

# STRENGTHS AND LIMITATIONS OF THE INDONESIAN CONSTITUTIONAL COURT'S "6 BASIC PRINCIPLES" IN RESOLVING WATER CONFLICTS

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## Abstract

Many parts of Indonesia are already experiencing water stress and the condition is expected to become worse by 2045, when, according to the World Bank, 67% of Indonesia's GDP will be produced in areas with high water stress. Conflict over water resources has been reported between water users and uses, such as between agriculture and drinking water, between agriculture and fisheries, and between farmers and industries. In 2015, responding to the petition to curtail private sector control over water resources, the Constitutional Court invalidated Water Law 7/2004 and introduced the 6 basic principles, that have been used as normative guidance for implementing the regulation on water resources and for resolving future water conflicts. However, the principles are ambiguous in many ways. This paper will critically examine the principles and then outline the difficulties in its implementation. The methodology employed is normative-analytical; incorporating analytical frameworks from water law and governance into constitutional adjudication. First the paper clarifies some conceptual frameworks related to water conflict and how the principles have been interpreted by regulators. The paper then explains the general categories of water conflict and where those principles would, or would not, fit. The paper then continues with a critique of the principles, in terms of their (i) unclear scope, (ii) conflation between users and uses, (iii) neglect of footprint and (iv) the implications for water reallocation. This paper finds that one of the strengths of the principles is that they provides a basic normative guidance for solving conflict in water allocation, the protection of human rights and the environment.

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However, these benefits come with some limitations: neglect of efficiency over perceived equity and potential restriction of reallocation of water among different users. The principles are also difficult to implement where there is conflict over water quality or spatial development. As such, the paper recommends that the Constitutional Courts revise and expand the principles in future cases using teleological approach and that in terms of implementation, the 6 basic principles should also be interpreted teleologically.

**Keywords:** Allocation; Conflict; Governance; Indonesia; Water.

## I. INTRODUCTION

Recent water conflicts have been captured by news media outlets. In Southern Sumatera, the utilization of water for an inland fishery in the upstream area led to water shortage downstream that precipitated conflict among farmers.<sup>1</sup> The development of hydropower has caused the submergence of rice fields in Southeastern Sulawesi that led to protests from the affected farmers.<sup>2</sup> In Northern Sumatera, the development of hydropower caused agricultural land to be submerged and disturbed the livelihoods of smallholder farmers.<sup>3</sup> In Sidoarjo, conflict between farmers arose when one village closed drains, which caused rice fields in another village to be submerged.<sup>4</sup>

Conflicts over water have been well reported in the literature. In Bali, the prioritization of urban drinking water and tourism has caused resentment among farmers and undermined the traditional Subak irrigation system.<sup>5</sup> In West Sumatera, hydropower projects compete with irrigation needs.<sup>6</sup> In Karanganyar,

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<sup>1</sup> PUPR Research and Development Agency, "Solusi Tangani Kekeringan dan Kelangkaan Air Indonesia [Solutions to Handle Indonesia's Drought and Water Scarcity]," Badan Penelitian dan Pengembangan PUPR [PUPR Research and Development Agency], published June 6, 2020.

<sup>2</sup> Liputan6.com, "Protes Petani Terdampak Pengembangan PLTA Poso, Mogok Makan hingga Mengecor Kaki [Farmers Protest Affected by Poso Hydropower Development, Hunger Strikes to Casting Feet]," Liputan6.com, accessed May 26, 2022.

<sup>3</sup> Harian Medan Bisnis, "20 Ha Lahan Pertanian Tergenang Air, Petani Kuta Gajah Langkat Protes PT TLE [20 Ha of Agricultural Land Flooded, Kuta Gajah Langkat Farmers Protest PT TLE]," MedanBisnisDaily.com, accessed June 16, 2022.

<sup>4</sup> Republik Jatim, "Wabup Sidoarjo Urai Polemik Saluran Irigasi Antar Desa di Porong Pemicu Lahan Pertanian Terendam Banjir [Deputy Regent of Sidoarjo Explains Polemic of Irrigation Channels Between Villages in Porong Triggers Flooded Agricultural Land]," Republik Jatim, accessed June 16, 2022.

<sup>5</sup> Sophie Strauß, "Water Conflicts among Different User Groups in South Bali, Indonesia," *Human Ecology* 39, no. 1 (February 2011): 69–79, <https://doi.org/10.1007/s10745-011-9381-3>.

<sup>6</sup> Franz von Benda-Beckmann, "Contestations over a Life-Giving Force Water Rights and Conflicts, with Special Reference to Indonesia," in *A World of Water Rain, Rivers and Seas in Southeast Asian Histories*, ed. P. Boomgaard (Leiden: KITLV Press, 2007), 240.

Central Java, some conflicts arose between tourism, local government and the private sector.<sup>7</sup> In Klaten, Central Java, conflict occurred between smallholder farmers and companies.<sup>8</sup> In Pandeglang, Banten, the religious community attending Islamic Boarding Schools -- led by their religious leaders (*Kyai*) -- resisted an industrial project that sought to control several springs.<sup>9</sup> Conflict also occurs between farmers themselves, for example, in Southern Sumatera conflict occurred between diversion of water for rice fields and inland fishery.<sup>10</sup>

These conflicts will likely intensify due to increasing water scarcity. All islands in Indonesia suffer from heavily polluted surface water.<sup>11</sup> River basins in Java, Bali, East Nusa Tenggara and Sulawesi already experience water stress. The island of Java, which is home to 57% (143 million) of Indonesian population is experiencing medium to high water stress.<sup>12</sup> The top 5 (GDP generating) river basin territories in Java are experiencing high to severe water stress annually.<sup>13</sup> Other islands such as Bali and East Nusa Tenggara (Nusa Tenggara Timur or NTT), and Sulawesi experience water stress<sup>14</sup> and it is estimated that by 2045, almost all of the river basins in Java, Bali, and Nusa Tenggara islands will experience severe water stress.<sup>15</sup>

<sup>7</sup> Zaini Rohmad, et al., "Conflict Management of Water in Tourism Area in Indonesia," *Mediterranean Journal of Social Sciences* 7, no. 1 (2016): 416, <https://doi.org/10.5901/mjss.2016.v7n1s1p416>.

<sup>8</sup> Jean-Marie Lopez, et al., "From Conflict to Equity: Handling the Challenge of Multipurpose Use of Ground and Surface Water in Indonesia," (Proceeding presented in Grounwater Conference 2011 Gestion des ressources en eaux souterraines at Orléans, France, 2011).

<sup>9</sup> M. Dian Hikmawan, Ika Arinia Indriyany, and Abdul Hamid, "Resistance Against Corporation by the Religion-Based Environmental Movement in Water Resources Conflict in Pandeglang, Indonesia," *Otoritas: Jurnal Ilmu Pemerintahan* 11, no. 1 (2021): 19–32, <https://doi.org/10.26618/ojip.v11i1.3305>. See also Agus Lukman Hakim et al., "Perebutan Sumberdaya Air: Analisis Konflik dan Politik Tata Ruang [Struggle for Water Resources: Conflict Analysis and Spatial Politics]," *Sodality: Jurnal Sosiologi Pedesaan* (2017): 81–91, <https://doi.org/10.22500/sodality.v5i2.17901>.

<sup>10</sup> Edward Saleh, "Studi Konflik Air Irigasi dan Alternatif Penyelesaiannya di Daerah Irigasi Kelingi Sumatera Selatan [Study of Irrigation Water Conflicts and Alternative Solutions in the Irrigation Area of South Sumatra]," *Jurnal Keteknik Pertanian* 24 (April 2010): 39–44, <https://doi.org/10.19028/jtep.24.1>.

<sup>11</sup> Abed Khalil, et al., "Indonesia Vision 2045: Toward Water Security (Policy Note)," World Bank, published December 1, 2021, <https://openknowledge.worldbank.org/handle/10986/36727>.

<sup>12</sup> Ibid.

<sup>13</sup> Ibid. These are the Ciliwung-Cisadane, Brantas, Citarum, Bengawan Solo and Jratenseluna River Basin Territories.

<sup>14</sup> Ibid. "Water Scarcity" is a condition where existing supply (in terms of volume) is inadequate to fulfill human consumption. "Water Stress" is a broader concept which includes the lack of available water to meet human and ecological needs, taking into account ambient water quality. See Pacific Institute, "Defining Water Scarcity, Water Stress, and Water Risk," Pacific Institute, accessed September 22, 2022.

<sup>15</sup> Khalil, et al., "Indonesia Vision 2045."

The relationship between water scarcity and conflict has been reported in the literature. Unfried et.al show that a reduction in total water volume increases the likelihood of social conflict, sometimes by up to three times.<sup>16</sup> Climate change contributes to these water challenges in many ways, for example by increasing the demand for water and simultaneously reducing the available resource, or increasing its variability.<sup>17</sup> International water conflicts have been a subject of many studies. The conflict between Palestine and Israel is also due to agricultural water demand.<sup>18</sup> The Nile river basin is shared by 10 (ten) countries; Egypt have always felt threatened by upstream water resources development, such as that conducted by Sudan and more acutely with hydropower development on the White Nile in Ethiopia.<sup>19</sup> Conflict, raids, tensions, threats to use force and military mobilization have occurred there and in Central Asia in a bid to control water resources or flows of water.<sup>20</sup>

However, this paper's interest is on localized (as opposed to international) water conflict. Gleick outlined a number of water related conflicts that have occurred from 3000 BC to 2013<sup>21</sup>. This includes: conflicts in Kenya between farmers and herders; in Tanzania between farmers and pastoralists; in Somalia fights to control water wells; in Mali between herders and nomadic tribes. Gleick also mentions a 2012 conflict in Saparua, Maluku, between the villages of Porto and Haria over springwater.<sup>22</sup> According to a BBC report, this conflict in Saparua has simmered for generations.<sup>23</sup> Areas which are considered fragile and have long

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<sup>16</sup> Three times if calculated by larger standar deviation. Kerstin Unfried, Krisztina Kis-Katos, and Tilman Poser, "Water Scarcity and Social Conflict," *Journal of Environmental Economics and Management* 113 (2022): 102633, <https://doi.org/10.1016/j.jeem.2022.102633>.

<sup>17</sup> Ibid.

<sup>18</sup> Christiane J. Fröhlich, "Security and Discourse: The Israeli-Palestinian Water Conflict," *Conflict, Security & Development* 12, no. 2 (2012): 123-48, <https://doi.org/10.1080/14678802.2012.688290>.

<sup>19</sup> M. El-Fadel et al., "The Nile River Basin: A Case Study in Surface Water Conflict Resolution," *Journal of Natural Resources and Life Sciences Education* 32, no. 1 (2003): 107-17, <https://doi.org/10.2134/jnrse.2003.0107>.

<sup>20</sup> José Antonio Peña-Ramos, Philipp Bagus, and Daria Fursova, "Water Conflicts in Central Asia: Some Recommendations on the Non-Conflictual Use of Water," *Sustainability* 13, no. 6 (January 2021): 3479, <https://doi.org/10.3390/su13063479>.

<sup>21</sup> Peter H. Gleick, et.al., *The World's Water 2008-2009: The Biennial Report on Freshwater Resources* (Washington D.C: Island Press, 2009).

<sup>22</sup> Gleick, et.al., *The World's Water*.

<sup>23</sup> BBC News Indonesia, "Situasi Saparua Berangsur Normal [The Situation of Saparua is Gradually Normal]," BBC News Indonesia, published March 8, 2012.

history of violence such as the Maluku Island, Sampit, Poso, Tarakan, Papua, and many others must thus pay careful attention to their water security.<sup>24</sup>

Both in international<sup>25</sup> and local/interstate<sup>26</sup> water conflicts, the role of the Court is important. The Indonesian Constitutional Court has adjudicated a Judicial Review of the Water Resources Law several times, eventually invalidating Water Law 7/2004 in 2015.<sup>27</sup> In the same decision, the Constitutional Court established 5+1 principles – popularly known as the 6 basic principles -- that target strict control of the “commercialization” of water.

