

# Understanding Complexities in Public Policy Making Process through Policy Cycle Model: A System Dynamics Approach<sup>1</sup>

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## ABSTRACT

*This paper is aimed to explore theoretically the complexities and the reality in the policy making process from the point of view causality relationships among the components or actors within the system. The complexities' exploration in the paper is based on the model of the policy cycle that is widely discussed in the public policy and public administration literatures. The sense of reality surroundings the policy-making process is perceived from some study cases that have been observed from Australia and Indonesia literatures. Simulation throughout the paper revealed different complexities and some pitfalls in each stage of the policy cycle model on which should be given a proper attention from the policy stakeholder. The paper tried to construct a different approach to understand the reality and embrace the complexities of the policy-making process in order to present a starting point for an open discussion in public policy field. The effort could be a learning tool for the public policy maker to build good awareness and understanding on their roles in the complex relationship and inter-dependent environment. Eventually, the paper can fill the gap between policy cycle model theory and the complexity in the real situation of the policy-making process.*

**Key words: Policy cycle model, Public Policy Process, System Dynamics, Simulation**

## INTRODUCTION

Despite its important role for the Indonesia's economic development, so far it can be said that Indonesia still has great challenges in managing the small and medium enterprises (SMEs). The challenge is evident when we look at especially the meaning or definition of SMEs and its data availability. It seems that the wide variation in SMEs' definition has a direct impact on the SMEs' data availability in Indonesia.

The current available data also seems very poor, where each data is still categorized as temporary, quasi temporary, and most temporary. Even the data is still tentative; despite has been three years from its first release. The variation in definition and availability of these data also indirectly indicate the presence of overlapping SME development roles and efforts, although on the other side has become common understanding that the SME is an important factor for

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sustaining high economic growth in Indonesia, from the point of view of its contribution to total GDP each year.

Various definitions and data can be found in the literature (OSMERI, 2008) or related agency website which has links directly or indirectly in the development of SMEs; such as the Ministry of MSME, Social, Industry, even on the website of Bank Indonesia. However, since the year of 2008 has been enacted Law No.20/2008 which gives a clearer definition of the SME.

Such enactment of regulation has been shown the will of the government to align all efforts to improve seriously the development of SMEs' sector that are as far done by several different ministerial without solid coordination. Coordination among ministerial and institutions such Ministerial of SMEs and Cooperative, Ministerial of Industry, Ministerial of Social, Ministerial of Youth and Sport, Central Bank of Indonesia, and The Central Statistical Bureau of Indonesia will play a significant role in developing sustainable SMEs since each institution has each own specific contribution in theory. However, when it comes into the practice, it may look completely on the other way around facts since the available data tells the different story. The increment of SMEs along the period of 1999 to 2005/2006 is about 2% a year, nearly equal with the Indonesia population growth which is 1, 54% a year (CIA Fact Book, 2011). In this concern, it can be considered that the SMEs development in Indonesia is *self-developing*, which means that it grown by itself either without any supports or unhelpful supports. Then for the period of 2006 to 2009, the data showed a very dynamics pattern which indicated an unsustainable development of SMEs in Indonesia (Subroto, 2011).

Such unintended development of the data also can be considered as a reflection of an uncoordinated policy and a nonsolid policy shaping process on the SMEs development. It raises the need to develop higher awareness on the important of the policy formation process which gives more emphasize on not only the result, but considers also the complexities during the process, and admits the different perception of an issue among the actors for more open policy discussion and submission, eventually will create a solid and sound public policy on the issue.

## **LITERATURE REVIEW**

Formation of public policy is shaped through several stages; in each stage lays a multi interaction that involves more than one actor and components. It has been some model perspectives on the public policy development. The notion of a policy cycle, prominent in the classical view, has its origin in systems theory and the pioneering work by David Easton on political systems (Easton 1965, 1966). May and Wildavsky (1978) described a policy cycle in which they include: (1) agenda setting, (2) issue analysis, (3) implementation, (4) evaluation, and (5) termination. Similarly, Brewer and deLeon (1983) based their understanding of the policy process on a series, they define as: (1) initiation, (2) estimation, (3) selection, (4) implementation, (5) evaluation, and (6) termination. Hogwood and Gunn (1984) also envisage a cycle: issue search or agenda setting; issue filtration; issue definition; forecasting; setting objectives and priorities; options analysis; policy implementation; evaluation and review; and policy maintenance, succession or termination. According to Colebatch (1998) the policy cycle imagines the policy process as an endless cycle of policy decisions, implementation and performance assessment. Howlett and Ramesh (2003) conceive of a similar cycle but with more steps: agenda setting (problem recognition); policy

formulation (proposal of a solution); decision-making (choice of a solution); policy implementation (putting the solution into effect); and policy evaluation (monitoring results).

Regarding public policy-making stages; Bridgman and Davis (2000) have proposed a model called the policy cycle model. In another literature, Meredith Edwards (1993) called the model as a policy development framework, as based on her experience that the framework is most useful in practice, especially when chairing the government interdepartmental committees (IDCs), and which she has used with her students of public policy in an attempt to encourage the good practice, contains stages similar to those in Bridgman and Davis (2000).

Generally, public policy formation process as in this paper described by Edward (2001) with a case study in Australia also occurs in Indonesia, although not at the same level. The process also can be found in the case of the Independent Commission on Transparency and Participation (CITP) formation in the District of Lebak, Banten Province, Indonesia. The commission was established as a local government's response to the public aspirations for more transparency in local government administration in order to create clean and good governance (Pramusinto, 2006).

However, according to Kay (2006), policy cycle models fail to embrace the complexity of the policy-making process and the reality that policy rarely, if ever, develops in a linear progression. Stages are often skipped or compressed and the idiosyncrasies, interests, preset dispositions, policy paradigms or mental maps of the actors involved often usurp the sense of a smooth process. There is a multitude of different processes at different scales and at different speeds occurring simultaneously.

Edwards (2001) has been presented an insightful point of view concerning with complexities in the policy environment. She revealed that policy environments are full of complexities, usually involving a diverse range of players coming from different perspectives and spawning a host of unexpected events.

## **METHODOLOGY**

This paper uses system dynamics as a method to explore and understand the complexity in the policy cycle model applied in some cases, which are taken from literature in public policy field. Thus, for the longer term could be used as an initial foundation for an open discussion in the public policy field. The suitability of the use of system dynamics as a method in this paper is based on Sterman's argument cited below:

System dynamics is a method to enhance learning in complex systems. Just as an airline uses flight simulators to help pilots learn, system dynamics is, partly, a method for developing management flight simulators, often computer simulation models, to help us learn about dynamic complexity, understand the sources of policy resistance, and design more effective policies (Sterman, 2000: 4).

In that regard, this paper has carried out some of the common modeling practice in system dynamics described by Zagonel (2006), such as; system mapping<sup>2</sup>, quantitative modeling<sup>3</sup> and in

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<sup>2</sup> System mapping is qualitative and inductive; involves drawing influence diagrams, CLDs, S&F diagrams, or any form of mapping or organization of the elements forming a system; attempts to get at the key causal interrelationships; focused upon identification of inter-organizational linkages and inter-dependencies. This step is needed as a visual summary of a lengthier verbal or written discussion. It organizes information and may yield

some degree also to test the hypothesis testing<sup>4</sup> (expectation on the simulation result); which is based on the way as much as possible to capture the process that has been described in the cases presented in the Edwards' book. Some necessary quantification is needed in order to simulate the system. Simulation technique is used to give the sense of the reality condition in public policy-making process.

The use of simulation techniques is believed has the attractive features of allowing the construction of realistic, testable and modifiable models of real-world phenomena. This makes them of particular interest in the policy field. Simulating the complexities in every phase of the policy cycle model could support the awareness creation of the common goal among the actors involved in public policy.

It has to be mentioned that at some points, the paper modeling process has to judgmentally quantify the effect of a variable to another variable. Quantifying process is taken in the believe of what Akkermans (1995) urged in his paper's conclusion that in many cases, clients will not expect a quantified model for very soft issues, in contrast to the expectations for a very 'hard' problem. Thus, the modeling process is not omitting such effect of important variable to another variable in the consideration of what Sterman (2000: 879) said in his book as omitting structures or variables known to be important because numerical data are unavailable is actually less scientific and less accurate than using our best judgment to estimate their values. And taking carefully the logical sense into the judgment of the important variable effect to another variable, yet it has to be verified that it will not either overstate or understate the final simulation result from the expected behavior. In order to support the logical sense the model, in-depth interview has been also made with some high level bureaucrat officers from related ministerial and institutions to enrich the insight.

The discussions in the paper are divided into several sections; such separation follows accordingly the policy cycle stages as the followings; 1) Identifying an issue in order to put agenda on the table, 2) policy analysis in order to prepare the green paper or recommendation paper, 3) Discussion and decision in order to prepare the white paper or policy paper, 4) implementation, and 5) evaluation. The end section will be dedicated to reveal the complexity insights of the paper and its implication for further research.

## **IDENTIFYING ISSUE STAGE**

Outline of the current subtopic can be drawn as in the following Table 2 for the system mapping and Table 3 for the variables are included in the simulation with the initial value, expected value, and the final value after the simulation.

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preliminary dynamic insights. For example, a stock-and-flow diagram helps to understand points of accumulation and intervention. Alternatively, causal-loop diagrams begin to explore reinforcing (R) and balancing (B) feedback. Delays can also be graphically displayed. Maps facilitate the surfacing and clarification of assumptions, and thus can help with communication

<sup>3</sup> Quantitative modeling is quantitative and descriptive; involves formulation and simulation; largely system-focused; emphasizes stocks and flows dynamics and the effects of delays; requires specification of the decision rules governing interrelationships; focused on representing and tracking consequences; sometimes rich in detail complexity

<sup>4</sup> Quantitative and deductive; requires stating a hypothesis that explains dynamic behavior from the causal structure of the system; largely problem focused; emphasizes feedback-rich dynamics, learning, and exploration of the effect of changes in system structure; focused upon understanding and insight.

