IJPD The Indonesian Journal of Planning and Development

P-ISSN: 2087-9733 E-ISSN: 2442-983X

Journal Homepage: http://ejournal2.undip.ac.id/index.php/ijpd

Volume 7 No 1, February 2022, 1-13
http://dx.doi.org/10.14710/ijpd.7.1.1-13

OPEN ACCESS

Assessing The Role of Water-Related Regulations and Actors in The Operation of PDAM (Local Drinking Water Company)

Submitted: 4 February 2022
Accepted: 15 February 2022
Available Online: 28 February 2022

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Abstract

Water management in Indonesia has not been addressing water problems and challenges needed in achieving SDG 6, especially in the provision of sustainable drinking water services. Based on the condition, this research starts with a hypothesis that current performance of PDAM (*Perusahaan Daerah Air Minum* – Local Drinking Water Companies) – that have significant roles in drinking water provision in Indonesia regions – is influenced by water-related regulations and actors. With the aim to analyse the influence of regulations and actors related to the operation of PDAM, and to formulate recommendations that helps better PDAM performance in providing sustainable drinking water services, this study analyses regulations underlying PDAM governance and performance. Using content analysis on regulations, reports, and documents related to PDAM, this research has figured out that the operation of PDAM has not been supported with effective regulations, which is exacerbated by poor implementation and low enforcement of the regulations at the operational level by determined parties: local governments and PDAM. Therefore, to improve PDAM performance, this study recommends the Government of Indonesia to integrate and simplify PDAM-related regulations to avoid overlapping regulations and regulatory obesity and to review, analyse, state and disseminate clearly the status of existing PDAM-related regulations in the hierarchy of repealed and ineffective regulations to avoid confusion, stagnation and wrong decision making in the operation of PDAM. This study also finds out that further research on internal and external factors of water utilities (environment, biology, water and human resources, public policy, public services etc.) is necessary for sustainable provision of drinking water services and water security purposes and to ensure that the use or the implementation of those factors be clearly regulated.

Keywords: decentralization; governance; PDAM; performance; regulations; SPAM; water-related actors

1. Introduction

Water actors from global to local level firstly need to have a good understanding of water governance – ideas on 'who' does 'what', 'why' and 'how' in providing sustainable water services, with considerations on internal and external factors/conditions to carry out those ideas successfully. However, due to its multilevel and involving various actors with responsibilities distributed based on the actors' levels – national, regional and local, the implementation of water governance is challenging and complicated (Di Vaio et al., 2021). In practice, Tortajada (2010a) found that many countries – in terms of water governance and management – tried to better their water institutions and policies, but the results were not as expected, in particular, most of water institutions in developing countries did not perform and their settings were fragmented, creating "overlapping and/or conflicting decision making" (p. 300) settings. The reasons for this 'failure' are ranging from lack of planning, resources, and capacities owned by the institutions, to lack of viable policy instruments and awareness to innovate and the maintenance of convenient but inefficient status quo in particular the provision of public water services (Tortajada, 2010b).

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How to Cite:
Fransiska, F. (2022). Assessing the role of water-related regulations and actors in the operation of PDAM. *The Indonesian Journal of Planning and Development*, *7*(1), 1-13. doi:10.14710/ijpd.7.1.1-13.

In its RPJMN (*Rencana Pembangunan Jangka Menengah Nasional* – National Mid-term Development Plan) 2020-2024, the Government of Indonesia states that challenges in providing access to proper and safe drinking water that cover the population needs include the weak governance and institutional implementation, and the low commitment and capacity of local governments and PDAM (*Perusahaan Daerah Air Minum* – Local Drinking Water Companies) as the main organizers of SPAM (*Sistem Penyediaan Air Minum* – Drinking Water Supply System). The proof of the challenges – as stated in RPJMN 2020-2024 – are the access to piped drinking water until 2018 only reached 20.14% and approximately only 6.8% of households get the water that meets the criteria of safe drinking water in accordance with the SDG 6. Moreover, at urban level, Mulyana & Prasojo (2020) pointed that "the level of interaction between actors and the policy domain in the urban water governance network is not well connected and is fragmented" (p. 215) resulting in challenges in urban water management are not only increasing water demand, decreasing water supply, and lacking access to water but also exacerbated by the failure of water-related actors in implementing urban water governance.

"The complexity within urban water governance in Indonesia is high, which poses significant challenges related to key institutional dynamics and in operationalizing on-ground actions" (Farrelly et al., 2019).There are various regulations and actors related to water governance in Indonesia ranging from national to local level, with urban water actors in Indonesia are mostly government institutions. Particularly, actors that have a direct and crucial role in the provision of drinking water services at the operational level in Indonesia regions are PDAM. The operation of PDAM has been through multiple changes in Indonesia's government setting – Indonesia is currently decentralized. With their experience going through diverse government settings, PDAM can help achieve a holistic water management approach in Indonesia and can be the sole institutions responsible for all forms of drinking water supply (both piped and non-piped water) as well as the development of water resources within the watershed in its area (Hadipuro et al., 2016). Therefore, how institutional factors influence urban water governance in Indonesia can be seen through the operation and performance of PDAM.

The results of performance assessment of 387 PDAM of book year 2019 show that in average, PDAM technical and administrative service coverage are 30.66% and 22.91% consecutively; water loss rate reaches 32.67% and idle capacity is of 58.83m³/second; while by applying a relatively low tariff, only 37.47% PDAM have achieved full cost recovery (FCR), to be able to develop their business (Directorate of Water Supply Development, 2020). Using mostly quantitative indicators, the assessment results do not clearly indicate the causes of PDAM performance which are crucial for bettering not only PDAM operation but also Indonesia's water governance as a whole system. Therefore, with an understanding on the government setting of Indonesia and the historical background and recent performance of PDAM, this research would like to assess whether water-related regulations and actors are the causes of PDAM current performance and to propose recommendations needed for PDAM to provide sustainable drinking water services for all. Focusing on current water-related regulations and actors that have impacted the operation of PDAM, this research comes with a hypothesis that current performance of PDAM is caused by water-related regulations and actors.

2. Understanding water-related regulations and actors as water governance components

Jiménez et al. (2020) introduce water governance as "a combination of functions, performed with certain attributes, to achieve one or more desired outcomes, all shaped by the values and aspirations of individuals and organizations" (p. 16). Moreover, according to Jiménez et al. (2020), "Core governance functions are the key processes, in various forms and to varying extents and quality, for the organised development and management of water resources and services" (p. 6) and "Water governance attributes describe how the governance functions are performed" (p. 10), while Pahl-Wostl (2015) explains the governance attributes as "a particular set of properties" (p. 45) of effective governance that include legitimacy, representativeness, leadership, and comprehensiveness. The attributes are also recognized as principles of water governance that depict ideal conditions governance actors should strive in carrying out their functions to achieve determined outcomes. In this case, water governance attributes/principles can be misunderstood as goals or objectives of water management if the ultimate goals and objectives are not clearly determined. Therefore, functions that generate attributes are the preconditions in achieving ultimate water goals.

