016). The rationale behind choosing this case-study is that matters like pollution abatement, river restoration and basin management in Ganges river system have been matters of issue-attention since the mid-1980s. Owing to the enormity of the Ganges restoration project and incompetent planning, numerous government projects

launched since 1985 have achieved minimum success, while on other hand fast unplanned urbanization, economic development and excessive water withdrawals have deteriorated the river's condition to worse levels than ever before. As a result, the Ganges river basin has captured significant national as well as global attention owing to its deplorable condition, and political demands for restoration. The time span for the study was taken to be 1996-2016 due to the availability of parliamentary data only after 1995. Moreover, the major issue attention dynamics regrading Ganges rejuvenation programme also occurred during this period.

The fundamental research questions investigated in this study are as follows-

- What is the nature of the agenda setting dynamics in the case of Ganges river pollution in India?
- What is the relationship between the two key policy actors, i.e- government and media in determining agendas?
- Does electoral cycles play crucial role in opening of policy windows to initiate policy agendas?

Empirical testing of the study is done by analysing time-series data gathered on the frequency of mentions of Ganges pollution-related topics in parliamentary as well as public or media discussions in the country over the period of 1996-2016. By examining the role of media and government in setting up agendas, I seek to evaluate if Down's hypothesis of media governing government actions holds true or vice versa. Furthermore, I extend my inquiry to explore if electoral cycles (institutional or political motivations; Kingdon, 1984) play a crucial role in opening of policy windows to initiate fresh policy agendas for the Ganges pollution control programme.

My findings suggest that although initially the issue of the Ganges renovation had experienced low salience from both government and media actors in its earlier years, it has picked up a lot of attention recently due to renewed political willingness and reactive response by the media. Unlike Down's proposition, parliamentary decisions resolve which agendas gain precedence, while media closely follows by covering government updates. Additionally, I also find that elections are significant in creating political incentives paving the path for opening of policy windows.

2. Theories of Agenda-Setting

Policy researchers often claim that policy making follows cyclical patterns of various stages of the policy process, starting from problem identification, through agenda setting, formulation, decision making, implementation and evaluation. At any given time, there exists an almost infinite set of societal problems or public issues that could need government attention. But only a few gain entries into a government's agenda. What classifies them as special events seeking immediate attention?

Much of the existing theory suggest that most policy issues follow periodic patterns of sudden appearance and subsequent gradual disappearance from public policy agenda. This notion was first proposed by Anthony Downs (1972) in his thought provoking work on 'issue-attention cycles', where he suggested that an extreme event generally catches media attention, which simultaneously triggers public interest, followed by government action. But this sudden enthusiasm soon gets buried under various other issues, as government realizes the high expenses involved. Nonetheless, the role of media remains as a pioneer agent towards restoring public focus over forgotten issues.

However the original Downsian idea of systematic issue-attention cycle lacked sufficient empirical evidence. This led researchers to try to find evidence for existence of cyclical relationship between public interest, media attention and government agendas. Peters and Hogwood's (1985) work in US federal government's agenda setting process, partially supported the Downsian theory, while noting that other patterns of agenda setting beyond Down's hypothesis (exogenous event triggering and initiation through political leadership) also existed. This thread was further extended by studies like Cook et al., 1983; Howlett, 1997. On the contrary, findings from Howlett (1997) claim that the reverse of Down's issue-attention cycle model is prevalent in Canadian agenda-setting trends as the government agenda can be seen to drive much of the public interest and demand for action in key areas.

Simultaneous to the Downsian theory, another important development in agenda-setting studies ensued through the findings of Cobb, Ross and Ross (1976) based on US Congressional agenda setting. The major contribution of their work involved establishing a distinction between the '*systemic* or informal *public* agenda' and the '*institutional* or formal *state* agenda'. Cobb et al. (1976)

proposes that while the *public agenda* consists of all issues that have acquired sufficient consideration from a majority section of the community through awareness, interest group highlights and some governmental concern; the *state agenda*, on other hand is a small sub-set of public agendas which have been acknowledged by policy makers as needing serious contemplation. They identify four major phases, i.e. *initiation, specification, expansion and entrance*, which determine the chief modes of agenda setting in any country. They further propose that depending on the type of political regime, the kind of agenda-setting may develop as *outside initiative model* in case of liberal democracies; it may be a result of *mobilization* in single-party ruled states; or in presence of dictatorial bureaucratic governments, it takes the form of an *inside initiative model* (Howlett et al. 2009).

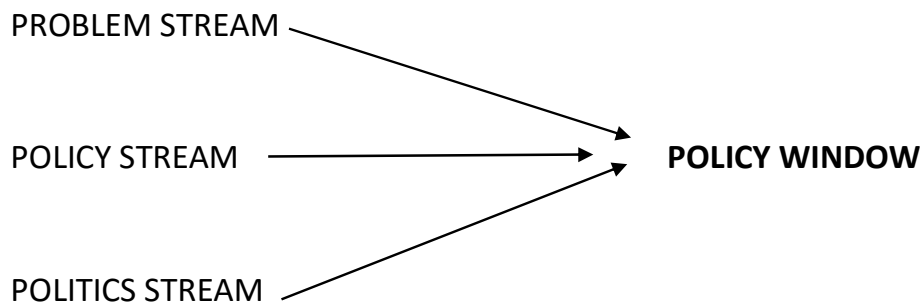
Yet other studies of the policy world suggest that agenda setting works through interaction between policy subsystems, that is interest groups, centres of *public images* such as media, public bodies etc., whose success or failure to push an event to the attention of government authorities or policy makers depends upon their ability to influence institutional structures and policy frameworks through availability of access points or *policy venues* (Baumgartner and Jones, 1993; Pross 1992; Howlett and Ramesh, 1998; Newig, 2004). In addition, Baumgartner and Jones (1991) argues that most significant changes occur rapidly in an otherwise stable policy world. Unlike Down's predictable agenda cycle, his theory proposes that subsequent shifts in policy images and institutional venues strike abrupt changes in the ongoing policy regime to bring out sudden unexpected displacements and new policy innovations.

