Examining flood policy change in Jakarta, Indonesia using the Multiple Stream model

1. Introduction

This chapter examines the usability of Kingdon's (2003) Multiple Stream (MS) model to understand the extent to which major flood events precipitated policy changes in Jakarta, Indonesia. Scholars (Rosenthal and t'Hart, 1998; Johnson et al. 2005; Sultana et al., 2008) have noted that major flood events have the ability to precipitate policy changes. These disasters attract attention (Birkland, 2006) in policy communities because of the severe damages they cause. It may seem obvious that governments formulate policies as a response to a disaster (Tobin, 1997). However, such policies may be created in a rush and tend to "subsidise some poor decisions and penalise some sound proposals" (Wilkins, 2000, p.84). It would be different if the crisis acts as a catalyst to adopt a proposal that has been long discussed. In which case, people in and around government work on the proposal prior to the crisis and utilise the crisis as a momentum to introduce change. The MS model is widely used to analyse such policy process. Focusing on the recent four major flood events in Jakarta (1996, 2002, 2007 and 2013), this chapter aims to analyse the extent to which the MS model can explain the policy processes and policy changes in relation to these floods. Located in a 5,000-year-old delta with more than 40% of the area below sea level, Jakarta is naturally vulnerable to flooding (Caljouw et al., 2005). The urbanisation pressure exacerbates the flooding condition since it causes rapid floodplain development. The 2007 flood was arguably the worst flood in Jakarta's history. It was seen as a national calamity due to the extensive paralysis it caused. The total financial loss due to the flood was around US\$ 900 million (Bappenas, 2007a), and thus it affected the global market outlook for Indonesia (Steinberg, 2007). As a response, the Indonesian government enacted two important regulations relating to disaster management and spatial planning. But, to what extent the regulations can be considered as policy changes? What factors, other than the flood, have contributed to these policy responses? Were other major floods able to trigger similar policy responses?

To answer those questions, the chapter is structured as follows. Following this introduction, I describe the main elements of the MS model (section 2). I then examine the flooding in Jakarta through the MS lens (section 3) and discuss several outcomes of the flood crises, with a focus on implementation 'booster' (section 4). Next, I analyse the usability of the MS model to understand policy processes and changes in the Jakarta's case (section 5), and then present my concluding remarks.

2. The Multiple Streams model

Derived from the garbage can model developed by Cohen, March and Olsen in 1972, Multiple Streams model is an analytical framework for agenda-setting and alternative specification developed by Kingdon (2003)[1]. The main components of this model are the independent three streams: problem stream, politics stream and policy stream. Problem

stream refers to any conditions in the public domain that requires government action to address them. Conditions that are highlighted by indicators (numerical data) and focusing events are more likely to be brought to the attention of government officials than conditions that do not have those advantages of being quantified and supported by critical moments, such as floods.

Politics stream refers to a particular political condition in the jurisdiction, such as variations of national mood, administrative or legislative turnover, and interest group pressure campaigns. While political events have important policy consequences, not every political environment or event is equally significant in influencing a specific policy field.

The last stream, policy stream, consists of proposed solutions developed by experts and analysts (Kingdon, 2003). Proposals are developed gradually in a so-called "policy primeval soup", in which proposals are recast or combined with something else. Because of this slow progress of policy alternatives development, the origins of them are somewhat haphazard.

The three streams have lives of their own and interact when they are brought together at a critical juncture by the activities of policy entrepreneurs. This moment is what Kingdon calls as 'coupling', when "solutions become joined to problems, and both of them are joined to favourable political forces (Kingdon, 2014, p.194)." The coupling of the streams opens a policy window which creates "opportunity for action or given initiatives" (Kingdon, 2003, p.166). Kingdon notes that coupling is more than pushing, as policy entrepreneurs must develop their proposals before the policy window opens. Windows are opened by events in either problem or political streams, creating problem windows and political windows, respectively. During a policy window, policy entrepreneurs attach their pet solutions to a problem that floats by. The complete joining of all three streams dramatically enhances the odds that the subject will become firmly fixed on a decision agenda. The characteristics of these policy windows vary according to the streams components (Howlett, 2009), but most of the time they are scarce and can stay open only for a short period of time.

