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Watery Interests Into Spatial Planning In Semarang

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Abstract- The result of climate change and land subsidence, several cities and communities located in on the north coast of Java faces flooding on a daily basis. The biggest impact of climate change is that bigger peak values in runoff water from higher lands are measured, tidal movements from the Java Sea effects the land more because of sea level rise and the lower surface level. Problems accrue during raining season. Many measurements have already been taken to protect the land from flooding in Indonesia. For example, dikes are built, pumps are installed and retentions areas are appointed. In the Netherlands the "water assessment" is introduced, which ensures that water management objectives are taken into considerations in relevant spatial planning procedures/ decisions of the central government, province and municipalities. The main focus for this research was to improve the legislation on spatial planning and the procedures at locale scale, which are related in the field of water management. The relevant legislation and procedures are used to derive what the opportunities and limitations are, to implement a kind of water assessment. The final results are two basic concepts which could be used in the context of the Banger Pilot Polder Project in East-Semarang (Jawa Tengah, Indonesia). Nevertheless, the legislation and regulation are mostly similar everywhere in Indonesia. This article and the results can also give an indication of the possibilities for other municipalities and water managers.

Keys Words: *Water Management, Planning Procedure, Legislation*

1. Introduction

Due to climate changes and land degradations Semarang faces daily with floodings caused by sea tides and heavy rainfall. In 2001 the Indonesian and Dutch governments signed a four party Memorandum of Understanding to cooperate in the field of solving water, environment and urban problematics. An area in the eastern part of Semarang is chosen because the water related issues are representative for many densely populated areas in Indonesia.

The involvement of Water board "van Schieland en de Krimpenerwaard'', hereinafter HHSK, has resulted in the first water board of Indonesia which will be operational in the end of 2016. The name of this Indonesian water board is "Badan Pengola Polder Schieland" (BPP SIMA). The members which forms the water board BPP SIMA are partly officials from the local government of Semarang, professors from universities, business owners and inhabitants which are living in the polder area.

In the Netherlands water boards are also an authorized government, however water boards do not regulate the spatial planning. A water board is responsible for the maintenance and management of the water level in ditches, rivers and channels. The water assessment is introduced as a formal decision-making document in the Netherlands in 2001. Spatial plans could no longer continue before a water assessment was performed. The main purpose of the water assessment is to uncover water problems in early stages instead of solving water problems after spatial plans has been completed. To introduce

the water assessment it should be clear how the Indonesian water and spatial planning policies are regulated.

2. Definition And Purposes

The defined problem definition of this research is that it is not clear what the structure is of the spatial planning in Indonesia and who is responsible for what. The Banger Polder Project is a pilot project which could be useful for the further development of sustainable water management in Indonesia. As a result of the analysis and description of the Indonesian spatial planning HHSK is curious if it is possible to implement a kind of form of a water assessment, which is used by water boards in the Netherlands.

A water assessment would only be successful when the policies on spatial planning and water management are adjusted to each other. The main objective of this research is to analysis the Indonesian spatial planning and in specially related to water management. The following question was derived from the objective:

- Which spatial planning legislation are in force in the Netherlands, and what are the responsibilities of the governmental authorities?
- How are Indonesian governmental authorities structured, and which department are responsible for the implementation of regulations in the field of spatial planning?
- Which aspects are important to implement a water assessment and how is the water assessment embedded in the spatial planning in the Netherlands?
- What is the utility and necessity of the water assessment and in which government level could it be embedded?

The purpose of the research will be to investigate how the different levels of governments are structured and how the policies between the governments is regulated. The result will be an advice report to Semarang water management, which will mention the answers to the questions as subscribed in the problem definition.

3. Research Methodology

This research is based on literature, inventory, interview, validation and analysis. The information has been obtained by a previous study. To make sure that the obtained information is correctly interpreted and to get additional data, interviews became part of the research as well. The most important procudure of the spatial planning are also obtained by interviews.