John Kingdon (1984) analysed both state and non-state actors' participation in agenda-setting and proposed an analytical model which emphasized that policy entrepreneurs, both inside and outside the government, work simultaneously through policy, problem and political streams, pushing an event on government's agenda. When all related forces act parallel to each other in the same direction, this can leads to the opening of a *policy window*, whereby an issue gets highlighted. These conclusions were derived from a study of policy initiation in the US Congress and were further extended in the work of Howlett (1998) where he showed that in the Canadian agenda-setting environment, the occurrence of routine openings of policy windows is more common. In fact, he found strong correlations of election cycles with the routine openings of key agendas, suggesting that in Canada, agenda-setting is not only driven by government, but is also politically motivated.

The above discussion summarizes principal concepts of key agenda setting theories. In following sections, I shall try to trace the chain of events in the Ganges clean-up program to examine if any of these can effectively explain its policy discourse. Specifically, I explore if there exists a predictable agenda setting cycle as proposed by Downs or does the pattern indicates evidence towards abrupt policy shifts (that is punctuated equilibrium model). Furthermore, I would evaluate the presence of policy windows (if any) that might facilitate these sudden policy changes.

2.1. Kingdon's theory of Policy Window

John Kingdon, in his 1984 work, integrated state and non-state factors affecting agenda-setting by proposing his idea about policy windows where internal as well as external policy entrepreneurs takes advantage of a narrow fertile window of time to shift issues into formal governmental agendas. He suggested that the properties of issues (problem stream), function parallel to the development of policy solutions (policy stream) and the creation of receptive policy institutions or circumstances (politics stream). All these streams converge together to opening or closing of opportunities for agenda entry. Such prospective advantage situations are recognized by pro-active policy entrepreneurs who strategically exploit them to move their agendas in focus (shown in schematic below).



Kingdon drew his presumptions from his research on operations of legislative system in the United States. His theory of agenda setting is accepted as a

standard model in policy studies. It has been already used as theoretical base to explain policy phenomena like US foreign-policy making (Woods & Peake, 1998), politics of privatization in Britain, France and Germany (Zahariadis, 1995; Zahariadis & Allen, 1995); characteristics of US anti-drug policy (Sharp, 1994); alliance between industry and environmental groups in pushing certain anti-pollution policies in US and Europe (Lober, 1997). Unfortunately, these studies in the absence of any empirical testing often simply assumed that Kingdon's model could be applied trans-nationally. In this regard, for example, Howlett (1998) attempted to provide empirical evidence on how Kingdon's theory could be applied in cross-country case-studies and added certain caveats to it as to what works and what does not in countries outside US.

In order to investigate the presence of policy windows in the Indian context and if so what are the characteristic properties, one needs to first understand the concepts of each window category. In addition to explaining the favourable events that lead to opening of policy windows, Kingdon highlighted four major types of windows that might be functional in specific settings. The types depended upon the level of window institutionalization.

Kingdon noted that although the primary 'focussing events' are unrelated external shocks (such as crisis or calamity, that is the problem), or existence of policy entrepreneurs inside or outside of government organizations (the policy stream); many times the crucial deciding factor was institutions and their motivations (the politics stream). Kingdon, in his 1984 paper argued that, "*Basically a window opens because of change in the political stream (for example, a change of administration, a shift in the partisan or ideological distribution of seats.....or a shift in national mood); or it opens because a new problem captures the governmental officials and those close to them.*" Hence institutionalized events like elections or budgetary sessions often change the status quo of situations, pushing it suddenly to government's attention.

Furthermore, Kingdon added that depending upon the nature of stimulating factors, policy windows also varies in terms of their predictability. While some windows opened at regular intervals periodically, others were abrupt and bring about fast changes. Thus according to Kingdon's model (figure 1), policy windows may be classified into in four broad categories depending upon the origin of the window (politics or problem stream) as well as degree of institutionalization. These are *routine political windows*, where predictable

windows open as part of routine procedure of the institutional framework; *discretionary political windows*, where motivation of individual or group of political actors result in creation of less predictable platforms; *spill over problem windows*, where closely associated events are also clubbed with an already existent window; and lastly *random problem window*, where random crisis occasions force open unpredictable windows for short times (Howlett et al. 2009).

The four types of policy windows as described by John Kingdom are shown in figure 1.

