

# Harmonization Of Environmental Management Law Based On L&C Matrixes

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## Abstract

This short paper will discuss the importance of harmonization of environmental management law based on L and C matrixes which may be used to develop artificial intelligence platform (AI-P). L and C matrixes are used here to show the process of legal harmonization. The AI-P will be able to facilitate national and international stake holders to communicate each other to harmonize their environmental management law, including natural, human, and man-made resources law (the law). What they should harmonize is legal and institutional aspects of the law (the aspect) and components of environmental management activity regulated by the law (the component). The aspect consists of legal objective, legal mandate, institutional organization carried out the mandate, means and infrastructure, network and working mechanism, and legal target as a part of legal objective. The component involves planning, organizing, actuating, and controlling or plan, do, check, and action. An expected result of legal harmonization is environmental public order as a prerequisite to realize legal objectives as stated in the law.

**Keywords:** *Legal Harmonization; Environmental Management Law*

## Introduction

Every country with different legal systems in the world has responded to environment with various environmental management law (the law). Different stake holders in every country, i.e. governments, private entities, communities, legal practitioners, and legal academia, will view the law with different goals in mind. Governments as regulator will view the law issued and executed by them as always effective and efficient. Different from governments point of view, private entities will see the law as effective and efficient when it can provide them with economic benefits, and with social justice from the view point of communities. Meanwhile, legal practitioners will expect that the effective and efficient law can be used as legal basis for providing their clients with the best legal services, and legal academia will view the law as effective and efficient when it is always capable of following dynamic changes in society. In this respect, different view point of stake holders on the law combining with complexity of continuous interaction of the three kind of resources, which are also regulated by the law, in the environment could eventually lead to legal uncertainty. Various environmental problems may appear because of the existence of legal uncertainty. The presence of environmental problems can, therefore, be able to be used as an indicator of inharmonious law that create legal uncertainty. In this regard, legal harmonization may be considered as one of legal instruments to promote legal certainty in conducting environmental management. If every country has the same legal pattern of harmonization,

communication on legal harmonization will develop among countries. Each country, however, has its own legal harmonization pattern (subjective legal pattern). However, since subjective legal pattern will apparently involve the aspect and the component, a common legal pattern (objective legal pattern) maybe developed. L and C matrixes (Figure 1)<sup>1</sup>, in this respect, may be used to form a common legal pattern of harmonization. Common legal pattern is, therefore, a pattern of interaction between the aspect on the one hand and the component on the other. Interaction between the two is actually the process of legal harmonization itself to meet legal objectives as the common good. The common good refers to legal objectives, such as sustainable clean and healthy environment, which can be attainable by the community (public interest) and by its individual member (private interest)<sup>2</sup>.

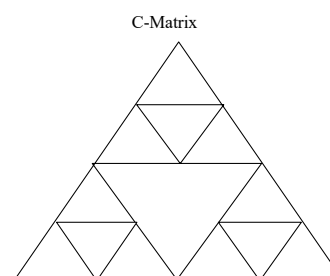



Figure 1: L-Matrix and C-Matrix<sup>3</sup>L-Matrix

<sup>1</sup>Eris Kusnadi, *Tentang Matrix Diagram*. <https://eriskusnadiwordpress.com/2012/02/10/tentang-matrix-diagram/>

<sup>2</sup> *Private interest regulated by private law has objectives to provide individual and private entity with legal protection of consumer and customer rights, producer right, and intermediary or agent right. Public interest regulated by public law forms legal base for creating public right through compromise of private interest, appreciation of sacrificial private interest made for creating public right (trade off), and share of benefits come up from operational public right (balancing). For more discussion, see Barry M. Mitnick (1980), The Political Economy of Regulation: Creating, Designing, and Removing Regulatory Forms. New York: Columbia University Press, 1980.*

<sup>3</sup> Tommy Hendra Purwaka, "L-Matrix dan C-Matrix Sebagai Sarana Pemberdayaan Hukum Pengelolaan Sumber Daya". *Jurnal Kajian* Vol. 23 No. 4 Th. 2018. Jakarta: Pusat Penelitian Badan Keahlian DPR RI. See also Tommy Hendra Purwaka, "Teknik Harmonisasi Hukum Pengelolaan Sumber Daya Dengan Menggunakan L-Matrix dan C-Matrix". *Staging-Point, Jurnal IPTEK* 2018/01/29. [www.staging-point.com](http://www.staging-point.com).