**Table 2: Identifying issue system mapping outline**

The Actors	Resource Strategic	Intermediate Control	Final Result	Final Indicator
The Government: Ministerial Department Task Force	Perception on Issue Interest on Initiative	Change in Perception on Issue and Pressure groups interest Change in Initiative interest	Green Paper <sup>5</sup>	Sense of broad agreement in society
Pressure Groups	Opposing Perception on an Issue	Change in Opposing perception on issue and government interest		
Press/Mass Media	Press coverage	Perception Gap on an issue		
Public	Opinion Discourse Need of Information	Change in Discourse intensity Information Fulfillment		

**Table 3: Initial, expected, and final value of the identification stage**

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
1	Interest pressure release	Constant	.15	-	-	dmnl
2	Pressure Group Perception (PGP)	Stock	1	~GP	.438	dmnl
3	Government Perception (GP)	Stock	1	~PGP	.097	dmnl
4	Issues clarity	Auxiliary	.97	1	.99	dmnl
5	Standard Press Coverage	Constant	2	-	-	%
6	Normal total report in one edition	Constant	200	-	-	report
7	Effect of report to public intensity addition	Constant	.001	-	-	Per report
8	Public discourse intensity	Stock	.1	~0	.03	dmnl
9	Publicly available Information Need (PAIN)	Stock	.99	0	.00013	dmnl
10	Publicly available information	Stock	.01	1	.99986	dmnl
11	Normal Public information need	Constant	.5	-	-	dmnl
13	Normal Information Fulfillment per report	Constant	.0015	-	-	Per report
14	Time to report	Constant	1	-	-	Week (wk)
15	Broad Agreement (BA) on Issues Initiatives	Stock	0	~1	.9927	dmnl

<sup>5</sup> Government discussion paper usually with issues, options and sometimes proposals as a basis for public consultation, typically developed before a white paper

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
16	Potential Broad Agreement on Issues Initiatives	Stock	1	~0	.00728	dmnl
17	Time To Change in BA	Constant	1	-	-	mo
18	Public Interest on Initiatives (PII)	Stock	.5	~1	.729	dmnl
19	Potential PPI	Stock	.5	~0	.27	dmnl
20	Ministerial Interest on Initiatives (MII)	Stock	.001	1	.7311	dmnl
21	Maximum Normative MII	Constant	1	-	-	dmnl
22	Potential MII	Stock	.999	0	.2688	dmnl
23	Time to Observed PII	Constant	1	-	-	wk
24	Time to adjust MII	Constant	1	-	-	mo
25	Normal pressure from poll	Constant	.5	-	-	dmnl
26	Incumbent Party Electability projection (IPE)	Stock	.4	1	.70	dmnl
27	Potential Addition to IPE	Stock	.6	0	.30	dmnl
28	Normal pressure from IPE Projection	Constant	.5	-	-	dmnl
29	Time to revise IPE	Constant	2	-	-	yr

Identifying the issues is the initial stage when an issue demands government attention and where the nature of the problem is clarified and articulated. Nevertheless, the empirical evidence is that commonly the policy process is initiated from within government (Howlett and Ramesh 1995: 105; Hall et al. 1986).

However, Cobb and Elder create two categories in the policy agenda setting as the beginning of a policy formation process. The two categories are; first, the “formal agenda,” also referred to as the institutional or governmental agenda, consists of items that have been placed for consideration on the policy agenda by Congress or the executive branch. Second, the “systematic agenda” or “agenda of controversy” consists of issues that have received enough attention to ensure public awareness, that reflect a concern shared by some members of the public that action is required, that are seen as appropriate for redress by government, or that are subject to resolution by citizen initiative (Cobb and Elder, 1972).

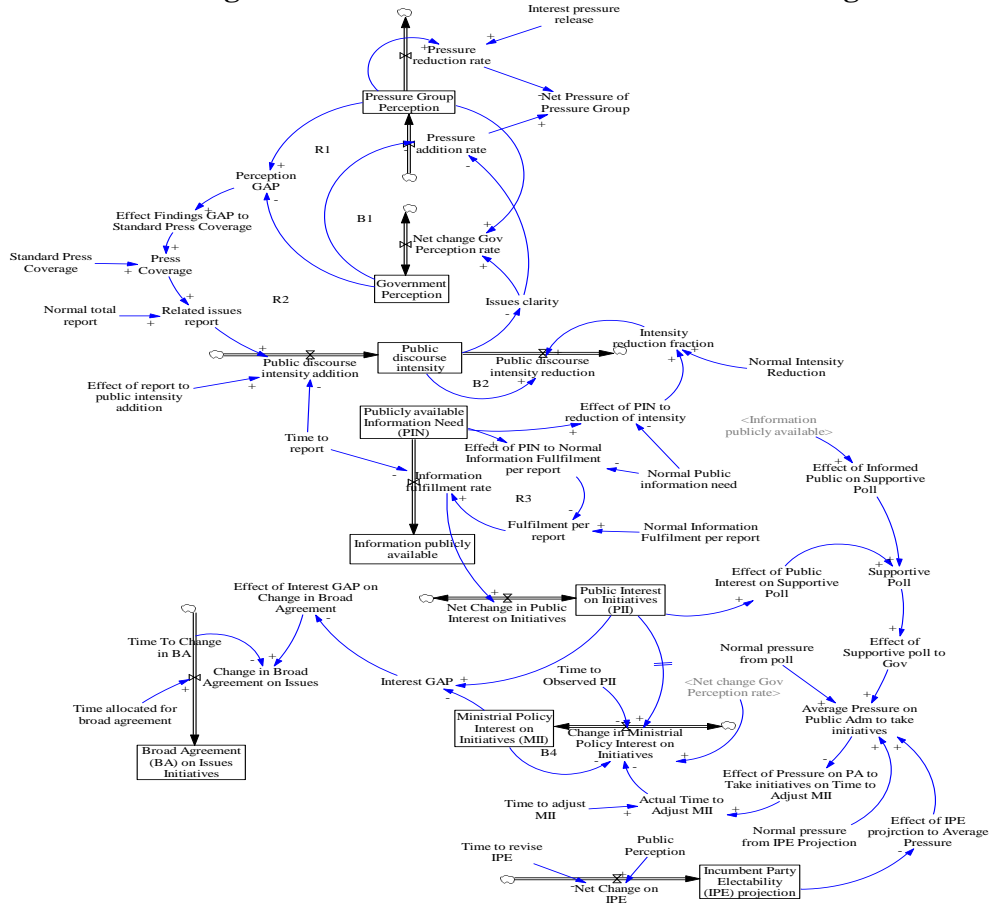
In this paper the discussion on the issue identification stage will be based on the second category of the category of the policy agenda set forth by Cobb and Elder, although in simulations it is also possible to initiate the agenda by the government. In the final stage of this phase is expected to emerge a general consensus on an issue thus the next stage can begin.

In her book, Edwards urged more or less the same tone on the broad consensus at the end of the stage i.e. a key question to address early on, therefore, in the context of the case studies she provided in her book, is how the problem got on the agenda and how it was articulated. Until there is broad acceptance of the nature of the policy problem, it is difficult to move on.

In this stage, some actors who have prominent roles can be identified as follows; government, specifically ministerial departments, pressure groups, the press or mass media, and the latest are the public. Each actor has a strategic resource that can affect the interaction with other actors in the system. In general, the government, represented by the ministerial department and pressure

group for example, each of them has its own perception on an issue. The difference on perception (perception gap) is what caused the onset of negotiation of interests between them. Negotiation of interest is facilitated by the press and the mass media because they have some degree of the communication role to the public in an opinion forming. These negotiations will continue until the perception of an issue to be approximately the same and did not attract public attention anymore. At that time, in theory, it has been already reached what is called by Edward as a broad agreement. In Figure 1 can be viewed in detail on how the process of general agreement on an issue.

**Figure 1: Issue identification stock and flow diagram**



While the process itself will be started from the existence of an issue where every single issue could become public interest and gain attention from the government. The reason of putting "issue" as the starting point of the policy commencement development process is that the issue *per se* will always exist in a dynamic society. While the government on one side already has its own agenda more or less like what was promised to the constituents, so that the government will choose the agenda based on a popular issue, routine programs, and short cut and generic solution.

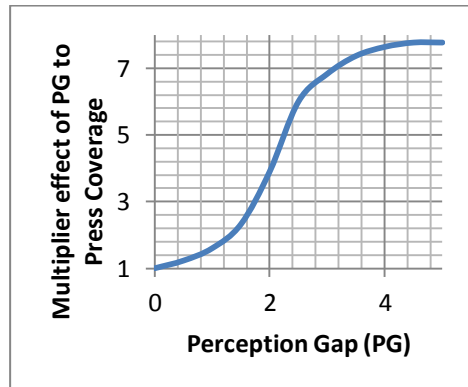
Thus, the more obvious and populist an issue will lead to the more government's positive perception. While on the other hand, pressure groups are set to always have a different perception from the government in some degree. The difference of perception will be even

greater if the pressure group is always opposed to the government's move, in other words the pressure groups would not reduce the pressure on the government, despite all efforts by the government.

In the simulation in the paper, it is deliberately made that between government and the pressure group are in the different position and perception on an issue. Precisely, issues on which the government has a positive perception will be perceived differently by the pressure groups. However, either government or pressure groups will use the each other perception as a reference to change their current perception on an issue. Thus, perception gap could be minimized along the process (B1).