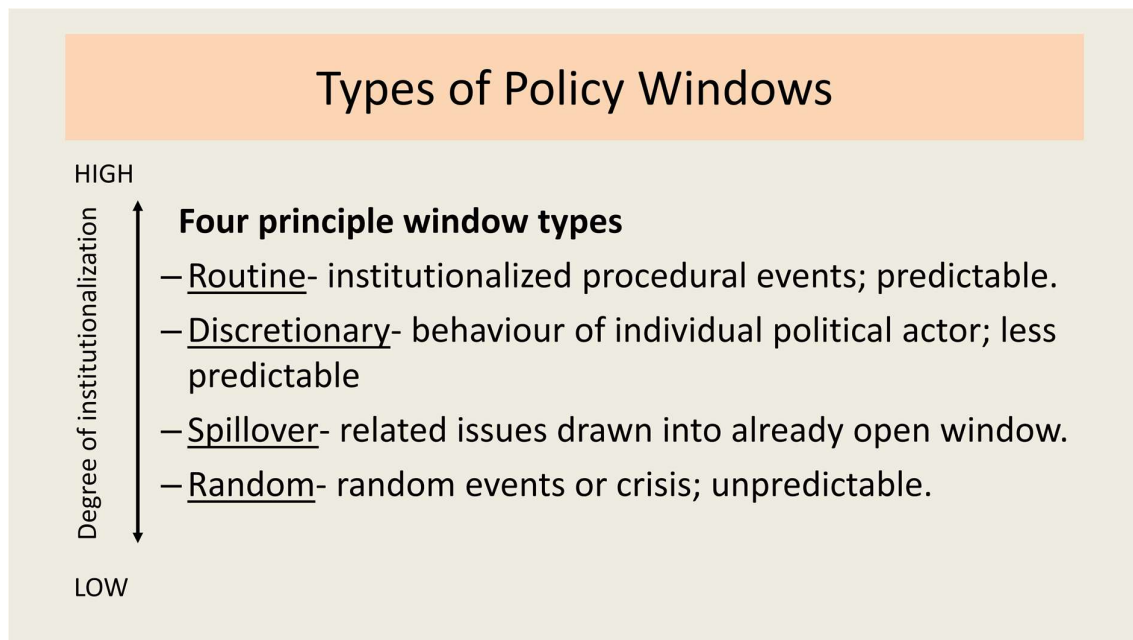


Figure 1: A model showcasing types of Policy Windows. (Howlett, 1998)

In this paper, Indian data regarding Ganges related issues have been inspected in order to evaluate if institutionalized windows also were significant in this case. The empirical assessment of existence of policy windows in the Indian case allows validation of Kingdom's model and its cross-national applicability. It also aids to investigate the nature of policy window that might be in place, with prior knowledge of background social as well as political movements that were happening backstage. It further helps in identification of factors or variables contributing towards functioning of policy windows in this case-study. Thus the

findings from this study would not only deliver empirical testing of Kingdon's model, but also identify specific governmental and non-governmental policy actors influencing key decisions in the Indian agenda-setting.

3. Ganges river basin: A short history of issue agenda behaviour

The Ganges river basin covers 1.09 million km² spread over India, Nepal and Bangladesh. It is one of the largest and most complicated river basin systems with trans boundary issues both inter-state and across countries. The basin accounts for over a quarter of India's land and water resources, 37% of human resources (more than 500 million people) and nearly half its irrigated area (MoEF documents). The main stem of the river is about 2500 km length and passes through five different states of India before entering Bangladesh. The river has enormous cultural and religious significance for Hindus and comprise of great ecological wealth to the region (Singh and Singh, 2007).

However, the water quality of the Ganges has deteriorated radically over the past decade due to uncontrolled discharge of untreated sewage, solid waste, industrial effluent, and reduced stream flow owing to diversion and control of the water for human use (CSE, 2013; MoEF documents). Ganges ranks amongst the five most polluted rivers in the world. Restoration efforts through three decades have failed to establish any notable results. On contrary, the situation is getting worse by the day. Under such a situation, the ruling political leadership has vowed to implement short term and long term interventions with the view of establishing a clean river at least in visible parameters within year 2019. Set on this context, I feel Ganges river pollution would be an appropriate choice as my probing issue to inspect agenda setting dynamics in the Indian context.

The Indian government had initiated efforts to clean the river back in 1985 with Ganga Action Plan I. However, this and subsequent action plans¹ had little impact on water quality and other ecological parameters of the basin. Sheer enormity of the project, inadequate planning, communication gaps between central and state agencies, inappropriate technologies, delays in investment, low utilization of treatment facilities, lack of appropriate monitoring mechanisms, ambiguous legal and institutional structures, limited involvement

¹ Ganga Action Plan I (GAP I) ran between 1985-2000
Ganga Action Plan II (GAP II) ran between 1991-2001

of stakeholders and numerous other factors have hindered the process from beginning (CSE, 2013; Das and Taminga, 2012; GRBMP, 2010; MoEF, undated).

Once GAP I and II ceased to function post 2000, issues related to the Ganges slowly faded out of public as well as governmental agenda. As a result, exploitation of the river basin resources (pollution, water withdrawal, sand mining, extinction of species) continued indiscriminately. This stimulated internal interest groups like NGOs, autonomous academic institutes, various local community groups to start campaigning against government inaction and alarming deterioration of the riverine system. Eventually wide-spread media attention, along with collective pressures from environmentalists, religious leaders, inter-national agencies and policy entrepreneurs forced the Indian government to revive the Ganga clean-up project under fresh leadership and organizational capacities (Zawahri and Hensengerth, 2012; Leong & Mukherjee 2015). Figure 1 traces the evolutionary path of the government initiatives taken regarding the 'Ganga rejuvenation' project.

In the year 2008, River Ganges received 'National River' status. Since then a series of activities followed in order to revive the Ganges clean-up project. National Ganga River Basin Authority (NGRBA), an advisory organization to supervise overall planning and progress, was formed under the Ministry of Environment and Forest (MoEF). GAP was relaunched as National Mission for Clean Ganga (NMCG) in 2011, and placed under NGRBA. A comprehensive 'Ganga River Basin Environmental Management Plan (GRBEMP) was sanctioned to be prepared by a panel of experts in order to establish an extensive management plan for integrated basin level management. Following the 2014 legislative assembly elections, a change in the ruling government brought back again political focus to the Ganges clean-up agenda with the Ganges rejuvenation program being shifted to the Ministry of Water Resources, River Development and Ganga Rejuvenation. 'Namami Gange', an interactive platform for communication between the general public with government authorities was launched in 2014 too.