In this respect, it can be said that legal harmonization of environmental management law maybe used to strengthen UN resolution number A/RES/76 /300 of 28 July 2022 on the human right to a clean, healthy and sustainable environment. Process of legal harmonization, then, should be converted in to AI language<sup>4</sup> to develop AI-P<sup>5</sup> which will provide all stake holders with objective legal pattern of harmonization. By the use of AI-P, they will be able to engage in communication for the purpose of harmonizing their environmental management law. The presence of continuous legal harmonization will maintain the existence of public order in managing the environment.

### What Should be Harmonized?

As afore mentioned, what should be harmonized is the aspect and the component. Interaction between the two may involve legal norms, legal principles, legal values, and legal ethics<sup>6</sup> in managing natural, human and man-made resources. The three resources, as a matter of fact, interact each other constantly<sup>7</sup> and so do their laws. By the use of AI-P, the interaction can be well organized towards realization of legal harmonization.

### The Aspect: Legal and Institutional Aspects

Every environmental management law has written legal objectives which should be achieved through the maintenance of public order<sup>8</sup> in conducting environmental management activity. Environmental public order is, therefore, a prerequisite for the achievement of legal objectives. It can be said here that environmental public order is an unwritten legal objective of every environmental management law. The law gives legal mandate to related institutional organizations (IO) to carry out their own environmental management in a specific area with specific legal targets broken down from the legal objectives. The legal targets will be obtained by making the best use of means and infrastructures available, and also by the appropriation of institutional network and its mechanism accessible. In this context, legal and institutional aspects of the law to be harmonized are made of legal objectives (LO), legal mandate (LM), institutional organization (IO), means and infrastructure (MI), institutional network and its mechanism (NM), and legal targets (LT) Table 1.

<sup>4</sup> *What I mean by AI language is languages commonly used in computer programming and scripting, i.e. Java Script, Pascal, C, C++, Structured Query Lan-*

*guage (SQL), Python, Java, and Hypertext Preprocessor (PHP). See Rinaldi Munir dan Leony Lidy, Algoritma dan Pemrograman Dalam Bahasa Pascal, C, dan C++. Bandung: Informatika, 2016 (pp. 19-21; 403-440); See also Fakultas Teknik U.I., Lima Bahasa Pemrograman Terpopuler Untuk Dipelajari di Tahun 2021. <https://insights.stackoverflow.com/survey/2020#technology-programming-scripting-and-markup-languages-professional-developers>.*

<sup>5</sup> See Phil Simon, *The Age of The Platform: How Amazon, Apple, Facebook, and Google Have Redefined Business*. Translated into Bahasa Indonesia by Sartika Kurniali and Lanny Natalia. Jakarta: Kompas Gramedia, 2015 (pp. 31-58).

<sup>6</sup> *From my understanding on legal thought of St. Thomas Aquinas, all legal norms, legal principles, legal values, and legal ethics should be understood in relation to and implemented on the basis of human virtue. See Jacqueline A. Laing and Russel Wilcox, The Natural Law Reader (2014: pp. 113-136), on the discussion of First Part of the Second Part (Prima Secundae Partis), Book II, Part I, 55-56, 90-97 of St. Thomas Aquinas' Summa Theologica.*

<sup>7</sup> See Luky Adrianto, "Konsep dan Aplikasi Teori Tata Kelola Sumberdaya (Resource Governance) Dalam Pengelolaan Ekosistem Terumbu Karang", and Victor P.H. Nikijulw, "Pendekatan Inter-Governmental Dalam Manajemen Terumbu Karang", in Victor P.H. Nikijulw dan Luki Adrianto (eds.), *Coral Governance*. Bogor: IPB Press, 2013 (pp. 21-60; 281-320).

<sup>8</sup> *Ibid., pp. 113-136. Based on my understanding similar to above note, public order is formed by integration of legal values of truth, justice and certainty embodied within human virtues which are reflected in social communication in the society. See also Brian H. Bix who discussed Radbruch's Formula in Imer B. Flores and Kenneth E. Himma (2013: pp. 65-75), mentioned that legal order is legal certainty which is viewed by Radbruch as the most important legal value in law. In this context, Jacqueline A. Laing and Russel Wilcox (2014: p. 97) showed legal thought of St. Augustine in Chapter IV of The City of God stated that "Justice being taken away, then, what are kingdoms but robberies?"*

**Table 1:** Legal and Institutional Aspects of Environmental Management Law

Law Legal & Inst Aspect	Law on Human Resources	Law on Natural Resources	Law on Man-Made Resources
LO	Harmonization of Legal Objectives		
LM	Harmonization of Legal Mandates		
IO	Harmonization of Institutional Organizations		
MI	Harmonization of Means and Infrastructures		
NM	Harmonization of Network and Mechanism		
LT	Harmonization of Legal Target as a Part of Legal Objective		