Figure 1 shows the structure which is has been the guidance how this research is conducted. There are 5 phases distinguishable and which hereinafter will be described. Phase 0 is separated from the other phases because it concerned only the formation of the internship and research determination.

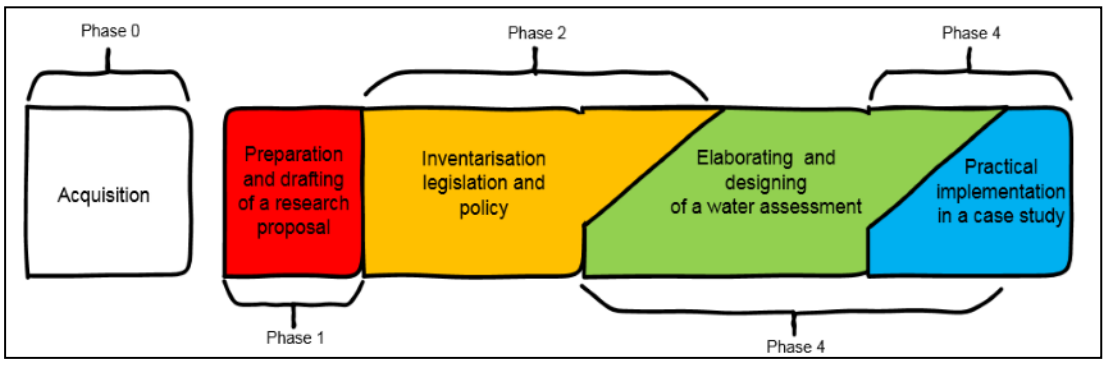


Figure 1. Research Phase

The information concerning about Dutch policies of spatial planning is obtained by a desktop study, were web pages from the government and researcher's experiences are used. The obtained information is analysed and interpreted by the researchers. For the purpose of this research and due to previous experience with Dutch policies concerning spatial planning this will be considered reliable.

Concerns to the Indonesian spatial planning, the obtained information from web pages and literature were verified by interviews. Because the language barrier a translator was needed to take of the interviews. The information is after each interview discussed with the translator, to make sure be obtained information is as complete as possible.

4. Structure Spatial Planning In Netherlands

This paragragh will describe the four government layers, which are involved in terms of water management in the Netherlands. Figure 2 shows a flowchart with the structure of the four government layers.

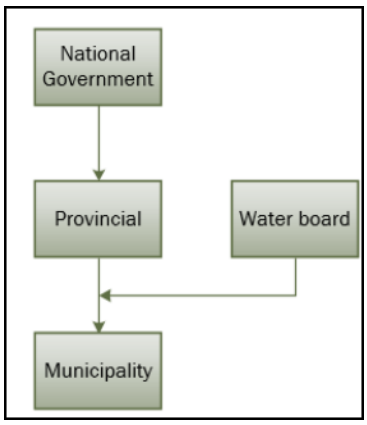


Figure 2 The four government layer in Dutch

A water board is as an intuition only responsible for the regional water systems in their management area. The management area are not restricted to provincial borders, but are mostly allocated to the catchment area of a river system. A province is the authorized organisation above the water board. Actually, there is also a fifth government: the European Union. The commitments and objectives made by the European Union are taken over by the national government and will be implemented into the national vision.

a. Central Government

The central government determine the long term visions based on the national interest and the commitments and objectives made by the European Union. The law spatial regulation (IenM M. v., Wet ruimtelijke ordening, 2015) is one of the regulations during planning decisions in the Netherlands. This law focused on spatial requirements like live, work, recreation, mobility, water and nature. The purpose of this regulations is to divide the earlier mention requirement in a coherent approach during spatial plans.