Tracing the evolution of Ganges clean-up program

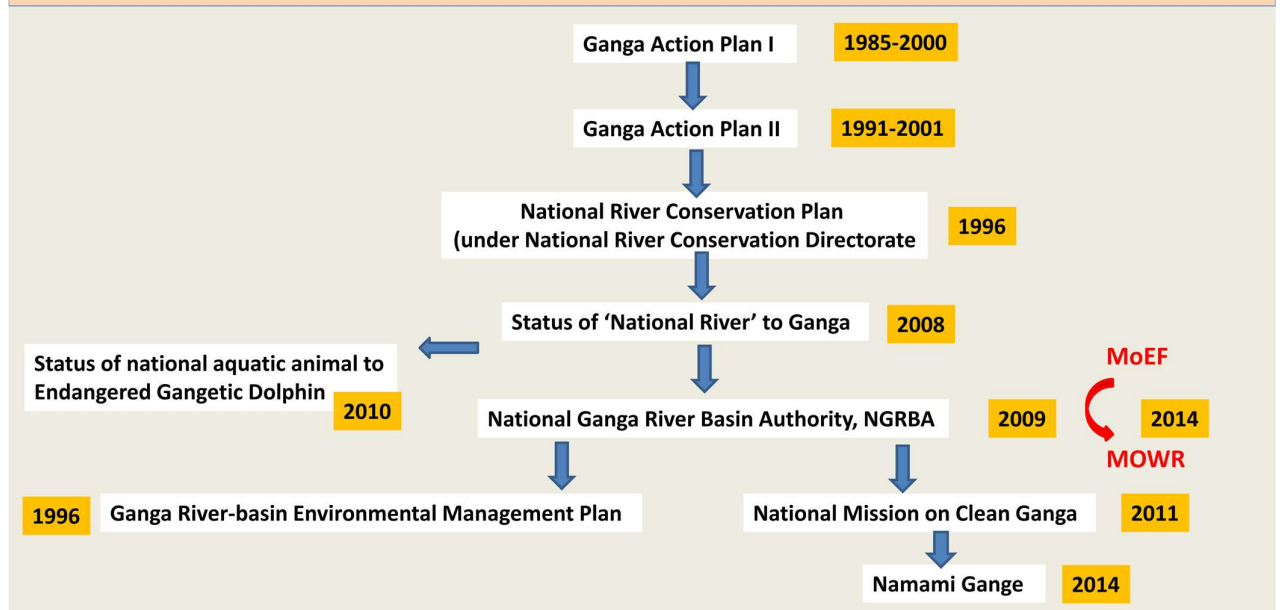


Figure 2: Schematic flow-chart showing the major milestones of the Ganges clean-up program (compiled by author)

From above discussion, it can be seen that Ganges river pollution and its abatement programs have been continuously on public as well as state agenda for nearly three decades, thus generating a long pattern of issue-attention behaviour. This provides an excellent opportunity to examine it as a case-study in order to find evidence of the nature of agenda-setting dynamics in Indian context.

4. Examining the nature of issue-attention in the Ganges case-study

In this section, empirical tests are set out to evaluate the nature of Indian agenda setting dynamics. First, the internal governmental dynamics of the case were captured by documenting the number of mentions of issues like 'Ganges pollution' and 'Yamuna pollution' in the Indian parliamentary discussion during debate sessions, question-hours and committee reports between 1996-2016. During the same time period, the number of mentions of search words like 'Ganges pollution' and 'Yamuna pollution' in media reports, blogs, publicly available reports and articles were also captured in order to document the public debate and attention paid to this issue. These two time-series were then compared and statistically tested to understand the interaction that exists between them.

4.1. Methods

To compile the time-series data, issue mentions were collected for policy areas related to Ganges basin management both from government as well as media forum. The series measured mentions of search words like 'Ganga pollution' and 'Yamuna pollution'² in parliamentary deliberations as well as media discussions, over a period of two decades (between 1996-2016). The measurements for selected issue mentions were generated through content analysis of documents accessed from parliamentary debates (both upper and lower house), parliamentary question-hour subjects, parliamentary committee reports, and papers laid out in the parliament along with articles appearing in newspapers, blogs or periodicals; on a monthly, bi-annual and annual basis.

While the parliamentary mentions could be found through the search engine at 'Lok Sabha' and 'Rajya Sabha' websites (see appendix); media coverage of Ganges and Yamuna issues were captured with the help of the software Factiva. Both the time series were analysed by generating case plots (with excel) and examining their trends. In addition, cross-correlation functions for the series residuals was also estimated to confirm the interpretation of the plot trends regarding the relationship between government and media's role in developing policy agendas in this specific case. The analysis findings have been detailed in subsequent section.

Although web based search engines or software were used to generate issue mention measures, the data collection procedure is inflicted with several threats to validity (most of which have been addressed as best as possible), as explained here. First, there were high chances of false identification of data points, due to occurrence of Ganga as name of persons as well as enterprises, which were all captured by the search machines. This was handled by carefully designing the search words. Actually issue mentions were chosen from a list of searches with words like 'Ganga' and 'Ganga pollution', after eliminating all irrelevant mentions as well as duplicated ones. The same was done for mentions involving Yamuna pollution as well.

² A major tributary system of river Ganges.

Next, it was noted that parliamentary sessions are held only in particular periods of the year³. Thus all those months where there were no parliamentary session, a false 'zero' was incorporated in the monthly case-plot graph, as opposed to those months when parliamentary session was going on but no mentions regarding Ganges issue occurred. The problem of 'false zeros' was solved by aggregating the monthly data into bi-annual or six-monthly ones. Thus budget session data comprised issue mentions for first half of the year, whereas monsoon and winter session data was coalesced into the data for second half of the year. Incidentally, six monthly aggregate of data led to alteration of the constructs of issue mention time period; a span of six months being too broad time to predict trends. Taking six months data also broadens lag time periods in case of cross-correlation function analysis, which resulted in skewed cross-correlation coefficients.

Lastly, the issue mentions of media coverage, as measured by Factiva was not exhaustive. Regional and national daily new materials, which were in local languages could not be captured by Factiva⁴. However the fact that local newspaper articles were not captured lessons the chances of duplication, as most media house in India has their daily newspapers circulated in English, national language (i.e. Hindi) and local languages. This means that most of the news are published in all languages daily, thus enhancing the chances of duplication of data points. Moreover, the inability to capture local media coverage does not alter the nature of its peaks, only the magnitude of each peak may be under-estimated.