From Indonesian perspective, environment is defined as a totality of space with all materials, resources, situation and creatures, including human and their behaviour that influence the nature, continuation of livelihood and human welfare as well as other creatures [Article 1 number (1) of Law 32/2009]. This definition shows a complexity of interaction and inter-relationship among human resources, living and non-living natural resources, man-made resources, including science and technology, law and institution, public and business administration, money, market and methods, and their surrounding and conditions in which they operate.<sup>9</sup> This complexity is just from the perspective of Indonesia alone,<sup>10</sup> not yet involves other countries. It will become much more complex, if it includes interests of executive, legislative, judicative, private entity, legal practitioner, law academia, and community of each country in viewing the law.<sup>11</sup> In order to reduce or, at least, to simplify it, an AI-P can be used to facilitate every country with a framework as guidance in harmonizing its own environmental management law. Ef-

forts to reduce and to simplify complexity in managing the environment through legal harmonization will, therefore, be able to be started in country level. In this regard, legal harmonization in a country is necessary and among nation states is advisable. By so doing, environmental

<sup>9</sup>As stated by Martin Boodman, "harmonization is a process in which diverse elements are combined or adapted to each other so as to form a coherent whole while retaining their individuality. In its relative sense, harmonization is the creation of a relationship between diverse things. Its absolute and most common meaning, however, implies the creation of a relationship of accord or consonance." See Martin Boodman, "The Myth of Harmonization of Laws". In *The American Journal of Comparative Law*, Vol. 39, No. 4 (Autumn, 1991), pp. 699-724 Published by: American Society of Comparative Law.

<sup>10</sup>This is not to mention that Indonesia as an archipelagic state consisting of 16,771 islands with 37 provinces, 416 district and 98 town governments. See Purwaka, Tommy Hendra, "Konvensi Hukum Laut PBB 1982 dan Hukum Laut Nasional Indonesia." Jakarta: Lex Publica, *Jurnal Ilmu Hukum Asosiasi Pimpinan Pendidikan Tinggi Hukum Indonesia*, Volume II, Nomor 2, Mei 2016.

<sup>11</sup>A good lesson can be learned from the experience of European Union in harmonizing its corporate law. See Sebastian Mock, "Harmonization, Regulation and Legislative Competition in European Corporate Law," in *3 German Law Journal* (2002).

public order can be continuously maintained to guarantee the achievement of legal targets as a part of LO.

Harmonization of written LO of the law can be done through legal interpretation, legal reasoning and legal argumentation of related legal norms and rules within the respective laws by referring to unwritten LO. This means that the written LO should be read from view point of public order. In this connection, the respective laws here mean laws on natural resources, laws of human resources, and laws on man-made resources which constantly interrelate each other since the resources always interact each other. The unwritten LO of the law are public order as formed by integrated values of truth (moral aspiration), justice (community aspiration), and certainty (law aspiration). In this context, legal interpretation should be accompanied by legal reasoning so as to guarantee the result logically meets moral aspiration (value of truth), community aspiration (value of justice), and law aspiration (value of certainty). All of these should be strengthened by legal and rational argumentation based on interests of institutional organizations having mandate to carry out the respective laws. Succeeded harmonization of LO will, therefore, be capable of guiding harmonization of the rest of the aspect. If the competent IO fail to harmonize LO, they will face difficulties in developing institutional cooperation, coordination, and integration in implementing legal norms and rules of the law. Such a guidance will be able to give direction on how to harmonize the rest of the aspect. In this regard, harmonization of LM can be made possible by analysing legal bases for the establishment of IO; harmonization of IO by analysing their corporate culture and competencies; harmonization of NM by analysing legal cooperation, coordination and integration, and harmonization of stated LT by conducting evaluation of the stated LO. It should be mentioned here that legal cooperation, coordination, and integration between or among IO usually take the form of memorandum of understanding (MoU), bilateral and multilateral agreements which are then usually formalized into joint ministerial decree. If the legal pattern

discussed previously can be standardized by stake holders, it will become an accepted legal instrument for harmonizing the aspect. The standardization itself should be processed by considering legal order and hierarchy of the law, in which lower legal norms must be in consonance with higher legal norms. If not, they are not valid legal norms and rules, and by law they are nullified. Prescription of valid legal norms and rules will give direction to stake holders on how they ought to behave<sup>12</sup> toward public order. If the legal norms and rules are valid, the aspect will also be valid. As a result of the process of standardization, each part of the aspect then can be written in the far-left column of the L-Matrix (Table 1).