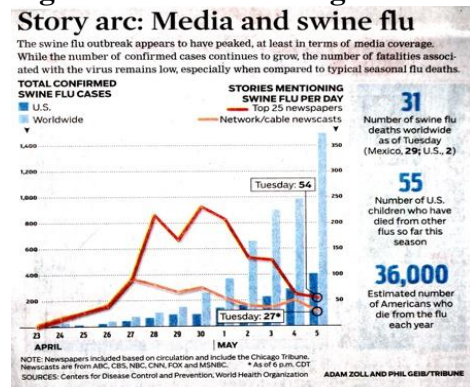
The perception gap then will be perceived and publicized by the press where the more gap will have the more coverage since "the bad is the news" for them. On average the press has a normal coverage on an issue and that is why the perception gap will have an effect to the coverage which is supposed nonlinear in this paper. The nonlinearity of the effect is assumed and can be seen on the Figure 2 below:

**Figure 2: Effect of perception gap on press coverage**



The behavior of press coverage is expected to follow the commonly believed which grows at a small percentage in the beginning period when an issue starts to be perceived by public, then keeps growing until the maturity period is reached and then starts to decline; akin behavior is called as *growth and collapse* in many system dynamics literatures. As some example of such behavior, it can be observed on one of the following figures:

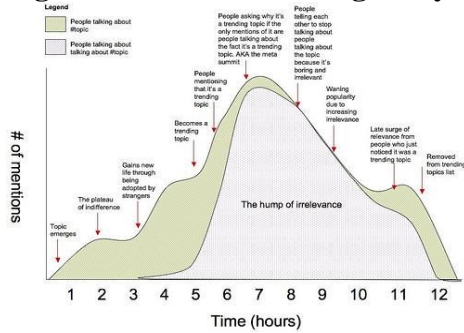
**Figure 3: Media coverage on the swine flu**



Beside figure (the red line) tells how the behavior of the press coverage on an issue. It shows the behavior of growth and collapse



**Figure 4: Twitter trending analysis**

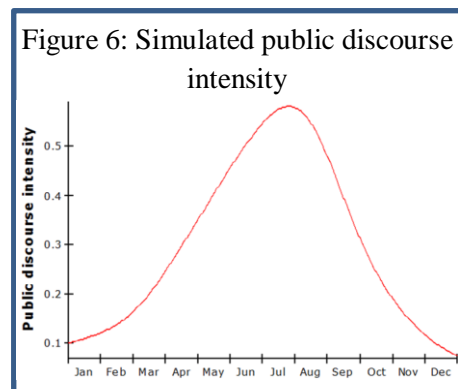
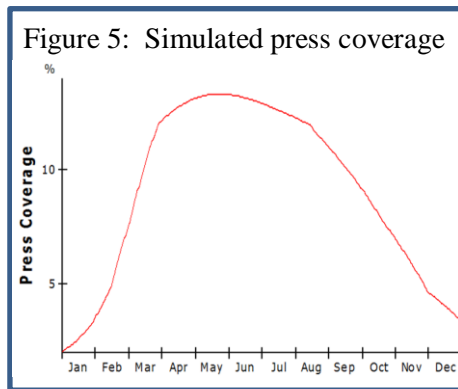


Source: Pickard (2009)

The graph compares 'people talking about #topic' and 'people talking about talking about #topic'.

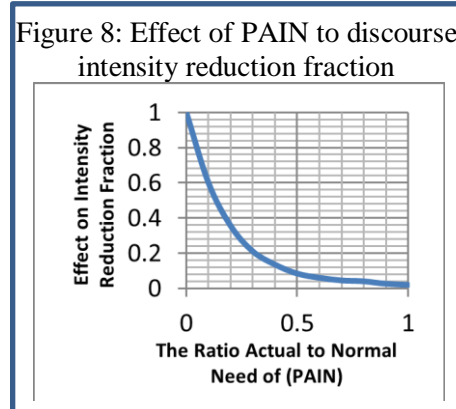
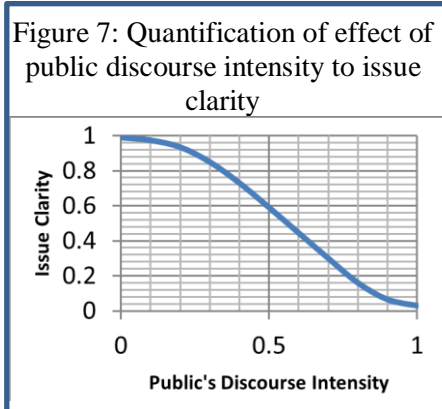
Beside, graph reflects of how peoples are interested on a topic and it shows more or less similar with the 'growth and collapse' behavior phenomenon in the system dynamics literatures.

With normal press coverage of 2% the actual press coverage will be like as can be seen on the Figure 5;



As can be seen on Figure 5, the simulation result meets the expectation that generates an identical behavior with the example graphs' behavior. Further, press coverage will have impacts on public discourse. The more press coverage means the higher public discourse intensity. Comparison between Figure 5 above and Figure 6 below shows the similar shape of behavior with some time delay effect on the former figure. The time delay in this case is depended on how long the public discourse will have a net change which been set up in every 2 weeks.

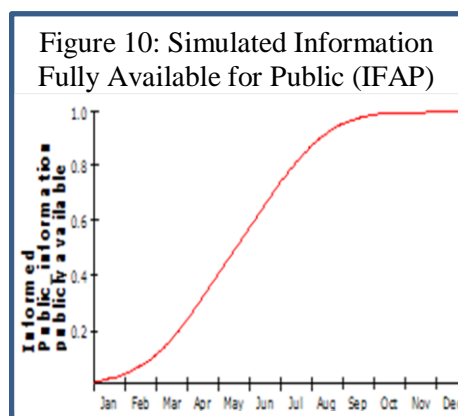
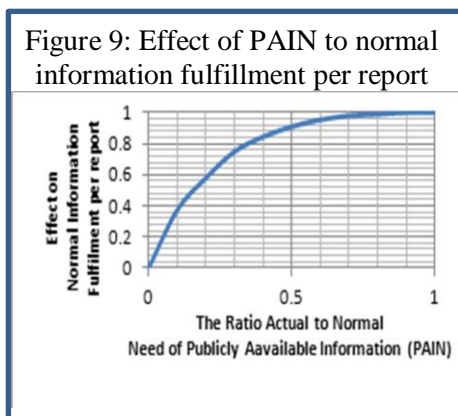
And somehow public discourse will have effect on the issue clarity. The paper' quantification effect of public discourse intensity on issue's clarity can be seen on the Figure 7. It is widely considered that if there are a lot of discussions about an issue, then in the same time the issue must be still unclear. Within such circumstance, the more discourse on public means the less clear the issue which eventually will be perceived differently by the pressure group (R1) and the government (R2).



As it has been mentioned in the former paragraph, public discourse intensity is affected by the net change on its intensity. Nevertheless, the net change of its intensity consists of two changes which are ‘addition to intensity’ and ‘reduction of intensity’, the former is depended on the press coverage and the latter is depended on the actual intensity of public discourse and the reduction fraction. The intensity reduction fraction is the resulted from multiplication of ‘normal reduction’ for a time period and effect of ‘publicly available information need (PAIN)’ on the fraction. Then, such effect is driven by the ratio of ‘normal level need of public information’ from the actual ‘need of information publicly available’. In this case, the effect is supposed to be nonlinear; specifically the more need the lesser effect on the reduction fraction which is can be seen on the Figure 8.

‘PAIN’ is more like a “potential” or the normative need of fully available information for the public. Thus for the initial time, it is set to have value of 0.9. The value level is set to that level for the initial time because of the sense that in the society must already available some degree of shared public information in any case; it is set in this case to the value of 0.1.

On the other hand, in the same time, the ratio of ‘PAIN’ to ‘Normal PAIN’ will also have an effect on the information fulfillment rate on a nonlinear basis, specifically the lesser the ratio; the lesser information will be supplied. The effect of the ratio on the fulfillment rate can be seen on the Figure 9:



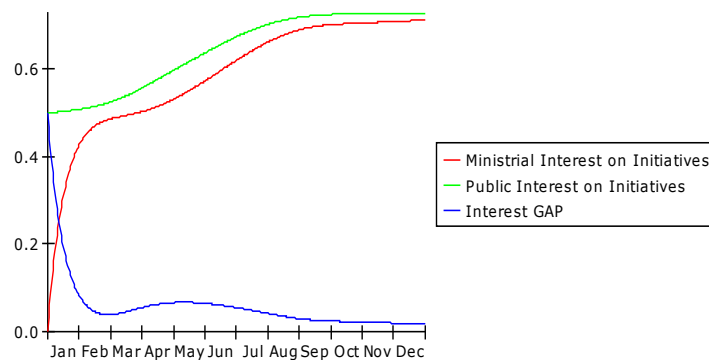
Along the simulation, PAIN will gradually be transformed to Information Fully Available for Public (IFAP). The transformation is hinged on the information fulfillment rate where the higher

information fulfillment rate the lesser the PAIN, and the IFAP will increase until its normative level is reached (R3). The simulation's result is shown on the Figure 10.

Information fulfillment rate has also influence on the public interest on initiatives to cope with the issue. The public interest on initiatives itself is governed by its own net change over the time which is influenced by the rate of information fulfillment adjusted with the available normative potential public interest. Strictly speaking, this net change will transform the available normative potential public interest on the initiatives which is set to 0.5 to the actual public interest which is set to 0.5 initially (apathy).

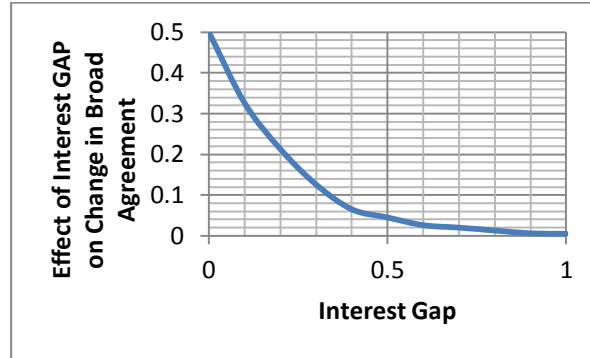
On the other side, the government is assumed to monitor closely the public interest development; however, there will be a probability of delay, since the respond from the government usually is late. In other words, development in public interest on initiative will influence the net change of government's interest to take the initiative. Some other variables that also influence the net change are pressure from the poll and the electability projection for the next round general election. In the short term basis, polls give real pressure to the government than the electability projection which is depended on the government accomplishments during the administration mandate. The dynamic development of government and public interest on initiative is shown on the Figure 11:

**Figure 11: Simulated interest of the government and the public**



As can be seen on above figure, the government tries to follow what the public wants on the issue even though there is still a gap between the interests of the two actors along simulation time. The gap *per se* reflects a bargaining process between governments and public in general thus it will determine accumulation rate of broad agreement sense in community through a nonlinear effect. In this paper as can be seen on the Figure 12, the nonlinear effect is defined as following; the more gaps on interest, the lesser effect on the change in broad agreement.