4.2. Findings

Case-plots generated from monthly data points of the two time-series shows cyclical patterns of high and low salience of the Ganges issue in both parliamentary as well as media discussions. Close examination of those time series trends reveals the interactive association between parliamentary and media attentions over short time periods (Figure 3, 4, 5).

As Figure 3 shows, most parliamentary peaks are followed by subsequent media peaks, indicating the presence of a reactive media (not leading) which picks up

³ There are three parliamentary sessions held each year- Budget session (end-February to mid-May); Monsoon session (July to August); and Winter session (end-November to mid-December)

⁴ Factiva cannot cover Indian local languages, hence only English media articles could be retrieved.

on the agenda set by the government and reports on it. The trends in issue attention shown in figure 3 also reveal very low importance generally given to Ganges program in its initial years (1995-2006). Ganges related issues gained salience only over the last decade (2006-2016), due to its deteriorating condition and rising concern from global as well as internal interest groups (mostly academia, local groups and NGOs). This has led the government to take up the issue more seriously, with extensive planning, fresh policies and better implementation. After the 2014 general elections, the Ganges issue gained a lot of political importance owing to a special interest taken into the matter by the newly elected Prime Minister. This sequence of events that led to sudden increase in activities in the Ganges related matters and resulted in abrupt changes in its policy images as well as policy venues gave rise to a *punctuated equilibrium pattern* in the agenda setting dynamics of Ganges river basin management (Figure 2).

After the end of GAP (Ganga action Plan) phases I and II, lack of governmental efforts and sheer negligence pushed the Ganges basin to alarming levels of ecosystem degradation (Figure 1). Academic communities and social groups tried their best to bring this to the policy fore-front. (Presence and recognition of the problem stream). Meanwhile, various academic as well as non-academic experts started researching on the problem and proposing solutions. NGRBA (National Ganga River Basin Authority), the supervising body on behalf government sanctioned the preparation of an integrated basin level masterplan by an expert panel, which submitted its report by 2014. The same year (2014), a change in the national ruling party provided substantial political momentum to the issue catapulting it to public forefront too. This political sensitization also had religious implications as river Ganges is considered a revered deity in India. The river's religious importance was tactfully used by incoming political party to sensitize it in public forum. All these led to opening of a much-awaited policy window which speeded up sanctioning and clearing of a number of projects which had already been pipelined in the government agenda. In fact, while writing this paper a lot of policy initiatives have been already taken and implemented on ground. As per the latest media updates, a lot of visible changes are being noted in maintenance of a clean river, its proper governance and river embankment management (Press Information Bureau, Gov. of India; The Hindu, 2015; The Economic Times, 2015; The Times of India, 2015; Singh, 2016).

Inferring from the above discussion of background policy forming events, the kind of window, following Kingdon's classification can be hypothesized. In the

initial low salience phase during early years, there were cyclical patterns of issue-attention but no specific pattern could be detected, indicating presence of random type of policy window. However with the passage of time and the Ganges issue gaining more political momentum, the nature of agenda-setting dynamics shifted towards a form of *institutional pattern and occasionally a discretionary policy window*, whose unpredictable nature can be seen in this case too.

Overall, the trend of leading parliamentary peaks followed by media peaks actually supports the proposition of presence of institutional pattern here. One factor that may triggers sensitization and focussing of the Ganges issue in government’s agenda is *elections*, which would also give rise to periodic cycles of political motivation. As apparent from figure 4, which displays case-plots of issue mentions at bi-annual intervals, election years does seem to play instrumental role in agenda focussing.

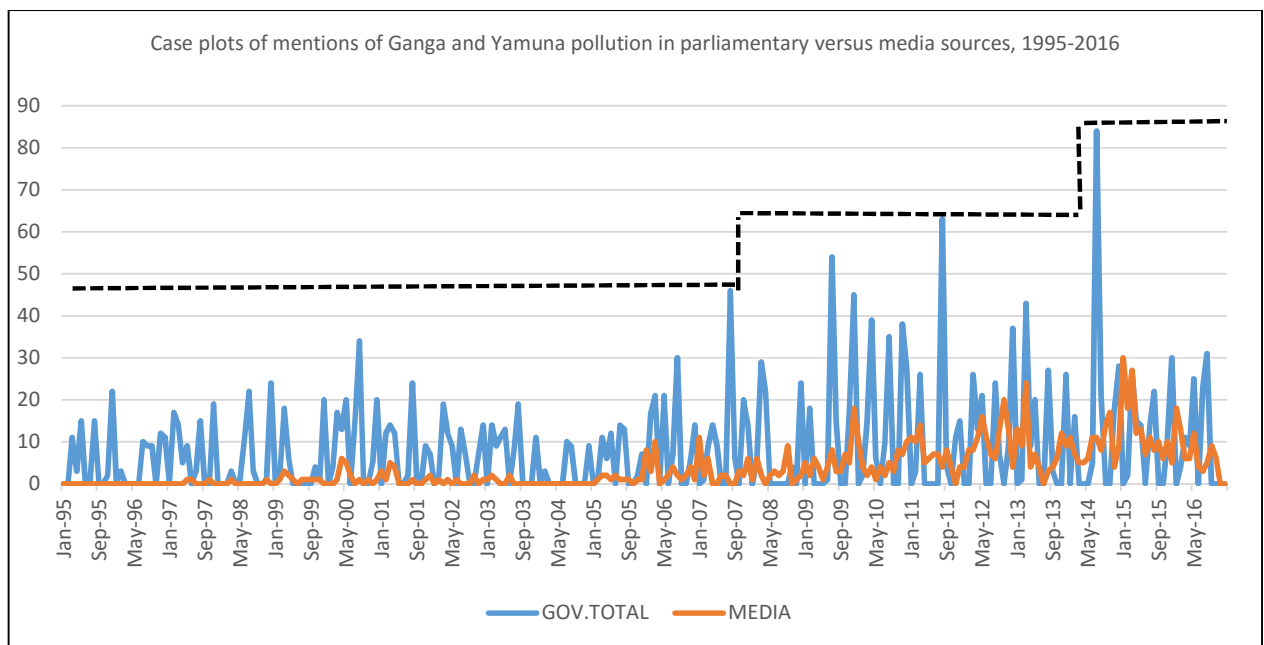


Figure 3: Graphical representation of monthly issue mentions of governmental and media sources (1996-2016).