The methodology used in this paper is normative-analytics, utilizing theories from water law and governance to inform constitutional adjudication. This paper will first explain the “6 basic principles” mentioned in the Constitutional Court’s Decision, how the principles are incorporated into the new Water Law 17/2019 and how they are enshrined in the implementing regulations. The paper will then clarify several conceptual frameworks used in water governance, such as the distinction between services and resources and the values embedded in Integrated Water Resources Management (IWRM), such as efficiency, environmental sustainability and equity. Subsequently, the chapter will elaborate three categories of water related conflict: quality, quantity, and spatial, and how the 6 basic principles applies to them.

This paper finds that the strength of the “6 basic principles” lies in their emphasis on: the state’s duty to protect the human right to water (principle 1); the state’s duty to fulfill human rights to water (principle 2); and the protection of the environment (principle 3). However, as elaborated in Section 5 below, the principle is ambiguous in many ways. The principle is drafted in order

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<sup>24</sup> Khalil, et al., “Indonesia Vision 2045.”

<sup>25</sup> International Court of Justice, “Dispute over the Status and Use of the Waters of the Silala (Chile v. Bolivia),” International Court of Justice, accessed June 19, 2022; International Court of Justice, “Construction of a Road in Costa Rica along the Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua). See also Christina Leb, “Water Conflicts and the Role of International Law in Their Prevention,” *SSRN Electronic Journal* (February 2012), <https://doi.org/10.2139/ssrn.2000951>.

<sup>26</sup> Robert T Anderson, “Indian Water Rights: Litigation and Settlements,” *Tulsa Law Review* 42, no. 1 (July 2006): 15, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1140324](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1140324); *Texas v. New Mexico and Colorado*, No. 141 Original.

<sup>27</sup> Constitutional Court Decision No.85 / PUU-XI / 2013 Regarding the Review of Law Number 7 Year 2004 Concerning Water Resources.

to curtail commercialization of water, however, as explained in Section 4, water conflict often involves social conflict between community groups, such as between farmers or between agriculture and inland fisheries, where the principle offers no resolution. Although the protection of the environment under Principle 3 is a strength, the 6th basic principle is confined to settling disputes over "commercialization" and thus, raise question as to whether it can be generalized into water governance as a whole (not only commercialization). The principle also disregards economic productivity<sup>28</sup> as a value recognized in water governance. This has two implications: first, water footprint is neglected, i.e. water will be distributed to smallholder farmers or state/region/village-owned enterprises despite that it may be less valuable and, secondly, the principle disallows the reallocation of water from less productive to more productive water uses. Finally, the principle is more applicable – notwithstanding the above criticism – to resolving water conflicts arising from allocative question (who gets x quantity of water) than to resolving conflict from water quality degradation or conflict relating to spatial plans which impacts water resources.

In light of these limitations, the paper recommends that the Constitutional Court utilize a teleological approach and based on such approach, revises the 6 basic principles in future cases so that it can address all types of water conflict. The exact re-formulation of the principles is not discussed in this paper, although it recommends what elements should be present. The implementation of the 6 basic principles through regulation and conflict resolutions by other courts or other bodies should also utilize the teleological approach.

## II. THE 6 BASIC PRINCIPLES AND THEIR APPLICATION

### 2.1. Constitutional Court's Decision

Water Law 7/2004 has been judicially reviewed several times. Most notably, it was judicially reviewed in 2004, in which the Constitutional Court (CC) declared

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<sup>28</sup> "Economic productivity" is defined as "...the value derived per unit of water used". See D Molden et al., "Pathways for Increasing Agricultural Water Productivity," in *Water for Food, Water for Life*, ed. D. Molden (London: International Water Management Institute, 2007), 279–310.

it conditionally constitutional.<sup>29</sup> In the 2005 decision, the CC declared that the Water Law 7/2004 can be invalidated if its implementing regulation does not follow CC's prescription. Subsequent judicial reviews had not been successful, however, Water Law 7/2004 was judicially reviewed again in 2013 and in 2015 the CC finally decided to invalidate the law in its entirety.<sup>30</sup>

The 2013 petition was largely motivated by the concern over the control of water resources by the private sector. The petitioner argued that "*the right to use water for commercial purpose...*" (*Hak Guna Usaha Air*) -- which is a permit instrument that can be granted to individuals and the private sector to utilize water for commercial activities -- "*...provide a large space for the private sector to control water resources*" and that such mechanism "*...enables the private sector to take over of water sources controlled by the community*" which in turn "*creates monopoly on the control of water resources by the private sector*".<sup>31</sup> The petitioner was especially concerned that the space for non-commercial water uses will greatly reduce while and on the other hand the allocation for commercial water use greatly increases -- to the detriment of the former.

As such, in order to curtail private sector control, the CC invented principles which could guide the commercialization of water. The CC begins outlining the basic principles by elaborating:

[...] "*...based on the above consideration, then, water commercialization must be strictly limited in an effort to preserve and sustain the availability of water for the nations' life:*"<sup>32</sup>

1. [*... water commercialization shall not impede, override, or even abolish people's right to water because the land, the earth and water and the natural riches contained therein, in addition to that they shall be controlled by the State, should be exploited to the greatest benefit of the people;*

<sup>29</sup> Constitutional Court Decision No.058-059-060-063 / PUU-1 / 2004 Regarding the Review of Law Number 7 Year 2004 Concerning Water Resources (2005).

<sup>30</sup> Constitutional Court Decision No.85 / PUU-XI / 2013 Regarding the Review of Law Number 7 Year 2004 Concerning Water Resources.

<sup>31</sup> *Ibid.*, 28-32.

<sup>32</sup> This translation is paraphrased by the author and is developed from authors' previous translation. See Mohamad Mova Al'Afghani, "Alienating the Private Sector: Implications of the Invalidation of the Water Law by the Indonesian Constitutional Court," *Journal of Water Law* 26, no. 3 (2019): 112, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3666679](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3666679).

2. *[...] the state shall fulfill the people's right to water. [As mentioned earlier] the access to water is a specific human right, then article 28 I (4) Constitution 1945 stipulates that "Protecting, advancing, upholding and the fulfilling human rights are the responsibility of the state, especially the government."*
3. *[...] we must pay attention to environmental conservation, since as the human rights Article 28H (1) of the Constitution, 1945, states "Every person shall have the right to live in physical and spiritual prosperity, to have a home and to enjoy a good and healthy environment, and shall have the right to obtain health services"*
4. *[...] as a vital production sector, which controls the livelihood of the people [...] must be controlled by the state (Based on Article 33 (3) of the Constitution, 1945) and water (according to Article 33 (3) of the Constitution, 1945) must be controlled by the state and shall be used to the greatest benefit of the people. Therefore, the supervision and the control by the state regarding water is absolute;*
5. *[...] as a continuation of state control and since water controls the livelihood of the people then the primary priority on the commercialization of water is by State Owned Enterprises (BUMN) or Region-Owned Enterprises (BUMD);*
6. *In the event all the restrictions above have been fulfilled and there is an availability of water, the Government may grant permits to private enterprises to commercialize water based on strict requirements."*

The term "6 basic principles" itself has never been mentioned by the CC in its Decision. The CC only states 5 principles which limits commercialization of water and 1 principle which states that commercialization by the private sector can be allowed pursuant to the fulfillment of the aforementioned limitations. Nevertheless, the media, CC's own website, scholars and also the government have used the term "6 basic principles".<sup>33</sup>

## 2.2. Water Law

The Water Law 17/2019 interprets the 6 basic principles through an allocation framework under Articles 8 and 49.<sup>34</sup> Article 8 is very specific regarding water

<sup>33</sup> Irfan Nur Rachman, "Implikasi Hukum Putusan Mahkamah Konstitusi Tentang Pengujian Konstitusionalitas Undang-Undang Sumber Daya Air [Legal Implications of Constitutional Court Decision on Constitutional Review of the Water Resources Law]," *Kajian* 20, no. 2 (September 2016): 109–28, <https://doi.org/10.22212/kajian.v20i2.573>; Directorate General of Water Resources, Ministry of Public Works and Public Housing of the Republic of Indonesia, "Enam Prinsip Dasar Pengelolaan Air Kembalikan Pengaturan Air Ke Negara [Six Basic Principles for Managing Water Return Water Regulation to the State]," Directorate General of Water Resources, Ministry of Public Works and Public Housing of the Republic of Indonesia, accessed April 5, 2017.

<sup>34</sup> Republic of Indonesia Law Number 17 Year 2019 Regarding Water Resources.



allocation. The state is obligated to fulfill the human right to water in terms of minimum daily basic needs. In addition to that, Article 8 requires the state to prioritise daily needs, peoples' farming, and water for drinking. In the event of scarcity, water for daily needs must be prioritised over people's farming. Nevertheless, Article 8 is not really clear as to whether it intends to fulfill daily basic needs, which are taken directly from water source (Article 8(2)a) or bulk supply for drinking water (Article 8(2)c) or both. The next priority under Article 8 is non-commercial water needs and other commercial needs for which licenses have been granted. The allocation priority is ranked below:

**Table 1:** Allocation Priority Under Law 17 and other Regulations

Law 7	Law 17		
	Art 8	Rank	Art 49
Minimum Daily Basic Needs	Minimum Daily Basic Needs	1.	<i>General Daily Basic Need (no permit*</i>
		2.	Daily basic need for large group
		3.	Daily basic need which alters the natural condition of the water source
People's Farming "Within an Existing Irrigation System"	People's Farming	4.	<i>People's Farming Within an Existing System (no permit)</i>
		5.	People's farming outside of existing irrigation system
	Daily basic needs <i>through</i> drinking water supply	6.	Daily basic needs through drinking water supply
		7.	Non-commercial activities for public needs

Law 7	Law 17		
	Art 8	Rank	Art 49
		8.	Water utilization for state, region and village-owned enterprises*
		9.	Water utilization for the private sector (individual or enterprises)

\* In the event of scarcity, rank 1, and 8 can trump other ranks (see Article 8 of Water Law 17/2019).

Source: AlAfghani, MM, Water Tenure in Indonesia (FAO, 2022)

### 2.3. Strength of the 6 Basic Principles

The strength of the 6 basic principles lies on its emphasis on human rights and the environment. Principle 1 can be seen as a manifestation of the state’s obligation to protect the right to water. In essence, principle 1 requires the state to protect its citizens from commercial appropriation of water resources which might be detrimental to their rights.

Principle 2 is a manifestation of the obligation to fulfill Principle 1. Principle 2 reaffirms General Comment 15 and ICESCR that the state has the obligation to ensure the human right to water, by all means. In addition, Principle 2 reaffirms “the right to water” as a specific category of human right.

Water use for smallholder farmers is not specifically mentioned by the 6 basic principles. Nevertheless, access to water for “subsistence farming” is guaranteed by General Comment 15.<sup>35</sup> As such, we can argue that water for subsistence farming forms a part of the human rights to water guaranteed by Principles 1 and 2. The term used by the Water Law is “*Pertanian Rakyat*” (people’s farming

<sup>35</sup> United Nations Committee on Economic Social and Cultural Rights, “General Comment No. 15 (2002), The Right to Water (Arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights),” E/C.12/2002/11 (Geneva: United Nations, 2003), para. 2.

or smallholder cropping). However, whether subsistence farming and *pertanian rakyat* are similar is subject to discussion. The General Comment 15 at para 7 refers to Article 1(2) of the ICESCR, which states that people may not "be deprived of its means of subsistence". However, as Winkler notes, in practice, it may be difficult to draw the line between "subsistence" and agriculture in general. Winkler proposed that one of the signifier of subsistence farming (in terms of human rights to water) is whether the community has no option to procure food and as such, rely for food production by themselves. In this case, water directly affects their survival from hunger and malnutrition.<sup>36</sup> *Pertanian Rakyat* (people's farming) under the Water Law is a much broader category however, since it incorporates both "subsistence" farming (water needed for survival from hunger and malnutrition) and water to irrigate rice fields which are not directly related to subsistence.

Principle 3 calls for the protection of the environment as it is necessary to protect human health. Thus, this principle still sees the protection of environment, not as a *sui generis* environmental right, but in the context of human rights. Principle 4 is best read in conjunction with Principle 5, namely that state control should be realized by prioritizing water allocation for state owned enterprises.