The law spatial regulation forces every province and municipality to describe their spatial planning policies and developments for the future. This means each government (accept the water boards) have to draft the following documents: Structural vision, Zoning plan, Beheersverordening (Management regulation) and Inpassings plan (Integration plan)

The water law (IenM M. v., Waterwet, 2015) is a merging of eight different regulations the water law. This law regulates the management of surface and ground

water. The merging means more cohesion between the water policies and spatial planning. According to the water law, there are only two formal authorized water managers: the central government, manager of the larger river systems and the water boards, manager of the regional water systems. Also, the water boards are responsible of the purification of waste water.

Province and municipalities have hydrological tasks, although they are not a formal manger of water systems like the central government or water board. Province are responsible for the permitting of withdrawal of groundwater as well as water infiltrations, when it concerns a high flow rate. Municipalities, are as described in the water law, responsible precipitation and groundwater duty of care. This means the municipalities is forced to manage and construct required water facilities if necessary. The water legislation must ensure for a better cohesion between spatial planning and water management.

b. Provincial

This provincial layer of government has his own structural vision, the provincial structural vision. This vision uses the central governments structural vision as advice document, although they are not forced to reproduce every assigned purpose per zone from it. As same as regulated for central governments.

Another policy report from this layer is the so called water management plan, the plan describes for every zone of land suited to the province it concerns what goals it wants to achieve. Subjects of matter can be safety, ecology, groundwater extraction zones, water quality, and etcetera. Roughly it describes the qualities that are already present and has to be sustained as well as were opportunities to achieve higher quality standards have been noticed.

The provincial government can force municipality to change their vision if it is not conform the vision of the overlying provincial government. The task and responsibilities of water boards are legally restricted. Water boards are responsible for the water management of regional water systems including and purification of urban waste water. Also, water boars have to manage the hydraulic structures like dams and weirs, as groundwater in rural areas.

Before any building works nearby water related constructions can be carried out, the constructor need a permission form the concerning water board to execute the building works. If the initiator is not the water manager, a water permit has to be handed in for modification of primary water related constructions, for secondary related water constructions (water constructions that only have a function for the regional system) the procedure from the keur from the authorized water board is in force (Rijksoverheid, 2015). The water board will check, if the building works does not have negative consequences for the water related constructions. Example of building works which are not allowed without the permission or license are: Chancing a waterway, Building bridges, Construction cables or conduits.

c. Municipality

The municipality layer in government is the institute that supports the closest to the people in urban areas (IenM M. v., Wet ruimtelijke ordening, 2015). Their task is to transform visions and regulations from different more central layers of government into more detailed and suited policies, spatial designs and regulations. Just like other government institutions. Municipality is legally forced by the law spatial regulation to have a structural vision zoning plan that covers every plot inside their border.

Municipality is responsible (IenM M. v., Zorgplichten, 2015) for three components in water management as written in article 3 of the Water law: Collecting and transport of urban water (Article 3.4), Collecting and discharging or retention of the rain water (Article 3.5), To prevent from negative effect on groundwater, often pollution (Article 3.6).