Water governance that works should embody values and aspirations needed to realize and maintain equity and equality for the whole stakeholders, from decision makers to users – the whole society; and efficiency and sustainability in the utilization of all resources, including the water resources. Concerning the water governance concept of Jiménez et al. (2020), assessment on water governance can be done through three components: institutions and stakeholders; governance principles; and performance (Jacobson et al., 2013). It is clear that the functions Jiménez et al., (2020) of actors and institutions Jacobson et al. (2013), are the input and the determinants of water governance system and performance (see Figure 1). To be effective, a water governance entails a mutual commitment of all related stakeholders, not only government, but also civil society at any levels, including the private sector, despite no definite model of effective governance that is compatible for all, especially in relation to the particularities of each local water area (Rogers & Hall, 2003).

"Administrative decentralization can be very effective if successfully implemented along with financial and technical decentralization. Any such process, if it is to be effective, will require a building up

of the local capacity. Otherwise, there can only be an extension of bad governance, with the expected poor outcomes" (Tortajada, 2010a). Moreover, Di Vaio et al. (2021) put pressure on how "the effectiveness of water governance depends on institutional factors, like territorial reforms or policy complementarities across sectors, levels of corruption and the willingness and preparedness of local institutions" (p. 8). Institutional factors – as argued by Romano & Akhmouch (2019) – are "external to the water sector" (p. 4) but "highly influence urban water governance" (p. 4). In the context of Indonesia – which is decentralized, focusing on water-related regulations and actors in analysing the governance of PDAM is expected to find the root cause of current PDAM performance and urban water challenges in Indonesia.

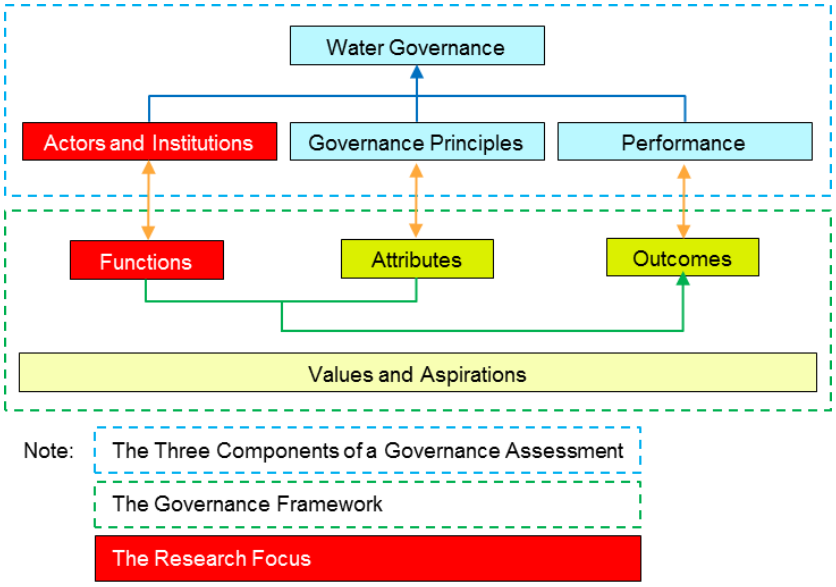

Figure 1. Assessment on the Components of Water Governance
(Adaptation of the Three Components of a Governance Assessment by Jacobson et al. (2013, p. 8) and the Governance Framework by Jimenez et al. (2020, p. 15))

3. Research Method

According to Jacobson et al., (2013), institutions are "the 'rules of the game' that determine how water is governed" (p. 9) and institutions are categorized into formal and informal, while the stakeholders are the actors who "respond to institutions" (p. 11). In the context of Indonesia, where regulations and government actors play critical roles in urban drinking water provision, to assess water governance functions means to assess water-related regulations (formal institutions) and government actors who implement the regulations. Using the Governance Framework by Jiménez et al. (2020) and the three components of a governance assessment by Jacobson et al. (2013) as can be seen in Figure 1, this research assesses regulations and actors influencing PDAM operation as local water utilities in Indonesia.

This research uses secondary data which is SPAM- and PDAM-related regulations collected from open databases of particular ministries and government institutions. The data is collected through document review and is processed using content analysis. The analysis on the regulations is based on Law Number 12 of 2011 on the Establishment of Legislation that sets the regulatory hierarchy. Furthermore, content analysis is done on the statutory framework especially to the preamble of each regulation that contains a brief description of the main ideas that are considered and the reasons for the formation of the regulation. This step leads to a chart of PDAM-related regulations that helps decide which content of the regulations need to be further analysed.

3.1 Review of the History of PDAM

As registered in Perpamsi (*Persatuan Perusahaan Air Minum Seluruh Indonesia* - Association of Indonesian Drinking Water Companies), there are 401 PDAM spread over 34 provinces in Indonesia but their services have not covered all the regions of 416 regencies and 98 cities (Directorate of Water Supply Development, 2020). Those PDAM were not established at the same time. However, the background of existing PDAM as summarized by The Ministry of Public Works and Public Housing of the Republic (2015) in *"Beberapa Catatan Sejarah Air Minum Indonesia 1800 – 2005"* shows that:

- The concept of water utilities was introduced by the Dutch East Indies Government and adopted by the Government of Indonesia at the beginning of Indonesia's independence (1945-1968).
- After Indonesia's independence and during the New Order (1945-1998), the Government of Indonesia tried to change its administration system from centralized to decentralized, including in the provision of urban drinking water services through PDAM. To establish a PDAM, the central government firstly developed the drinking water infrastructure and prepared the human resources for its management, to be

further handed over to a local government. The establishment of PDAM was funded with the state budget that was sourced from loans and grants.

- During and after the Reformation Era (1998-2005), the Government of Indonesia established Law Number 22 of 1999 on Local Government. The Law stipulated that local governments were determined to have a greater role in developing their regions and a PDAM was owned by and a part of a local government. The Government of Indonesia also established Law Number 7 of 2004 on Water Resources and Government Regulation Number 16 of 2005 on the Development of Drinking Water Supply System as water-related regulations for the era of decentralization.

Overall, following the water utilities concept, PDAM are meant to serve areas such as cities and districts regardless of whether the government arrangement is centralized or decentralized. Therefore, the operation of PDAM cannot escape the influence of changes in government policies and arrangements.

3.2 The Hierarchy of PDAM-Related Regulations and Actors

The Law Number 12 of 2011 on the Establishment of Legislation regulates the hierarchy of legal force of laws and regulations in Indonesia from the highest to the lowest which are: (1) The 1945 Constitution of the Republic of Indonesia as the legal basis of legislation; (2) Decree of the People's Consultative Assembly; (3) Laws and Government Regulations in Lieu of Laws; (4) Government Regulation; (5) Presidential Regulation; (6) Provincial Regulation; and (7) Regency/ Municipal Regulation. Based on the Law Number 12 of 2011, the hierarchy of regulations related to PDAM operation with the focus on Laws and Government Regulations is as depicted in Table 1.