Finally, the strength of the 6 basic principles is in providing value-guidance in conflict over water shortage. There are basically 4 (four) categories of water uses recognized by the 6 basic principle: people, environment, state/region/village owned enterprises and the private sector. People and the environment come first while – according to principle 6, the private sector comes last.

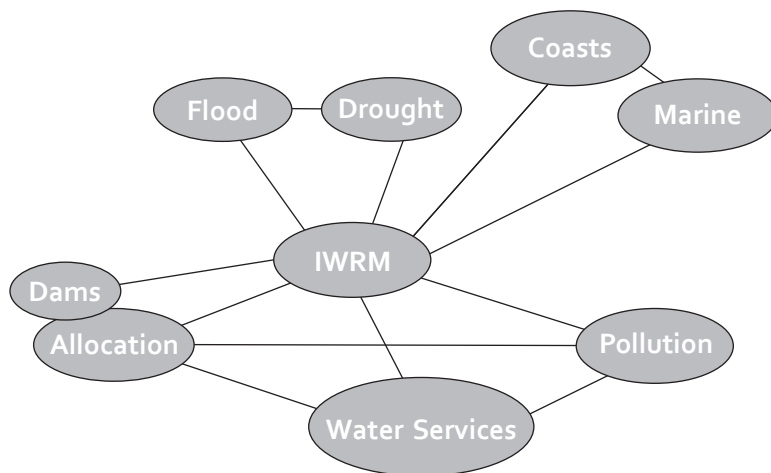
### III. CONCEPTUAL FRAMEWORKS

#### 3.1. Resources and Services

One of the most important distinction in water governance and water law is the management of water as a resource and the management of water as a service. As elaborated by Hendry, water services and resources are usually a part of different water law reform packages, meaning that a country will usually have

<sup>36</sup> See Inga T. Winkler, *The Human Right to Water: Significance, Legal Status and Implications for Water Allocation* (Oxford: Portland, 2012).

its own water (resources) law and its own water (services) law.<sup>37</sup> Hendry notes that services can be argued to be a sectoral use of water, namely for water supply and sanitation, among many other types of water use.



**Figure 1.** Water Law Meta Regime by Hendry (2014)<sup>38</sup>

As can be seen in Figure 1 above, water resources domain address pollution, allocation, water infrastructure (other than services), flood, drought and to a certain extent, coasts and marine. Water services are usually treated under their own regime. In most cases, when we speak of “water privatization”, we speak about the privatization of water services, such as hydropower and water and/or sewerage utilities.<sup>39</sup> Unlike Indonesia, many countries have developed water services sector legislation, separate from resources regulations.<sup>40</sup>

The distinction between resources and services and the understanding of the other water law meta-regime as explained above is important, as I will argue later that the 6 Basic Principles are the most appropriate when solving conflict arising

<sup>37</sup> Sarah Hendry, *Frameworks for Water Law Reform* (London: Cambridge University Press, 2014).

<sup>38</sup> *Ibid.*

<sup>39</sup> Karen J. Bakker, *Privatizing Water: Governance Failure and the World’s Urban Water Crisis* (New York: Cornell University Press, 2010); K. J. Bakker, *An Uncooperative Commodity: Privatizing Water in England and Wales* (London: Oxford University Press, 2003).

<sup>40</sup> Defra, *Water Industry Act 1991 Section 13(1) Modification of the Conditions of Appointment of United Utilities Water Plc* (London: The Stationery Office, 2005).

out of allocation (see figure 1), but are not so useful when applied to conflict arising out of pollution or conflict over water services, such as privatization.

### 3.2. Values in Water Governance

According to Turall, Good Water Governance is the mechanisms to achieve fair, productive and sustainable use of water through the actions of good institutions (laws, regulations, responsible organisations, user representation, policies, actions and incentives) and sufficient human and financial resources which supports them.<sup>41</sup> Water governance enshrines competing values, namely equity, efficiency and environmental sustainability.

Equity means fairness or justice, a concept with its own history of debates from the Greek philosophy to Rawl's theory of justice and Sen's capability approach – which will not be discussed in detail here.<sup>42</sup> Lenton and Muller describe equity in this context as “*equitable access to water, and to the benefits from water use*” from all walks of life, irrespective of gender, socioeconomic group or country.<sup>43</sup>

In addition, efficiency is defined as the maximum economic output from the use a scarce input; i.e that water should be “*...strategically allocated to different economic sectors and uses*” to the best outcome possible. Environmental sustainability is defined as the protection of water resources and aquatic ecosystems in an effort to address wider environmental issues such as loss of biodiversity, habitat, climate change, the the provision of energy and food.<sup>44</sup> As noted earlier, these values often compete with each other; what is considered efficient may not be considered “equitable” and so forth.

Embracing efficiency as a value is important here as it would mean that water should be allocated from lower to higher productive uses. From example, Factory A used 1 liter of water to produce Rp10,000 worth of product, whereas Factory B can only produce Rp1,000 worth of product with the same volume. We can

<sup>41</sup> Discussion with Hugh Turall on September 3, 2022.

<sup>42</sup> J. Rawls, *A Theory of Justice* (Cambridge: Belknap Press, 1999); Amartya Kumar Sen, *Development as Freedom* (Oxford: Oxford University Press, 2001).

<sup>43</sup> Mirja Kattelus, “Integrated Water Resources Management,” in *Practice: Better Water Management for Development*, ed. Roberto Lenton and Mike Muller (London: Earthscan, 2009).

<sup>44</sup> Ibid.

infer that the Factory A is more productive than Factory B. Reallocation would mean that during scarcity water should be preferentially allocated to Factory A instead of B – this could be done with or without compensation depending on the legal framework. Some industry have more water footprint than others and some agriculture use more intensively than others.<sup>45</sup> However, the issue is much more complicated if it involves different kinds of water uses and users, for example within the agriculture sector or between agriculture and drinking water, as will be explained below.

#### IV. CATEGORIES OF WATER RESOURCES CONFLICT

In most generalized terms, there are three types of water conflict: i.e. (1) conflict over water quantity (too little or too much), (2) conflict over water quality (too dirty), and (3) conflict over spatial development with implications to water security. The analytical distinction between different categories of conflict is important in order to assess whether the 6 basic principles can be applied.

##### 4.1. Conflict over the quantity of water utilised

Conflicts over quantity have been reported in many instances in Indonesia and can be caused by either scarcity or flooding. Conflicts can occur in the same category of use (for example between smallholder farmers) or between different categories of use (for example between agriculture and drinking water). Conflict due to water scarcity for farming usually arise from inefficient operation of an irrigation system. Nurhayati *et al.* explain that conflict between farmers in Northern Aceh was caused by lack of coordination in water distribution, inadequate water availability during the drought season, a lack of maintenance of irrigation infrastructure or unilateral action from upstream farmers in lessening or preventing water flows downstream.<sup>46</sup>

<sup>45</sup> On related study regarding water footprints, see F. Bultink, et.al., "The Water Footprint of Indonesian Provinces Related to the Consumption of Crop Products," *European Geosciences Union* 14, no. 1 (2009): 119-128, <https://doi.org/10.5194/hess-14-119-2010>.

<sup>46</sup> Nurhayati, Cut Rizka Al Usrah, and Alwi Alwi, "Konflik Air Irigasi Antar Petani Sawah di Gampong Tanjong Keumala dan Gampong Babah Buloh Kecamatan Sawang Kabupaten Aceh Utara [Irrigation Water Conflict Between Paddy Field Farmers in Gampong Tanjong Keumala and Gampong Babah Buloh, Sawang District, North Aceh Regency]," *Jurnal Sosiologi Dialektika Sosial* 1, no. 2 (2021): 97-110, <https://doi.org/10.29103/jds.v1i2.5114>.

While natural conditions contribute to the lack of flows during the dry season, inefficient water management is often the primary cause of water crises. Industry is often blamed for a water crisis during drought despite the fact that this accusation is usually difficult to prove hydrologically. In one research study in Klaten, Lidon *et al.* discovered that inefficient irrigation management contributed significantly to the water crisis whereas the withdrawal from one private bottled water company was (volumetrically) insignificant.<sup>47</sup> Through participatory rural appraisal, farmers agreed that the causes of the crisis, other than natural conditions, were the deteriorating irrigation system, a lack of respect for water sharing rules, water theft, and poor coordination of cropping calendars.<sup>48</sup> One of the reasons why irrigation infrastructure is under-maintained in many parts in Indonesia is that there are fewer and fewer young farmers.<sup>49</sup> Another problem is the lack of local government attention in maintaining irrigation systems.<sup>50</sup> In this example, industrial water withdrawal is very small compared to agricultural water use and reallocating water from industry to farmers would have negligible impact on resolving the conflict. Since it is very likely in the future that these cases be brought to a Court, it is thus important for the Court to first understand the cause of a water crisis – and whether such a reallocation is the proper and effective remedy. If a conflict is caused by infrastructural and managerial issues, then it could be improved (in the future) by addressing these problems instead of reallocating water entitlements.<sup>51</sup>

<sup>47</sup> Bruno Lidon *et al.*, "Approach and Impact of a Participatory Process for the Reorganization of Irrigation Management: A Case Study in Indonesia," *Cahiers Agricultures* 27, no. 2 (March 2018): 1-9, <https://doi.org/10.1051/cagri/2018015>.

<sup>48</sup> *Ibid.*

<sup>49</sup> In 2011 30% of the young people work in agriculture, in 2021, only 19% work as farmers, 25% work in manufacture and 55.8% work in services. See, Data Indonesia, "Krisis Petani Muda di Negara Agraris [The Crisis of Young Farmers in an Agricultural Country]," [DataIndonesia.id](http://DataIndonesia.id), accessed June 21, 2022. See also, Sri Hery Susilowati, "Fenomena Penuaan Petani dan Berkurangnya Tenaga Kerja Muda serta Implikasinya bagi Kebijakan Pembangunan Pertanian [Phenomenon of Aging Farmers and Decreasing Young Labor Force and Its Implications for Agricultural Development Policies]," *Forum penelitian Agro Ekonomi* 34, no. 1 (June 2016): 35, <https://doi.org/10.21082/fae.v34n1.2016.35-55>.

<sup>50</sup> Ahmad Sururi, "Efektivitas Implementasi Program Pemeliharaan Infrastruktur Jaringan Irigasi di Kabupaten Lebak [Effectiveness of Infrastructure Maintenance Implementation Program for Irrigation Networks in Lebak Regency]," *Pamator Journal* 13, no. 1 (April 2020): 95-104, <https://doi.org/10.21107/pamator.v13i1.6949>; Fandi Armanto, "Baru 15 Persen Delapan Titik Jaringan Irigasi Jauh dari Target [Only 15 Percent of Eight Irrigation Network Points have Achieved Target]," *Radar Bromo*, published August 9, 2021.

<sup>51</sup> It will not be efficient for the legal system to have a reactive adjudication everytime a dispute arises. It is much more efficient that disputes are resolved at the river basin level, utilizing TKPSDA (The Coordination Team for Water Resources Management). This has yet to materialize and it is one of the recommendation from the World

Another type of water conflict is between different kinds of uses among farmers, for example, the conflict between aquaculture and rice farmers.<sup>52</sup> Fishponds are mushrooming in the regions between Musi Rawas Regency and Lubuk Linggau (Kelingi Tugumulyo Irrigation Area (Southern Sumatera)). The conflict has been ongoing for several years.<sup>53</sup> According to Saleh, the problem is quite complex: (i) rice farmers felt that their water entitlement was not protected by the government, (ii) there is no allocation framework for dividing water between fish ponds and ricefields, (iii) lack of enforcement of current rules and norms, (iv) lack of consistent enforcement of cropping pattern<sup>54</sup>, (v) water theft by fishpond owners by damming irrigation channels or not returning the flows to irrigation channels, (vi) the accelerating growth of fishponds, (v) lack of maintenance of irrigation infrastructure, and (vi) siltation of the channels.<sup>55</sup> Many of these factors result in the lack of water ("too little") for downstream farmers, especially during drought.<sup>56</sup> However, Saleh also noted that the damming of on the upstream also causes rice fields to be flooded ("too much").<sup>57</sup>

One of the most common conflict is between agriculture and drinking water – operated by regionally-owned water utility (PDAM). Instances have been reported to occur in Klaten (Cokro spring)<sup>58</sup>, Bali (Badung and Tabanan Regency)<sup>59</sup>, and

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Bank Water Security report that such system be developed at the river basin level. See Khalil et al., "Indonesia Vision 2045." However, there could cases where TKPSDA deliberation results as incorporated by allocation decision from public officials are challenged in Court. Clarifications regarding the norms on reallocation and a consistent application of such norms by the Court would be needed in order to ensure legal certainty. The author would like to thank Pak Hugh Turrall for raising the clarification on this important issue.

