

A Comparative Analysis on Curbing Illegal Sand Mining in Sri Lanka: In light of Environmental Law

MDM Cooray^{1#} and PBK Gamage²

Faculty of Law, General Sir John Kotelawala Defence University, Ratmalana, Sri Lanka

#dinuka.cooray@ymail.com

Abstract— *The world develops every day whereby the requirements of mankind to fulfil its need will never come into an end. Construction industry has become one of the booming industries that fulfil this need. Relation to such an industry, sand has become an essential natural resource for construction undertakings. Societies recognize a country/ economy to be in developed status from their infrastructural facilities. Thus, most countries incline to advance their infrastructure facilities. For each of these, constructors utilize sand as a vital component which illustrates the significance of this natural resource. The problem of this research paper is to discuss on illegal sand mining in Sri Lanka. Sand has been commercialized and mining has expanded rapidly, which has resulted increments in the supply chain of sand throughout the time. And due to various loopholes in the legislation and the monitoring mechanisms the offenders go unpunished destroying the natural assets of the country. Although, Sri Lanka has recognized this issue, the current legislation and monitoring system are consisted with defects. Therefore the main objective of the research paper would be to examine the challenges and loopholes of the available domestic legal mechanism and to search answers through an analysis of Indian and South African jurisdictions, in order to curb illegal acts. The information regarding this will be derived from primary sources; books, conventions, legislations of Sri Lanka, India and South Africa since this research is intend to discuss about the loopholes of the prevention systems. Secondary sources; journals and electronic data bases will be used to elaborate vital concepts such as sustainable development, good governance etc. that relate to illegal sand mining in Sri Lanka. To conclude, the paper will emphasize on the loopholes of law as well as the defective mechanisms in Sri Lankan system and would propose new recommendations which Sri Lanka could implement as successfully done in selected jurisdictions, where those countries required to set more effort in order to curtail illegal sand mining.*

Keywords— **Illegal Sand mining, Sri Lanka, Environmental Law**

I. INTRODUCTION

Sand as a natural resource has been a part and parcel element throughout the human civilization where has become an inalienable part of the construction industry supply-chain, which is an important indicator of the growth of any economy. There is so much demand that riverbed and beaches around the world are being exposed for exploiting sand for construction and the amount of sand being mined has not been in low levels for a considerable period. It take millions of years to produce sand in natural conditions, however, it take only few hours for exploit and gain massive economic benefits.

Sri Lanka is an island with a land area of 65,525 square kilometres, endowed with 103 distinct rivers, streams and 94 coastal basins, where sand is being exposed to various commercial purposes. Thus, sand as a resource that can be freely accessed and mining activities have expanded dramatically. Mining is the extraction or excavating on, in or below the earth surface for the purpose of evaluating and obtaining minerals which is formed through natural occurring. Indiscriminate river sand mining has resulted in a large number of environmental and social problems in Sri Lanka. Environmental problems include effects such as the erosion of riverbanks, lowering of water tables, intrusion of salt water, damage to riverine vegetation, loss of habitat of the aquatic population, and damage to bridges and structures. These environmental issues have affected most of the rivers and streams of Sri Lanka (Gunaratne L.H.P, 2010). The practise is often very destructive and poorly managed in Sri Lankan context since there are controversies within the Mines and Minerals Act No. 33 of 1992 itself and especially within the monitoring system regarding mining activities where the selected jurisdictions have adopted better legislative measures and accurate monitoring mechanisms to tackle illegal practices, which is the rationale of this research paper to propose unique system to monitor illegal sand mining activities that occur around Sri Lanka absorbing the knowledge from other countries. This paper hereby address the issues of illegal sand mining and seek methods of curbing it. Even though,

~~this is a global issue, as per a requirement to narrow down~~ the focused subject area only two jurisdictions were considered. The authors agree on selecting Indian context since it is the closest neighbouring nation for Sri Lanka which possess similar cultural, social, economic and political background and had similar issues relation to sand mining. South Africa was selected due to Roman Dutch Law background which is considered to be followed by Sri Lanka as well. Therefore it will be discussed on three jurisdictions specifically on environmental legislation in relation to sand mining with other supportive principles focussing on recommendations that could be incorporated to Sri Lankan system.

