

# LEGAL RESPONSIBILITIES OF DELI POLLUTERS FROM THE ENVIRONMENTAL AND ISLAMIC LEGAL PERSPECTIVE IN INDONESIA

Andoko,

Law Study Program, Social Sains Faculty,  
Universitas Pembangunan Panca Budi, Medan, Indonesia.  
Email - bundazahrazahra@yahoo.com

**Abstract:** *The river is one of the "features" of nature with a myriad of benefits for humans. The presence of the river is not only a complement, but also can be used as a support for the human economy. Not only that, the river can also complement the electrical energy needs. Broadly speaking, the existence of rivers is important and influential for human life. But over-exploitation of the river is still common. As a result, pollution of the river flow is unavoidable which has a negative impact on human life. In accordance with the reality, rivers in Indonesia are increasingly polluted due to human behavior itself, one of which is dumping waste into rivers. This study uses a normative juridical approach with descriptive analysis research specifications. The data used in this study are secondary data collected through library research. The collected data were analyzed using qualitative methods. Policies in international legal instruments regulate efforts to prevent the occurrence of pollution of hazardous and toxic materials in the Deli River region. The problem raised in this research is how the role of the government in efforts to prevent pollution of the Deli River based on existing legal instruments and how the study in the perspective of environmental law and Islamic law related to water pollution behavior in the Deli River. The preliminary result of this research is that the establishment of a Supervisory Agency is a preventive effort in the context of controlling environmental impacts, therefore it is necessary to develop a legal system of environmental protection and management that is clear, decisive, and comprehensive in order to guarantee legal certainty as a basis for the protection and management of resources nature and other development activities.*

**Key Words:** *Law Enforcement, Environmental Pollution, Islamic Law.*

## 1. INTRODUCTION:

The river is a gift of God Almighty that has countless important functions both socially and ecosystems, including water consumption, health and sanitation needs, agriculture, navigation, and industry, as well as various aesthetic, cultural, spiritual, and recreational facilities. Meeting past human needs for security and stability tends to neglect the needs of aquatic ecosystems. There are many cases where human activities have undesirable effects and most have an impact on river sustainability, sacrificing the natural variability of rivers, structural integrity and complexity, and maintaining the functioning of aquatic ecosystems (Brierley and Fryirs, 2005).

According to Government Regulation No. 38 of 2011 concerning Rivers, rivers are defined as natural and/or artificial waterways or containers in the form of water flowing network and water in it, starting from upstream to the estuary, with boundary right and left by borderlines. Deli River which divides the city of Medan is one of the sites that play a role in the economic history of the Deli Sultanate. Located in the western part of Maimun Palace which is located in Aur Village, Medan Baru District, Medan City (Takari et al., 2012). History shows that in the early 19th-century trading activities focused on Labuhan Deli as the main port for export and import activities in the Deli Kingdom. Commodities in the form of pepper are brought from the interior to Labuhan Deli using small canoes or shouldered along the trail. Labuhan Deli cannot last long due to the silting of the Deli river due to siltation (Hutagaol, 2016).

Deli River is included in the shipping channel which includes the Deli river channel in Medan Labuhan District and surrounding areas in the northern area of Medan City. While the river and lake transportation network system and crossings in the form of a river pier are set at the dock of the Nelayan Indah Kelurahan Medan Labuhan. The Deli River is also a primary drainage network that aims to reduce standing water for residential and commercial areas in settlements (Medan City Regulation Number 13 of 2011 concerning Medan City Spatial Planning 2011-2031, 2011). Activities along the Deli River vary among other industries and the Sicanang Steam Power Plant. This activity results in a decrease in water quality and affects the number and types of biota in the Deli River (Barus et al., 2014). Considering the historical value and ecological condition of the Deli River today, it is important and urgent to manage the Deli River that is adjusted to the development of Medan City as the capital of the third-largest province in Indonesia. This paper aims to: a) identify problems in structuring the Deli River, and; b) provide input related to the management of the Deli river. The scope of the writing is the chemical, physical, and biological conditions of the Deli River, the socio-cultural conditions of the community, and regulations that support the management of the Deli river.

## 2. RESEARCH METHODOLOGY:

This paper is a literature review with data sources derived from literature such as journals, theses/dissertations, and legislation, as well as previous research on Deli rivers and rivers in other cities, both in Indonesia and the world that has been successful in river management. Data will be analyzed descriptively qualitatively and then made a comparison between river management in the city of Medan with other cities in Indonesia/the world.