<sup>52</sup> See for example Ollaf Winesia, "Konflik Air Daerah Irigasi Kelingi Tugu Mulyo Provinsi Sumatera Selatan – Balai Bws Sumatera VIII [Water Conflicts in the Tugu Mulyo Irrigation Area, South Sumatra Province – Balai BWS Sumatera VIII]," Directorate General of Water Resources, Ministry of Public Works and Public Housing of the Republic of Indonesia, accessed May 22, 2020.

<sup>53</sup> Saleh, "Studi Konflik Air."

<sup>54</sup> Local government agricultural agencies issue and enforce policy on cropping patterns – by adjusting to seasons. Thus, they may require that rice shall not be planted during droughts. However, this is hard to enforce as oftentimes the price of rice increases during drought and thus, incentivized farmers to plant rice by securing additional water supply, for example, through groundwater.

<sup>55</sup> Saleh, "Studi Konflik Air."

<sup>56</sup> Ibid. See also Winesia, "Konflik Air Daerah."

<sup>57</sup> Saleh, "Studi Konflik Air".

<sup>58</sup> Yunita Permatasari, "Resolusi Konflik Pengelolaan Sumber Mata Air Cokro Tulung Kabupaten Klaten [Conflict Resolution on the Management of Cokro Springs, Tulung, Klaten Regency]," *Sosialitas: Jurnal Ilmiah Pendidikan Sosiologi-Antropologi* 5, no. 2 (2015): 163558, <https://jurnal.fkip.uns.ac.id/index.php/sosant/article/view/10472>; Ardhi Satria K, "Kerjasama antara Pemerintah Kabupaten Klaten dan Pemerintah Kota Surakarta Tentang Pemanfaatan Air Umbul Cokro [Collaboration between the Klaten Regency Government and the Surakarta City Government on Umbul Cokro Water Utilization]" (PhD Thesis, University of Muhammadiyah Surakarta, 2014).

<sup>59</sup> Hikmah Trisnawati, "Dampak Perkembangan Infrastruktur Pariwisata terhadap Konflik Air di Kabupaten Badung dan Tabanan [The Impact of Tourism Infrastructure Development on Water Conflict in Badung and Tabanan



Malang (Sumber Pitu Water Source).<sup>60</sup> Baiquni and Rijanta reported that water conflicts between PDAM and farmers in other areas, some of which may have been resolved: Semarang (Umbul Senjoyo), Klaten (Arunsari Village), Boyolali (Umbul Sangsang), Kendal and Semarang (Umbul Boja).<sup>61</sup> All of these reported conflicts typically involve the utilization of spring water as bulkwater supply for PDAMs, sometimes in another city.

The problem of a "thirsty" city is not peculiar to Indonesia and is in fact a common problem all over the world.<sup>62</sup> Research by Garrick *et al.* covering 69 urban agglomerations in South America and Africa estimated that there had been transfers totalling 16 billion m<sup>3</sup> of water per year.<sup>63</sup> These reallocation from rural to urban use are usually mediated by an agreement, which contains items on compensation, water source replacement for the donor region or for the infrastructure operating rules.<sup>64</sup> Water reallocations to urban use are sometimes detrimental to rural communities, however, a win-win situation can materialize if there are benefits to the donor region (rural community), usually in the form of flood control, increased irrigation efficiency, new infrastructure or alternative water sources.<sup>65</sup> New infrastructures could take the form of on-farm storages to collect catchment runoff and irrigation supply<sup>66</sup>. In addition, the Dutch experience shows that cities can also utilize alternative water sources, such as from private and collective rainwater harvesting.<sup>67</sup> These experiences show that

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Regencies]," *Jurnal Ilmiah Pariwisata* 2, no. 1 (2012): 109–222, <https://ojs.unud.ac.id/index.php/jip/article/view/3671>.

<sup>60</sup> Nasional Tempo.Co, "Petani Malang Cemaskan Proyek Eksplorasi Air [Malang Farmers Worry about Water Exploration Projects]," Nasional Tempo.Co, accessed June 22, 2022; "Sumber Pitu Dimonopoli PDAM, Petani Malang Menjerit [Pitu Springs Monopolized by PDAM, Malang Farmers Cry Out]," Memorandum.co.id, accessed March 8, 2020; Redaksi Bacamalang.com, "Ini Rekom Dewan Soal Pemanfaatan Air Sumber Pitu untuk Petani [This is the Council's Recommendation Regarding the Utilization of Pitu Springs for Farmers]," *Bacamalang.com*, published March 4, 2020.

<sup>61</sup> M. Baiquni and R. Rijanta, "Konflik Pengelolaan Lingkungan dan Sumberdaya dalam Era Otonomi dan Transisi Masyarakat [Conflicts in Environmental and Resource Management in the Era of Autonomy and Society Transition]," *Bumi Lestari Journal of Environment* 7, no. 1 (2007), <https://ojs.unud.ac.id/index.php/blje/article/view/2414>.

<sup>62</sup> Dustin Garrick *et al.*, "Rural Water for Thirsty Cities: A Systematic Review of Water Reallocation from Rural to Urban Regions," *Environmental Research Letters* 14, no. 4 (2019): 1–14, <https://doi.org/10.1088/1748-9326/abodb7>.

<sup>63</sup> *Ibid.*

<sup>64</sup> *Ibid.*

<sup>65</sup> *Ibid.*

<sup>66</sup> N. Roost *et al.*, "Adapting to Intersectoral Transfers in the Zhanghe Irrigation System, China: Part II: Impacts of in-System Storage on Water Balance and Productivity," *Agricultural Water Management* 95, no. 6 (June 2008): 685–97, <https://doi.org/10.1016/j.agwat.2008.01.011>.

<sup>67</sup> Suzanne Loen, "Thirsty Cities: Learning from Dutch Water Supply Heritage," *Adaptive Strategies for Water Heritage* (2020): 79, <https://doi.org/10.1007/978-3-030-00268-8>.

reallocating water from urban to rural needs to take into account the benefit of rural communities. These initiatives however, will need to be incorporated into the legal regimes in order to provide legal certainties.

#### 4.2. Water Quality Conflict

Conflicts over water quality occur when stakeholder's expectation over a certain water quality standard are not met. One example is the conflict between rice farming and aquaculture, where brackish water from fish and prawn ponds seeps into paddy fields and damages rice plants.<sup>68</sup>

Another example is the decrease of water quality due to aquaculture/floating net cages (*keramba jaring apung*) in dams. In 2016, it was estimated that there were 23 thousand floating net cages in the Jatiluhur dam, causing disturbance to the operation of electricity turbines and billions of rupiah increase in drinking water treatment costs.<sup>69</sup> Aquaculture increases acidity of water and produces sulfuric acid, which corroded the hydropower turbines.<sup>70</sup> This situation also occurs in Koto Panjang hydropower dam, which supplies electricity to Riau. Eutrophication from floating net cages and solid waste from tourism likewise impairs turbine operation.<sup>71</sup>

Floating net cages also allegedly contribute to the decrease of water quality in Lake Toba, which renders it inappropriate for tourism and drinking water purpose.<sup>72</sup> In these cases, the utilization of water bodies for fishery contributes to the deterioration of water quality required for other purposes. The solution to

<sup>68</sup> Tomi, "Ganguu Pertanian, Tambak Udang Harus Ditata [Disrupting Agriculture, Shrimp Ponds Must be Regulated]," *KRJogja*, published February 3, 2017.

<sup>69</sup> Mediaindonesia.com, "Jaring Apung di Jatiluhur Ganggu Turbin PLTA [Floating Nets in Jatiluhur Disrupt Hydropower Turbines]," Mediaindonesia.com, published November 7, 2016.

<sup>70</sup> Sonny Koeshendrajana et al., "Kajian Eksternalitas dan Keberlanjutan Perikanan di Perairan Waduk Jatiluhur [Externalities and Sustainability Study of Fisheries in the Jatiluhur Reservoir]," *Jurnal Sosial Ekonomi Kelautan dan Perikanan* 4, no. 2 (2017): 137–56, <http://dx.doi.org/10.15578/jsekp.v4i2.5826>.

<sup>71</sup> Happy Rosalina, Sujianto Sujianto, and Sofyan Husein Siregar, "Strategi Pengembangan Ekowisata di Kawasan Waduk Pembangkit Listrik Tenaga Air (PLTA) Koto Panjang Kabupaten Kampar [Ecotourism Development Strategy in the Koto Panjang Hydroelectric Power Plant (PLTA) Area of Kampar Regency]," *Dinamika Lingkungan Indonesia* 1, no. 2 (2014): 97–108, <http://dx.doi.org/10.31258/dli.1.2.p.97-108>.

<sup>72</sup> Yudhi Soetrisno Garno, Rudi Nugroho, and Muhammad Hanif, "Kualitas Air Danau Toba di Wilayah Kabupaten Toba Samosir dan Kelayakan Peruntukannya [Water Quality of Lake Toba in the Toba Samosir District and Its Suitability for Use]," *Jurnal Teknologi Lingkungan* 21, no. 1 (January 2020): 118–24, <https://doi.org/10.29122/jtl.v21i1.3277>. See also Lukman, *Danau Toba: Karakteristik Limnologis dan Mitigasi Ancaman Lingkungan dari Pengembangan Karamba Jaring Apung* [Lake Toba: Limnological Characteristics and Environmental Threat Mitigation from Floating Net Cage Development] (Menteng, Jakarta: LIPI Press, 2013).

these problems therefore, often involves the governance on the use of particular water bodies – in this case concerning fish net cages.<sup>73</sup> Managing new uses (such as the floating net cages) can take the form of either taxation, licensing, administrative penalties combined altogether with citizen monitoring.

#### 4.3. Conflict due to certain land use activities

This category is used to describe conflicts which arise in situations where certain land use activities causes water quality or quantity to decline. This could range from deforestation which contributes to flooding and landslides<sup>74</sup> to the conversion of open green spaces into residential or commercial districts.<sup>75</sup> In this cases the problem and its solution would require the invocation of different legal sectors outside of water law.

Regimes which are designed to reduce surface runoff, such as the obligation of minimum open spaces in building developments<sup>76</sup> or the obligation of zero delta Q<sup>77</sup> in areas with high elevations or peatlands, follow spatial development regimes outside of water law.

In many cases, conflict arises due to mining activities – which are governed by mining law. Open pits filled with highly acid water have been used by community-based water supply systems in East Kalimantan to supply water for daily needs.<sup>78</sup> Mining activities in Muara Enim also caused water to smell

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<sup>73</sup> In turn, these could trigger social conflict. See Nendah Kurniasari et al., "Risiko Sosial Penertiban Keramba Jaring Apung di Waduk Jatiluhur [Social Risks of Regulating Floating Net Cages in Jatiluhur Reservoir]," *Jurnal Sosial Ekonomi Kelautan dan Perikanan* 15, no. 1 (2020): 107–19, <http://dx.doi.org/10.15578/jsekp.v15i1.8363>.

<sup>74</sup> Jessie A. Wells et al., "Rising Floodwaters: Mapping Impacts and Perceptions of Flooding in Indonesian Borneo," *Environmental Research Letters* 11, no. 6 (2016): 064016, <https://doi.org/10.1088/1748-9326/11/6/064016>; Jennifer Merten et al., "Flooding and Land Use Change in Jambi Province, Sumatra: Integrating Local Knowledge and Scientific Inquiry," *Ecology and Society* 25, no. 3 (2020), <https://doi.org/10.5751/ES-11678-250314>.