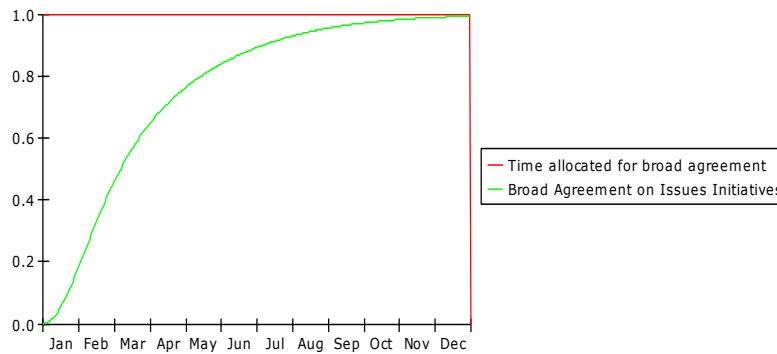
**Figure 12: Effect of interest gap on the broad agreement**



In fact, it will not be easy to reach the extreme interest gap either 0 (zero) or 1 (one), and the gap will never reach the value of 0 (zero); that is because no party always takes an extreme position and has to stand a different 180 degree all the time. Thus for the initial time, it is set the value of the interest gap up to 0.5 for a moderate case.

For initial state, there is no sense of any such broad agreement that might be caused by no social awareness about the issue. The sense of broad agreement is developed by the change on the sense, which is driven by the effect of interest gap between government and the pressure group, the normative potential broad agreement that society can maximum reach which is set to 1 (one), and the allocated time (deadline) for broad agreement to established. Figure 13 shows the simulation result of the first stage of the policy cycle model.

**Figure 13: Simulated broad agreement**



The change rate of the sense will actually transform the normative potential broad agreement into the actual one. Sense of broad agreement will be reached when the level reaches closer to 1 (one). The closer to value of 1 will indicate the confidence in the society for the initiative willingness on the issue and be a signal for government to move on the next step of the policy-making process.

## POLICY ANALYSIS STAGE

Outline of the policy analysis stage can be drawn as in the following Table 4 for the system mapping and Table 5 for the variables are included in the simulation with the initial value, expected value, and the final value after the simulation.

**Table 4: Policy analysis stage system mapping**

The Actors	Resource Strategic	Intermediate Control	Final Result	Final Indicator
The Government: Ministry Steering Committee (MSC) Interdepartmental Task Force (ITF)	MSC: Confidence on the policy analysis result, key policy found, and clarified objective ITF: Number of Submission received and Confidence in policy option	MSC: change in confidence on policy analysis, key policy found, and clarified objective ITF: Submission rate and change in confidence on extracted policy option	White Paper <sup>6</sup>	Policy options
Public, including departmental national/local branch coordination meeting	Submitted opinion on policy	Submission rate	Submitted review or opinion	Number of Submission and Options

**Table 5: Initial, expected, and final value of the policy analysis stage**

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
1	Average Contribution on Policy Option from a Submission	Constant	1	-	-	option/unit
2	Time to Extract	Constant	2	-	-	mo
3	Interdepartmental Interest Friction	Constant	.5	-	-	dmnl
4	Weight on Steering Committee	Constant	.3	-	-	dmnl
5	Supportive External Review Report on Past Policy	Constant	.3	-	-	dmnl
6	Submission time	Constant	.5	-	-	mo
7	Time to revise Credibility	Constant	2	-	-	mo
8	Positive Submission	Stock	0	Max	32	unit
9	Proposed Policy Options	Stock	0	Optimum	~3	option
10	Confidence on Positive Policy Analysis	Stock	0	1	.99	dmnl
11	Potential Confidence Positive Policy Analysis	Stock	1	0	.01	dmnl
12	Credibility Ministerial Steering	Stock	.5	1	.97	dmnl

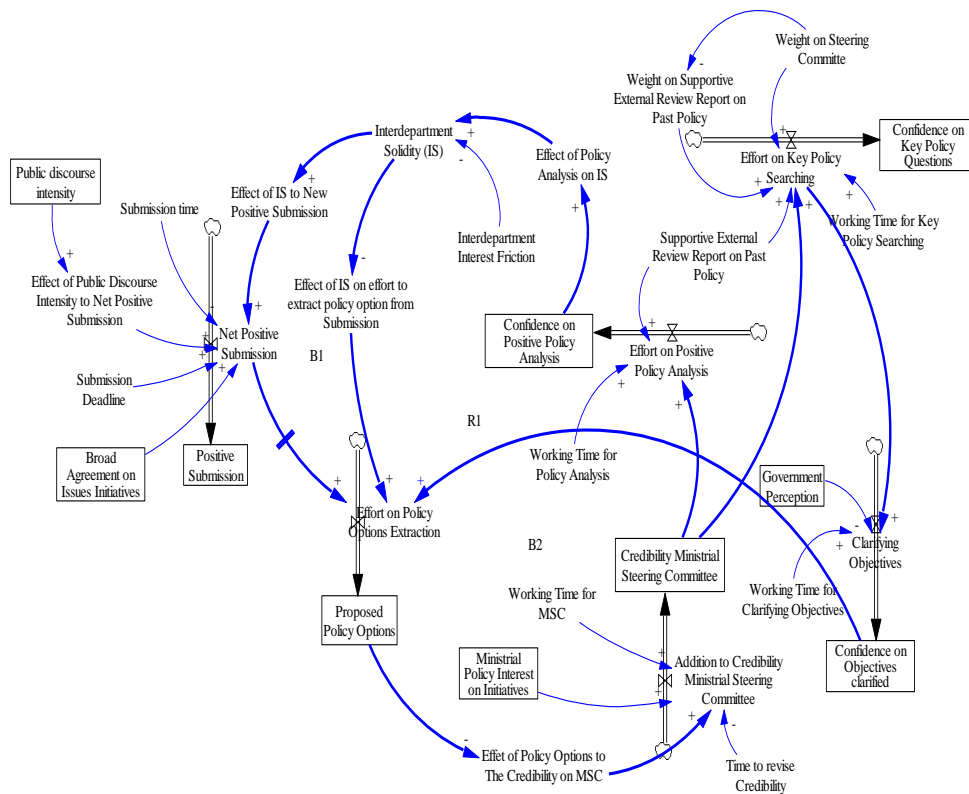
<sup>6</sup> Statement of a government's policy intention in a particular area, traditionally printed on white bond paper. (Bridgman and Davis 2000: 174)

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
	Committee					
13	Potential Credibility Ministerial Steering Committee	Stock	.5	0	.03	dmnl
14	Confidence on Key Policy Questions	Stock	0	1	.99	dmnl
15	Potential Confidence on Key Policy Questions	Stock	1	0	.01	dmnl
16	Objectives clarified	Stock	0	1	.999	dmnl
17	Potential Objectives clarified	Stock	1	0	.001	dmnl

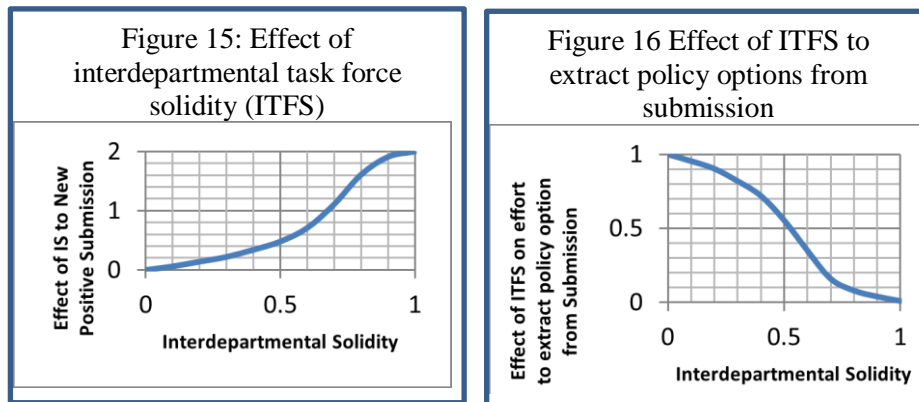
On her book, Edwards has made a slight modification of the concept of the policy cycle model from Bridgman and David. In the modified form, she described the policy analysis phase contains three major activities with some overlap in time, which are collect relevant data and information, clarify objectives and resolve key questions, and develop options and proposals (Edward, 2001., p.4; 24).

System mapping that has been drawn in this stage contains three major loops, one for reinforcing and the others two are balancing. The loops are assumed to begin after the ministerial task force has issued the green paper or discussion paper in which it is indicated the sense of a broad agreement has been reached among stakeholders. The detail system mapping of the current stage can be seen on Figure 14 below:

**Figure 14: The policy analysis stage stock and flow diagram**



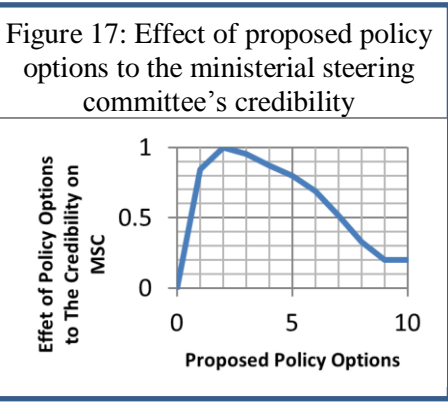
Establishment of a steering committee holds an important role that would affect the success of the others next stages. The credibility of the team is automatically embedded on the committee membership figure and its term of reference (TOR). This means that the more experience in the field of the committee member and the clearer the TOR will have the higher change to have an easy effort to analyze available past relevant policies for the benefit of incoming one. Such facts of the committee somehow also have a good perceived of authority to cope with friction that usually emerge between the others ministerial department involved in the process. The higher ability to deal with the friction means the more solidity from the supporting department. Thus the higher solidity means the more idea, policy review or opinion coming onto the committee table and will give more policy option for the committee. Quantification is taken to reflect the effect of the interdepartmental solidity to the policy review and idea submission that can be seen on Figure 15 below:



However, the credibility of the committee will be affected also by how it chooses the optimal option which is not too much or too less (too much options are chosen means the more ambiguity of purpose). These series of causalities create a balancing loop (B1), as can be seen on the former Figure 14.