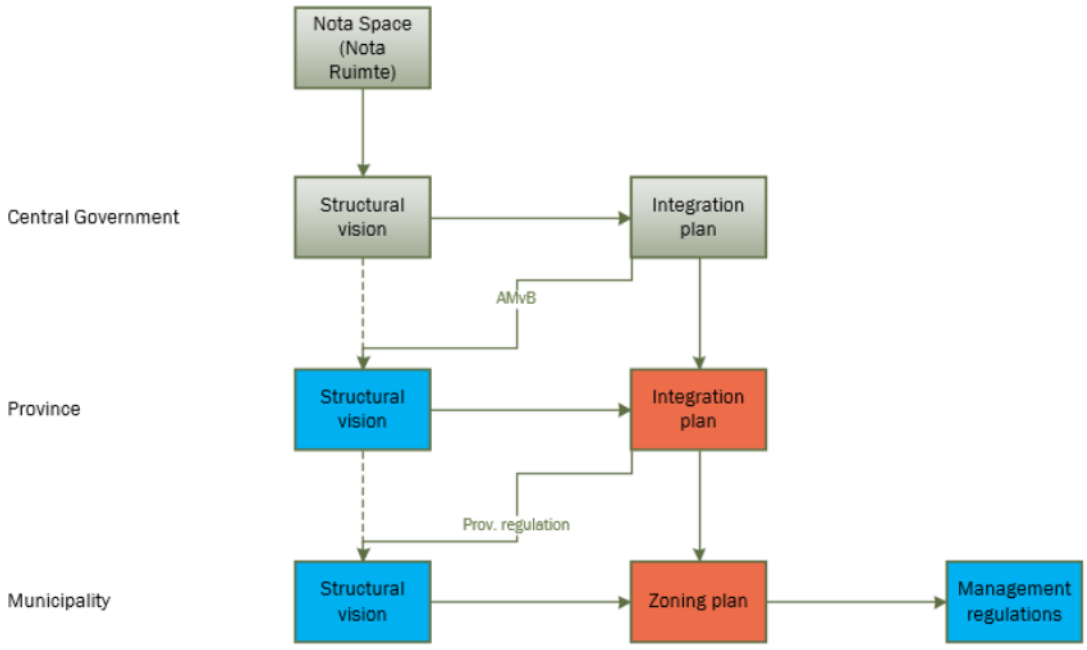
5. Water Assessment Process Netherlands

This paragraph will describe the water assessment (process). First the process will be explained, and how the water assessment is embedded in the Dutch spatial planning. Afterwards the phases of the water assessment will be mentioned.

Figure 3 shows a flowchart of the Dutch spatial planning and summarizes the previous paragraphs. The spatial planning is written and regulated by the authorized governments. Water boards are also an authorized government, however water boards do not regulate the spatial planning. To make sure that the water interests from water boards are included in spatial plans, the water assessment is introduced. Without permission of the water boards, spatial plans could not be conducted.

This paragragh described the Dutch spatial planning including the legislation water, which forces to use the water assessment for intended spatial or development plans. A water section is an obligated part of a structural vision, zoning plan or other spatial plan. This section describes the water management for the concerning plan side.

For governments (province and municipality) is it obligated to apply for a water assessment when spatial plans (like integrations or zonal plans) has to be renewed. The policies which concerning spatial planning does not mention that a water assessment is required for a structural vision. However, the NWB mentioned (IenM M. v., Wateroverlast en ruimtelijke ordening, 2015) that there are several agreements which forces to use the water assessment during the designing and drafting of a structural vision, when water related spatial developments are part of a structural vision. Only with well supported reasons is possible to deviate from this agreement. It is essential that the water manager and the developer consult in an early stage, so the water interests of both sides can be adapted.



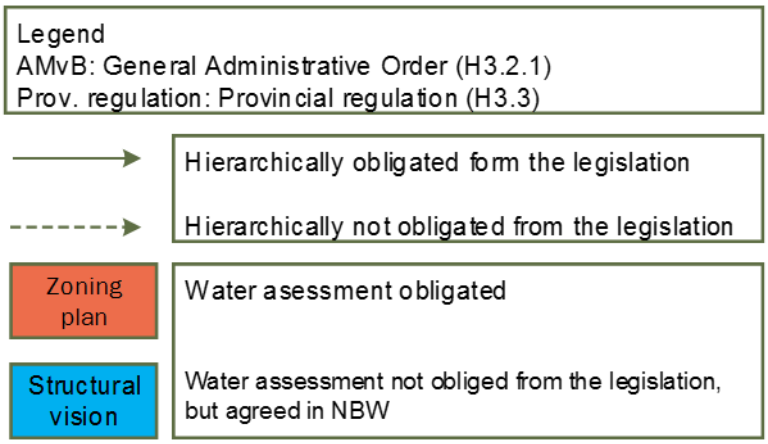


Figure 3. Hierarchy of Water Assessment Process

The water assessment applies for all water related aspects in spatial design or decisions and concerns all of the national and regional rivers and surface water, as well as ground water. Water related aspects are for example: water safety, water flooding, sewage system, (natural) water resources, public health, land subsidence, ground water, surface and ground water quality, desiccation and aquatic nature (IenM M. v., Handreiking watertoets 2, 2003).