<sup>75</sup> T. P. Moeliono, *Spatial Management in Indonesia: From Planning to Implementation: Cases from West Java and Bandung: A Socio-Legal Study* (Leiden: Leiden University, 2011).

<sup>76</sup> Presidential Regulation Number 60 of 2020 on the Spatial Plan of the Urban Areas of Jakarta, Bogor, Depok, Tangerang, Bekasi, Puncak, and Cianjur.

<sup>77</sup> Zero delta Q means that all development activity must not increase water flows to rivers or drainage systems. In other words, water from needs to be recharged back to aquifers. See Government Regulation of the Republic of Indonesia Number 26 of 2008 on the National Spatial Plan. The obligation to recharge aquifers are also manifested in building codes. See Minister of Public Works Regulation Number 11/PrT/M/2014 on Rainwater Management in Buildings and Land Plots.

<sup>78</sup> "Ketika Warga Desa Sikalang Gunakan Air dari Kolam Bekas Tambang Batubara [When Residents of Sikalang Village Use Water from a Former Coal Mine Pond]," [Mongabay.co.id](http://Mongabay.co.id), published May 5, 2021.

of rust.<sup>79</sup> One stakeholder we interviewed from that area also commented that rust is major challenge for community based water infrastructure since it often damages their waster treatment facilities.<sup>80</sup>

## V. CRITICISMS OF THE 6 BASIC PRINCIPLES

### 5.1. Unclear Scope

As mentioned in section 2, The Constitutional Court (CC) prefaced the 6 basic principles by elaborating: [...] *based on the above consideration, then, water commercialization must be strictly limited in an effort to preserve and sustain the availability of water for the nations' life* (underlined by author). The underlined phrase denotes that the scope of the 6 basic principle is the commercialization of water. What "commercialization" means have been extensively discussed by Al'Afghani, in which the element of commercialization is profit-generation.<sup>81</sup> If water is used as a material or media or that water bodies (blue space) are being used for any activities which produce profit, then it is "commercial". In the literature, the term "commercialization" is often equated by "private sector participation" or privatization of drinking water services<sup>82</sup> or an opposition on treating water as social good (where water is considered a "commercial good").<sup>83</sup>

Nevertheless, Water Law 17/2019 does not even utilize the term *pengusahaan* (commercialization) – except for few examples in transitional provisions. The term used by the Water Law is "*The Utilization of Water Resources for commercial needs – the "commercial use" of water*" (*Penggunaan Sumber Daya Air Untuk Kebutuhan Usaha*). As such, the definition of commercialization of water is not

<sup>79</sup> Helper Sahat P Manalu, Bambang Sukana, and Kenti Friskarini, "Kesiapan Pemerintah Kabupaten Muara Enim dalam Rangka Menanggulangi Pencemaran Batubara [The Readiness of the Muara Enim Regency Government in Dealing with Coal Pollution]," *Indonesian Journal of Health Ecology* 13, no. 2 (2014): 95-104, <https://www.neliti.com/publications/81029/kesiapan-pemerintah-kabupaten-muara-enim-dalam-rangka-menanggulangi-pencemaran-b>.

<sup>80</sup> Interview with community based water stakeholders in Muara Enim for the research project "Supporting Sustainable Rural Water Service Delivery: District Associations of Community-Based Organisations in Indonesia" on January 26-27, 2014.

<sup>81</sup> Al'Afghani, "Alienating the Private Sector."

<sup>82</sup> Sean Flynn and Danwood M. Chirwa, "The Constitutional Implications of Commercializing Water in South Africa," In Book *The Age of Commodity: Water Privatization in Southern Africa* 59. London: Routledge, 2004.

<sup>83</sup> J. Dugard, "Can Human Rights Transcend the Commercialization of Water in South Africa? Soweto's Legal Fight for an Equitable Water Policy," *Review of Radical Political Economics* 42, no. 2 (June 2010): 175-94, <https://doi.org/10.1177/0486613410368495>.

clear under existing legislation. Perhaps this is meant to avoid the sensitive issue of commercialization of the water sector. In any case, the question here is the scope of the 6 basic principles: was it means for water governance as a whole or only for the commercialization of water resources?

This question is relevant because if the 6 basic principles are meant to guide water governance as a whole, non-commercial water use must fall within it. This means that utilization of water for smallholder crops and drinking water as well as social and religious activities must pay attention to the 6 basic principles. On the other hand, if the 6 basic principles are meant only to limit commercialization, then those activities will not be covered by it.

The second problem is the relevance of the said principles in governing water services. As discussed in Section 3, "water services" is one of the meta regimes in water law. The strength of the 6 basic principles is its role in providing guiding values for water allocation. In the case of water services, when water has been considered to have been allocated among other uses, the problem is considered to have been settled at the resources (river basin) level, and not within the governance of water services. Nevertheless, it is possible to extend the interpretation of 6 basic principles for allocation of water among water utility consumers in the event of water crisis in which household water use and water for daily basic needs should be prioritized over industrial or commercial water use (such as water use in malls).

The other problem in the water services sector has more to do with ownership (public vs private), pricing/tariffs, stakeholder participation, network expansion or public utilities capture.<sup>84</sup> As Al'Afghani and Bisariyadi notes, privatization in water service provision covers a spectrum; from management contract, to affermage, lease, BOT, concession and in its highest form, divestiture – of the

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<sup>84</sup> Mohamad Mova Al'Afghani, *Legal Frameworks for Transparency in Water Utilities Regulation: A Comparative Perspective* (London: Routledge, 2016); Hendry, *Frameworks for Water Law Reform*. Here is taken from Stigler's 1971 seminar paper. According to Stigler, "...as a rule, regulation is acquired by the industry and is designed and operated primarily for its benefits". See, George J. Stigler, "The Theory of Economic Regulation," *The Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3–21, <https://doi.org/10.2307/3003160>; E. Dal Bo, "Regulatory Capture: A Review," *Oxford Review of Economic Policy* 22, no. 2 (2006): 203, <https://doi.org/10.1093/oxrep/grj013>.

infrastructure.<sup>85</sup> Principle 5 is closer to the other principles with regards to the question of ownership. Principle 5 states:

[“...sebagai kelanjutan hak menguasai oleh negara dan karena air merupakan sesuatu yang sangat menguasai hajat hidup orang banyak, maka prioritas utama yang diberikan ***pengusahaan*** atas air adalah Badan Usaha Milik Negara atau Badan Usaha Milik Daerah”]

[...] as a continuation of state control and since water controls the livelihood of the people, then the primary priority on the ***commercialization*** of water is by State Owned Enterprise (BUMN) or Region-Owned Enterprise (BUMD) (emphasized by author);

Both the Indonesian term “*Pengusahaan*” and the english translation “*Commercialization*” is underlined by author. As mentioned earlier, the term used by the Water Law is different from the 6 basic principles by the Constitutional Court (CC). Water Law used the terms “commercial use” and “non-commercial use”.<sup>86</sup>

The CC’s uses of the term *Pengusahaan* is because commercialization (the CC decision used both terms: *komersialisasi* and *pengusahaan*) are widely used and intensely debated during the trials. As such, Principle 5 seeks to address this. This however, can trigger another question: which license typology on the allocation framework (see table 1 above) can be considered a “commercialisation”?

The problem is that principle 5 is not specific to water services and is aimed at regulating the whole range of commercialization of water, including water services. Principle 5 simply means that state and region-owned enterprises should be prioritized in the commercial use of water resources – in other words, in terms of license, it should be granted first. Principle 5 does not even prohibit commercialization or the private sector’s role in water services.

The Water Law 17/2019 seemed to interpret Principle 5 even further by ruling, in Article 50, that if the product is drinking water, abstraction licenses can only be granted to state, regional or village-owned enterprises.<sup>87</sup> It appears

<sup>85</sup> Mohamad Mova Al’Afghani and Bisariyadi, “A Hidden Legal Loophole: The Problematique of Regulating Private Sector’s Participation in Indonesia’s Drinking Water Service,” SSRN, published December 30, 2021, <http://dx.doi.org/10.2139/ssrn.3996774>.

<sup>86</sup> See, Article 8 Law Number 17 Year 2019 Regarding Water Resources.

<sup>87</sup> Law Number 17 Year 2019 Regarding Water Resources.

that entities apart from state/region/village-owned enterprises are prohibited from supplying drinking water. However, the government has often stated that foundations, associations or community groups could still obtain an attraction license under Article 45 to fulfill their "daily basic needs". However, what if the daily basic need is for drinking water – as often supplied by housing developers or in apartments? This is where the presence of Article 50, in conjunction with Article 45, creates legal uncertainty. This has been addressed in another paper.<sup>88</sup>

## 5.2 Inapplicability to Certain Conflict Categories

As discussed earlier, the strength of the 6 basic principles is that they can be used to guide the resolution of water conflicts. The following table summarizes the different categories of real-life water conflicts outlined in Section 4 and assess whether they can be resolved using the 6 basic principles.

**Table 2.** The Different Categories of Real-Life Water Conflicts

No.	Conflict Categories	Parties	Applicability
1.	Quantity	Between Smallholders (Farmers vs Farmers)	<b>Not applicable.</b> Since the 6 basic principles apply to different categories of uses and users, it is of little relevance to conflict within the same categories of uses and users. For example, if two state-owned enterprises compete over water, the principle is of little use.
2.		Smallholder Farmers vs Industry	<b>Applicable.</b> Smallholder farmers should be prioritized over industry. However, allocation priority may not matter too much if industrial water use is too small to be usefully reallocated to smallholder farmers. There are also cases where conflict arises due to inefficient irrigation infrastructure and its management.

<sup>88</sup> Al'Afghani and Bisariyadi, "A Hidden Legal Loophole."

No.	Conflict Categories	Parties	Applicability
3.		Rice fields vs Aquaculture ( <i>tambak</i> )	<b>Applicable IF</b> aquaculture is <b>not</b> defined as " <i>pertanian rakyat</i> " (smallholders). Note that elucidation of Article 8(b) of Law 17/2019 categorized "perikanan" (fishery) as smallholders. If this is the case then the principle is not applicable (see no 1 above).
4.		Smallholder vs Drinking Water	<b>Applicable</b> but does not provide clear solution. It can be argued that drinking water - through drinking water utilities (PDAM) - is more protected by the constitution than the rights of smallholder farmers. But this is more complicated than it sounds, some PDAMs also supply water to hotels, malls and industries and they are commercial, in that they levy charges and make an operating profit. During scarcity, it is possible for example, to allocate a certain amount of water to PDAM and ensure that priorities be given to households and consumers utilizing water for their daily needs. As discussed above, reallocation of water from rural to urban needs to be accompanied with incentives and compensation mechanisms.
5.	Water Quality	Aquaculture vs Rice Farmers (Smallholders)	<b>Not Applicable.</b> The language of the 6 basic principle (at principle 6) is " <i>apabila masih ada ketersediaan air</i> " (if there is an availability of water). In conflict over quality, water is available in terms of quantity but its quality is low. <b>However</b> , it can be applicable



No.	Conflict Categories	Parties	Applicability
			<p>IF the 6 basic principle is interpreted extensively so as to cover quality and that aquaculture is not categorized as <i>pertanian rakyat</i>. Hence, the principle would prioritize rice farmers.</p>
6.		Aquaculture vs Hydropower	<p><b>Not Applicable.</b> Neither aquaculture (in this case <i>Keramba Jaring Apung</i>) nor hydropower* is specifically addressed in the 6 basic principles. Principle 1 and 2 protect "access" to water, this possibly meant water for daily basic need, which constitutes the core elements of the human right to water.** In addition, even if sufficient volume of water is available, the problem is that waters are dirty and/or corrosive. <b>However</b>, it can be applicable IF the 6 basic principle is interpreted to cover water quality. In this case, Hydropower which is operated by state owned companies should be prioritized over aquaculture.</p>
7.		Aquaculture vs Tourism	<p><b>Not applicable.</b> Neither <i>Keramba Jaring Apung</i> nor tourism is the concern of the 6 basic principles.</p>
8.	Land Use implications of water	Conversion of green or blue spaces into residential or business districts	<p><b>Not applicable.</b> None of them are considered as water uses or users under the 6 basic principles</p>

\* There are social, including welfare considerations in terms of granting access to electricity which should be weighed against other uses, such as the floating net cages or agricultural water needs. The author would like to thank Pak Hugh Turall for raising this issue.