Table 1: the Hierarchy of PDAM-Related Regulations

Type of Regulations	Regulation Description
National Level	
The Constitution	The 1945 Constitution of the Republic of Indonesia and its Amendments
Law	• Number 11 of 1974 on Irrigation • Number 23 of 2014 on Local Government and its Amendments
Government Regulation	• Number 121 of 2015 on Water Resources Management • Number 122 of 2015 on Drinking Water Supply System • Number 54 of 2017 on Local-Owned Enterprise
Presidential Regulation	Presidential regulations as implementing regulations of laws and government regulations related to water management in Indonesia and as the legal basis for the regulation implementation in local level
Ministerial Regulation	Ministerial regulations as guidelines for implementing water management, covering technical, financial, health, environmental, and administration aspects
Local Level	
Provincial Level	In the form of provincial and gubernatorial regulations, particularly those relate to the utilization and management of water resources across administrative boundaries
Municipal/ Regency Level	In the form of municipal/ regency and mayor/ regent regulations, especially for regulating LDWC's organization and capital/ investment structures

Those PDAM-related regulations also stipulate actors related to PDAM operation. Following the types of actors in urban water governance by Mulyana & Prasojo (2020), types of PDAM-related actors are non-executive government actors; executive government actors; and non-government actors at national, provincial, and municipal/regency levels. Due to various conditions at the local level and that local level regulations and actors are based on the national level regulations, this research focuses on PDAM-related regulations at national level and the actors of all levels regulated in the regulations.

4. Findings

4.1. An Overview of PDAM Operation

A PDAM is a BUMD (*Badan Usaha Milik Daerah* – Local-Owned Enterprise) that may generate revenue from its business as a provider of drinking water services for customers in an area of a regency and/or a municipality. Moreover, a PDAM operation is influenced by all levels of government actors, from national to local levels, through regulations, funds and permits. Therefore, in its operation, PDAM have to fulfil both the expectation of governments and the needs of customers, the flow of influence of government actors on the operation of PDAM depicted in Figure 2.

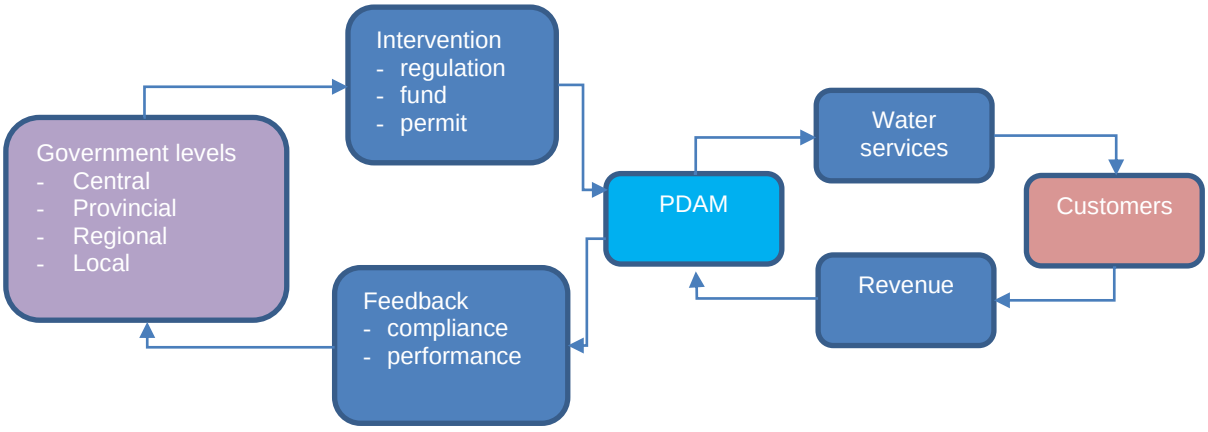

Figure 2. Overview of PDAM Operation

4.2. Analysis of The Hierarchy of PDAM-related Regulations

As a BUMD, the operation of PDAM is based on the Government Regulation Number 54 of 2017 on BUMD and as a SPAM organizer, a PDAM also implements the Government Regulation Number 122 of 2015 on SPAM. In addition, as a BUMD that organizes SPAM, a PDAM has to obtain permits related to water resources exploitation, which is regulated in the Government Regulation Number 121 of 2015 on Water Resources Management. Those three government regulations become the legal basis for the formation of presidential, ministerial, provincial and local government regulations related to the operation of PDAM. Therefore, based on those three government regulations, an analysis of regulations available on the official websites of ministries and institutions finds that there are at least 20 implementing regulations of the three government regulations (see Figure 3), and 15 of them have direct influence on the operation of PDAM (see Table 2 and Appendix A for details).