II. RESEARCH PROBLEM

Whether the existing legal framework is adequate to address the issue of illegal sand mining.

III. RESEARCH OBJECTIVE

The objective of this study is to assess the efficiency of the available domestic legal mechanism established in Sri Lanka and to identify loopholes in the current legislation comparing with other jurisdictions in order to adapt better legal provisions complying with the concept of sustainable development and good governance.

IV. METHODOLOGY

The study adopts qualitative approach, using comparative study plan. The material used in the study include legislations, books, electronic/ internet sources, journal articles. The study is principally an analysis and comparison of the legal provisions relating to Environmental Law. All conclusions are based on careful comparison between the corporate law in Sri Lanka, India and South Africa.

V. DISCUSSION

Discussion is based on the both domestic and international legal documents, conventions, related writings by resource persons, newspaper articles and web article. They are being listed as follows;

A. Legislations

1) Sri Lanka:

Basic protection for the whole environment arises from the National Environment Act No. 47 of 1980 that establishes the Environment Authority to maintain quality of the environment as per stated in Article 10(1) (e). Sri Lankan legislation in corresponding to the protection of the Environment is recognized under Chapter 6 of the 1978 Constitution; Directive principles of state policy and fundamental duties. According to Article 27(14) it mentions that "state shall protect, preserve, and improve the

environment for the benefit of the community". On the other hand it imposes duties on each and every individual to protect nature and conserve its riches under Article 28(f). However, these provisions are not enforceable. Although, the Supreme law doesn't grant much space concerning Environment law, through judicial activism environmental protection is being regulated up to a certain level.

Sri Lanka is a highly enriched with natural resources. Thus, regulating acts relation to environment is an essential fact. The Mines and Minerals Act No 33 of 1992 which amended other several Acts such as the Radioactive Minerals Act, No. 46 of 1968, and the Mines and Minerals Law, No. 4 of 1973 is the fundamental law related to the main theme of this paper in Sri Lankan context. This Act therefore specifically establishes both the Geological Survey and Mines Bureau (GSMB) and its functions and powers with issue of mining licence, standards of mining workers and penal provisions. On the authority of its section 70, "mineral" means a naturally occurring substance that can be mined, whether in solid, liquid or gaseous form, in or below the surface of the soil; any ores containing such minerals and any product of such minerals derived by Processing and include peat and salt but does not include hydrocarbon. Although sand is considered as a mineral in terms of scientific research this term has not been interpreted under the Act. This seems an omission in the Sri Lankan legislation. According to the Act, no person is allowed to explore for, mine, transport, process, trade in, or export any minerals without licence that has been issued by the Geological Survey and Mines Bureau. Therefore interested parties must obtain a licence before any of the activity mentioned above. The Act constantly emphasizes on conditions where a licence could be issued and moreover standards that must be maintained throughout the mining tenure. In compliance with Section 35(4)(a), a miner must not be fraudulent, negligent and reckless in conducting any activity. Moreover, section 35(4)(a) states that a licensee must comply with written law regarding environment protection. Thus, it reveals the scope of jurisdiction of the legislation and demonstrates how it has cited on the priority for environment conservation for the future generations of the country.

The legal piece, has vested wide powers on the minister, and it eventually has granted unfettered discretion on the relevant authorities. Section 30 states about restrictions on powers to issue licences. Reference to its subsection 1(d) Bureau shall not issue a licence to any person to explore for, mine any minerals upon; any wild life reserve, nature reserve, forest or park within the meaning of the Crown Lands Ordinance (Chapter 454) without the approval of Minister and the Minister in charge of the subject of Lands. It impliedly expresses that with the discretion of the relevant Minister a mining licence could be allowed on a wild life reserve. The illegal sand mining activities are