## 3. RESEARCH RESULTS AND DISCUSSION

There are 9 (nine) River Areas (WS) in North Sumatra, namely: Wampu-Besitang WS; WS Belawan-Ular-Padang; WS Bahbolon; WS Toba-Asahan; WAS Nias; WS Sibudong-Batangtoru; WS Barumun-Kualuh; WS about Angkola-Batang Gadis; and, WS Batang-Batang Batahan WS. Deli River is part of the Belawan-Ular-Padang WS called the Deli River Basin (DAS) (Regulation of the Minister of Public Works and Public Housing Number 04/PRT /M/2015 Regarding Criteria and Determination of River Basin Areas, 2015). The river is controlled by the state and its management is carried out as a whole, integrated, and environmentally friendly with the aim of realizing the benefits of sustainable river functions. River management is carried out by the Government, Provincial Governments, or Regency/City Governments in accordance with their authority (Government Regulation of the Republic of Indonesia Number 38 of 2011 concerning Rivers, 2011).

### 3.1. Deli River Conditions:

Diversity and abundance of periphyton in the Deli River can be used as a parameter to determine the level of pollution. Pollution that occurs in the Deli River is strengthened by the identification of pathogenic bacteria in the mouth of the Deli River, such as *Escherichia coli*, *Klebsiella oxytoca*, *Klebsiella ornithinolytica*, *Cedecea lapegei*, *Aeromonas hydrophyla*, *Aeromonas sobria*, *Aeromonas caviae*, *Ewingella americana* and *Vibrio fluvialis*. The nine bacteria can cause fever syndrome, pneumonia, decreased endurance in humans, and infect and cause death in fish (Meliala et al., 2015). One of the causes of pollution in the Deli River is carried out by the community around the river. Communities in Hamdan Sub-District, Medan Maimun Subdistrict make a River Deli as a trash can that comes from household activities (domestic waste) (Purba, 2013).

### 3.2. River Conditions and Management in the World:

The results of studies of the U-Tapao river flow in southern Thailand show that changes in land use are the result of complex interactions such as policy, management, economy, culture, human behavior, and the environment. A decade of integrated research to examine the relationship between land-use change and surface water quality, and evaluate the impact of land use on river water quality. The results showed a significant relationship between water quality and land use and the ability to use land indications to explain urban water quality and agricultural land use has a strong positive relationship with the concentration of water pollutants. Forest land use has a positive relationship with water quality. A significant relationship between land use and water quality indicators can be used in environmental protection and land use planning (Gyawali et al., 2013). The condition of the river is important to be monitored every year to keep the level of river sustainability at an acceptable level for optimal function to support living things. The water quality index used to assess water quality conditions in rivers. Water quality index and river index can be used to monitor river health. In a study conducted at Sungai Plus in Perak, Malaysia, the analysis showed that the water quality index in the dry season (71.73) was higher than the average water quality index in the rainy season (59.90). This shows that water quality during the rainy season (Class III-polluted) is slightly lower than water quality during the dry season (Class III Slightly polluted). Sediment load in rivers per year is estimated at 7.056 kg ha/year during the dry season and is expected to be higher during the rainy season. Anthropogenic activities such as deforestation and agriculture are expected to influence the stability of water quality in the Pelus River (Hasan et al., 2015).

A case study in Sheffield, England, with three alternative development scenarios, combines several possible riverbank design features. The Sustainability Appraisal (SA) model is used to develop better designs by optimizing different design elements and carrying out more sustainable rebuilding plans. Assessment of sustainability in rivers in urban complex tasks involves the integration of social, environmental, and economic considerations and often requires negotiations between various stakeholders that may not be easily brought to consensus. Often the differences from each discipline are useful at the time of discussion, but only some can be informed to policymakers because many important aspects of sustainability are abstract and not interrelated. The steps taken to implement the model are: a) Identification of criteria to represent relevant aspects of sustainability goals; b) Mind mapping, conceptual development of the network of causes of the effects of each sustainability criterion; c) Integration and simplification of sub-network concepts; d) Classification and specifications of model variables; e) Integrated Model (Merging of sub-networks); f) elicitation knowledge; g) Testing and evaluation of integrated models; and, h) Sensitivity and level of integration. Integrated participatory modeling has strong potential to support the sustainability assessment process. A high level of integration provides the opportunity to make more inclusive decisions and information on issues regarding urban development. It

also provides an opportunity to reflect on long-term dynamics and to gain insight into the interrelationships that underlie the issue of sustainability on an ongoing basis. So that the ability to overcome economic, social, and environmental dependence on policies, plans, and laws and regulations can be improved (Kumar et al., 2013).