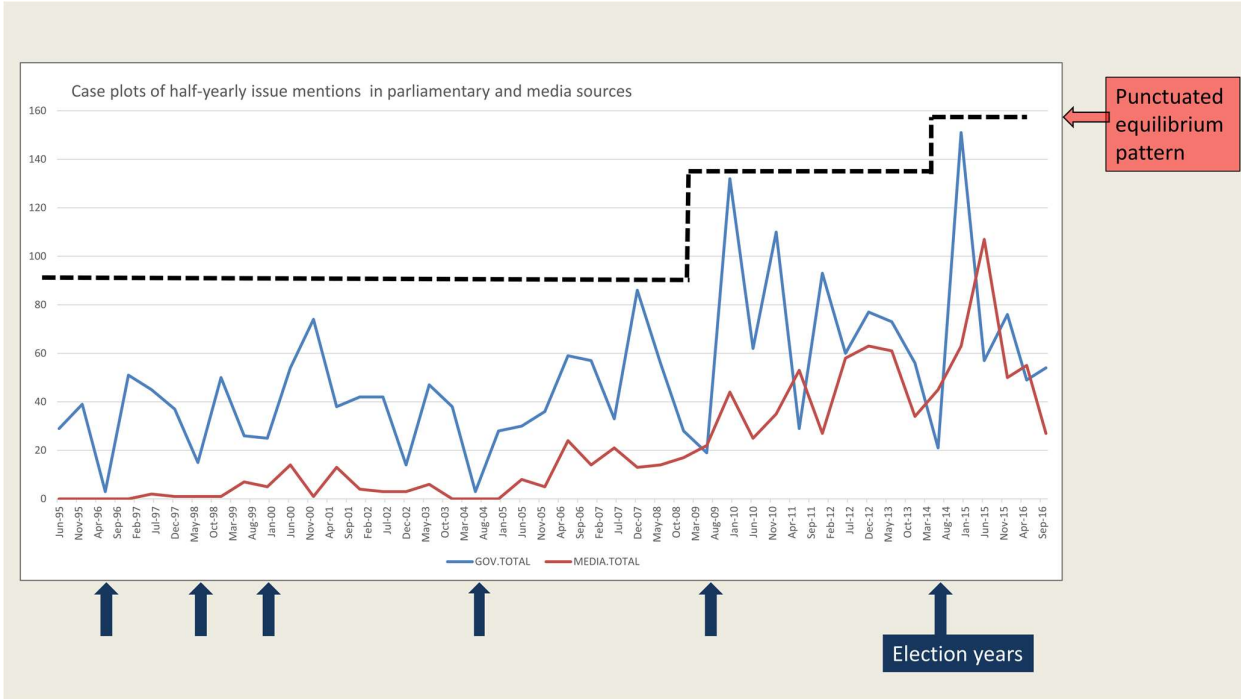


Figure 4: Graphical representation of governmental and media issue mention at intervals of six months (1996-2016). Election years within this time period has been highlighted

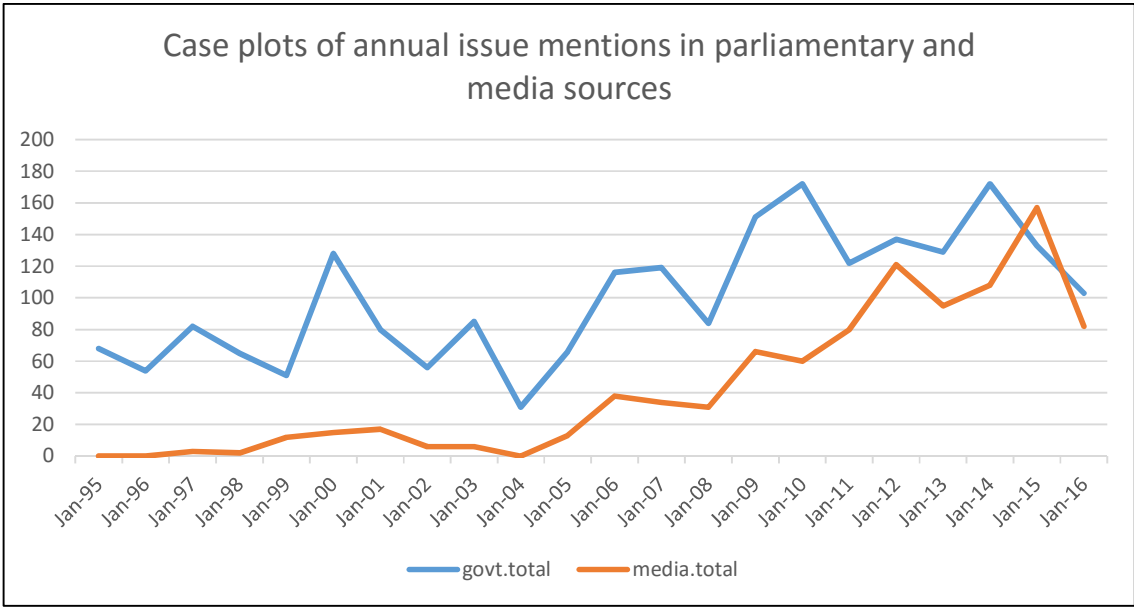


Figure 5: Annual issue mention plots of both parliamentary and media data base

To generate statistical evidence for the observation of presence of a reactive media, case-plots of difference-in-series (figure 6) was mapped which reinforced

the reactive role of media. In addition, cross correlation function for within-series residuals for both datasets were performed and lag coefficients between -2 to +2 were estimated. Unfortunately due to broad time intervals of six months, cross-correlation coefficients fail to predict accurately the pattern of series functions. Cross-correlation functions (CCF) for the series residuals are shown in table 1 and figure 7.