Another series of causality which has created reinforcing loop (R1) also can be seen on the former Figure 14. Akin of loop emerges as interdepartmental solidity has another nonlinear effect to another variable, which is an effort on digesting and extracting options from the submitted idea about the policy. The effect is to follow the logic of when the interdepartmental solidity is high then the extraction efforts will less and lesser to produce options with more quality, parsimonious, and robustness. The quantification effect can be seen on Figure 16.

The robustness of extracted options in the simulation has been defined as how many options the committee will propose for the next round stage. The definition sounds like a little shallow in this way. However, the definition comes out from the fact that top executives usually demand only a few options, i.e. two or three options on their table. Thus, the higher number of options proposed by the committee will be surely to have an impact on its credibility. Specifically, the higher number of option proposed will then reduce the credibility since the more options proposed by the committee reflects a high ambiguity on understanding the policy vision of the top executive. The effect quantification of the number of option proposed to the MSC credibility can be seen on Figure 17.

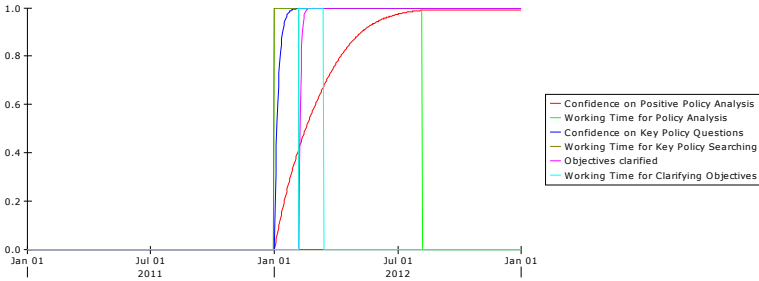


As can be observed on the above figure, the committee will be expected to propose about 2 or 3 options to the top executive which are cabinet meeting in this case. The more options proposed means the lesser credibility of the committee.

Some series of causal have also been indicated in the former Figure 14: The policy analysis stage stock and flow diagram creates the second balancing loop (B2). Along the policy analysis proses there is another process is done by the committee to search the policy's key questions and to clarify the policy objectives as vivid as possible. The clarity of intended policy objective will determine the success of the committee to filter the policy review and idea from public or ministerial local branch through national coordination meeting and other interested party to make a robust policy option proposal (white paper).

The development of committee confidence on the white paper is supported by the confidence on the other activities which are key policy question and policy objective clarification. Graphically, the development of the three confidences on the three variables can be observed on the Figure 18 below:

**Figure 18: Simulated confidence on policy analysis, key question on policy, and clarified the policy objective**



As can be seen on the above figure, it clues the confidence development on the policy analysis report is preceded by the development of the key question and clarified objective of the policy. However, the confidence on policy objective is preceded by the confidence development on the policy's key question.



## CONSULTATION AND DECISION STAGE

Outline of the consultation and decision stage can be drawn as in the following Table 6 for the system mapping and Table 7 for the variables are included in the simulation with the initial value, expected value, and the final value after the simulation.

**Table 6: Consultation and decision stage system mapping**

The Actors	Resource Strategic	Intermediate Control	Final Result	Final Indicator
The Government: Cabinet Meeting (PM)  Departmental Staff (DS)	1. PM: a) Confidence on the Criterion definition and Options Selection, b) Budget  2. DS: a) Capability, b) Detail policy operationalization	PM: a) change in confidence on the Criterion definition and Options Selection b) available budget DS: a) addition to capability b) confidence on policy operationalization	Policy option selected supported with reasonable budget  Policy Operationalization in detail and confidence on the policy operationalization	Consultation to the parliament proceeded  Staff's capability and Policy's detail increment
Law Maker (Legislative Body)	Approval Vote	Supporting and Opposing rate	Parliament Majority	Policy enactment
Pressure Group (Opposition Party)	Opposing vote	Change in opposition standing	Parliament disagreement	Blocked policy

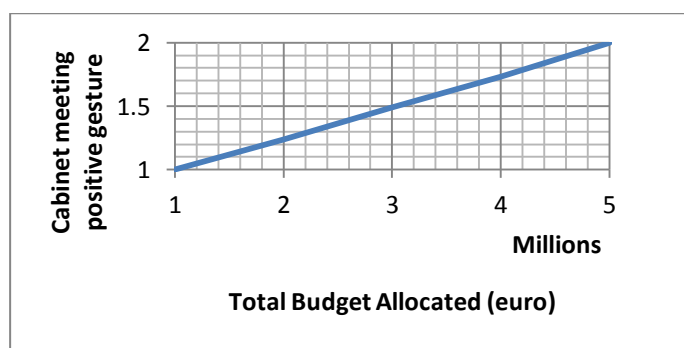
**Table 7: Initial, expected, and final value of the consultation and decision stage  
End of Second Year**

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
1	Potential Contradiction Opposition Party Point of View	Stock	.5	.5	.593	dmnl
2	Contradiction Opposition Party Point of View	Stock	.5	.5	.406	dmnl
3	Time to review point of view	Constant	5	-	-	mo
4	Potential Confidence on Criterion Selection	Stock	1	0	.028	dmnl
5	Confidence on Criterion Selection	Stock	0	1	.972	dmnl
6	Working time intensity to Find Criterion	Constant	10	-	-	da
7	Potential Confidence on Policy Decision	Stock	1	0	.001	dmnl
8	Confidence on Policy Decision	Stock	0	1	.999	dmnl
9	Working time intensity to decide Policy	Constant	15	-	-	da

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
10	Normal Against meeting	Constant	2	-	-	per mo
11	Against Lobby Effectiveness	Constant	.1	-	-	dmnl
12	Supportive Legislative member	Stock	50	100	94.99	Person
13	Against Legislative member	Stock	50	0	5.01	person
14	Legislative member	Constant	100	-	-	person
15	Supportive Lobby Effectiveness	Constant	.05	-	-	dmnl
16	Potential in Detail Policy Operational	Stock	1	0	.01	dmnl
17	Detail Policy Operational	Stock	0	1	.99	dmnl
18	Working time intensity to operationalize policy	Constant	2	-	-	da
19	Potential Department Staff Capability	Stock	.9	0	.06	dmnl
20	Department Staff Capability	Stock	.1	1	.94	dmnl
21	Induction time intensity	Constant	10	-	-	da

In the next step, the MSC has to bring what they have done in the former stage of policy making i.e. policy analysis and can be said MSC has three important roles in the current stage. First, its credibility is still an important part to boost the cabinet meeting positive gesture with its high confidence on the white paper. It means that the more MSC credibility will make the cabinet meeting in a higher positive gesture. However, the condition of the economic situation, i.e. the fiscal condition will give more pressure in the cabinet meeting. The tighter the fiscal environment will lead to the lesser allocated total budget. Somehow, total budget will affect the cabinet meeting gesture, specifically the lesser the budget the lower positive gesture in cabinet meeting. The effect has been quantified in this paper's simulation as can be observed on the following Figure 19:

**Figure 19: Effect of fiscal environment to cabinet meeting gesture**

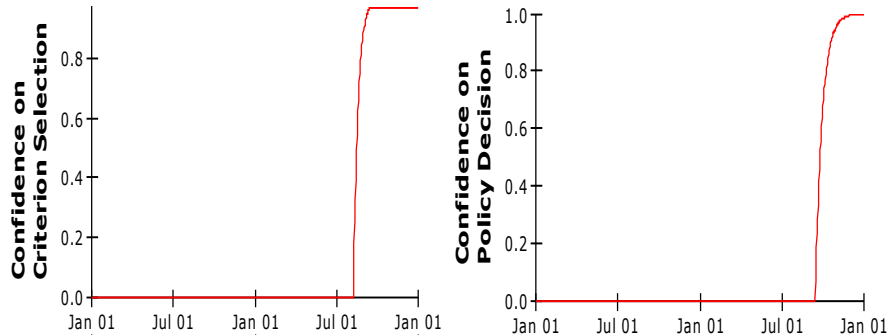


The total budget *per se* is calculated from the expected delivery of policy implementation and average budget spent for per percentage (1%) delivery, further will be discussed in the next section.

Next, the cabinet meeting must decide the criterion to select the best policy proposal. To make the best choice of policy this means to choose with high confidence and must be preceded with high confidence on the criterion selection. In other words, the more confidence on the criterion selection will lead to the more confidence in the policy decision. Thus, it will ease the

departmental staff in making the details of the policy decision. The confidence development along the simulation can be seen on the Figure 20a, b:

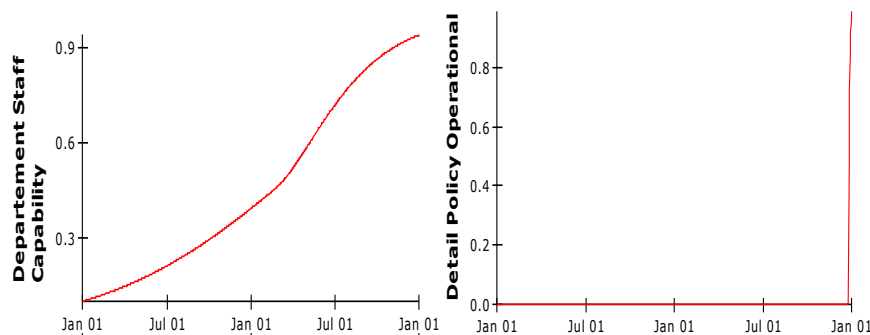
**Figure 20a: Criterion selection    Figure 20b: Policy decision**



On two above figures, after the certain level of confidence is reached then the policy decision can be taken and at a given time the confidence on it will be accumulated to reach the maximum level which is 1 (one) in order to be ensued to the other step i.e. policy operationalization.