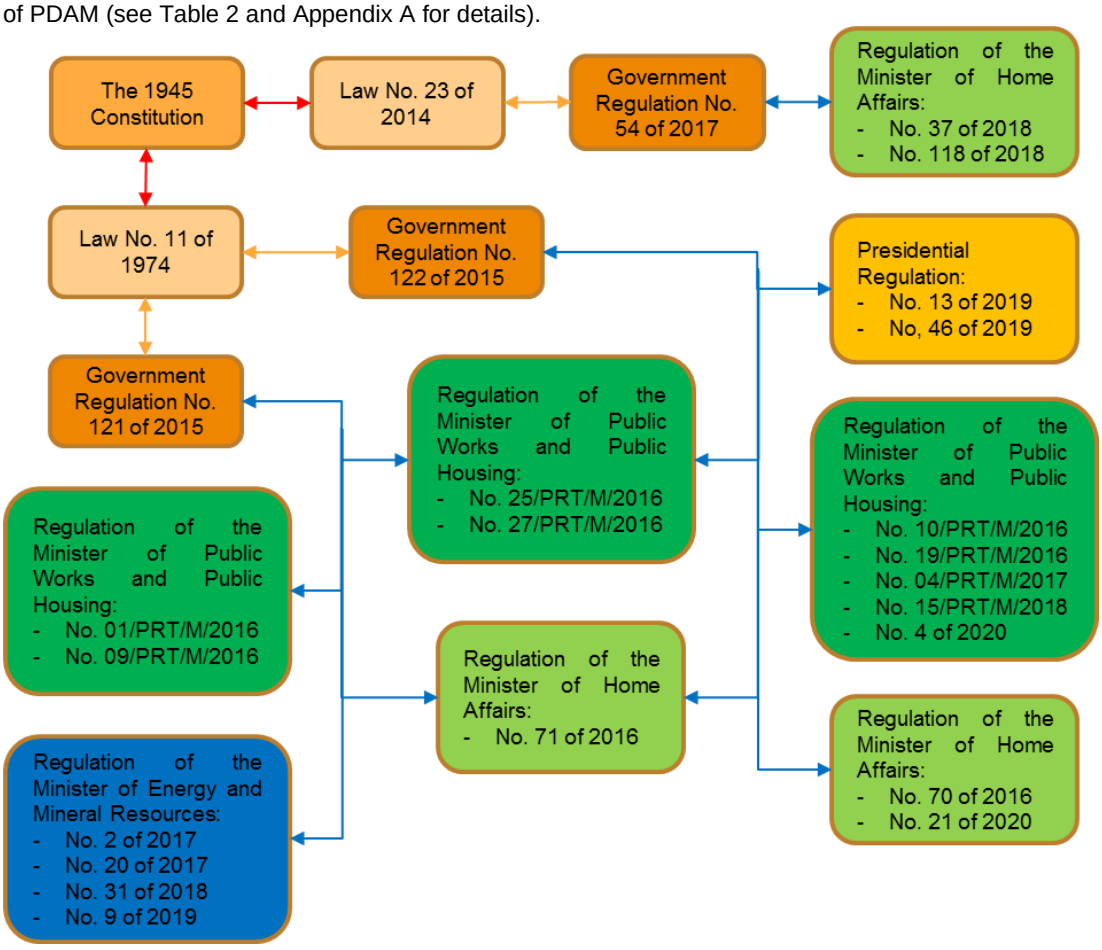

Figure 3. The Hierarchy of Regulations based on Government Regulations Number 121 and 122 of 2015 and Number 54 of 2017

Table 2: The Least Number of Regulations under Government Regulations Number 121 and 122 of 2015 and Number 54 of 2017

Type of Formal Institution	Direct Influence on PDAM Operation		Total
	Yes	No	
Presidential Regulation	1	1	2
Ministerial Regulation			
- Regulation of the Minister of Public Works and Public Housing	6	3	9
- Regulation of the Minister of Home Affairs	5	0	5
- Regulation of the Minister of Energy and Mineral Resources	3	1	4
Total	15	5	20

The Government Regulation Number 121 and 122 of 2015, and Government Regulation Number 54 of 2017 regulate the integrated functions and positions of PDAM as can be seen in Figure 4. According to Government Regulation Number 54 of 2017, there are two types of BUMD based on the form and composition of capital ownership, namely Perumda (*Perusahaan Umum Daerah* – Local General Company) and Perseroda (*Perusahaan Perseroan Daerah* – Local Limited Company). PDAM – whose capital is not in the form of shares, and are almost entirely owned by local governments – are classified as Perumda. Furthermore, a PDAM as a Perumda whose main business is water services automatically becomes one of the main users of water resources and one of the main organizers of SPAM.

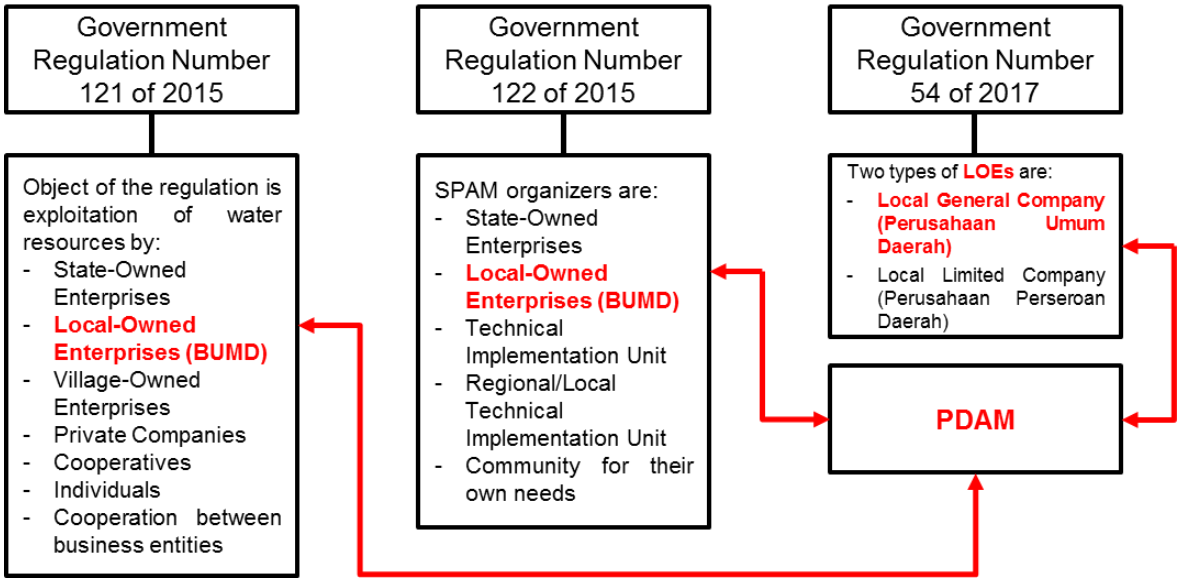

Figure 4. PDAM as BUMD, SPAM Organizers, and Users of Water Resources

4.3. Changes in regulations that influence the operation of PDAM

In Indonesia, changes in regulations are constant. Following the hierarchy of regulation, changes in the highest regulations under the Constitution – namely laws, are followed by changes in their implementing regulations. At least, there have been judicial reviews of Law Number 7 of 2004 on Water Resources and Law Number 11 of 2020 on Job Creation by the Constitutional Court that have influences on PDAM operation, which description can be seen in Table 3.

The judicial review of Law Number 7 of 2004 and Law Number 11 of 2020 influence the operation of PDAM in the ways that the status of regulations formulated under Law Number 7 of 2004 is unclear, whether they are still in effect or not. Meanwhile, at least 20 regulations (see Figure 3) were formulated under the Law Number 11 of 1974 which is re-applicable after Law Number 7 of 2004 was revoked and declared no longer valid by the Constitutional Court through Decision Number 85/PUU-XI/2013, dated February 18, 2015. Furthermore, when Law Number 17 of 2019 on Water Resources was promulgated on October 19th 2019, Law Number 11 of 1974 was repealed and declared ineffective. It is unclear whether there have been regulations under the hierarchy of Law Number 17 of 2019, but the law is amended by Law Number 11 of 2020 on Job Creation – which is now in repair. There have been many regulations formulated based on Law Number 7 of 2004 on Water Resources and Government Regulation Number 16 of 2005 on the Development of SPAM. One of them is the Regulation of the Minister of Public Works Number 18/PRT/M/2007 on the Implementation of SPAM Development which is still effective and being used as the legal basis for the issuance and application of the technical guideline for the 2013-2020 PDAM performance assessment. Based on the decision of judicial review of Law Number 7 of 2004, the priority for water exploitation is given to BUMN (*Badan Usaha Milik Negara* – State-Owned Enterprises) and/or BUMD in order to meet people's needs for water. Therefore, it is important for PDAM as BUMD to operate in a way that provides sustainable quality water services for all.