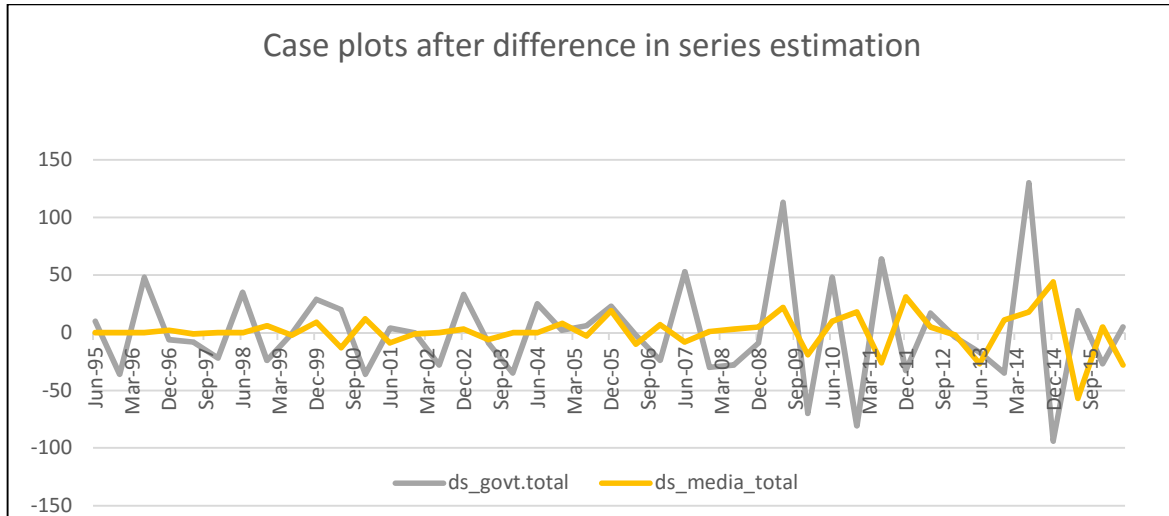


Figure 6: Graphical representations of case-plots after difference in series estimation

The figures in table 1 provide limited evidence that parliamentary mentions correlate with media mentions which follow closely government updates on issues. At lag 0, coefficient of -0.12 means that media might be leading government actions, but the strength of correlation is too weak. At lags -2 and -1, where media is considered delayed over government (alternately government leads media), we find relatively strong positive correlation at -1 i.e. within the last six months whatever government updates are issued media is likely to closely follow them. At lag-2, correlation coefficient is negative implying media is not likely to follow or remember what was announced by government agencies one year back. Again at lags +1 and +2, where government is considered delayed over media (meaning media is leading) we do not find strong correlation coefficients, which again implies media is not leading over parliamentary mentions. Thus the key finding from the CCF scores is the presence of a strong positive correlation between parliamentary and media actions (parliamentary issues leading the pattern).

Table 1: Cross-correlation coefficients between governments versus media series residuals.

lag	CCF
-2	-0.50896
-1	0.444098
0	-0.12092
1	0.156946
2	-0.17013

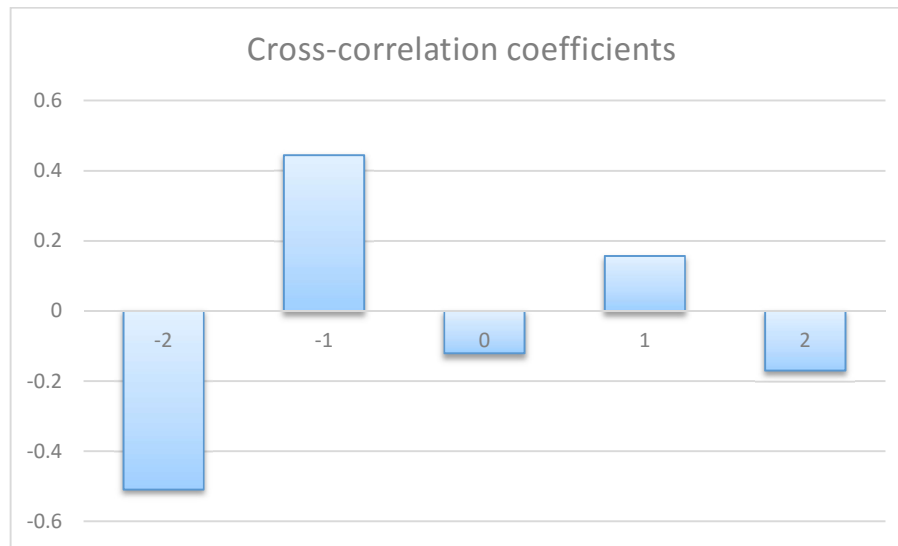


Figure 7: Graphic representation of cross-correlation coefficients between lag -2 to +2.

5. Conclusion

This paper uses time series case plot analysis and cross-correlation functions to evaluate the nature of agenda setting dynamics in India. The existence of an institutionalised policy window opening was identified in two instances, which coincided with election years. Since only one issue topic was examined, the results need to be interpreted very carefully before suggesting any normative pattern of agenda-setting for developing nations. However, the main interpretations that have been derived from this study are:

- *Low salience* in initial phases of the time period studied (1995-2006). This may contribute as yet another factor behind failure of earlier Ganges clean-up projects.