The MS model highlights the importance of both policy process and policy entrepreneurs, but this chapter emphasises discussion on the process (the three streams and their joining to create a policy window). The model was developed in the context of health and aviation policies in the United States in the 1980s, but it has been used widely in different geography and policy domains, such as in Argentine education policy (Jelena, 2008) and in Canadian municipal emergency management policy (Henstra, 2010). Some authors (e.g. Meijerik (2005) proved that the MS model can be combined with other policy theories, such as Sabatier's (1988) Advocacy Coalition Framework.

3. Flooding in Jakarta through MS lens

In the past two decades, Jakarta annually exposed to flooding with severe flood happening almost every five years: 1996, 2002, 2007 and 2013. Table 1 summarises activities/ events in the three streams - problem, politics and policy - in relation to these recent major floods. This is followed by a brief explanation about the interaction of the streams that create the policy windows.

Table 1 Key activities and events related to Jakarta's flood policy evolution in the past two decades

Flood event	Problem stream	Politics stream	Policy stream
Prior to 1996	Major floods: 1621, 1654, 1918, 1976	1967 – Suharto's regime/ new order (dictatorship)	1973-Flood Master Plan I 1991-1993 Flood Master Plan II
January 1996	The first major flood after 1976; 745 houses affected; 2,640 evacuees	Changing president: May 1998-Suharto stepped down (end of dictatorship) Election: Oct 1997-New governor elected by parliament Financial climate: 1997–1998 Asian financial crisis 2000-Indonesia's positive economic growth Regulation: UU* 22/1999 Decentralised System Act (devolution of power) UU 25/1999 Fiscal Equalization Act UU 34/1999 Jakarta as Special District Act	1996-New study about Jakarta's flood 1997-Flood Master Plan III
	Regulation: **1999 – Regional Regulation 6/1999 Jakarta's Spatial Planning**		
February 2002	15-20% area inundated; 30 killed; 380,000 evacuees	Regulation: UU 32/2004 Decentralisation Act (amendment) Election: Sept 2002-Incumbent governor re-elected by parliament	2002- Flood Master Plan IV 2005- Jakarta's long-term plan (2005-2025), including flood risk management 2002- MoU to construct East Flood Canal (EFC)
	Implementation:		

	2003-Instigation of East Flood Canal construction		
February 2007	60% area inundated; 70 people killed; 340,000 evacuees	Election: Aug 2007-First direct gubernatorial election Jul 2012-Direct gubernatorial election	2007-Proposal to build canal connecting River Ciliwung to East Flood Canal (EFC) 2007-Proposal to construct Multi-Purpose Deep Tunnel (MPDT) and Giant Sea Wall (GSW) to alleviate flood risk
	Regulation: **UU 24/ 2007 Disaster Management Law** **UU 26/2007 National Spatial Planning Law** **Implementation:** **2009-River Ciliwung dredging project**		
January 2013	14% area inundated; 20 people killed; 50,000 evacuees	New administration (flood happened three months after new governor elected in Oct 2012)	Mar 2013-MPDT and GSW included in the 2013-2017 plan of Jakarta Oct 2013-MoU to construct Ciliwung Dam Nov 2013 -The launch of the National Capital Integrated Coastal Development (NCICD) plan (seawall and reclamation projects) Jan 2014-Planning to construct a connecting canal between River Ciliwung and East Flood Canal (EFC)
	Implementation: **2013-Normalisation of Pluit and RiaRio retention ponds**		

*UU stands for *Undang-Undang*, a national level regulation in Indonesia

(Source: Bappenas, 2007a; Akmalah and Grigg, 2011; Simanjuntak et al., 2012; Vaswani, 2013)

The 1996 flood occurred in a dictatorial regime which strongly affected the policy and administration system at the local levels. Funding for local governments was regulated by the central government and originated mainly from international donor agencies (Firman, 2008). It was aggravated by the unstable economic condition in the country due to the Asian financial crisis. Such political and economic unrest was unable to couple with the flooding problem to open a policy window. The fall of Suharto regime in 1998 started an era of true democracy, as Indonesia was a de facto dictatorship under Suharto, and the country adopted a new decentralised system. Jakarta also recovered from the financial crisis in early 2000. One of the impacts of this revived condition on flood policy was the enactment of local spatial planning regulation, Perda 6/1999. The 1996 flood was not able to open a policy window immediately after the flood, but it opened later when the situation was supportive.