The credibility of MSC, on the other side has a second important role to be akin of ‘bridge’ from the top-level government to the lower staffs in the ministerial department as the implementation team members who are standing in the front line to make the policy implementation is successful. The higher credibility of the MSC will make the probability of success to spread the policy’s vision to the ‘front liner’ higher through an induction process, such as training, seminar, national or local coordination meeting etc. Bruijn, in his book called such role as “boundary spanners” who are the actor operating on the boundary between the managerial and the professional system (Bruin, 2002, p.66).

**Figure 21a: Team Capability    Figure 21b: Policy in detail**



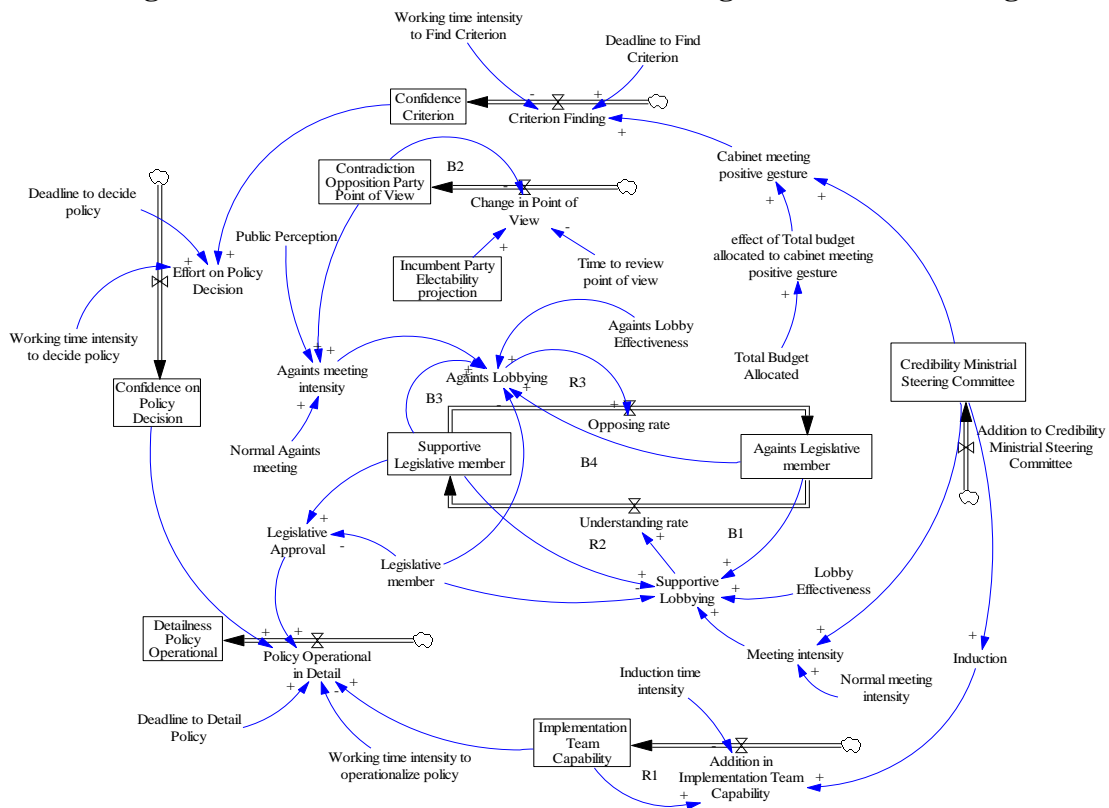
Specifically, the more MSC credibility will lead to the more induction that they can make and the more addition to the capability of the implementation team. However, this capability addition is depending on the current capability that the staffs have already (.1), its normative potential (.9), and the induction time, specifically the more actual capability will lead to the more ‘addition to the capability’ and the more capability of the staff will be (R1). Eventually, the actual

capability of implementation team will affect the confidence on the policy operationalization which is the more capable the team, the higher confidence on policy operationalization will be. The development of implementation team capability and policy operationalization in detail along the simulation can be seen on the Figure 21a, b.

As can be observed on the above figure, at the beginning it is set that the staff capability to implement such policy is not 0 (zero). It follows the sense that it does not make sense if staff capability is zero, since they have a minimum requirement to have their job. At the end of the current stage's simulation, the value of team's capability and policy operationalization successively are .94 and .99 as it has been shown on the former Table 7.

The third another important role of the MSC as the boundary spanners is to deal with the law makers or legislative body through lobbying activities. The higher MSC's credibility will make them able to organize gathering, meeting, seminar, workshop, etc. for idea and vision sharing. These efforts eventually can increase understanding from the legislative body members to support the policy implementation. It means that the more understanding rate, the more legislative member supports the policy (R2), meanwhile the more understanding rate will reduce the legislative member who against the policy implementation, and the lesser the number of opposing member, the lesser lobby to support the policy (B1). The complete series of causal relationship can be seen on the Figure 22.

**Figure 22: The consultation and decision stage stock and flow diagram**



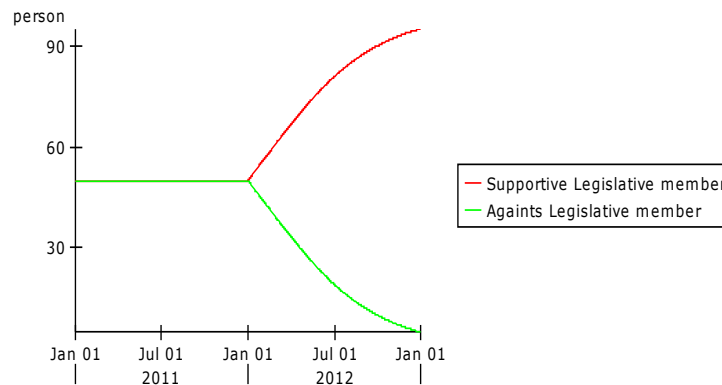
Another case, the opposition party as the real pressure group that stands to challenge the incumbent party's majority, will keep observing their opponent electability projection. The

higher electability projection of the incumbent party (IPE) is perceived by the opposition party as a threat to their electability thus they will make their challenge harder the policy initiative by making tougher their contradiction perspective. In other words, if the opposition perceived that the successful implementation of the proposed policy will give the benefit to the incumbent party's electability in the next round of the general election then they are eagerly to block the policy as possible as they can. Specifically, the more IPE, the more change to the contradiction perspective, the tougher opposition standing. On the other hand, the more opposing stand; the lesser addition to it since practically there is no opposing views forever (B2).

As perception on policy can go very differently between the incumbent and opposition party if the opposing party perceived that the policy will only give its benefit to the incumbent party, they begin to lobby to against the policy implementation.

The more lobby to against the policy implementation, the more opposing rate which has implications to the lesser supportive legislative member (B3) and the more legislative members who oppose the policy (R3). The development behavior of the legislative members who are supportive or against the policy implementation can be seen on the Figure 23:

**Figure 23: Simulated legislative's member on the policy initiative**



As can be seen on Figure 23, it has been set for initial simulation that there is no majority figure in the legislative body (50-50, with the total legislative member is 100 person) concerning to the confidence of the policy until the MSC is established. MSC starts to make lobbies as the preparation for the proposed policy in order to reach a majority figure in the parliament which is at least 51% is in favor to support the policy. Thus, if the 'favor' majority cannot be reached then for sure government cannot implement the policy.

## IMPLEMENTATION STAGE

Outline of the implementation stage can be drawn as in the following Table 8 for the system mapping and Table 9 for the variables are included in the simulation with the initial value, expected value, and the final value after the simulation.

**Table 8: Implementation stage system mapping**

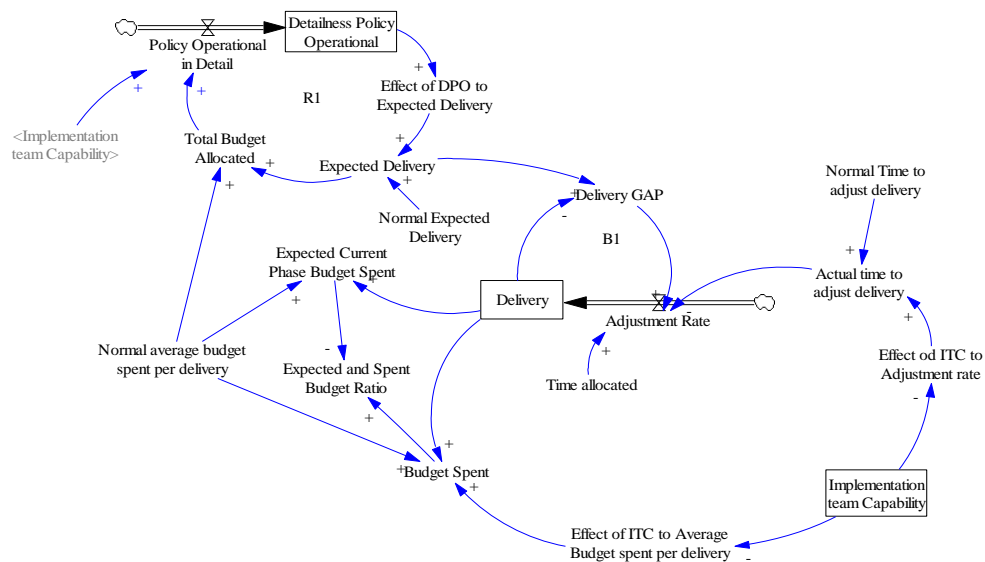
The Actors	Resource Strategic	Intermediate Control	Final Result	Final Indicator
Government: Implementation Team (included local branch of department)	Delivery of policy	Delivery adjustment rate	Policy delivered 100%	Delivery GAP . Expected and Budget Spent Ratio