### 3.3. Deli River Management Problems:

The problems currently faced in the management of the Deli River at present can be categorized into 2 (two) problems, namely:

- The unavailability of river management plans/models. The river border which is a protected area is used as a place for human activities so that all waste generated from human activities around the Deli river border directly leads to the river and results in a decrease in the quality of water sources. Referring to the Medan City Regional Spatial Plan for 2011-2031, the river border is at least 50 meters from the river body.
- The unavailability of regional regulations regarding river management. Sungai Deli has not been considered as development capital. Apart from the establishment of the river network as a priority for the development of the Medan city spatial structure, the Medan City Government has not considered the Deli River as an asset that needs to be organized so that it has an impact on increasing regional income. The role of the Deli River in the history of the Deli Sultanate and economic activity in the past is a historical value that can be a capital for the development of the tourism sector. Ignorance of the potential of the Deli River makes policymakers feel they have an obligation to issue regulations that serve to preserve the Deli River.

Management of the watershed has been regulated by the Government by issuing Government Regulation of the Republic of Indonesia Number 37 of 2012 concerning Watershed Management. The whole watershed management is carried out through the stages of planning, implementation, monitoring, and evaluation, as well as guidance and supervision. The regulation aims to coordinate, integrate, synchronize, and synergize watershed management in order to increase the carrying capacity of watersheds. Deli River is one of the rivers included in the Deli River Basin, so the success of Deli River management is very dependent on the management of the Deli River Basin as a whole. Management of the Deli River can be done by adapting WFD which is done in Europe and SA which is done in England. At the Deli River management planning stage, it is important to identify criteria to represent relevant aspects of sustainability goals. These criteria are business support; property value; the benefits of adequate housing investment; health and well-being; safety and security; sustainable transportation; efficient land use; environmental quality; historic environment and cultural heritage; Panorama; biodiversity; Water resources; flood risk; and, energy and climate change. The identification of these criteria is carried out by the Provincial / Regency / City Government in accordance with their authority. The involvement of the DAS Forum, academics, business people, and the community is an important factor for success in the identification process.

Activities that have developed along with the Deli river flow until 2017 include: industry, offices, and housing. From an economic point of view, these activities have contributed to improving the economy while ignoring the environmental aspects. Fulfillment of administration of environmental documents such as UKL-UPL and Amdal does not necessarily mean that the activities carried out along the river have no effect on the condition of the river. For example, industrial liquid waste discharged into a river body needs to be monitored whether the physical and chemical conditions have met the requirements for flow into the river. Furthermore, domestic liquid waste originally from settlements along river streams that do not get treatment and are immediately discharged into water bodies will cause a decrease in river water quality. Annual monitoring and evaluation are needed to see the impact of industrial, business, and settlement activities on environmental conditions, such as the one conducted at Sungai Pelus, located in Perak, Malaysia. Monitoring and evaluation are expected to be one of the strategic steps in order to maintain the carrying capacity of the river. Based on the identification results a mind mapping was carried out aimed at developing the conceptual network of each sustainability criterion. Each party participating in the identification process is absolutely involved in the mind mapping process so that the resulting sustainable model can be understood by all stakeholders. The next step is the integration and simplification of the concept of sub-networks of several sub-watersheds so that the roles of each stakeholder are clearly illustrated. Each sub-watershed provides a management concept to further integrate the classification and specifications of the model variables. The integrated model is generated from the merging of models from each sub-watershed, to facilitate the implementation of management models in the field, the stages of elicitation knowledge are carried out. Knowledge elicitation is the process of making implicit knowledge of explicit knowledge of experts to help remember, test, and perfect rules, heuristics, and practical past experience. Furthermore, integrated model testing is carried out and continues to be carried out and evaluated. At the evaluation stage, sensitivity and level of integration are parameters to assess whether the applied model can be used in the sustainable management of the Deli river.

Furthermore, the model that is considered applicable to the sustainable management of the Deli River is poured into the Medan Mayor Regulation as a form of commitment of all stakeholders to carry out the modes that have been set together. One of the Regencies in Indonesia that has established a Regional Regulation on river management is the

Central Bangka Regency through the Bangka Tengah Regent Regulation No. 22 of 2014 concerning River and Swamp Management. The regulation clearly stipulates the determination of river border, protection of river sections, community participation, and administrative sanctions and criminal provisions.