Table 3: The Description of Judicial Reviews on Law Number 7 of 2004 and Law Number 11 of 2020

Aspect Analysed	Judicial Review of Law Number 7 of 2004 on Water Resources	Judicial Review of Law Number 11 of 2020 on Job Creation
Archive	The Decision of Constitutional Court Number 85/PUU-XI/2013, dated February 18, 2015	The Decision of Constitutional Court Number 91/PUU-XVIII/2020, dated November 3, 2021
Description of the hierarchy of the law	It has become a legal basis for the formation of at least seven government regulations; one presidential regulation; eight regulations of the Minister of Public Works; two regulations of the Minister of Home Affairs; and three regulations of the Minister of Finance.	It is meant to revoke two laws and to amend seventy-eight laws, one of them is Law Number 17 of 2019 on Water Resources.
Reason for the judicial review	Law Number 7 of 2004 fundamentally reconstructed the value of water which is a common good into an economic commodity (commercial good) that can be controlled by a group of individuals and business entities.	- The establishment of Law Number 11 of 2020 did not meet the provisions of the establishment of a law based on the 1945 Constitution and Law Number 12 of 2011 on the Establishment of Legislation. - Law Number 11 of 2020 is formally and procedurally flawed.
Consideration	- The people's right to water, including access to water; - The state must control and supervise water exploitation with attention to environmental sustainability; and - The priority to water exploitation should be given to State-Owned Enterprises or Local-Owned Enterprises in order to meet people's need for water.	- The government was aware of the regulatory obesity and the overlap between laws, so it used the omnibus law method in the formation of Law Number 11 of 2020, aimed at accelerating investment and expanding employment opportunities in Indonesia. - Legally, the formation of Law Number 11 of 2020 did not meet the procedures and guidelines for the establishment of legislation (the 1945 Constitution and Law Number 12 of 2011), meanwhile many implementing regulations have been issued and implemented at the practical level.
Decision	- Law Number 7 of 2004 is contrary to the 1945 Constitution and has no binding legal force. - Law Number 11 of 1974 on Irrigation is re-applicable to prevent a legal vacuum.	- The establishment of Law Number 11 of 2020 is contrary to the 1945 Constitution and has no conditionally binding legal force. - Law Number 11 of 2020 is still in effect until repairs are made within two years since the decision is made. If within that time limit no repairs are made, the Law will be permanently unconstitutional. If within two years the legislators cannot complete the revision of the Law, then laws or articles or material content of the laws revoked or amended by Law Number 11 of 2020 are declared valid again. - Suspension of all strategic and broad-impact actions/policies, as well as prohibition of the issuance of new implementing regulations under Law Number 11 of 2020.

4.4. Determined actors in the operation of PDAM

Using the statutory framework as regulated in Law Number 12 of 2011 on the Establishment of Legislation, analysis of the content of Government Regulation Number 121 and 122 of 2015 and Number 54 of 2017 is on the preamble, body, and explanation (see Table 4).

Table 4: Analysis of The Content of Government Regulation Number 121 and 122 of 2015 and Number 54 of 2017

Title	Government Regulation of the Republic of Indonesia Number 121 of 2015 on Water Resources Management	Government Regulation of the Republic of Indonesia Number 122 of 2015 on Drinking Water Supply System	Government Regulation of the Republic of Indonesia Number 54 of 2017 on Local Owned Enterprises
Content	9 Chapters, 61 Articles	11 Chapters, 67 Articles	17 Chapters, 141 Articles
A. Preamble			
Position of Legislator	President of the Republic of Indonesia		
Considering	to implement the provisions of Article 11 of Law Number 11 of 1974 on Irrigation	to implement the provisions of Article 3, 7 and 10 of Law Number 11 of 1974 on	to implement the provisions of Article 331 paragraph (6), Article 335 paragraph (2),

Title	Government Regulation of the Republic of Indonesia Number 121 of 2015 on Water Resources Management	Government Regulation of the Republic of Indonesia Number 122 of 2015 on Drinking Water Supply System	Government Regulation of the Republic of Indonesia Number 54 of 2017 on Local Owned Enterprises
		Irrigation and to fulfill the responsibility of the State in ensuring the fulfillment of the people's right to drinking water and access to drinking water	Article 336 paragraph (5), Article 337 paragraph (2), Article 338 paragraph (4), Article 340 paragraph (2), Article 342 paragraph (3) and Article 343 paragraph (2) of Law Number 23 of 2014 on Local Government
Observing	1. Article 5 paragraph (2) of the 1945 Constitution of the Republic of Indonesia 2. Law Number 11 of 1974 on Irrigation	1. Article 5 paragraph (2) and Article 33 paragraph (3) of the 1945 Constitution of the Republic of Indonesia 2. Law Number 11 of 1974 on Irrigation	1. Article 5 paragraph (2) of the 1945 Constitution of the Republic of Indonesia 2. Law Number 23 of 2014 of Local Government as amended several times, most recently by Law Number 9 of 2015 on the Second Amendment to Law Number 23 of 2014 on Local Government
B. Body			
General Provision(s)	Chapter I (Article 1-3)	Chapter I (Article 1-2)	Chapter I (Article 1)
Subject Matter	Chapter II Fundamentals of Water Resources Management (Article 4-12) Chapter III Types of Water Resources Management (Article 13) Chapter IV Licensing (Article 14-44) Chapter V Water Resources Management Covering One River Basin (Article 45-46) Chapter VI Supervision (Article 47-48) Chapter VII Administrative Sanctions (Article 49-58)	Chapter II Types of Drinking Water Supply System (Article 3-16) Chapter III Implementation of SPAM (Article 17-32) Chapter IV Prevention of Water Pollution (Article 33-35) Chapter V Authority and Responsibilities (Article 36-41) Chapter VI Execution of Implementation of SPAM (Article 42-52) Chapter VII Rights and Obligations of Customers (Article 53) Chapter VIII Financing, Tariffs, Levies, and Dues (Article 54-61) Chapter IX Development and Supervision (Article 62-65)	Chapter II BUMD Policy (Article 2-3) Chapter III Establishment of BUMD (Article 4-18) Chapter IV BUMD Capital (Article 19-28) Chapter V Organs and Employees of BUMD (Article 29-78) Chapter VI Internal Audit Unit, Audit Committee, and Other Committees (Article 79-87) Chapter VII Planning, Operations, and Reporting of BUMD (Article 88-99) Chapter VIII Use of BUMD Profits (Article 100-106) Chapter IX BUMD Subsidiaries (Article 107) Chapter X the Government Assignment to BUMD (Article 108) Chapter XI Evaluation, Restructurisation, Changes in Legal Form, and Privatization of BUMD (Article 109-122) Chapter XII Merger, Consolidation, Acquisition, and Dissolution of BUMD (Article 123-126) Chapter XIII Bankruptcy of BUMD (Article 127-128) Chapter XIV Development and Supervision of BUMD (Article 129-135)
Criminal Provision(s)	-	-	-
Transitional	Chapter VIII (Article 59)	Chapter X (Article 66)	Chapter XVI (Article 138-