6. Structure Spatial Planning In Indonesia

This paragraph will describe the policies and procedures for spatial planning of the Indonesian Government. The Indonesian government is hierarchical divided into three government layers, as figure 4 shows. The regency and city have the same hierarchical position, this is because cities are more (densely) populated and regencies.

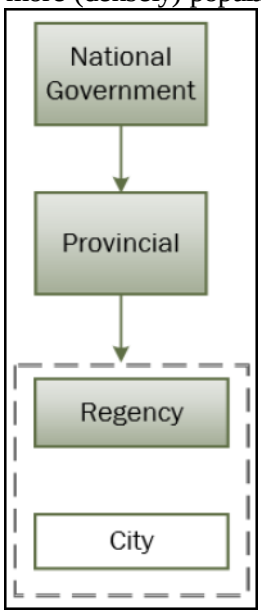


Figure 4. Hierarchy of Spatial Planning in Indonesia

Generally, each government below the central government will use National spatial plan (*Rencana Tata Ruang Wilayah*, RTRW) (I3S, RTRW Nasional, 2015), as a guidance for their own RTRW. This document contains the strategy and objectives from the concerning government. The central government decide the national interests and due to the hierarchical structure these interests will be mentioned in the RTRW of the lower government layers.

The spatial planning of Indonesia is based on two acts (Rukmana, 2015), as described below: Legislation National spatial planning, Legislation National development system, Legislation Water resources. The third act, Water resources (I3S, sumber-daya-air, 2015), describes the regulation of the catchment areas. A department of the Ministry of Public Works is responsible of the drafting of the required documents as mentioned in the concerning law.

a. Central Government

According to the law National Spatial Planning 26/2007, the RTRW is being drafted on a scale of 1:1000.000 (Wardhono, 2015), and covers a period of 20 years. The RTRW Island is draft on a scale of 1:500.000. This law regulates all the aspects of spatial planning.

The RTRW is used to control and for checking the functions on the national scale, for the integration and coordination of developments between the regions and provinces, for area and functions of investments, to structure the national strategic area and for the spatial planning of the province, district and city (I3S, tujuan-dan-kebijakan, 2015). The RTRW is the guidance during the preparation of the Long term development plan (*Rencana Pembangunan Jangka Panjang, RPJP)*.

b. Legislation National Development System

The RPJP is a Long term development plan (Rukmana, 2015) which describes the development of Indonesia and covered a period of 20 years. The mail goal of this document is to describe the national long term vision, which is import for the further developments of Indonesia. Each RPJP is a continuation and renewal of earlier drawn potential developments for Indonesia. This law focus on developments of Indonesia.

Yearly, an action plan has to be draft to describe the annual developments (*Rencana Kerja Pemerintah Daerah*, RKDP).The RKDP contains an evaluation of the previous RKDP, finances, assumed annual targets and planned activities. This action plan will be drafted by each government.

The contents of the RPJP describe how to increase the position of the Indonesia in the international community. BAPPENAS and BAPPEDA are responsible for the drafting of the RPJP, RPJM and RKDP.

c. Legislation Water Resources

The directorate General Water Resources, part of the ministry of Public Works is responsible for the catchment areas of the larger rivers. The strategy and future plans are described in the Pola and Masterplan. Both documents are drafted to cover a period of 20 years, the as the RTRW and RPJP.