recognized to be politically motivated occurrences. Thus, Central Government may, by notification in the Official Gazette, declare to be a minor mineral. Thus, sand as a minor mineral has been recognized in Indian context, which is not familiar in the scope of Sri Lankan Context. India possess a considerable geographic entity which has established state governments to involve in monitoring sand mining activities within their boundaries. Therefore, the Act No 67 of 1957 has empowered state governments to make laws relating to illegal mining under the authority of section 23C. It declares that a State Government may, by notification in the Official Gazette, make rules for preventing illegal mining, transportation and storage of minerals and for the purposes connected therewith. Subsequently the process of curbing illegal sand mining has been extended throughout the country from legislative measures. The Indian legislature differ from the Sri Lankan legislation and emphasize moreover on procedure of obtaining licence, distinguishing powers of Central government and State government and penal provisions (Section 21). Furthermore, the Indian Act has excluded the term "Minister" while taking away powers on a single person of the government which is an unlikely feature in the Sri Lankan context.

vesting wide powers over Minister/Politician could be one of the sources for illegal sand mining. Observing the monitoring mechanism, The Mines Division of the Bureau is presently functioning with seventeen regional offices at Kandy, Matara, Kurunegala, Badulla, Ratnapura, Anuradhapura, Ampara, Moneragala, Hambantota, Trincomalee, Kaluthara, Jaffna, Batticaloa, Hasalaka, Kanthale, Polonnaruwa and Gampaha (GSMB, 2012). The main activities of the regional offices are to provide a well service for the persons who are engaged in mining and to manipulate illegal sand mining. Despite of these seventeen regional offices, as the research problem emphasizes illegal sand mining still continues at large scale whereby the environment is now being threatened. In the fact that the Sri Lanka is yet a developing nation, the requirement of infrastructure facilities eventually becomes the priority in the hierarchy of needs, whereby the need of essential materials also arises at similar levels. This is the main reason for the increase of illegal activities. Although the Bureau imposes constraints, illegal acts still continue progressively irrespective of the law through the loop holes of implied rules and regulations.

2) India

With the colossal landmass of 3,287,590 square kilometres that is divided into 29 states, protection of natural environment is one of the fundamental duties of every citizen under Article 51A of the Constitution of India (1950). Article 48A of the Constitution, obliged the State to endeavour to protect and improve the environment and to safeguard the forests and wild life of the country. The Environment (Protection) Act and Rules of 1986 were enacted and came into force on 19th November, 1986. The object of this Act is to provide for the protection and improvement of environment and for matters connected therewith (Ministry of Environment, forest & climate change, government of India, 2015). Under provisions of the Act and Rules of 1986, issued various notifications regulating the mining of minor minerals, specifically stating the procedures that were required to be complied by persons intending to carry on such mining activity and for the authorities to regulate them. The Mines and Minerals (Regulation and Development) Act No 67 of 1957 is the main governing body in Indian context which followed by several amendments up to 2010 (Act No 34).

On the authority of its section 3(a) "minerals" includes all minerals except mineral oils. However the Indian legislations has more specifically declared through section 3(e), whereby "minor minerals" means building stones, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the

India is a vast country of more than one billion people which hides hundreds, most likely thousands, of illegal sand mining operations around the country. The depth of these activities goes towards even slaughtering inspecting officers. However, India has taken effective steps towards curbing illegal sand mining across the country. In February 2012, the Supreme Court of India ruled that approval under the 2006 Environment Impact Assessment (EIA) notification is needed for all sand mining and gravel collection activities, even if the area being mined is less than 5 hectares (12.5 acres). On the authority of the Ministry of Environment and Forests, an order was issued to comply with the Supreme Court's judgment and directed that permissions be pursued for all mining activities. Moreover respective State Environment Impact Assessment Authorities (SEIAA) were also empowered to monitor sand mining areas in their regions. The judicial authorities have also enhanced this process, since the establishment of National Green Tribunal, a sort of federal court for environmental matters has allowed citizens to lodge complaints regarding illegal mining activities, especially illegal sand mining (Adam Ferguson, 2015). Under the scope of jurisdiction of the National Green Tribunal, it has issued restraint orders against all sand mining activities that are being carried out across the country without environmental clearance that could be recognized as a promising step towards curbing illegal sand mining (Manoj K). In practice, State of Kerala