In 2002, Jakarta was inundated by another severe flood. This problem interacted with a relatively stable political atmosphere in a new democratic era. Their coupling was able to open a policy window. A re-elected governor who acted as a policy entrepreneur was successful in advocating the most important flood alleviation project at that time: East Flood Canal (EFC). The project was finally started in 2003 after 30 years of delay in implementation due to funding constraints and land acquisition problem (Simanjuntak et al., 2012).

Another policy window opened in 2007 after a catastrophic flood (problem stream) combined with the first direct gubernatorial election (politics stream). As a result, new regulations of disaster management and spatial planning were enacted shortly after the flood. Furthermore, the elected governor utilised this window to initiate a dredging project in 2009. The government could not do any high-cost flood defence project in the city because the East Flood Canal was still under construction until 2010.

The most recent major flood, the 2013 flood, happened just three months after a new governor was elected. A policy window opened because the flood in the problem stream and the new administration in the politics stream came together. Since many proposals have 'floated' in the policy stream for more than two decades, the new governor as the policy entrepreneur took advantage of the policy window to implement some urgent projects (e.g. normalisation of Pluit and RiaRio reservoirs). The window was also used to launch a massive seawall project as part of the NCICD plan to deal with the increased risk of flooding caused by land subsidence and sea level rise.

4. Outcomes of policy windows: implementation 'booster' and policy change

This section discusses several outcomes of policy windows. I begin by discussing the phenomenon of time lags in policy implementation and 'booster' effect given by flood events, as observed in 2002 and 2013 floods. Thereafter, I discuss another outcome of policy window for the 2007 and 1996 floods. The former was successful in creating a flood-related policy change, while the latter neither created policy change nor boosted implementation for delayed policy.

Policy implementation deficit characterises flood policies in Jakarta. There are fractures between levels of government and organisation at the local level to implement the already

adopted policy (Pressmand and Wildasky, 1984). The policy is either implemented in the later times or sink into oblivion and hence never get implemented. Common factors causing an implementation deficit are institutional characteristics (Storbjork, 2007), lack of coordination between stakeholders (Beucher, 2009), unspecific mandate and insufficient resources (Montjoy and O'Toole, 1979).

As shown in the policy stream in Table 1, the government had been actively responding to recent flood events by doing studies and producing policies. But there was a phenomenon of time lags between the time a policy decided and implemented. Policy windows opened by major floods in 2002 and 2013 were able to implement these 'shelved' policies. I label this particular outcome of policy window as implementation 'booster'. The windows enable "a renewed effort to implement an existing policy that had been inadequately enforced" (Birkland, 2006, p.189).

The delayed implementation of the East Flood Canal for more than 30 years was finally instigated after the Memorandum of Understanding signed as a response to the 2002 flood. The flood, supported by conducive political and financial conditions, became a wake-up call for the government to act on the flooding problem. They considered the construction of the canal was urgent and could significantly alleviate the flooding in the city. This 23.6-kilometer canal was finally completed in 2010. Funding and land acquisition problems were the main reasons for the three-decade delay.

Another shelved policy that was finally implemented is the normalisation of Pluit and Ria Rio retention ponds. The project started after the 2013 flood, albeit the fact that these programs were already in governmental agenda for about ten years (Bappenas, 2007b). Normalisation aims to return the capacity of the ponds by dredging the ponds and clearing their banks from squatters. The project was delayed because of the difficulties in negotiating with the people who had been inhabited the banks for decades. The government was reluctant to deal with such a sensitive issue as it may harm a governor's popularity. The 2013 flood occurred just three months after a new governor took office. He prioritised the normalisation project and used persuasive, not repressive, approach to discuss with the people.

Next, I discuss the other (conventional/ expected?) outcome of policy windows, the introduction of policy change. From the four major floods discussed in the previous section, only the 2007 flood has successfully triggered a policy change. Before proceeding, I discuss what policy change is.