Table 4 continued **Title**	**Government Regulation of the Republic of Indonesia Number 121 of 2015 on Water Resources Management**	**Government Regulation of the Republic of Indonesia Number 122 of 2015 on Drinking Water Supply System**	**Government Regulation of the Republic of Indonesia Number 54 of 2017 on Local Owned Enterprises**
Provision(s)			139)
Closing Provision(s)	Chapter IX (Article 60-61)	Chapter XI (Article 67)	Chapter XVII (Article 140-141)
Miscellaneous Provision(s)	-	-	Chapter XV (Article 136-137)
C. Closing			
Enacted in	-	-	-
Issued in	December 28th, 2015	December 28th, 2015	December 27th, 2017
Promulgated in	December 28th, 2015	December 28th, 2015	December 28th, 2017
D. Elucidation	**Available**	**Available**	**Available**
E. Annex	**-**	**-**	**-**
Ministry in charge of implementing regulations	The Ministry of Public Works and Public Housing The Ministry of Energy and Mineral Resources	The Ministry of Public Works and Public Housing	The Ministry of Home Affairs
Local Level Government involved in the implementation of the regulation	Provincial Governments, especially in supervision	Provincial and Municipal/ Regency Governments, especially in development and supervision	Provincial and Municipal/ Regency Governments, especially in development, supervision and financing
Subject matter for PDAM operation	Not stated specifically, but to manage license and permit in water resources management, PDAM must comply with this regulation.	Not stated specifically, but it regulates BUMD that organizes SPAM and PDAM meet the category of BUMD organizing SPAM.	Not stated specifically, but PDAM are BUMD.

Government Regulation Number 54 of 2017 sets PDAM, as BUMD are attached to local government related regulations, especially on local financial management. Attachment on local financial management may hinder especially developing or underdeveloped PDAM operation and development in a way that a PDAM is owned by a local government and its capital is mostly from the local government equity participation. A PDAM gets investment or subsidies from local government only when the local government has a budget surplus. Being BUMD, makes PDAM independent entities that have and manage their own budget even though they are owned by local government. PDAM are not categorized as local organizations which revenue and expenditure budget clearly stated and allocated in local government budget. Moreover, both Government Regulation Number 122 of 2015 and Number 54 of 2017 regulate sanctions to apply on PDAM with low performance and local governments as owners of those PDAM.

5. Discussion

5.1. The Influence of regulations on the operation of PDAM

In general, the judicial review of Law Number 7 of 2004 and Law Number 11 of 2020 shows that the legislation establishment and implementation in Indonesia is complex and any revocation and amendment to a law will influence other regulations within the hierarchy of the law revoked and amended. The hierarchy of both Law Number 7 of 2004 and Law Number 11 of 2020 shows how the Government of Indonesia is experiencing regulatory obesity – where a law can be a consideration for many levels of implementing regulations established by diverse ministries that regulate many sectors – that makes possible overlapping regulations and authorities causing confusion and unclear objectives of the regulations for the party being regulated or implementing the regulations. Most of the regulations affecting PDAM come from the central government. In addition, local regulations affecting PDAM – based on the hierarchy of formal institutions – must be based on higher regulations, namely regulations at the national level. PDAM must operate according to both national and local regulations. Following those diverse and fragmented regulations, PDAM are at risk of operating overlapped roles and responsibilities. The operation of PDAM as BUMD must obey other government regulations stipulated under Law Number 23 of 2014 on Local Government, one of which is Government Regulation Number 12 of 2019 on Local Financial Management. The regulation does not directly regulate PDAM, but regulates the role of local governments as owners of BUMD, namely providing capital through equity participation for BUMD but in accordance with their financial capacity, not with BUMD needs. In addition, Government Regulations Number 122 of 2015 and Number 54 of 2017 which do not specifically prioritize the role of PDAM as SPAM organizers, generalize PDAM as BUMD organizing SPAM with one of the objectives is to generate profits. Therefore, when PDAM as BUMD cannot generate profits or at least cover its operational costs, while the local governments cannot provide capital or subsidy for PDAM, PDAM cannot maintain to provide sustainable

drinking water services. This situation depicts how regulations may create gaps in water governance setting as identified by OECD (Akhmouch & Correia, 2016), namely administrative gap; policy gap; capacity gap; funding gap; objective gap; and accountability gap.

5.2. The Influence of Determined Actors on The Operation of PDAM

Based on the hierarchy of Government Regulation Number 121 and 122 of 2015 and Number 54 of 2017, actors that influence PDAM operation through their regulations are at least the Ministry of Public Works and Public Housing, the Ministry of Home Affairs, the Ministry of Energy and Mineral Resources, and local governments. On the one hand, those government regulations have fragmented the functions of PDAM as providers of sustainable drinking water services. On the other hand, Government Regulation Number 122 of 2015 on SPAM and Government Regulation Number 54 of 2017 on BUMD also depict that there are two actors who have significant influence on the operation of PDAM, the Minister of Public Works and Public Housing who is in charge of the implementation of Government Regulation Number 122 of 2015 and the Minister of Home Affairs for the implementation of Government Regulation Number 54 of 2017. While the first focuses more on PDAM role in the operation of SPAM, the second puts pressure on PDAM as part of regional government affairs. The first regulation is more about technical and operational affairs while the second one is more about non-technical (financial and administrative) affairs of PDAM. Both regulations set evaluation and reporting activities on the operation of PDAM, including health and performance assessment, involving local governments – regency/municipal government and provincial government, which means that PDAM and regional governments have to evaluate and report the result of the evaluation on PDAM to two different ministers. The formation and implementation of monitoring, evaluation and supervision activities regulated in the regulations are not meant for PDAM. While Minister of Public Works and Public Housing regulates those activities and carries them out for the sake of national policies and strategies on the implementation of SPAM, the Minister of Home Affairs aims at evaluating the implementation of regional autonomy and the performance of local government.

6. Conclusion

Analysis on the influence of regulations and government actors related to the operation of PDAM leads to the conclusion that in its operation, a PDAM is governed by multilevel and multisectoral regulations and is strongly influenced by the central government. It shows how the central government has a dominant intervention in the strategic level of governance of local governments through hierarchical government mechanisms, even though Indonesia has been implementing a decentralized government system since 1999 (Handayani et al., 2022). The governance of PDAM as organizers of SPAM depends on the policies, strategies and plans of the central government which blurs the authority and responsibility of local (regency/municipal) governments who, in the implementation of regional autonomy, are owners of PDAM as BUMD.