~~has made measures against illegal sand mining through~~ and any mineral occurring in residue stockpiles or in new regulations: establishing a round the clock complaining cell at the collectorate control room for the public to record complaints regarding illegal sand-mining in the district, raiding areas of illegal sand mining, and seizure of sand and selling at government rates. Moreover, on the authority of guidelines issued by the Ministry of Environment, Forests and Climate change (MEFC), it has introduced enhanced monitoring mechanism for sustainable sand mining. Accordingly, proposals exist to utilize technology with regarding transport permits which emphasize on printing of transport permits on security paper, invisible ink mark, fugitive ink background, VOID pantograph and unique barcodes. While consuming sand as a natural resource for construction industry at a sustainable level, the above evidences exemplifies how India has adapted the laws, regulations and mechanisms for the rising problem of illegal sand mining.

3) South Africa

South Africa is a medium sized country, with a total land area of slightly more than 1.2-million square kilometres. Environment is a right of every South African citizen. Section 24(a) of the Constitution of The Republic of South Africa (18 December, 1996) states that everyone has the right to an environment, which is not harmful to his or her health and well-being. This supersedes all other legislation. Therefore, any person suffering damage as a result of mining activities may still able to claim indemnities.

Mineral regulation falls utterly under national government and the Department of Mineral Resources exercises its authority using a key national statute; the Mineral and Petroleum Resources Development Act No 28 of 2002. The Mineral and Petroleum Resources Development Act empowers the State to grant, issue, refuse, control, administer, and manage the following: reconnaissance permission, prospecting right, permission to remove, mining right, mining permit, retention permit, technical co-operation permit, reconnaissance permit, exploration right and production right with reference to section 3(2)(a). For any person planning a sand mining operation, this Act is the preparatory point. The Act places all mineral resources in South Africa, including natural sand, under the custodianship of the State (SC Green, 2012). Sand as a natural mineral has been recognized under its interpretation section which declares; "mineral" means any substance, whether in solid, liquid or gaseous form, occurring naturally in or on the earth or in or under water and which was formed by or subjected to a geological process, and includes sand, stone, rock, gravel, clay, soil

residue deposits. From an Environmental Law perspective there are three authorities in the national level that regulate sand mining; the Department of Mineral Resources, the Department of Environmental Affairs and the Department of Water Affairs. These authorities use the Mineral and Petroleum Resources Development Act, the National Environmental Management Act 107 of 1998 and the National Water Act 36 of 1998, respectively, to regulate sand mining. There is also a fourth authority, active in the provincial sphere of government that is the provincial department responsible for environmental affairs in each province, of which there are nine. These provincial authorities also use the National Environmental Management Act to regulate certain environmental aspects related to sand mining. Adapting into the geographic situation of the country could be one of the methods to curb illegal sand mining through empowering provincial bodies to take necessary acts alike in South African context.

The Mineral and Petroleum Resources Development Act No 28 of 2002 also specify about a Minister, however, it has not set wide discretionary powers over Minister and he/she acts as a guardian of natural resources which are owned by state. Evidence could be identified in terms of section 22 which declares; "Any person who wishes to apply to the Minister for a mining right must simultaneously apply for an environmental authorisation and must lodge the application – (a) at the office of the Regional Manager in whose region the land is situated..." Additionally, soft law perform as guidelines for sand miners (Compendium on Best Practices in Small-Scale Mining in Africa). Monitoring mechanism is further advanced through municipal councils of South Africa which has curbed illegal sand mining for considerable amount, which is a lesson to be learnt. Although there exist overlaps in the regulatory system from the mineral regulation and land use planning regulation, legislative measures shall be admired since South Africa has taken steps that are necessary for the protection of its environment such as the section 28(1) of the National Environmental Management Act No 107 of 1998 which declares that "every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such". Thus, the existing legislation and monitoring mechanisms seems better in curbing illegal sand mining in South African context.