Kingdon (2003) does not define what policy change is in his book; this is partly because he aims to explain policy process and does not specify how the outcome of policy windows should be. Therefore, I follow Johnson et al.'s (2005) definition of policy change: "changing set of beliefs, values and attitudes towards the flood problem" (p.562) because of learning from past disasters (Bennet and Howlett, 1992). So, policy change means a shift of approach or thinking indicated by the enactment of law products containing a new idea. It appears to be a palpable definition, but since the keyword here is the shift of ideas, the legalisation of a new law may or may not be called policy change depending on the ideas underpinning the policy. Birkland (2006) further argues the need to adopt the actual legislation as part of policy change definition. While I agree that it is necessary to implement

the already enacted policy, this work separates the policy formulation and implementation stages.

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The enactment of UU 24/2007 Disaster Management Act and UU 26/ 2007 Spatial Planning Act after the 2007 crisis can be considered as policy changes because they contain new approaches related to the existing flood risk management. The first act, UU 24/2007 Disaster Management Act, denotes a shift of approach from merely an emergency response to a disaster to an integrated approach of disaster management, emphasising the importance of early warning system to reduce damage (UU 24/ 2007, article 44). The mandate consists of forming the National Disaster Management Agency and coordinating local disaster management strategies throughout the country (BNPB, 2013). The emergence of this new idea towards disaster management originated from the Tsunami catastrophe which struck Aceh in 2004 (Vidiarina, n.d.). Since then, the government had been actively developing new regulation about disaster management strategy (BNPB, 2013) that was finally promulgated after the 2007 flood.

The general principles of the new spatial planning law in UU 26/2007 are still the same as the old one, UU 24/1992. However, the new act obliges local governments to provide a fixed amount of green spaces: 30 percent of their total area (UU 26/2007, article 29). Such new standards force local governments to change fundamentally their planning strategies (Liesnawati, 2010). By having more open spaces, rainwater will infiltrate the ground instead of moving as surface runoff. The idea of enforcing local governments to provide such spaces has been enacted in less binding regulations (e.g. Ministerial Regulation 327/KPTS/M/2002), and the momentum of the 2007 crisis could make this issue more impactful. Because Jakarta's crises are considered as national events, they can influence the regulations at the national level.

The policy formulation processes of each law indicate that the rate of policy changes was accelerated by a disaster. 'New' ideas carried in both laws did not emerge from the 2007 flood, but they had been developing from accumulative learning of past disasters. These seemingly 'new' ideas had been discussed and circulated in the widespread professional or public discourses (Penning-Rowsell et al., 2006). The 2007 flood acted as a catalyst to accelerate the enactment of regulations carrying pre-existing ideas that evolved through learning.

Lastly, neither policy change nor program implementation occurred after the 1996 flood. The flood was not able to open a policy window immediately, but it opened three years later. The window did not open in 1996 because the problem stream was not coupled with the unstable political and economic conditions in the politics stream. In 1999, Regional Regulation 6/1999 about Jakarta's spatial planning was legalised. It was not clear whether this law contained new ideas for flood risk management, but it urged the implementation of the East Flood Canal construction and acted as a legal foundation for the instigation of the project in 2003. Nonetheless, due to the timing that policy enacted, it cannot be considered as a policy change that was precipitated by a crisis.

5. The usability of MS model in explaining Jakarta's flood policy change

This section analyses the extent to which the MS model can explain flood policy processes and changes. As expected from a dynamic model, the model has been useful in explaining change (John, 2000) in the flood policy domain in Jakarta. In my view, the key strength of the model is its simplicity in disentangling policy process through the identification of three streams and their convergence to create a policy window.

The model suggests that problem and politics streams interact first before policy stream joins the coupling. It is the "change in the political stream... or a new problem capture[ing] the attention of governmental officials" that potentially open a window (Kingdon, 2003, p.168). For Jakarta's case, the interaction between these two streams always initiated by a flood problem as a focusing event. Further, Kingdon (2003) postulates that "none of the streams are sufficient by themselves to place an item firmly on the agenda" (p.178). This was observed in the 1996 flood, in which a policy window did not open immediately after the crisis because it could not be coupled with the unstable political condition at that time.

This model also notes that a crisis "merely opens a window of opportunity for change without guarantee of change itself" (Birkland, 2006, p.24). This was evident in Jakarta as among the three windows opened, only the 2007 window was able to promote a policy change. This relates to the implementation deficit condition: the introduction of a new policy was not prioritised because relevant policies were still piled up to be implemented. Table 2 shows the relationship between the policy window, change and implementation in Jakarta's flood policy-making process.