**Table 9: Initial, expected, and final value of the implementation stage**

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
1	Delivery	Stock	0	100	99.66	%
2	Normal Time to adjust delivery	Constant	4	-	-	mo
3	Department Staff Capability	Stock	.1	1	.9928	dmnl
4	Normal average budget spent per 1% delivery	Constant	5,000,000	-	-	euro
5	Detail Policy Operational	Stock	0	1	1	dmnl
6	Delivery GAP	Auxiliary	100 (at the implementation starting date)	0	.34	%
7	Budget Spent Ratio	Auxiliary	1.14 (at the implementation starting date)	1	1	dmnl

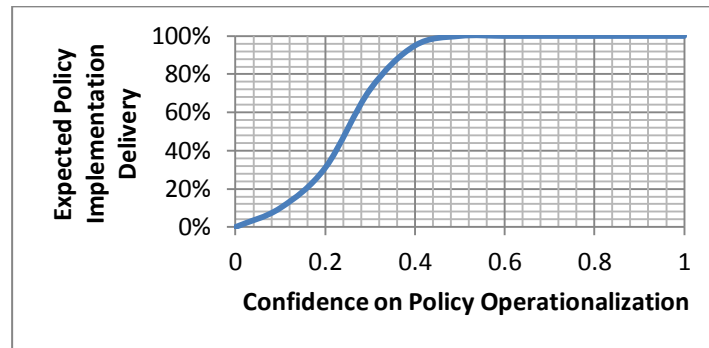
The fourth step in the policy cycle model requires firm confidence from the former stage. As can be seen on the Figure 24 below, the implementation team’s capability in doing the required job in this stage and the detail of policy operationalization are dominating the process.

**Figure 24: Policy implementation stocks and flows diagram**



However, two loops are introduced in this stage; first, the confidence on the detail policy information somehow has an effect to ‘expected delivery’ which is the more confidence on the policy operationalization leads to the more expected delivery. Quantification on this effect can be seen on the Figure 25:

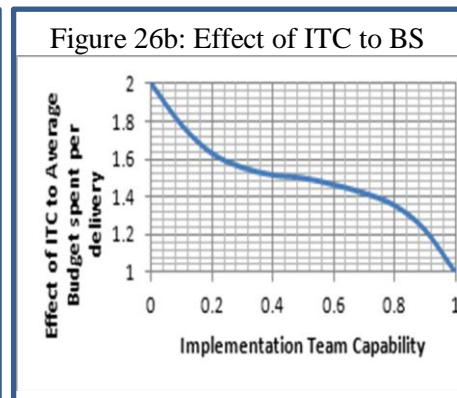
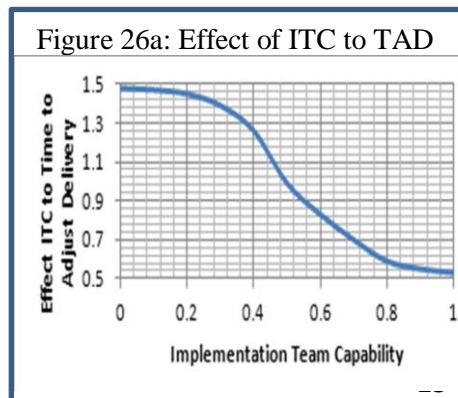
**Figure 25: Effect of policy operationalization on the expected policy delivery**



On the above figure, there can be seen a high expectation on policy implementation. The quantification follows the sense of an organization frequently likes to put their expectation as high as possible regardless the resource it has is able to support or no. In this concern, the sense implies the government still puts the high expectation to have 100% policy implementation delivery even though the confidence on policy operationalization is not perfect on the highest level which is 1 (one). In the paper simulation, the government expectation is set on the level of 1 (one) if the level of confidence on policy operationalization is equal or more than 0.5. Below that level of confidence, the government expectation will decrease nonlinearly to 0% if there is no confidence at all on the policy operationalization which is in theory might be happened.

The expected delivery will then determine how much the budget will be allocated precisely. Thus, the more expectation on the policy deliveries means the higher budget will be allocated. And through some connecting variables as can be seen on former Figure 24, the total budget has implications on the effort to detail the policy operationalization to boost its confidence. These series of causality create reinforcing loop (R1) in this stage.

On the other side, Implementation Team Capability (ITC) has been assumed to have two effects; first on the time to adjust delivery (TAD) and second on the budget spent (BS) which are quantified as the following Figure 26a,b:

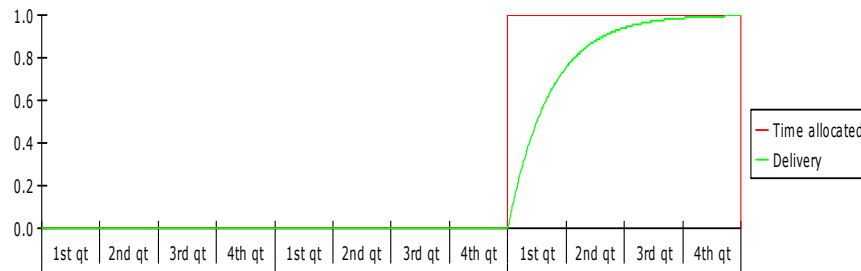


As can be observed on above two graphs, the effect of ITC on the variable of time to adjust the delivery and average budget spent per 1% deliveries are in nonlinear pattern with a negative slope. The difference is on its elasticity, specifically the effect of ITC on Figure 26a is inelastic and to the other Figure 26b the effect is elastic.

The second loop is created from series of causality as follows; the more gaps on the policy implementation delivery will lead to force the implementation team to boost their effort to minimize the gap and then the faster adjustment rate implies the more delivery is delivered. The more delivered delivery will reduce the delivery gap (B1). Thus, the behavior of the delivery is expected to be a goal seeking.

Given the time to implement the policy a year, the behavior delivery of the policy implementation is seen on the Figure 27 below:

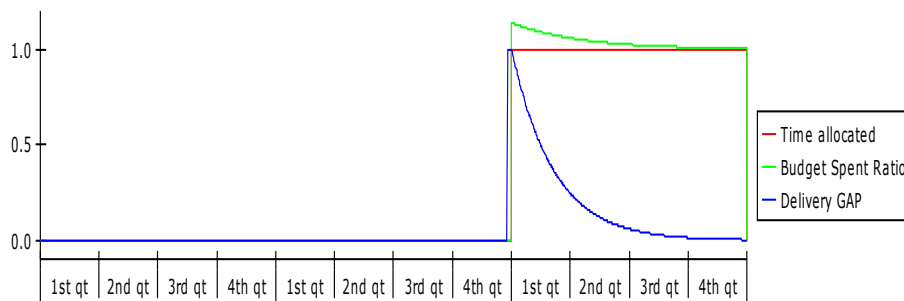
**Figure 27: Simulated policy delivery within the given time schedule**



It seems on the above figure that the simulation result supports the expectation on the delivery behavior which is ‘goal seeking’. It tells that on the first quarter the delivery grows very fast as the delivery gap is very wide in that time and then along with the delivery gap reduction, the delivery increment becomes lesser and lesser.

There are two variables, which are considered as the positive indicator for the policy implementation in the paper that is ‘delivery gap’ and ratio of expected budget and budget spent. The delivery gap is expected to be 0 (zero) while the ratio is expected to reach 1 (one) at the end of the implementation time. The behaviors of the two indicators are shown on the Figure 28:

**Figure 28: Simulated expected budget to budget spent ratio**





As can be seen on the Figure 28, the expectations on the two indicators more or less are reached. In the end of simulation for this stage, it gives the value of 1(one) for the ratio and of 0.34% for the delivery gap. These two values also can be seen on the former Table 9.

## EVALUATION STAGE

Outline of the evaluation stage can be drawn as in the following Table 10 for the system mapping and Table 11 for the variables are included in the simulation with the initial value, expected value, and the final value after the simulation.

**Table 10: Evaluation stage system mapping**

The Actors	Resource Strategic	Intermediate Control	Final Result	Final Indicator
Government Ministerial related to the policy Non-Government Organization Academicians Legislative body	Review on the Implemented Policy	Facts finding	Report	Public perception

The last stage of the policy cycle finally is reached. According to Edwards, the evaluation policy stage can lead to the policy revision, and then she said that the objective of the stage is to assess the extent to which the policy objectives originally set were actually met and met efficiently (Edwards, 2001, p. 6-7). In the paper has been introduced the delivery gap and the budget spent and expected ratio as the final indicators. Successively, those indicators accommodate ‘the policy objective originally set were actually met’ is meant 100% delivered and ‘met efficiently’ is meant delivered with exact expected budget (the ratio budget spent to expected ratio is 1 (one)).

**Table 11: Initial, expected, and final value of the evaluation stage**

No	Variable	Type	Initial Value	Expected Value	Final Value	Unit
1	Potential Positive Policy Evaluation Report	Stock	1	0	.001	dmnl
2	Positive Policy Evaluation Report	Stock	0	1	.999	dmnl
3	Public Perception	Auxiliary	0	1	.87	dmnl

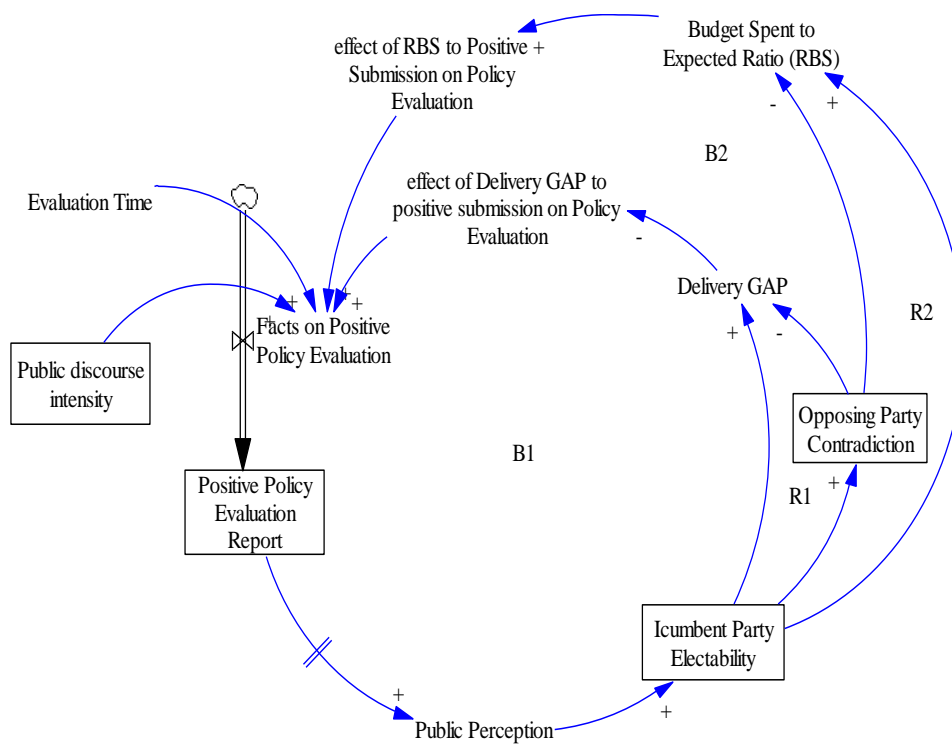
About the evaluation stage, Edwards has given important remarks in her book, which is the evaluation stage is not necessarily a neutral, technical exercise but can be as politically charged as any of the other policy development phases. To understand the evaluation stage, it is therefore important to consider also who initiates the evaluation, why, and how it is organized (Edwards, 2001, p. 7).