B. Conventions

Sri Lanka signed the Convention on Biological Diversity in June 1992, and ratified in March 1994. Sri Lanka prepared a

~~comprehensive Biodiversity Conservation Action Plan in Development (Eppawela phosphate mining case)[2000]~~, order to fulfil the obligations under Article 6 of the convention (Each Contracting Party shall, in accordance with its particular conditions and capabilities: (a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned) and cabinet approval for the action plan was granted in 1998. The National Biodiversity Conservation Action Plan comprises the concrete actions to be taken to achieve the objectives of the Convention (Ministry of Environment & Renewable Energy, 2014). Sand is a mineral resource which is vital in present day undertakings which is extracted from rivers and coasts of Sri Lankan territory, which directly affect the other components of eco-system (Flora and Fauna). Although, the convention does not specify on sand mining it impose on state parties to maintain certain standards of their biodiversity and as a mechanism each state party has to submit reports on lags and improvements in biodiversity as carried out by Sri Lanka in 2014, which is the fifth national report to the convention of biological diversity.

C. Sustainable Development

It is the development which meets the necessities of the present without compromising the ability of future generations to meet their own necessities (Environment Foundation Limited, 2009). It has integrated economic development, social development and environment protection as interlinked and interdependent elements of long term development. There are four elements as reflected in international agreements; (1) Preservation natural resources for the benefit of future generations, (2) Exploiting natural resources in a manner which is sustainable, prudent, rational, wise and appropriate, also known as the principle of sustainable use, (3) The equitable use of resources which implies that use by one state must take into account the needs of other states, and (4) Ensuring that environment considerations are integrated into economic and development projects. Sand mining is not prohibited, however, it shall be carried accordance with the principle of sustainability notwithstanding the economic requirement, since ultimately it is the surrounding or the environment that will emerge as a priority at certain stage of development. Therefore illegal sand mining must be a significant consideration that shall be taken by relevant administration bodies to curb in satisfying levels. Sustainable development was first discussed in *Bulankulama v Secretary, Ministry of Industrial*

Development (Eppawela phosphate mining case)[2000], which was followed in case of *Gunaratne v The Homagama Pradeshiya Sabha*[1998], where the Supreme Court held; “publicity, transparency and fairness are essential if the goal of sustainable development is to be achieved”. Components supplement for sustainability will be discussed hereby.

D. Good Governance

Good governance is a concept that has recently come into regular use in political science, public administration and, more particularly, development management. It appears alongside such concepts and terms as democracy, civil society, popular participation, human rights, and social and sustainable development (Agere S, 2000). It is stated that the concept of good governance comprise of eight components; Rule of Law, Accountability, Transparency, Responsiveness, Equitable and Inclusiveness, Participative, consensus oriented, and Effective and Efficient. As discussed, transparency is a requirement for sustainable development which indeed would upkeep the research theme. Thus, components of good governance could be utilized in order to curb illegal sand mining. Sri Lanka incorporated Right to Information in Article 14A through the 19th Amendment to the Constitution (Right to Information Bill No. 91 was presented on Parliament on 24th March 2016) and have prioritized good governance in its agenda, would be a great opportunity in respect of Environment Law to combat against illegal sand mining process and to remedy the loopholes in the current legislation and monitoring mechanism as well. I.e. more publicity for license holders, maintaining an updated electronic data base in the relevant websites would give enough space to public and especially for those who are engaged the respective field. Therefore, through this section it is emphasized on curbing illegal sand mining using the maximum potentials of current context in Sri Lanka.

VI. RECOMMENDATIONS

The discussion have incorporate information through various sources and elaborates basic features: interpretations, powers and functions of authorities, delegation of powers etc. of legislation in three jurisdictions which exist to manage environment resources; particularly curbing illegal sand mining. Sri Lankan Act lacks specific provisions within the legislation comparing to other jurisdictions. Moreover, vesting power over a single person paves way for corruption, where most of the incidents found in Sri Lanka are rather linked to politicians, especially in issuing mining licence and local legislation had not emphasized the minister as a guardian of natural resources.