Table 2. Observed policy windows, changes and implementation caused by Jakarta's flood crises

Variables	Policy change		Policy implementation	
	Yes	No	Yes	No
Policy window	2007	2002, 2013	2002, 2007, 2013	-
No policy window	-	1996	-	1996

Relating to the duration of a policy window, the model suggests that a window opens only for a short period of time. While this was observed in Jakarta, it appears that the window never closed completely as floods struck the city annually. Therefore, the flood problem was on the governmental agenda for most of the time. It was indicated by regulations produced by the government although crisis did not occur (see the policy stream in Table 1). The severe floods, which occurred in a regular pattern and short return period -almost every five years since 1996, allowed policy windows to be opened longer than usual and were able to push the problem from the government agenda to the decision agenda [2].

Concerning the independent characteristic of the streams, Kingdon received criticism on this conceptualisation. Critics (e.g. Mucciaroni 1992) argue that the streams tend to be interdependent because changes in one stream can trigger changes in another. In response to this, Kingdon, in his latest publication on the MS model (2014), acknowledges the interdependency of streams to a certain extent: couplings are attempted often other than in

open windows and final coupling. This interdependent notion was observed in the Jakarta's case, especially for the policy and problem streams. The ideas (policy stream) embodied in UU 24/2007 Disaster Management Act and UU 26/2007 Spatial Planning Act were products of learning from previous disasters (problem stream) and had been discussed in specialist communities long before the 2007 window opened. Before the enactment of these laws, the components of these two streams were clearly interacting.

While most of the elements of the MS model were evident in Jakarta's case, there is one observation that seems to be contradictory to the model's argument. The 'problem surfing' notion, in which solutions "search(ing) for problems ... to become attached" (Kingdon, 2003, p.172) is not evident in the case study. Solutions or proposals 'float' in the policy streams are emerging because of the problems. So, once a window of opportunity opens, they are attached to the re-surfacing initial problem: flood crisis. The reverse notion in which problem seeks whatever solutions that are available is more appropriate in this context.

Learning insights from the Jakarta's case, I agree with other authors (John, 2000; Zahariadis, 2007; Robinson and Eller, 2010; Solik and Penning-Rowsell 2017) regarding the importance of expanding the existing MS scope to include other stages of policy-making process: from only the agenda-setting and alternatives specification stages to also include policy enactment and implementation stages. John (1999) argues that Kingdon concentrates "too much on agendas and not enough on how ideas fed into implementation process and back again" (p.176). This limited scope of policy analysis is the primary reason why implementation 'booster' observed after policy windows are not recognised by the model. It excludes possibilities other than policy enactment as the expected result of the streams coupling.

6. Conclusion

This chapter has demonstrated that the Multiple Streams model was a powerful lens to analyse flood policy process in Jakarta through its conceptualisation of three streams (problem, politics and policy streams) and their convergence to create a policy window. The case study shows that only when the three streams coupled, policy change had a higher probability to occur, in which political stream was the main determinant. From the four major floods (1996, 2002, 2007 and 2013), only the 2007 crisis acted as a catalyst to precipitate policy change in the city's flood policy by the legalisation of two regulations whose ideas have been developing for many years. The 1996 flood was unable to open a policy window and created no change immediately after the crisis. The other major events, 2002 and 2013, acted as an implementation 'booster' to delayed policies. The booster is not recognised in the MS model because the model has limited scope of only explaining the initial stages of policy process, i.e. agenda setting and alternatives specification. Despite this limitation, the MS model offers a simple yet robust conceptualisation of policy formulation. The concepts of the three streams and policy window are easily mobilised in a wide range of policy contexts to help explain the often chaotic and irrational nature of policy process.

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1 The original piece was published in 1984, and revised in 1995, 2003, 2011 and 2014. This chapter is based on the 2003 version, but insights from the 2014 version have also been incorporated.

2 Governmental agenda is "a list of items that are getting attention", while decision agenda is "a list of subjects within governmental agenda that are up for an active decision" (Kingdon, 2003, p.4).

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