The Pola (Ratih, 2015) is based on economical and political aspects, as well climate change. This document described the policies of the national, provincial, district and municipality/city. Idem like the RPJM, there is also a guidebook to draft a Pola called: "Procedures for the preparation of water resources management plans" (*Tata Cara Penyusunan Repncana Pengelolaan Sumber Daya Air*). The Pola will form the basis of the Masterplan. The Masterplan (Ratih, 2015) is more specific and gives detailed

information about the catchment area, management and future plans. The future plans are provided with detailed information, until the designing phase. However, more elaboration about the final design is required. Beside that a province have to write the early mentioned documents that the province is also responsible.

d. Regency And City

As written before, a regency and city have the same hierarchical position. Both authorized organisations have to draft several (spatial) plans. The RTRW, RDTR and RTBL are respectively ordered in primary, secondary and tertiary plans see in figure 5. (Sutiyani, 2015).

The RDTR is much further detailed then the RTRW, the scales of the plan is 1:5000. The RDTR covers also the entire city. The RDTR will be drafted by the DTKP (Situyani, 2015). The aspects which the RTBL covered are related to building and environment specifications, general design, investment/ finance plan, provision/ control plan and the guidelines for constructing. The local authority is responsible for the drafting of the RTBL (Riyanto & Irwansyah, 2015).

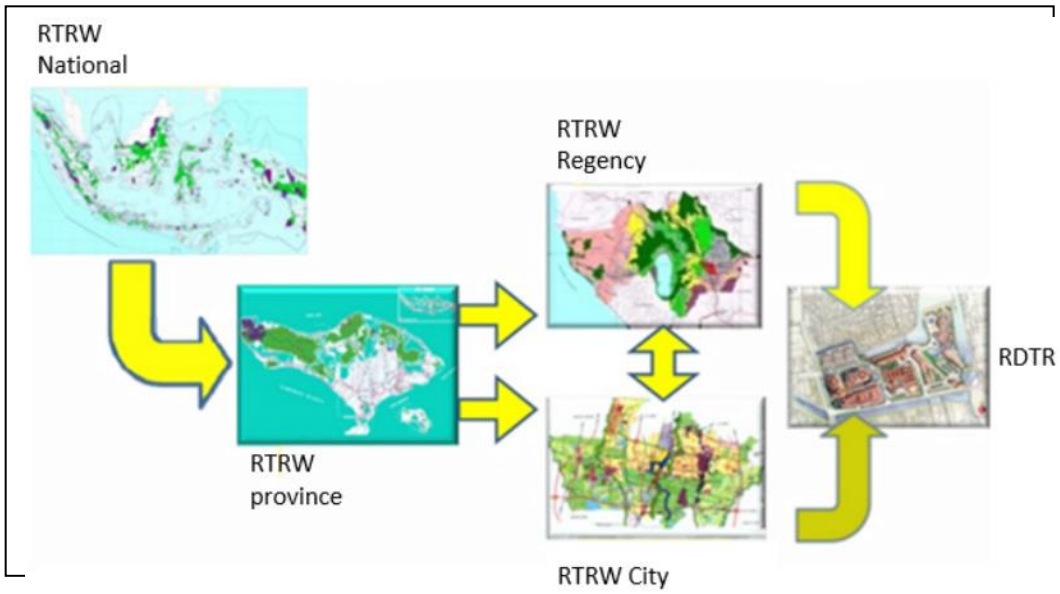


Figure 5. Stages of Spatial Planning in Indonesia

7. Propose to Water Assessment Process in Indonesia

The paragraph describes the unity of the water assessment, how this process could be applied and in which form. The water assessment is a process which is developed to implement water interested in spatial plans or developments plans part of IMB procedure. Figure 6 describe IMB proses which water assessment could help to maintain the water systems (in step 5 to 10).