## The Component: Components of Environmental Management Activity

It is well understood that each environmental management law has different definition of management. It is also well noted that the meaning of management in environmental management will differ from that of in, for example, mining management, forestry management, plantation management, agriculture management, fishery management, human resource management, and man-made resource management. It is also well

<sup>12</sup>"The concept of the norm and the concept of the "ought" coincide. To prescribe in a norm how one ought to behave is understood here not only as a command but also as a positive permission or an authorization." See Hans Kelsen, "The Concept of The Legal Order". Translated by Stanley L. Paulson in *The American Journal of Jurisprudence*. <https://academic.oup.com/ajj/article-abstract/27/1/64/203271>.

acknowledged that meaning of resources management will differ from that of financial management. So, there is various definition of management in the law indicating that there is a lot of different perception of stake holders on how to conduct management in accordance with the law. If so, it will go without saying that institutional conflict of interests and overlapping legal mandates, legal problems and legal disputes, and also various legal cases will appear, where some of which should be settled through court. This is why a common technic used in reading various definitions of management should be introduced to all stake holders. It is hoped that by so doing, they will be able to come up with the same general understanding on what management is. Management, in this respect, should be viewed as decision making process to allocate resources in a certain space and in a certain time for the purpose of meeting stated LT as part of LO. A certain space relates to spatial planning and a certain time is in line with licensing policy.

Decision making process should be made by considering at least six factors, i.e. science and technology, law and institution, and public and business administration. Decision making process is commonly used in planning, organizing, actuating and controlling (POAC) or in formulating plan, do, check and action (PDCA). The component that should be harmonized, therefore, includes POAC or PDCA, in which PO in POAC is equal to P in PDCA, A is equal to D, and C is equal to CA (Table 2).



**Table 2:** Legal Components of Environmental Management Activity

Component		Law		
		Law on Human Res	Law on Natural Res	Law on Man-Made Res
PO (P)	DB	Harmonization through Big Data Development		
	PC	Harmonization through Join Research		
	CC	Harmonization through Join Research		
	AC	Harmonization through Join Research		
	RA	Harmonization through Join Research		
A (D)	RE	Harmonization through Join Supervision		
	PP	Harmonization through Join Supervision		
	MP	Harmonization through Join Supervision		
C (CA)	MCS	Harmonization through Join Supervision		

The general understanding on the meaning of management will lead to identification of several sub-components of management activity, in which PO consists of data and information (DB: data base), resource research to assess potential capacity (PC), determination of carrying capacity (CC), absorptive capacity (AC), and resources allocation (RA); A consists of resource exploitation (RE), process of production (PP) and marketing product (MP); and C consists of monitoring, control and surveillance (MCS). MCS, in this respect, is an integrated system used to carry out supervision of environmental management activities(the component).<sup>13</sup>

DB must be formed first if a stake holder would like to develop environmental management. This is because environmental management should be carried out based on

<sup>13</sup> P. Flewelling, *An Introduction to Monitoring, Control and Surveillance Systems for Capture Fisheries*. FAO Fisheries Technical Paper No. 338. Rome, FAO, 1995 (217p).

the best scientific data available in DB. Data concerning the aspect and the component can be collected from various sources available in government institutions, private entities, and community. If DB is formed, it will be used by resource research to produce data on PC which is then stored in DB. The following steps of management activity are the use of PC data to determine CC and AC. Since the form of CC and AC is data, that data on CC and AC should be inserted into DB so that it can be appropriated by the next step of management activity in making allocated resources (RA) available for RE. Data on RA is informed and offered in the form of licensing system by respective government institution to investors interested in doing RE, PP, and MP. As final step of management activity, government makes the best use of MCS system to supervise all management activities. MCS is conducted to give assurance if LT is met as contribution to the achievement of LO. In MCS system, monitoring is supervision with its focus on the degree of intensity of RE relative to whether or not CC and AC have been met or surpassed. Control is supervision with its focus on legality of RE with respect to licensingsystem and surveillance is supervision with its focus on manoeuvre activity of RE, PP, and MP. Surveillance activity may be executed by land, by sea, and by air. Surveillance usually also carries the mission

of monitoring and control. MCS and its result will be evaluated to maintain continuous improvement. Join supervision will, therefore, be able to promote harmonization of RE, PP, MP and MCS.