At strategic level, the central government through national level regulations has emphasized the importance of good governance in the operation of PDAM as BUMD. However, at operational level, due to the hierarchical mechanism applied, PDAM operations are greatly influenced by the Ministry of Public Works and Public Housing in terms of PDAM function as SPAM organizers; the Ministry of Home Affairs in terms of PDAM position as BUMD; and the local governments as owners of PDAM. Local governments, as owners of PDAM, have not given adequate support (financial, technical, and human resources) needed in the operation of PDAM. Therefore, operating within a given institutional complexity and following the hierarchical structure, PDAM have not operated effectively and efficiently in providing sustainable drinking water services.

The operation of PDAM shows how PDAM as BUMD organizing SPAM have not been prioritized in carrying out mandatory government affairs in the aspects of health, public works and spatial planning, and social, even though those mandatory affairs are regulated in Law Number 23 of 2014 on Local Government and its amendment. PDAM as BUMD operating SPAM which are meant to provide quality drinking water services for all levels of society have not received the attention deserved in order to implement the authority of local government in providing quality basic services.

Overall, this research results in the root cause of water challenges stated in the National Medium Term Development Plan 2020-2024 of the Government of Indonesia, which are the weak governance and institutional implementation and the low commitment and capacity of local governments and PDAM as the main organizers of SPAM. Those water challenges are simply because the operation of PDAM has not been supported with effective regulations, which is exacerbated by poor implementation and low enforcement of the regulations at the operational level by determined parties: local governments and PDAM. Existing PDAM-related regulations and actors have created barriers which are “socio-institutional” and “reflect impediments related to community, resources, responsibility, knowledge, vision, commitment and coordination” (Brown & Farrelly, 2009) in encouraging institutional changes and capacity building of water utilities in Indonesia.

Based on this study, there are rrecommendations for the Government of Indonesia, academics and researchers in the field of water governance. For the Government of Indonesia, to integrate and simplify PDAM-related regulations in ways that avoid regulation overlapping and regulatory obesity caused by the establishment of PDAM-related regulations by different related ministries that hinder PDAM to operate effectively and efficiently. Considering that a PDAM is a BUMD with specific characteristics and purposes,

the Government of Indonesia can formulate and stipulate a government regulation or a presidential regulation that concern only on PDAM using the omnibus law method that represents water-, SPAM-, local government-, environment- and other related sectors and involves all related ministries that influence PDAM. It is also important for the Government of Indonesia, especially the ministry in charge, to review, analyse, state and disseminate clearly the status of existing PDAM-related regulations in the hierarchy of repealed and ineffective regulations to avoid confusion and wrong decision making especially at the local and operational level. For academics and researchers in the field of science related to water (environment, biology, water and human resources, public policy, public services etc.), to further research the internal and external factors of water utilities that need to be considered in attaining sustainable provision of drinking water services and water security purposes and in ensuring that the use or the implementation of those factors be clearly regulated.

References

Akhmouch, A., & Correia, F. N. (2016). The 12 OECD principles on water governance – When science meets policy. *Utilities Policy*, *43*, 14–20. doi:10.1016/j.jup.2016.06.004.

Brown, R. R., & Farrelly, M. A. (2009). Delivering sustainable urban water management: a review of the hurdles we face. *Water Science and Technology : A Journal of the International Association on Water Pollution Research*, *59*(5), 839–846. doi:10.2166/wst.2009.028.

Di Vaio, A., Trujillo, L., D'Amore, G., & Palladino, R. (2021). Water governance models for meeting sustainable development Goals: A structured literature review. *Utilities Policy*, *72*, 101255. doi:10.1016/j.jup.2021.101255.

Directorate of Water Supply Development. (2020). *Buku kinerja BUMD penyelenggara SPAM 2020*. The Ministry of Public Works and Public Housing of the Republic of Indonesia.

Farrelly, M., Gunn, A., Brodnik, C., Holden, J., Rogers, B., Setyono, YA., Suwarso, R., Syaukat, Y., & Velentina, R. (2019). *Governance for a water sensitive transition in Bogor Raya, Indonesia. Australia-Indonesia Centre (AIC)*.

Hadipuro, W., Setianto, B.D., Ferijani, A., Connell, D., Gunawan, R.I., & Olbrei, E. (2016). Mengembangkan pasokan air minum terpadu untuk menyelamatkan ekosistem: Agenda reformasi pasokan air minum di Indonesia. *Prakarsa*, *23*, 37–45.

Handayani, W., Dewi, S. P., & Septiarani, B. (2022). Toward adaptive water governance: An examination on stakeholders engagement and interactions in Semarang City, Indonesia. *Environment, Development and Sustainability*. doi:10.1007/s10668-022-02124-w.

Jacobson, M., Meyer, F., Tropp, H., Oia, I. & Reddy, P. (2013). *User's guide on assessing water governance*. Oslo: UNDP.

Jiménez, A., Saikia, P., Giné, R., Avello, P., Leten, J., Liss Lymer, B., … Ward, R. (2020). Unpacking water governance: A framework for practitioners. *Water*, Vol. 12. doi:10.3390/w12030827.

Mulyana, W., & Prasojo, E. (2020). Indonesia urban water governance: The interaction between the policy domain of urban water sector and actors network. *International Journal of Sustainable Development and Planning*, *15*(2), 211–218. doi:10.18280/ijsdp.150211.

Pahl-Wostl, C. (2015). *Water governance in the face of global change: From understanding to transformation*. Cham, Swiss: Springer Cham. doi:10.1007/978-3-319-21855-7.

Republic of Indonesia. (2020). *Presidential Regulation of the Republic of Indonesia Number 18 Year 2020 Concerning National Mid-term Development Plan 2020-2024*.

Rogers, P., & Hall, A. W. (2003). *Effective water governance (Technical Committee Background Papers No. 7.)*. Sweden: Global Water Partnership (GWP).

Romano, O., & Akhmouch, A. (2019). Water governance in cities: Current trends and future challenges. *Water*, Vol. 11. doi:10.3390/w11030500.

The Government of Republic Indonesia. (2015a). *Government Regulation Number 121 of 2015 Concerning Water Resources Management*.

The Government of Republic Indonesia. (2015b). *Government Regulation Number 122 of 2015 Concerning Drinking Water Supply System*.

The Government of Republic Indonesia. (2017). *Government Regulation Number 54 of 2017 Concerning Local-Owned Enterprise*.

The Ministry of Public Works and Public Housing of the Republic of Indonesia. (2015). *Some Historical Records of Indonesian Drinking Water 1800 – 2005 [Beberapa Catatan Sejarah Air Minum Indonesia 1800 – 2005]*.

Tortajada, C. (2010a). Water governance: A research gaenda. *International Journal of Water Resources Development*, *26*(2), 309–316. doi:10.1080/07900621003683322.

Tortajada, C. (2010b). Water governance: Some critical issues. *International Journal of Water Resources Development*, *26*(2), 297–307. doi: 10.1080/07900621003683298.