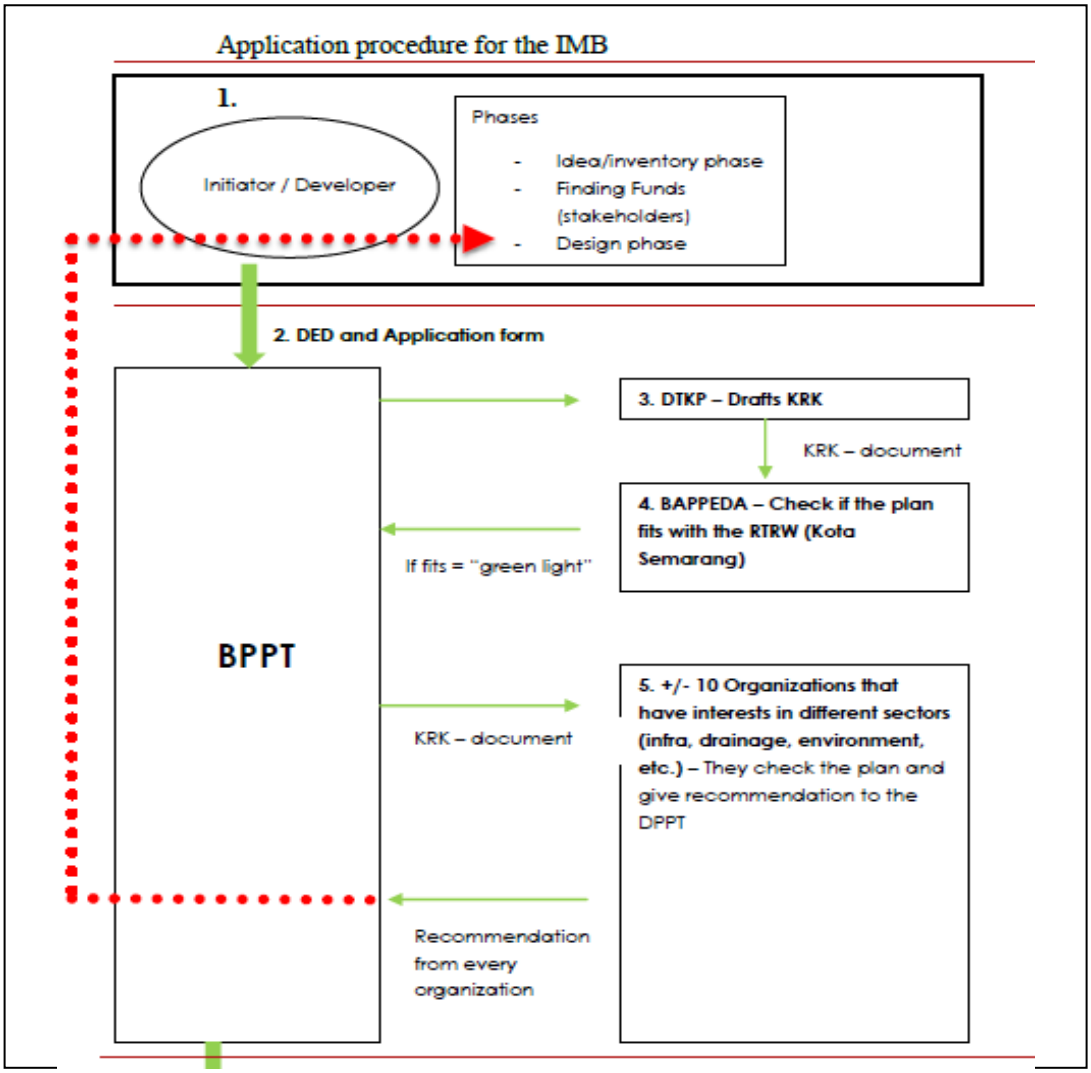


Figure 6. IMB Procedure Where Water Assessment in Step 5 Till 10.

A potential water assessment could be in the form of a legger and checklist. Each spatial plan, development or other activities (like building a house) which could possibly have negative consequents for the water systems can be check firstly, before a definitive design will be approved and permits are granted.