#### 4. CONCLUSION:

- Problems faced in the management of Deli River are a) the unavailability of plans/models for river management and b) the unavailability of Regional Regulations (Perda) on river management.
- Management of the Deli River must be carried out holistically, starting from upstream to downstream. The involvement of the government, business people, academics, practitioners, and the community is essential for the sustainable management of the Deli River.

#### 5. SUGGESTION:

The North Sumatra Provincial Government and the Medan City Government should coordinate with each other to formulate a sustainable river basin management strategy so that the historical and economic value of the Deli River can be a development capital. It is necessary to study the adaptation of the Water Framework Directive (WFD) model or the guideline framework in Europe and the Sustainability Appraisal (SA) in the UK, to determine the possibility of its application in Indonesia.

#### REFERENCES:

1. Barus, S.L., Yunasfi, Suryanti, A., 2014. Keanekaragaman Dan Kelimpahan Perifiton Di Perairan Sungai Deli Sumatera Utara. *AQUACOASTMARINE* 139–149.
2. Brierley, G.J., Fryirs, K.A., 2005. Geomorphology and River Management: Application of The River Styles Framework. *Blackwell Publishing*. doi:10.1672/0277- 5212(2006)26[884:GARM]2.0.CO;2
3. Gyawali, S., Techato, K., Monprapussorn, S., Yuangyai, C., 2013. Integrating Land Use and Water Quality for Environmental based Land Use Planning for U-tapao River Basin, Thailand. *Procedia - Soc. Behav. Sci.* 91, 556–563. doi:10.1016/j.sbspro.2013.08.454
4. Hasan, H.H., Jamil, N.R., Aini, N., 2015. Water Quality Index and Sediment Loading Analysis in Pelus River, Perak, Malaysia. *Procedia Environ. Sci.* 30, 133–138. doi:10.1016/j.proenv.2015.10.024
5. Hutagaol, N., 2016. Pengembangan Pelabuhan Belawan Dan Pengaruhnya Terhadap Kehidupan Sosial Ekonomi Masyarakat Deli, 1920-1942. *J. Sej. Citra Lekha* 1, 40–50.
6. Koundouri, P., Ker Rault, P., Pergamalis, V., Skianis, V., Souliotis, I., 2016. Development of an integrated methodology for the sustainable environmental and socio-economic management of river ecosystems. *Sci. Total Environ.* 540, 90–100. doi:10.1016/j.scitotenv.2015.07.082
7. Kumar, V., Rouquette, J.R., Lerner, D.N., 2013. Integrated modelling for Sustainability Appraisal of urban river corridors: Going beyond compartmentalised thinking. *Water Res.* 47, 7221– 7234. doi:10.1016/j.watres.2013.10.034
8. Meliala, E., Suryanto, D., Desrita, D., 2015. Identifikasi Bakteri Potensial Patogen Sebagai Indikator Pencemaran Air Di Muara Sungai Deli. Identification of Potential Pathogen Bacteria as. *AQUACOASTMARINE*.
9. Peraturan Daerah Kota Medan Nomor 13 Tahun 2011 Tentang Rencana Tata Ruang Wilayah Kota Medan Tahun 2011-2031, 2011.
10. Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Nomor 04/PRT/M/2015 Tentang Kriteria dan Penetapan Wilayah Sungai, 2015. . Indonesia.
11. Peraturan Pemerintah Republik Indonesia Nomor 38 Tahun 2011 Tentang Sungai, 2011. . Indonesia.
12. Peraturan Pemerintah Republik Indonesia Nomor 37 Tahun 2012 tentang Pengelolaan Daerah Aliran Sungai
13. Purba, L.W., 2013. Hubungan Higiene Pengguna Air Sungai Deli dengan Keluhan Kesehatan Kulit dan Tindakan Pencemaran Sungai di Kelurahan Hamdan Kecamatan Medan Maimun Kota Medan Tahun 2013. Universitas Sumatera Utara.
14. Surbakti, P., Patana, P., Ezraneti, R., 2014. Kandungan Logam Pb di Sungai Deli Provinsi Sumatera Utara. *AQUACOASTMARINE* 66–74.
15. Takari, M., S, A.Z.B., Dja'far, F.M., 2012. *Sejarah Kesultanan Deli dan peradaban masyarakatnya*. USU Press.