\*\* United Nations Committee on Economic Social and Cultural Rights, "General Comment 15 ICESCR."

No.	Conflict Categories	Parties	Applicability
9.		Mining vs Drinking Water	<b>Not Applicable.</b> The state has the duty to protect and fulfill the people's right to water, however, principle 1 is confined to the context of commercialization: " <i>water commercialization shall not impede...</i> ". Discharging dirty water into the river does not fit into this category. Dewatering (the drainage of tunnels or pits to enable mining activity) is an allocation issue. If dewatering affects drinking water, drinking water shall be prioritized over dewatering.

As can be seen from the above table, that the 6 basic principles can only be used to resolve certain kinds of conflicts. Conflicts over quantity (allocation issues) can be resolved by referring to the principle, but only if they concern different kinds of water uses and users.

Conflicts over quality are generally inapplicable since the 6 basic principles seem to be preoccupied with *ketersediaan air* (water availability) which is a quantity issue. However, if *ketersediaan air* can be interpreted extensively so as to cover availability of water at a desired quality, then the 6 basic principles would be more applicable. For instance, any water quality conflict between hydropower and *keramba jaring apung* (floating fish cages) would prioritize water use for hydropower.

Water conflicts which arise due to land use, development or the pollution of waterways due to activities, such as mining, are not covered by the 6 basic principles. This is because the principle is preoccupied with commercialization and not governance as whole. Principle 1 reads "*water commercialization shall not impede...*". Land use cases, such as the conversion of open green spaces into commercial areas, are not water commercialization *per se*. It is the commercialization of land, whose function is to retain and regulate water. Likewise,

pollution cases are not water commercialization *per se*, i.e. water is neither abstracted as media or materials in which the abstraction itself is detrimental to other parties. This is different from situation where, for example, abstraction by industrial water users reduces water availability for daily needs. In pollution cases, it is the discharge (and not the abstraction) of polluted water back into the environment that lessens the enjoyment of water by other parties. In order for Principle 1 to be applicable to pollution cases, we need to ignore the phrase "water commercialization" and interpret it as any kinds of water use.

### 5.3 The Problem of Water Efficiency

As discussed in Section 3, one important value in water governance other than equity and environmental sustainability is efficiency, which means that scarce water resources should "...go as far as possible" and allocated strategically "...to different economic sectors and uses".<sup>89</sup> Lenton and Muller do not define efficiency<sup>90</sup> further, but from their article, it is possible to denote that efficiency in the context of water allocation means achieving as large an output as possible with as little water input. Using less water intensive crops (higher productivity), reducing seepage in irrigation infrastructure, replacing faucets with automatic taps are all examples of technical water efficiency measures to reduce the net consumption of water. Increasing productivity requires allocating water to uses that generate more economic value to the economy (allocative efficiency). In the words of Allan, allocative efficiency simply means: *which activity brings the best return (more productive value) to water?*<sup>91</sup>

The question now becomes: do the 6 basic principle allow allocative efficiency measures? There are two ways to approach this problem, the first, is through literal interpretation of the 6 basic principles, and the second is through teleological interpretation of the principles.

<sup>89</sup> Kattelus, "Integrated Water Resources."

<sup>90</sup> In many parts of this paper, the term used to denote efficiency is the "productive value of water."

<sup>91</sup> Tony Allan, "Productive Efficiency and Allocative Efficiency: Why Better Water Management May Not Solve the Problem," *Agricultural Water Management* 40, no. 1 (March 1999): 71–75, [https://doi.org/10.1016/S0378-3774\(98\)00106-1](https://doi.org/10.1016/S0378-3774(98)00106-1).

### The Literal Interpretation

In the strict literal sense, Principle 6 can be read as follows: Private enterprises can only be granted a permit to abstract water *if, and only if*, the other allocation priorities, namely (i) human right to water – water for daily basic needs and livelihood including smallholders, (ii) water for environmental conservation, and (iii) water for state owned enterprises - have been fulfilled and sufficient resource exist to supply commercial demand. This means that, according to the literal interpretation, if there is no water left, the private sector ***shall not*** be allocated any.

The agricultural is the most intensive consumer of water compared to other sectors. According to PT Jasa Tirta 2 (the river basin corporation) annual report 2020, around 6.8 billion meter cubic meters of water – or 90% of its water deliveries - are distributed across 300,000 hectares of agricultural land in northern west Java, *free of charge*.<sup>92</sup> This means that only 10% of its water generates profit.



Figure 2. Water Allocation in PJT 2

The remaining 10% is utilized for electricity, bulkwater supply to Jakarta and water supply to industry. If the literal interpretation is applied – also by referring to the allocative framework under Water Law – then drinking water and smallholders will need to be fulfilled first before industry can be supplied.

<sup>92</sup> PJT 2, "Annual Report 2020: Beyond A New Normal A New Era of Growth" (Purwakarta: PJT 2, 2020).

*Teleological Interpretation*

According to Bulsink *et al.*, rice consumes more water than other crops.<sup>93</sup> Coffee and cocoa are also water hungry, but they take their water from rain (green water); rice on the other hand needs quite a lot of irrigation (blue) water. The average water footprint for Java is 2800 m<sup>3</sup>/ton.<sup>94</sup>

**Table 3.** Water footprint of crops in Indonesia

	Water footprint [m <sup>3</sup> /ton]			Total
	Green	Blue	Grey	
Rice	2527	735	212	3473
Maize	2395	75	13	2483
Cassava	487	8	19	514
Soybeans	1644	314	0	1958
Groundnut	2962	162	0	3124
Coconut	2881	0	16	2896
Oil palm	802	0	51	853
Banana	875	0	0	875
Coffee	21904	0	1003	22907
Cocoa	8895	0	519	9414

**Source:** Bulsink (2009)

1 kg of beef needs 15,000 liter of water whereas a pair of jeans needs 8,000 liter of water.<sup>95</sup> Bottled water on the other hand, require 17.42 liter of raw water for every liter of production.<sup>96</sup> In these cases, during scarcity, can water be allocated from rice farmers to other crop production with higher economic value? Can water be allocated from *peternakan* (livestock) to bottled water?

Unlike the literal interpretation, the teleological interpretation looks at the purpose behind the 6 basic principles. In Dworkin's words; "...*constructive interpretation is a matter of imposing **purpose** on an object or practice in order to make it the best of possible example of the form or genre to which it is taken*

<sup>93</sup> Bulsink, et.al., "The Water Footprint."

<sup>94</sup> Ibid.

<sup>95</sup> Arjen Y. Hoekstra, *The Water Footprint of Modern Consumer Society* (London: Routledge, 2013).

<sup>96</sup> Shalini A. Tandon, Niranjan Kolekar, and Rakesh Kumar, "Water and Energy Footprint Assessment of Bottled Water Industries in India," *Natural Resources* (February 2014), <https://doi.org/10.4236/nr.2014.52007>.

to belong" (emphasized by author).<sup>97</sup> He continued: "...an interpretation is by nature the report of a purpose".<sup>98</sup>

Principle 1 reiterates Article 33 of the 1945 Constitution in that natural resources (water included) should be exploited to the greatest benefit of the people's welfare (*sebesar-besarnya kemakmuran rakyat*). In this case, water should be allocated in such a way that would optimize welfare – which could include employment in the private sector. At the same time, the teleological argument states that less than economically optimal (but nonetheless "equal") allocation of water would violate the constitution. Thus, if industries have higher economic water productivity, which means that they can produce more rupiah per drop of water compared to agriculture or livestock, then (some) water may need to be reallocated to industry.

What welfare (*kemakmuran*) means is a matter of debate. It is thus possible to argue that in situation where water is allocated to certain industry (for example, bottled water) and denied to certain farmers group (for example, one part of the irrigation area) and the result of such allocation brings more benefit to state or village income (through taxation or other means) – to the detriment of certain farmer groups – then it could be consistent with the constitutional goal to increase welfare.<sup>99</sup>

Although (re)allocating water from farmers (which consumes the highest percentage of water in many river basins – Citarum is one example) to industry seems easy on paper, there are plenty of other considerations, such as social conflict, consensus-building and most importantly equity. It is true that such reallocation would increase the economic benefits (i.e industry produce more rupiah than farmers) and is beneficial for taxes, but the distributional questions remains, what do the farmers receive in compensation for letting go some of their water entitlement? In this situation, a compensation mechanism will need to be created. Certain farmers groups could receive less water in exchange for

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<sup>97</sup> Ronald Dworkin, *Law's Empire* (Cambridge: Harvard University Press, 1986).

<sup>98</sup> *Ibid.*

<sup>99</sup> In economic terms, the allocation is a Kaldor-Hicks improvement. See Guido Calabresi, "The Pointlessness of Pareto: Carrying Coase Further," *The Yale Law Journal* 100, no. 5 (March 1991): 1211, <https://doi.org/10.2307/796691>.

financial or other benefits. If all parties agree to such mechanism than both the welfare maximization consideration and the equity consideration could go hand in hand. This is more aligned with the Article 33 and preamble of the 1945 Constitution which seeks to increase welfare. The situation could be more complicated if reallocation involves environmental water use as their economic value might and welfare implicatons might be harder to determine.

#### 5.4 Restrictions on Reallocation

In order for such welfare-enhancing mechanism to operate, the Water Law needs to allow the reallocation of water. However, from the discussion in Section 2 and the allocation rank in Table 1 (Articles 8 and 49 of the Water Law), it is not really clear if the water law permits the reallocation of water from smallholders to the private sector. Furthermore, it is also not clear that, if such reallocation is actioned, farmers would be entitled to receive compensation.

Likewise, the 6 basic principles, in the literal sense, do not provide any room for reallocation of water from smallholders to industry, even when industrial/non-commercial water use could be more beneficial and welfare enhancing. Principle 6 stipulates that the private sector can only be allocated with water "*apabila masih ada ketersediaan air*" (if there is an availability of water). It is also not possible for farmer groups to exchange (for money) some of their water quota to industry.

Therefore, in order to allow a fair water reallocation, the 6 basic principles will need to be reinterpreted, namely that reallocation should be allowed to the extent that it is fair and maximizes welfare In other words, if farmers are happy to receive less or no water in exchange of money, then it should be allowed – insofar as the social costs which may arise from such reallocations are taken into account.

## VI. CONCLUSION

This paper has demonstrated that the 6 basic principles' strength is in providing value guidance in water conflicts over quantity (too little), between people, environment, state owned enterprises and the private sector. Nevertheless,

this comes with limitations – the 6 basic principles (and their implementation in Water Law) cannot really provide guidance for conflicts which arise from the same category of uses and users (for example between farmers for agriculture). The 6 basic principles offer little guidance to solve water conflicts which arise due to water quality (too dirty) or flooding (too much) or those which arise from spatial (both land and water) developments. One important limitation to the 6 basic principles is that they ignore economic productivity and inadvertently prohibits the reallocation of water from smallholders to industry – even when such reallocation is economically efficient and welfare-maximizing.

If another judicial review on Water Law is submitted to the Constitutional Court (CC) in the future, the CC should utilize teleological approach as outlined in this paper and revised the 6 basic principles accordingly. In addition, it is also better to extend the interpretation of the 6 basic principles into water governance as a whole instead of only water commercialization since non-commercial water use will still need to pay attention to environmental and human rights concerns.

In terms of implementation, the 6 basic principles should be interpreted teleologically in which, reallocation of water from low value uses to higher value uses must be allowed if it maximizes welfare and includes compensation of the donor party and internalizes any social costs. The procedures and regulation for a welfare-maximizing, democratic and accountable water reallocation in Indonesia is a subject for future research.