The legger visualises all the ditches and water ways, include all the water related constructions like bridges, culverts, weirs and pumps, of a curtained area. The checklist will mention several objectives, but could be supplemented in the future when the Banger Polder will be further developed. Design water assessment continue with the legger and checklist.

Derived of the responsibilities of water board, there are three water interests which are important: Water safety; Water systems; Sanitation en hygiene that are included in Environment assessment see figure 7.

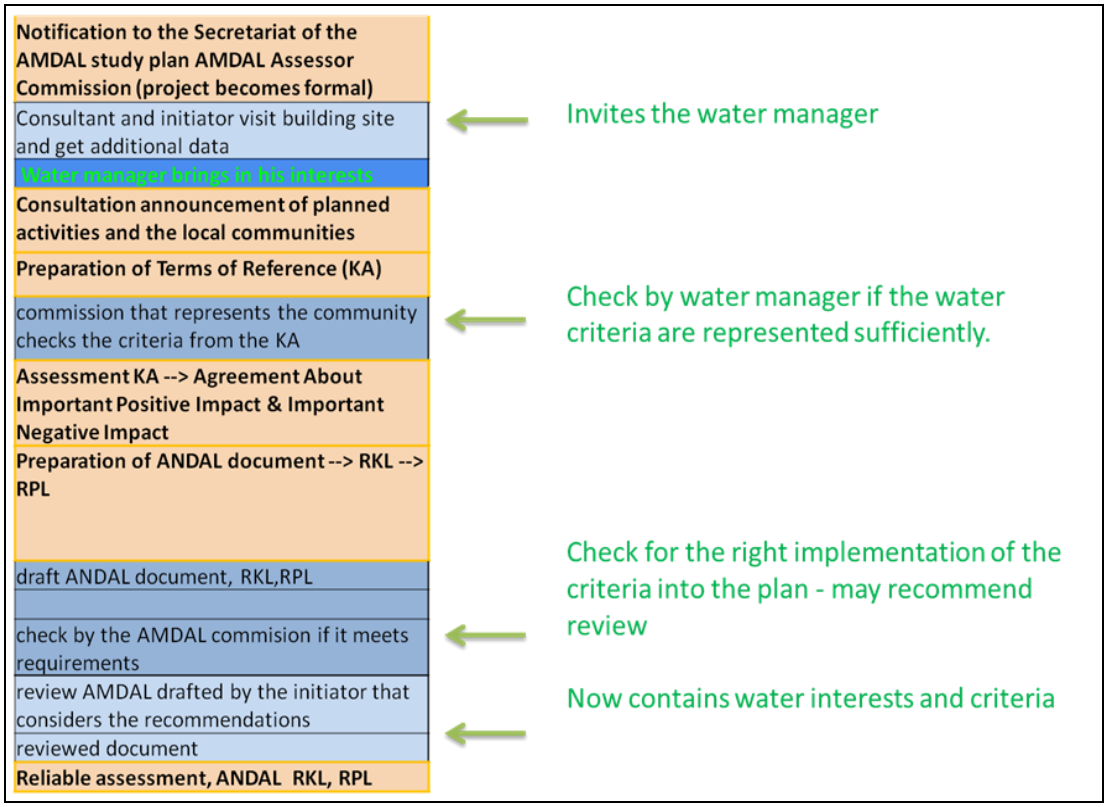


Figure 7. Water Assessment Involved in Environment Assessment Process

8. Conclusions and Recommendation

Base on the study, It can conclude that:

- Water manager can bring in his knowledge about the area
- Water manager can bring his criteria and interests in an early stage, when details of the design have not been determent yet.
- The water interests of Water management should be more eloborated before the water assessment could be implemented
- The communication between de AMDAL Commission and the water manager has to be reliable and frequent.
- In the future the regulation may be implemented in the AMDAL procedure of Indonesia.

Acknowledgments

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