Appendix A
The Description of Regulations under Government Regulations Number 121 and 122 of 2015 and Number 54 of 2017

***Bahasa* Indonesia**	**English**	**Direct Influence on PDAM**
Peraturan Presiden	**Presidential Regulation**	
Nomor 13 tahun 2019 tentang Honorarium bagi Ketua dan Anggota Badan Peningkatan Penyelenggaraan Sistem Penyediaan Air Minum	Number 13 of 2019 on Honorarium for Chairpersons and Members of the Agency for Improvement of Drinking Water Supply System	**No**
Nomor 46 Tahun 2019 tentang Pemberian Jaminan dan Subsidi Bunga oleh Pemerintah Pusat dalam Rangka Percepatan Penyediaan Air Minum	Number 46 of 2019 on Provision of Guarantees and Interest Subsidies by the Central Government in Accelerating the Provision of Drinking Water	**Yes**
Peraturan Menteri	**Ministerial Regulation**	
Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat	***Regulation of the Minister of Public Works and Public Housing***	
Nomor 01/PRT/M/2016 tentang Tata Cara Perizinan Pengusahaan Sumber Daya Air dan Penggunaan Sumber Daya Air	Number 01/PRT/M/2016 on Procedures for Licensing of Water Resources and Use of Water Resources	**Yes**
Nomor 09/PRT/M/2016 tentang Tata Cara Pelaksanaan Kerjasama Pemerintah dan Badan Usaha dalam Pemanfaatan Infrastruktur Sumber Daya Air Untuk Pembangunan Pembangkit Listrik Tenaga Air/ Pembangkit Listrik Tenaga Minihidro/ Pembangkit Listrik Tenaga Mikrohidro	Number 09/PRT/M/2016 on Procedures for Implementing Government and Business Entity Cooperation in the Utilization of Water Resources Infrastructure for the Development of Hydroelectric Power Plants/Mini-hydro Power Plants/Micro-hydro Power Plants	**No**
Nomor 10/PRT/M/2016 tentang Pemberlakuan Standar Kompetensi Kerja Nasional Indonesia Bidang Pengelolaan Sistem Penyediaan Air Minum	Number 10/PRT/M/2016 on the Enforcement of Indonesian National Work Competency Standards in the Field of Drinking Water Supply System Management	**Yes**
Nomor 19/PRT/M/2016 tentang Pemberian Dukungan oleh Pemerintah Pusat dan/atau Pemerintah Daerah dalam Kerjasama Penyelenggaraan Sistem Penyediaan Air Minum	Number 19/PRT/M/2016 on the Provision of Support by the Central Government and/or Local Governments in Drinking Water Supply System Cooperation	**Yes**
Nomor 25/PRT/M/2016 tentang Pelaksanaan Penyelenggaraan Sistem Penyediaan Air Minum untuk Memenuhi Kebutuhan Sendiri oleh Badan Usaha	Number 25/PRT/M/2016 on the Implementation of Drinking Water Supply System to Meet Own Needs by Business Entities	**No**
Nomor 27/PRT/M/2016 tentang Penyelenggaraan Sistem Penyediaan Air Minum	Number 27/PRT/M/2016 on the Implementation of Drinking Water Supply System	**Yes**
Nomor 04/PRT/M/2017 tentang Penyelenggaraan Sistem Pengelolaan Air Limbah Domestik	Number 04/PRT/M/2017 on the Implementation of Domestic Wastewater Management System	**No**
Nomor 15/PRT/M/2018 tentang Pemberlakuan Standar Kompetensi Kerja Nasional Indonesia Bidang Pengelolaan Sistem Penyediaan Air Minum	Number 15/PRT/M/2018 on the Enforcement of Indonesian National Work Competency Standards in the Field of Drinking Water Supply System Management	**Yes**
Nomor 4 Tahun 2020 tentang Prosedur Operasional Standar Penyelenggaraan Sistem Penyediaan Air Minum	Number 4 of 2020 on Standard Operational Procedures for the Implementation of Drinking Water Supply System	**Yes**
Peraturan Menteri Dalam Negeri	***Regulation of the Minister of Home Affairs***	
Nomor 70 Tahun 2016 tentang Pedoman Pemberian Subsidi dari Pemerintah Daerah kepada Badan Usaha Milik Daerah Penyelenggara Sistem Penyediaan Air Minum	Number 70 of 2016 on Guidelines for Providing Subsidies from Local Governments to Local-Owned Enterprises Organizing Drinking Water Supply System	**Yes**
Nomor 71 Tahun 2016 tentang Perhitungan dan Penetapan Tarif Air Minum	Number 71 of 2016 on Calculation and Determination of Drinking Water Tariffs	**Yes**
Nomor 37 Tahun 2018 tentang Pengangkatan dan Pemberhentian Anggota Dewan Pengawas atau Anggota Komisaris dan Anggota Direksi Badan Usaha Milik Daerah	Number 37 of 2018 on the Appointment and Dismissal of Members of the Supervisory Board or Members of Commissioners and Directors of Local-Owned Enterprise	**Yes**
Nomor 118 Tahun 2018 tentang Rencana Bisnis, Rencana Kerja dan Anggaran, Kerja Sama, Pelaporan dan Evaluasi Badan Usaha Milik Daerah	Number 118 of 2018 on Business Plans, Work Plans and Budgets, Cooperation, Reporting and Evaluation of Local-Owned Enterprise	**Yes**

***Bahasa* Indonesia**	**English**	**Direct Influence on PDAM**
Nomor 21 Tahun 2020 tentang Perubahan atas Peraturan Menteri Dalam Negeri Nomor 71 Tahun 2016 tentang Perhitungan dan Penetapan Tarif Air Minum	Number 21 of 2020 on Amendments to Regulation of the Minister of Home Affairs Number 71 of 2016 on Calculation and Determination of Drinking Water Tariffs	**Yes**
Peraturan Menteri Energi dan Sumber Daya Mineral	***Regulation of the Minister of Energy and Mineral Resources***	
Nomor 2 Tahun 2017 tentang Cekungan Air Tanah di Indonesia	Number 2 of 2017 on Groundwater Basin in Indonesia	**Yes**
Nomor 20 Tahun 2017 tentang Pedoman Penetapan Nilai Perolehan Air Tanah	Number 20 of 2017 on Guidelines for Determining the Value of Groundwater Acquisition	**Yes**
Nomor 31 Tahun 2018 tentang Pedoman Penetapan Zona Konservasi Air Tanah	Number 31 of 2018 on Guidelines for Establishing Groundwater Conservation Zones	**Yes**
Nomor 9 Tahun 2019 tentang Optimalisasi Pemanfaatan Pengeboran Eksplorasi Air Tanah	Number 9 of 2019 on Optimizing the Utilization of Groundwater Exploration Drilling	**No**