## BIBLIOGRAPHY

Al'Afghani, Mohamad Mova, and Bisariyadi. "A Hidden Legal Loophole: The Problematique of Regulating Private Sector's Participation in Indonesia's Drinking Water Service." SSRN, December 30, 2021, <http://dx.doi.org/10.2139/ssrn.3996774>.

Al'Afghani, Mohamad Mova. "Alienating the Private Sector: Implications of the Invalidation of the Water Law by the Indonesian Constitutional Court." *Journal of Water Law* 26, no. 3 (2019): 103-114, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3666679](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3666679).



- Al'Afghani, Mohamad Mova. *Legal Frameworks for Transparency in Water Utilities Regulation: A Comparative Perspective*. London: Routledge, 2016.
- Allan, Tony. "Productive Efficiency and Allocative Efficiency: Why Better Water Management May Not Solve the Problem." *Agricultural Water Management* 40, no. 1 (March 1999): 71–75, [https://doi.org/10.1016/S0378-3774\(98\)00106-1](https://doi.org/10.1016/S0378-3774(98)00106-1).
- Anderson, Robert T. "Indian Water Rights: Litigation and Settlements." *Tulsa Law Review* 42, no. 1 (July 2006): 15, [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1140324](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1140324).
- Armanto, Fandi. "Baru 15 Persen Delapan Titik Jaringan Irigasi Jauh dari Target [Only 15 Percent Eight Irrigation Network Points Far from the Target]." Radar Bromo, published August 9, 2021. <https://radarbromo.jawapos.com/pasuruan/09/08/2021/baru-15-persen-delapan-titik-jaringan-irigasi-jauh-dari-target/>.
- Bacamalang.com. "Ini Rekom Dewan Soal Pemanfaatan Air Sumber Pitu untuk Petani [This is the Council's Recommendation regarding the Use of Pitu water for Farmers]." Bacamalang.com, published March 4, 2020. <https://bacamalang.com/ini-rekom-dewan-soal-pemanfaatan-air-sumber-pitu-untuk-petani/>.
- Baiquni, M., and R. Rijanta. "Konflik Pengelolaan Lingkungan dan Sumberdaya dalam Era Otonomi dan Transisi Masyarakat [Conflicts over Environmental and Resource Management in the Era of Autonomy and Community Transition]." *Bumi Lestari Journal of Environment* 7, no. 1 (2007). <https://ojs.unud.ac.id/index.php/blje/article/view/2414>.
- Bakker, K. J. *An Uncooperative Commodity: Privatizing Water in England and Wales*. London: Oxford University Press, 2003.
- Bakker, Karen J. *Privatizing Water : Governance Failure and the World's Urban Water Crisis*. New York: Cornell University Press, 2010.
- BBC News Indonesia. "Situasi Saparua Berangsur Normal [The Situation of Saparua is Gradually Normal]," published March 8, 2012. [https://www.bbc.com/indonesia/berita\\_indonesia/2012/03/120308\\_bentrokmalukutengah](https://www.bbc.com/indonesia/berita_indonesia/2012/03/120308_bentrokmalukutengah).

- Benda-Beckmann, Franz von. "Contestations over a Life-Giving Force Water Rights and Conflicts, with Special Reference to Indonesia." In *A World of Water Rain, Rivers and Seas in Southeast Asian Histories*, edited by P. Boomgaard, 240. Leiden: KITLV Press, 2007.
- Bulsink, F., A. Y. Hoekstra, and Martijn J. Booij. "The Water Footprint of Indonesian Provinces Related to the Consumption of Crop Products." *European Geosciences Union* 14, no. 1 (2009): 119-128, <https://doi.org/10.5194/hess-14-119-2010>.
- Calabresi, Guido. "The Pointlessness of Pareto: Carrying Coase Further." *The Yale Law Journal* 100, no. 5 (March 1991): 1211-1237, <https://doi.org/10.2307/796691>.
- Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v. Nicaragua).
- Constitutional Court Decision No. 058-059-060-063/PUU/2004 Concerning the Approval of Law Number 7 of 2004 Concerning Water Resources.
- Constitutional Court Decision Number 85/PUU-XI/2013 Regarding Review of Law Number 7 of 2004 Concerning Water Resources.
- Dal Bo, E. "Regulatory Capture: A Review." *Oxford Review of Economic Policy* 22, no. 2 (2006): 203-225, <https://doi.org/10.1093/oxrep/grj013>.
- Defra. *Water Industry Act 1991 Section 13(1) Modification of the Conditions of Appointment of United Utilities Water Plc*. London: The Stationery Office, 2005.
- Directorate General of Water Resources, Ministry of Public Works and Public Housing of the Republic of Indonesia. "Enam Prinsip Dasar Pengelolaan Air Kembali Pengaturan Air Ke Negara [Six Basic Principles of Water Management Return Water Management to the State]." Accessed April 5, 2017. <http://sda.pu.go.id/pages/posts/Enam-Prinsip-Dasar-Pengelolaan-Air-Kembali-Pengaturan-Air-Ke-Negara>.
- Dispute over the Status and Use of the Waters of the Silala (Chile v. Bolivia). Accessed June 19, 2022.

- Dugard, J. "Can Human Rights Transcend the Commercialization of Water in South Africa? Soweto's Legal Fight for an Equitable Water Policy." *Review of Radical Political Economics* 42, no. 2 (June 2010): 175-94, <https://doi.org/10.1177/0486613410368495>.
- Dworkin, Ronald. *Law's Empire*. Cambridge: Harvard University Press, 1986.
- El-Fadel, M., et.al. "The Nile River Basin: A Case Study in Surface Water Conflict Resolution." *Journal of Natural Resources and Life Sciences Education* 32, no. 1 (2003): 107-117, <https://doi.org/10.2134/jnrlse.2003.0107>.
- Flynn, Sean, and Danwood M. Chirwa. "The Constitutional Implications of Commercializing Water in South Africa." in book *The Age of Commodity: Water Privatization in Southern Africa*. London: Routledge, 2004.
- Fröhlich, Christiane J. "Security and Discourse: The Israeli-Palestinian Water Conflict." *Conflict, Security & Development* 12, no. 2 (2012): 123-48, <https://doi.org/10.1080/14678802.2012.688290>.
- Garno, Yudhi Soetriono, Rudi Nugroho, and Muhammad Hanif. "Kualitas Air Danau Toba Di Wilayah Kabupaten Toba Samosir Dan Kelayakan Peruntukannya [Water Quality of Lake Toba in the Toba Samosir District and Its Suitability for Use]." *Jurnal Teknologi Lingkungan* 21, no. 1 (January 30, 2020): 118-24, <https://doi.org/10.29122/jtl.v21i1.3277>.
- Garrick, Dustin, et al. "Rural Water for Thirsty Cities: A Systematic Review of Water Reallocation from Rural to Urban Regions." *Environmental Research Letters* 14, no. 4 (2019): 1-14, <https://doi.org/10.1088/1748-9326/ab0db7>.
- Gleick, Peter H., et al. *The World's Water 2008-2009: The Biennial Report on Freshwater Resources*. Washington D.C: Island Press, 2009.
- Government Regulation of the Republic of Indonesia Number 26 of 2008 Concerning National Spatial Plans.
- Hakim, Lukman, et al., "Perebutan Sumberdaya Air: Analisis Konflik Dan Politik Tata Ruang [Struggle for Water Resources: Conflict Analysis and Spatial Politics]." *Sodality: Jurnal Sodiologi Pedesaan* 5, no. 2 (2017): 81-91, <https://doi.org/10.22500/sodality.v5i2.17901>.

- Harian Medan Bisnis. "20 Ha Lahan Pertanian Tergenang Air, Petani Kuta Gajah Langkat Protes PT TLE [20 Ha of Agricultural Land Flooded, Kuta Gajah Langkat Farmers Protest PT TLE]." MedanBisnisDaily.com. Accessed June 16, 2022. [https://www.medanbisnisdaily.com/news/online/read/2022/02/05/150465/20\\_ha\\_lahan\\_pertanian\\_tergenang\\_air\\_petani\\_kuta\\_gajah\\_langkat\\_protes\\_pt\\_tle](https://www.medanbisnisdaily.com/news/online/read/2022/02/05/150465/20_ha_lahan_pertanian_tergenang_air_petani_kuta_gajah_langkat_protes_pt_tle).
- Hendry, Sarah. *Frameworks for Water Law Reform*. Cambridge: University Press, 2014.
- Hikmawan, M. Dian, Ika Arinia Indriyany, and Abdul Hamid. "Resistance Against Corporation by the Religion-Based Environmental Movement in Water Resources Conflict in Pandeglang, Indonesia." *Otoritas: Jurnal Ilmu Pemerintahan* 11, no. 1 (2021): 19–32, <https://doi.org/10.26618/ojip.viii.3305>.
- Hoekstra, Arjen Y. *The Water Footprint of Modern Consumer Society*. London: Routledge, 2013.
- Indonesia, Data. "Krisis Petani Muda di Negara Agraris [The Crisis of Young Farmers in an Agricultural Country]." DataIndonesia.id. Accessed June 21, 2022. <https://dataindonesia.id/sektor-riil/detail/krisis-petani-muda-di-negara-agraris>.
- Kattelus, Mirja. "Integrated Water Resources Management." In *Practice: Better Water Management for Development*, edited by Roberto Lenton and Mike Muller, 141-168. London: Earthscan, 2009.
- Khalil, Abed, et al. "Indonesia Vision 2045: Toward Water Security (Policy Note)." World Bank, published December 1, 2021. <https://openknowledge.worldbank.org/handle/10986/36727>.
- Koeshendrajana, Sonny, et al. "Kajian Eksternalitas dan Keberlanjutan Perikanan di Perairan Waduk Jatiluhur [Externality and Sustainability Study of Fisheries in Jatiluhur Reservoir Waters]." *Jurnal Sosial Ekonomi Kelautan dan Perikanan* 4, no. 2 (2017): 137–56, <http://dx.doi.org/10.15578/jsekp.v4i2.5826>.
- Kurniasari, Nendah, Tenny Apriliani, Sonny Koeshendrajana, and Rizky Aprilian Wijaya. "Risiko Sosial Penertiban Keramba Jaring Apung di Waduk Jatiluhur

- [Social Risks of Regulating Floating Net Cages in Jatiluhur Reservoir]." *Jurnal Sosial Ekonomi Kelautan Dan Perikanan* 15, no. 1 (2020): 107–19, <http://dx.doi.org/10.15578/jsekp.v15i1.8363>.
- Law of the Republic of Indonesia Number 17 of 2019 Concerning Water Resources.
- Leb, Christina. "Water Conflicts and the Role of International Law in Their Prevention." *SSRN Electronic Journal*, February 7, 2012, <https://doi.org/10.2139/ssrn.2000951>.
- Lidon, Bruno, et al. "Approach and Impact of a Participatory Process for the Reorganization of Irrigation Management: A Case Study in Indonesia." *Cahiers Agricultures* 27, no. 2 (March 2018): 1–9, <https://doi.org/10.1051/cagri/2018015>.
- Liputan6.com. "Protes Petani Terdampak Pengembangan PLTA Poso, Mogok Makan hingga Mengecor Kaki [Farmers Protest Affected by Poso Hydropower Development, Hunger Strikes to Casting Feet]." Accessed May 26, 2022. <https://www.liputan6.com/regional/read/4970614/protes-petani-terdampak-pengembangan-plta-poso-mogok-makan-hingga-mengecor-kaki>.
- Loen, Suzanne. "Thirsty Cities: Learning from Dutch Water Supply Heritage." *Adaptive Strategies for Water Heritage* (2020): 78–103, [https://doi.org/10.1007/978-3-030-00268-8\\_5](https://doi.org/10.1007/978-3-030-00268-8_5).
- Lopez, Jean-Marie, et al. "From Conflict to Equity: Handling the Challenge of Multipurpose Use of Ground and Surface Water in Indonesia." Proceeding, Orléans, France, 2011.
- Lukman. *Danau Toba: Karakteristik Limnologis dan Mitigasi Ancaman Lingkungan dari Pengembangan Karamba Jaring Apung* [Lake Toba: Limnological Characteristics and Environmental Threat Mitigation from Floating Net Cage Development]. Menteng, Jakarta: LIPI Press, 2013.
- Manalu, Helper Sahat P, Bambang Sukana, and Kenti Friskarini. "Kesiapan Pemerintah Kabupaten Muara Enim dalam Rangka Menanggulangi Pencemaran Batubara [The Readiness of the Muara Enim Regency Government in Dealing with Coal Pollution]." *Indonesian Journal of Health*

*Ecology* 13, no. 2 (2014): 95-104, <https://www.neliti.com/publications/81029/kesiapan-pemerintah-kabupaten-muara-enim-dalam-rangka-menanggulangi-pencemaran-b>.