The lesson that could be learnt from South African context is that they specifies that the minister must be the guardian with less discretionary powers on issuing licence. All jurisdictions mentioned consist of Departments/Bureaus to administer natural resources and have implemented plans to curb illegal activities regarding sand mining. India and South Africa are large geographies compared to Sri Lanka, where they had to cover a huge area to protect resources that made them to broaden their monitoring capacities to provincials and municipalities. Despite, Sri Lanka possess seventeen regional offices, yet the illegal sand mining continues. This is why Sri Lanka should seek advance systems and international cooperation (Article 10(1)(j) of National Environment Act No 47 of 1980) to conserve natural resources. Sri Lanka have obliged to protect its biodiversity and its essentials through ratifying the Convention on Biological Diversity in 1994. Therefore authorities shall establish firm monitoring mechanisms as discussed in the Indian context, where guidelines of MEFC focussed on utilizing technology for proceedings of sand mining, so that none will be able to evade. Good governance has become an utmost requirement for many countries in exercising democracy. The issuing of sand mining license must not be carried out as an insider deal in departments. The environmental resources, especially minerals (sand) that has commercialized belong to citizens and must not be restricted to a single body which manipulate inequitably. Recommendations for sand mining should be based on keeping the eye on the broad principle on which any sustainable sand mining guideline or policy can be based is that river or natural resources must be utilized for the benefit of the present and future generations, thereby the river resources should be managed and developed.

With accordance with principles of good governance and sustainable development authors recommend that Geological survey and mining bureau shall enhance their monitoring mechanisms: giving publicity to license holders, maintaining a regularly updated electronic database through their official website, GPS monitoring over mining sites, so that interesting parties could monitor whether there are any illegal acts engaged with sand mining. As previously mentioned Indians had implemented such practices and have achieved better results in protecting their resources according the Ministry guidelines and acts taken by state bodies as discussed by K. Manoj, which is a lesson to Sri Lankan authorities. Moreover, this can be implemented in light of the right to information as debated in parliament in 2015/2016, where centralized monitoring mechanism can be transformed into a democratic system

which environmental activists and media could also participate for the process of curbing illegal sand mining in Sri Lanka. Identification of areas where sand mining can be allowed is a good step; however, identification of areas of erosion and proximity to infrastructures and installations where mining should be prohibited would be the best. Identifying possible ways of scientific and systemic mining would be another great approach, since it provides a more systemic, practical, expertise and realistic view of sand mining, where problems and the solutions might not be hidden like they were before. On marking to that, required equipment and technology should be provided with expertise instructions and relevant authorities should take considerations on this matter. Authorities should implement safeguards for checking illegal and discriminatory sand mining and should punish before law for illegal acts. Further, new constitutional amendments shall supplement regarding this matter and implement for the betterment of this industry with the necessary safeguards for the environment as well as for the persons who are involved in it. Most importantly, determining measures for protection of bank erosion and identifying reliable steps for conservation would be a great help for the protection of environment and ecology which is the main objective of the research. Additionally, alternatives for river sand (such as manufactured sand and quarry dust) would be another preference to reduce the damage that is being caused by illegal acts and to maintain sustainable levels of this resource.

VII. CONCLUSION

Natural resource are a blessing to a developing country like Sri Lanka. Unless the government of Sri Lanka introduce and implement policies properly to curb illegal sand mining and maintain sustainable levels of mining, this process will continue until sand is vanished within the territory. Even though there are conflicts between the notions of development and protection of environment, everyone requires to understand that human being is a creation of nature and is blend with it, where every component of nature will decay at some stage and will be limited for usage. As quoted by Mahatma Gandhi: "earth provides enough to satisfy every man's need, but not every man's greed". Thus, curbing illegal sand mining in Sri Lanka shall be a priority of Sri Lankan government in order to maintain sustainable levels and to possess sustainable economic development.

REFERENCE

Legislation and Conventions:
Convention on Biological Diversity <
<https://www.cbd.int/convention/text/default.shtml>>

India, Constitution of India < <http://doj.gov.in/acts-and-rules>>

India, Mines and Minerals (Regulation and Development) Act No 67 of 1957

South Africa, Constitution of the Republic of South Africa (18 December, 1996) < <http://www.justice.gov.za/legislation/constitution/index.html>>

South Africa, Mineral and Petroleum Resources Development Act No 28 of 2002

South Africa, National Environmental Management Act No 107 of 1998

Sri Lanka, Constitution of the Democratic Socialist Republic of Sri Lanka [1978], Department of Government Printing

Sri Lanka, Mines and Minerals Act No 33 of 1992

Sri Lanka, Right to Information Bill No. 91

Sri Lanka, National Environment Act No 47 of 1980

Case Law:

Bulankulama and others v. Secretary, Ministry of Industrial Development and others [2000] SLRs 3 (SC), p.243.