- *Higher salience over last decade* (2006-2016), due to excessive pollution, acute deterioration and pressure from global as well as internal interest groups (mostly academia, local groups and NGOs).
- A *punctuated equilibrium pattern* seen in agenda setting dynamics over the later high salience period. This was possible mainly because of alignment of policy stream (by learning from previous failed experiences, and research generated by experts), and the politics stream (due to creation of political motivation).
- The trends between two time series indicate the presence of a *reactive media*. This is opposed to pro-active media concept, as proposed by Downsian theory.
- A form of *institutional pattern* of the issue-mention cycle in agenda formation is observed, as most government peaks are followed by media peaks. Cross-correlation coefficients too support this.
- Lastly *elections* played an instrumental role in agenda focussing, since most prominent peaks noted in the case-plot trends coincided with national general election years.

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Appendix

The following websites were used to measure the number of parliamentary issue mentions. Lok Sabha [available at: <http://164.100.47.192/Loksabha/Debates/Debatetextsearch16.aspx> ; accessed 22nd November, 2016] is the lower house; while Rajya Sabha [available at: <http://rsdebate.nic.in/> ; accessed 22nd November, 2016] is the upper house of the Indian Parliament. Documents from both house proceedings were surfed through to identify relevant mentions.

Factiva software, operated by Dow & Jones (accessed from National University of Singapore library services) was used for compiling media mentions. [accessed from following website: <https://global-factiva-com.libproxy1.nus.edu.sg/sb/default.aspx?Inep=hp> ; 22nd November, 2016]

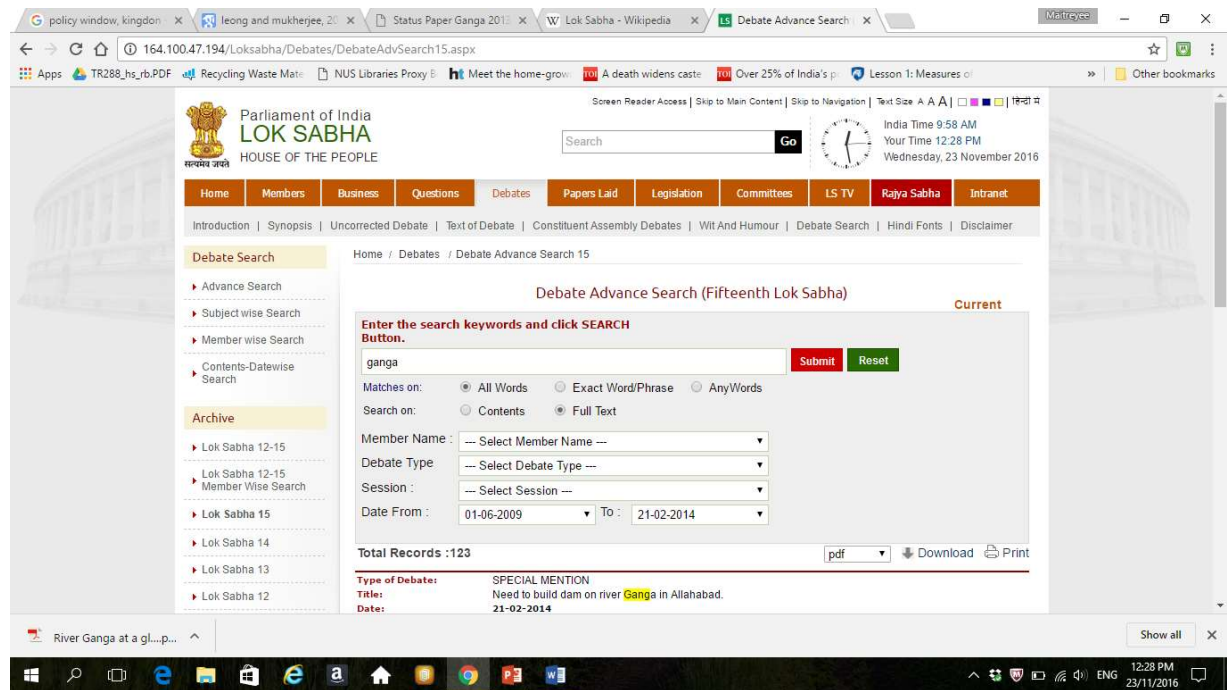


Figure 8: Screen shot of the website of lower house of Indian parliament. [Source: <http://164.100.47.192/Loksabha/Debates/Debatetextsearch16.aspx>]

The screenshot shows the official website of the Rajya Sabha (Upper House of the Indian Parliament). The page features a search bar with the query 'GANGA POLLUTION' and a 'Go' button. Below the search bar, there are options to add filters and sort results. The search results are displayed in a table with the following columns: Session Number, Debate Date (DD-MM-YYYY), Debate Type, Debate Title Subject, Debate Titles, Members Participated, and View. The first result is for Session 236, dated 3-Aug-2015, with the subject 'WRITTEN ANSWERS TO UNSTARRED QUESTIONS' and the title 'Pollution in Ganga'. The member participated is NAZIR AHMED LAWAY.

Session Number	Debate Date (DD-MM-YYYY)	Debate Type	Debate Title Subject	Debate Titles	Members Participated	View
236	3-Aug-2015	Part 1 (Question and Answer)	WRITTEN ANSWERS TO UNSTARRED QUESTIONS	Pollution in Ganga	NAZIR AHMED LAWAY	View...
236	3-Aug-2015	Part 1 (Question and Answer)	WRITTEN ANSWERS TO UNSTARRED QUESTIONS	Pollution in Ganga	NAZIR AHMED LAWAY	View...

Figure 9: Screen shot of the web page of upper house of the Indian parliament. [Source: <http://rsdebate.nic.in/>]