Mediaindonesia.com. "Jaring Apung di Jatiluhur Ganggu Turbin PLTA [Floating Nets in Jatiluhur Disturb Hydropower Turbines]." Mediaindonesia.com, published November 7, 2016. <https://mediaindonesia.com/nusantara/76098/jaring-apung-di-jatiluhur-ganggu-turbin-plta>.

Memorandum.co.id. "Sumber Pitu Dimonopoli PDAM, Petani Malang Menjerit [PDAM Monopolizes Sumber Pitu, Malang Farmers Scream]." Memorandum.co.id, published March 8, 2020. <https://memorandum.co.id/sumber-pitu-dimonopoli-pdam-petani-malang-menjerit/>.

Merten, Jennifer, et al. "Flooding and Land Use Change in Jambi Province, Sumatra: Integrating Local Knowledge and Scientific Inquiry." *Ecology and Society* 25, no. 3 (2020), <https://doi.org/10.5751/ES-11678-250314>.

Moeliono, T. P. *Spatial Management in Indonesia: From Planning to Implementation: Cases from West Java and Bandung: A Socio-Legal Study*. Leiden: Leiden University, 2011.

Molden, D, et al. "Pathways for Increasing Agricultural Water Productivity." In *Water for Food, Water for Life*, edited by D. Molden, 279–310. London: International Water Management Institute, 2007.

Mongabay.co.id. "Ketika Warga Desa Sikalang Gunakan Air dari Kolam Bekas Tambang Batubara [When Residents of Sikalang Village Use Water from a Former Coal Mine Pond]." Mongabay.co.id, published May 5, 2021. <https://www.mongabay.co.id/2021/05/05/ketika-warga-desa-sikalang-gunakan-air-dari-kolam-bekas-tambang-batubara/>.

Nurhayati, Cut Rizka Al Usrah, and Alwi Alwi. "Konflik Air Irigasi Antar Petani Sawah di Gampong Tanjong Keumala dan Gampong Babah Buloh Kecamatan Sawang Kabupaten Aceh Utara [Irrigation Water Conflict Between Paddy Field Farmers in Gampong Tanjong Keumala and Gampong Babah Buloh,

- Sawang District, North Aceh Regency].” *Jurnal Sosiologi Dialektika Sosial* 1, no. 2 (2021): 97–110, <https://doi.org/10.29103/jsds.vi12.5114>.
- Pacific Institute. “Defining Water Scarcity, Water Stress, and Water Risk.” Pacific Institute. Accessed September 22, 2022. <https://pacinst.org/water-definitions/>.
- Peña-Ramos, José Antonio, Philipp Bagus, and Daria Fursova. “Water Conflicts in Central Asia: Some Recommendations on the Non-Conflictual Use of Water.” *Sustainability* 13, no. 6 (January 2021): 3479, <https://doi.org/10.3390/su13063479>.
- Permatasari, Yunita. “Resolusi Konflik Pengelolaan Sumber Mata Air Cokro Tulung Kabupaten Klaten.” *Sosialitas: Jurnal Ilmiah Pendidikan Sosiologi-Antropologi* 5, no. 2 (2015): 163558, <https://jurnal.fkip.uns.ac.id/index.php/sosant/article/view/10472>.
- Nasional Tempo.Co. “Petani Malang Cemaskan Proyek Eksplorasi Air [Malang Farmers Worried About Water Exploration Project].” Nasional Tempo.Co. Accessed June 22, 2022. <https://nasional.tempo.co/read/647219/petani-malang-cemaskan-proyek-eksplorasi-air>.
- PJT 2. “Annual Report 2020: Beyond A New Normal A New Era of Growth.” Purwakarta: PJT 2, 2020.
- Presidential Regulation Number 60 of 2020 Concerning Spatial Plans for the Urban Areas of Jakarta, Bogor, Depok, Tangerang, Bekasi, Puncak, and Cianjur.
- PUPR Research and Development Agency. “Solusi Tangani Kekeringan dan Kelangkaan Air Indonesia [Solutions to Handle Indonesia’s Drought and Water Scarcity].” PUPR Research and Development Agency, published June 6, 2020. <https://litbang.pu.go.id/inovasi/2016/07/02/solusi-tangani-kekeringan-dan-kelangkaan-air-indonesia/>.
- Rachman, Irfan Nur. “Implikasi Hukum Putusan Mahkamah Konstitusi Tentang Pengujian Konstitusionalitas Undang-Undang Sumber Daya Air [Legal Implications of the Constitutional Court Decision Regarding Reviewing the Constitutionality of the Water Resources Law].” *Kajian* 20, no. 2 (September 2016): 109–28, <https://doi.org/10.22212/kajian.v20i2.573>.

Rawls, J. *A Theory of Justice*. Cambridge: Belknap Press, 1999.

Regulation of the Minister of Public Works of the Republic of Indonesia Number 11/Prt/M/2014 Concerning Management of Rainwater in Buildings and Their Plots.

Republik Jatim. "Wabup Sidoarjo Urai Polemik Saluran Irigasi Antar Desa di Porong Pemicu Lahan Pertanian Terendam Banjir [Deputy Regent of Sidoarjo Explains Polemic of Irrigation Channels Between Villages in Porong Triggers Flooded Agricultural Land]." Accessed June 16, 2022. <https://republikjatim.com/baca/wabup-sidoarjo-urai-polemik-saluran-irigasi-antar-desa-di-porong-pemicu-lahan-pertanian-terendam-banjir>.

Rohmad, Zaini, Agung Nur Probohudono, Waskito Widi Wardoyo, and Agung Wibowo. "Conflict Management of Water in Tourism Area in Indonesia." *Mediterranean Journal of Social Sciences* 7, no. 1 (2016): 416-22, <https://doi.org/10.5901/mjss.2016.v7n1s1p416>.

Roost, N., X. L. Cai, H. Turrall, D. Molden, and Y. L. Cui. "Adapting to Intersectoral Transfers in the Zhanghe Irrigation System, China: Part II: Impacts of in-System Storage on Water Balance and Productivity." *Agricultural Water Management* 95, no. 6 (June 2008): 685-97, <https://doi.org/10.1016/j.agwat.2008.01.011>.

Rosalina, Happy, Sujianto Sujianto, and Sofyan Husein Siregar. "Strategi Pengembangan Ekowisata Di Kawasan Waduk Pembangkit Listrik Tenaga Air (PLTA) Koto Panjang Kabupaten Kampar [Ecotourism Development Strategy in the Koto Panjang Hydroelectric Power Plant (PLTA) Area of Kampar Regency]." *Dinamika Lingkungan Indonesia* 1, no. 2 (2014): 97-108, <http://dx.doi.org/10.31258/dli.1.2.p.97-108>.

Saleh, Edward. "Studi Konflik Air Irigasi dan Alternatif Penyelesaiannya di Daerah Irigasi Kelingi Sumatera Selatan [Study of Irrigation Water Conflicts and Alternative Solutions in the Irrigation Area of South Sumatra]." *Journal Keteknikan Pertanian* 24 (April, 2010): 39-44, <https://doi.org/10.19028/jtep.24.1.39-44>.



- Satria K, Ardhi. "Kerjasama Antara Pemerintah Kabupaten Klaten dan Pemerintah Kota Surakarta Tentang Pemanfaatan Air Umbul Cokro [Collaboration Between the Government of Klaten Regency and Surakarta City Government Regarding Umbul Cokro Water]." PhD Thesis, Universitas Muhammadiyah Surakarta, 2014.
- Sen, Amartya Kumar. *Development as Freedom*. Oxford: Oxford University Press, 2001.
- Stigler, George J. "The Theory of Economic Regulation." *The Bell Journal of Economics and Management Science* 2, no. 1 (1971): 3-21, <https://doi.org/10.2307/3003160>.
- Strauß, Sophie. "Water Conflicts among Different User Groups in South Bali, Indonesia." *Human Ecology* 39, no. 1 (February 2011): 69-79, <https://doi.org/10.1007/s10745-011-9381-3>.
- Sururi, Ahmad. "Efektivitas Implementasi Program Pemeliharaan Infrastruktur Jaringan Irigasi di Kabupaten Lebak [The Effectiveness of the Implementation of the Irrigation Network Infrastructure Maintenance Program in Lebak Regency]." *Pamator Journal* 13, no. 1 (April 2020): 95-104, <https://doi.org/10.21107/pamator.v13i1.6949>.
- Susilowati, Sri Hery. "Fenomena Penuaan Petani dan Berkurangnya Tenaga Kerja Muda serta Implikasinya bagi Kebijakan Pembangunan Pertanian [The Phenomenon of Aging Farmers and Reducing Young Workers and Their Implications for Agricultural Development Policy]." *Forum penelitian Agro Ekonomi* 34, no. 1 (June 2016): 35-55, <https://doi.org/10.21082/fae.v34n1.2016.35-55>.
- Tandon, Shalini A., Niranjana Kolekar, and Rakesh Kumar. "Water and Energy Footprint Assessment of Bottled Water Industries in India." *Natural Resources* 2014 (February 2014): 68-72, <https://doi.org/10.4236/nr.2014.52007>.
- Texas v. New Mexico and Colorado. Accessed June 17, 2022, <https://www.oyez.org/cases/2017/141-orig>.

- Tomi. "Ganggu Pertanian, Tambak Udang Harus Ditata [Disturbing Agriculture, Shrimp Ponds Must Be Organized]." *KR Jogja*, published February 3, 2017. <https://www.krjogja.com/berita-lokal/jateng/kedu/ganggu-pertanian-tambak-udang-harus-ditata/>.
- Trisnawati, Hikmah. "Dampak Perkembangan Infrastruktur Pariwisata Terhadap Konflik Air Di Kabupaten Badung Dan Tabanan." *Jurnal Ilmiah Pariwisata* 2, no. 1 (2012): 109–222, <https://ojs.unud.ac.id/index.php/jip/article/view/3671>.
- Unfried, Kerstin, Krisztina Kis-Katos, and Tilman Poser. "Water Scarcity and Social Conflict." *Journal of Environmental Economics and Management* 113 (2022): 102633, <https://doi.org/10.1016/j.jeem.2022.102633>.
- United Nations Committee on Economic Social and Cultural Rights. "General Comment No. 15 (2002), The Right to Water (Arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights)." E/C.12/2002/11 20 January 2003. Geneva: UN, 2003. 82173502.
- Water Industry Act 1994, Water Industry Regulatory Order 2003 (2003).
- Water Services Industry Act 2006, Act 655 (Malaysia).
- Wells, Jessie A., et al. "Rising Floodwaters: Mapping Impacts and Perceptions of Flooding in Indonesian Borneo." *Environmental Research Letters* 11, no. 6 (2016): 1-15, <https://doi.org/10.1088/1748-9326/11/6/064016>.
- Winesia, Ollaf. "Konflik Air Daerah Irigasi Kelingi Tugu Mulyo Provinsi Sumatera Selatan – Balai Bws Sumatera Viii [Water Conflicts in the Tugu Mulyo Irrigation Area, South Sumatra Province – Balai BWS Sumatra VIII]." Accessed May 22, 2020. <http://sda.pu.go.id/bbwssumatera8/2018/02/19/konflik-air-daerah-irigasi-kelingi-tugu-mulyo-provinsi-sumatera-selatan/>.
- Winkler, Inga T. *The Human Right to Water: Significance, Legal Status and Implications for Water Allocation*. Oxford: Portland, 2012.