Gunaratne v The Homagama Pradeshiya Sabha [1998] SLRs 2 (SC), p.11.

Books, Articles and Websites:

Agere, S, (2000). Promoting Good Governance Principles, Practices and Perspectives. 1st ed. United Kingdom: commonwealth secretariat, Marlborough House, Pall Mall, London SW1Y 5HX, United Kingdom.

Alternatives to River Sand Organized by the Research Committee on Geology & Mineral Resources of the National Science Foundation < <http://thakshana.nsf.ac.lk/slstic/NA-291/NA-291.pdf>>

Environment Foundation Limited (2009) Judges and Environmental Law, Colombo 5, Sri Lanka: Environment Foundation Limited. < <http://efl.lk/legal-publications/>>

Environmental Foundation Limited (2016) MECHANISED SAND MINING IN MAHA OYA, Available at: <http://efl.lk/portfolio-posts/mechanised-sand-mining-in-maha-oya/> (Accessed: 22nd May 2016).

Ferguson A, (2015) The Deadly Global War for Sand, Available at: <http://www.wired.com/2015/03/illegal-sand-mining/> (Accessed: 7th May 2016).

Green, S.C, (1998). The Regulation of Sand Mining in South Africa. MPhil. Cape Town: UNIVERSITY OF CAPE TOWN. < https://open.uct.ac.za/bitstream/item/4336/thesis_law_2012_green_j.pdf?sequence=1>

Gunaratne L.P.H (2010) Policy Options for Sustainable River Sand Mining in Sri Lanka, Singapore: Economy and Environment

Manoj K Jha (2016) Illegal Sand Mining: Steps taken by Government of India, Available at: <http://iasscore.in/national-details-177.html> (Accessed: 7th May 2016).

Pereira, K., & Ratnayake, R. (2013). Water Integrity in Action: Curbing Illegal Sand Mining in Sri Lanka, Berlin, Germany: Water Integrity Network < www.waterintegritynetwork.net/wp.../04/Case_SriLanka_SandMining_EN_2013.pdf>

Sabry H (2015) 'Illegal Sand Mining Causes Chaos In Kurunegala', Sunday Leader, 22 November, p. < <http://www.thesundayleader.lk/2015/11/22/illegal-sand-mining-causes-chaos-in-kurunegala/>>

Sustainalytics (2016) Sand Mining in India, Available at: <http://www.sustainalytics.com/sand-mining-india> (Accessed: 7th of May 2016).

THE GEOLOGICAL SURVEY AND MINES BUREAU (2012) Annual Report, Pitakotte: The Geological Survey and Mines Bureau. https://www.parliament.lk/uploads/documents/paperspresented/annual_report_geological_survey_and_mines_bureau_2012.pdf

United Nations Environment Programme (2016) Rio Declaration on Environment and Development, Available at: <http://www.unep.org/documents.multilingual/default.asp?documentid=78&articleid=1163> (Accessed: 22nd May 2016).

ACKNOWLEDGMENT

We would like to acknowledge the advice and guidance of the all the lecturers of the Faculty of Law, Kotelawala Defence University, our parents, and friends for the advices, criticisms and the encouragement given to fulfill this research.

BIOGRAPHY OF AUTHORS



M.D.M Cooray is a 3rd year Law undergraduate of General sir John Kotelawala Defence University, Sri Lanka. Research interests; Human Rights, Humanitarian law, Environmental law, Public International law and International Relations.



P.B.K Gamage is a 3rd year Law undergraduate of General sir John Kotelawala Defence University, Sri Lanka. Research interests; Human Rights & Social Science, IT law, Environmental law and diplomacy.