However, all policy reviews that have been posted either the negative or positive review on the policy cycle from the initial stage to the final stage will be perceived by the policy's object itself which is the public. Specifically, as can be seen on Figure 29: System Mapping for Evaluation Stage, the more positive outcome that public can take the benefit from the policy implementation will for sure lead the higher positive public perception.

On the Figure 29, public perceived the positive with some time lags, but eventually public will fully perceive what have been reported positively from the policy implementation after it has felt the policy's outcome.

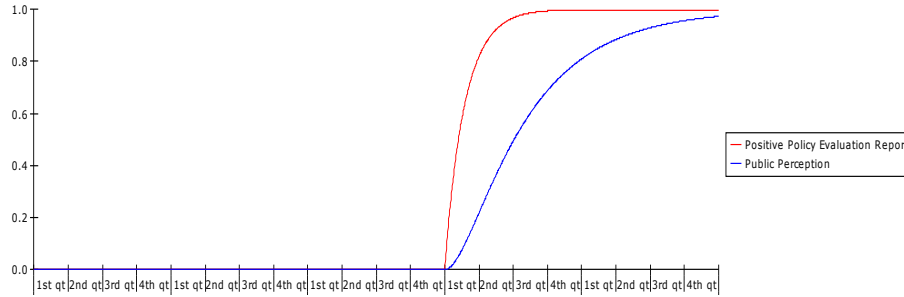
The more positive public perception makes the better incumbent party electability projection (IPE) in the next round general election. With involving causality series from the former stage i.e. Figure 22; the more IPE means the higher expected delivery and the higher delivery gap.

**Figure 29: Evaluation stage's stocks and flows diagram**

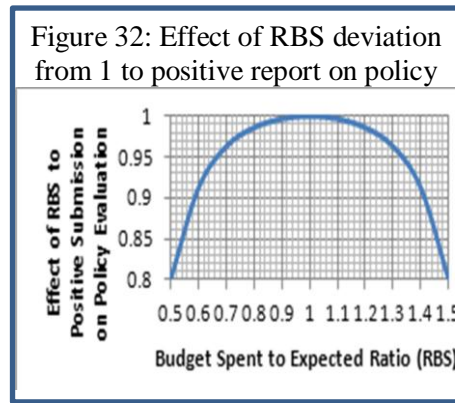
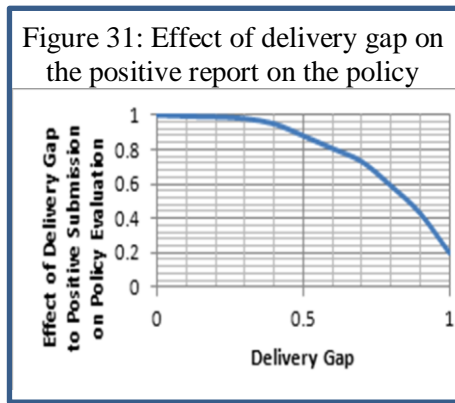


Then, the lesser delivery gap leads to the higher effect on the facts finding (positive review) of the policy and the last will make the positive policy evaluation report is higher to the maximum normative evaluation i.e. 1 (one). These series of causality will form balancing loop (B1). The simulation result concerning to the public's perception can be seen on the following Figure 30:

**Figure 30: Simulated positive policy valuation report and the public perception**



The quantification effect of the delivery gap to the submission of positive facts finding can be seen on the Figure 31 below:



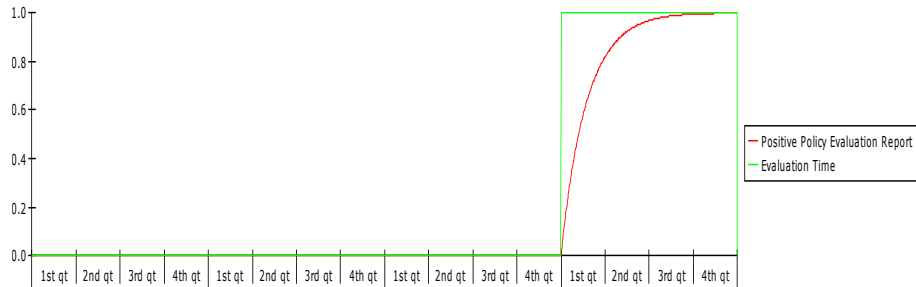
As it can be observed on above figure, the more delivery gap will lead to the lesser positive submission on the policy review. However, it also can be seen that the lowest effect is 0.2 when the delivery gap is 1 or 100%. The sense behind such quantification is that even though there are 100% gap of delivery which the policy is failed to be implemented; there will be still a positive report concerning to the ‘lesson learned’ at least.

On the other hand, the better IPE will mean the closer budget spent to expected ratio to 1 (one) then the closer this ratio to 1 (one) leads to the much more positive evaluation reports through the quantification of its effect to the submission of positive facts finding, which can be seen on the Figure 32. These series of causality form second reinforcing loop (R2).

Figure 32 shows the effect of deviation from the expected RBS which is 1. Such quantification tells that the more deviation from 1, the lesser positive submission reviews on the policy implementation.

The other regard from the Figure 29 is that the higher IPE will be perceived ‘bad news’ by the opposing party, that is why the higher IPE will make the opposition party put more contradiction (challenge) to the government. Also through a long series of causality from the former system mapping stage i.e. from Figure 1; 14; 22; and 24, the higher challenge from the opposition party will lead to the higher delivery gap. These series will create the first reinforcing loop in the system mapping (R1) and the higher deviation of budget spent to expected ratio from 1 (one) and the series create the second balancing loop (B2). For the result of the simulation of the current stage can be seen on the following Figure 33:

**Figure 33: Simulated positive report on the policy**



Policy implementation’ dynamics can be seen on above Figure 33 where it is reflected by the delivery delivered time to time beginning from the start of policy implementation. The delivery of the policy is grown increasingly as the delivery gap is still wide. The growth is starting to decrease after the first quarter is reached and then keep on decreasing until it reaches the desired delivery which is 100% delivery (goal seeking phenomenon).

## CONCLUSION AND IMPLICATION FOR FURTHER RESEARCH

This paper has presented stage by stage of the policy cycle model as the basis framework to explore and understand complexities in the public policy-making process. The policy cycle model has been observed on some cases from Australia written by Edward (Edward, 2001) and a case from Indonesia written by Pramusinto (Pramusinto, 2006).

From the first stage, complexities arise when among the government and the pressure groups have a different perception, a different point of view on an issue. Each actor has different agendas with a variety background of interest, mainly for political power reason. The perception gap is then publicized by the press to create public opinion since indeed public has the need of information to be fulfilled. This is creating another pressure to either government (issue related ministerial office) or pressure groups to align the perception until the sense of broad agreement is reached.

The second stage of the policy cycle model has other complexities that can be understood. Complexities now come from the new actors who come into the stage system. When the ministerial steering committee is established with some members coming from different background and experiences, the committee *per se* will have its credibility. The credibility of the committee will have some important roles to put the committee on a strong command and determination to make the interdepartmental team works with enthusiast. Credibility of the committee and the solid interdepartmental team will be very helpful to attract submission of ideas. On the other way, the committee should be able to find the key policy questions and clarify the findings to the top level of government, i.e. the prime minister and his cabinet since the clear objective is needed to filter the idea from the submission.

The main complexity in the third stage is coming from the vested interest of the actors in the house of legislative; either incumbent party or opposition party. Each side will as much as possible to support policy that could raise their own prospect to win the next round general election to have a parliament majority. However, ministerial steering committee still has

important roles in this concern. The committee could be a boundary spanner to alter the departmental staff capability to work on the policy. On the other hand, the committee should be able to convince and to make the cabinet meeting within a tight fiscal condition choose a solid and robust selection on the available policy options. Law makers lobbying is become another role that the committee should do to secure the legislative approval, failed to accomplish this role will block all effort to implement the policy. It implies that the committee should consider the interest of the opposition party in the parliament.

The fourth and fifth cycle discussed about implementation and evaluation. The implementation stage starts from how detail the policy operationalization is, the more detail could make the implementer team's work is easier. The implementation success indicators are 'the delivery gap' and 'the budget spending to the expected budget ratio' that depend also on the capability of the implementer team. In evaluation stage, perception from public on the different between what are the institutional reports on their review on the policy implementation and what is public receive and perceive from the policy implementation will determine the next general election winner among the incumbent party or the opposition party. The complexities that have been explored in the paper is hoped to be able to enlarge a widely open discussion further in the field of public policy field from the point of view system dynamics and the paper also support the use of system dynamics for learning tools to build pitfall awareness in the policy making for public among the public policy makers.

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