Management activities above mentioned form a sequential step called linear synergicto show sub-component of management activities carried out sequentially. In addition to linear synergic, there is also a responsive synergic which show a responsive relationship between DB and the rest of management activities, i.e. PC, CC, AC, RA, RE, PP, MP, and MCS (Table 3). The process of linear and responsive synergic also show key role and function hold by DB and MCS as guarantors for the existence of public order. This is why DB and MCS must be in the hand of respective government institution and the rest activities may be decentralized or authorized to private entity and community by direction and standard operational procedure (SOP) from the government. With respect to Table 4,each sub-component activity will produce data and information which should be stored in DB. In this respect, join research and supervision will pave the way in promoting data harmonization. Harmonization of DB will form big data as public or private ledgers.

**Table 3:** Input-Output Model on the Process of Linear and Responsive Synergic

Out	DB	PC	CC	RA	RE	PP	MP	MCS
In			AC					
DB	Key Role							
PC								
CC								
AC								
RA								
RE								
PP								
MP								
MCS								Key Role

Every country, including all its stake holders can enjoy data and information available in public and private ledgers to process their own linear and responsive synergic. Sequentialsteps in running linear synergic and responsive synergic activities can be used as guidance in conducting legal interpretation, legal reasoning, and legal argumentation towards legal harmonization.

**How to Identify What Should be Harmonized?**

As mentioned in the previous discussion, what should be harmonized includes the aspect which consists of LO, LM, IO, MI, NM, and LT, and the component which includes DB, PC,CC, AC, RA, RE, PP, MP, and MCS. The aspect and the component are regulated by the law.In another words, the aspect and the component form legal substance of the law which is viewed as *ius constitutum*. According to legal system theory

of Lawrence Friedmann,<sup>14</sup> legal substance will be implemented as *ius operatum* by legal structure, i.e. government, private entity, and community, which is influenced by its cultural background. Legal culture is attitude and behaviour of legal structure in applying legal substance towards public order.

Attitude and behaviour of legal structure reflect its understanding on legal norms, rules and values, i.e. values of truth, justice, and certainty. By value of truth means moral truth. Moral truth is deduced from spiritual truth, the highest objective truth, the highest good, Summum Bonum, i.e. God. God creates man equipped with spiritual power embedded in human heart, intellectual power embedded in human brain, and appetite power embedded in human bodily senses. In short, spiritual power is evocative moral truth, intellectual power is evocative intellectual truth, and appetite power is evocative human truth, then equal interaction of the three is the seed of internal justice within individual human life. Therefore, communication among human based on moral truth in daily life will create social justice. And then for the sake of legal certainty, legal norms and values are formulated in positive law.<sup>15</sup>

<sup>14</sup> This narrative is based on my understanding of legal system theory of Lawrence M. Friedman which then I combine with my lecturing experience for several years in teaching environmental law and public policy at the School of Environmental Studies, University of Indonesia. See Lawrence M. Friedman, *Sistem Hukum: Perspektif Ilmu Sosial*. Translated by M. Khozim from original title "The Legal System: A Social Science Perspective." New York: Russell Sage Foundation, 1975, into Bahasa Indonesia. Cetakan I. Bandung: Nusa Media, 2009.

<sup>15</sup> Based on my limited understanding on St. Thomas Aquinas and St. Augustine thoughts discussed in book of *The Natural Law Reader* of Jacqueline A. Laing and Russell Wilcox. See Jacqueline A. Laing and Russell Wilcox (eds.), *The Natural Law Reader*. West Sussex, UK: Wiley-Blackwell, 2014. See also Robert Baldick, C.A. Jones and Betty Radice, *Saint Augustine Confessions*. Harmondsworth, Middlesex, England: Penguin Books, 1975; and St. Thomas Aquinas, *The Summa Theologica*. Translated by Fathers of the English Dominican Province. Downloaded from <http://www.microbookstudio.com>. This kind of human character above mentioned is expected to be the character of stake holders in forming and making the use of AI-P. By such an expectation, AI-P is expected capable of overcoming diverse "ism" of naturalism and modernism camps. For discussion on the morality of authority, see John Rawls, *A Theory of Justice*. (1999, pp 405-409; 425-429).

The integrated unity of three legal norms and values theoretically, as above mentioned elsewhere, will form public order. By considering the three legal norms and values, legal system implementation in a country will involve considerations concerning national situations and conditions of political, economy, social, culture, defence, security, environment, and law.

These situations and conditions embedded in daily life socio-culture of a country are implicitly reflected in attitude and behaviour of legal structure<sup>16</sup> in conducting legal substance. Implementation of the law should, therefore, be in accordance with legal system, i.e. legal substance, legal structure, and legal culture.

Since the law regulates the aspect and the component not only explicitly, but also implicitly, therefore, the aspect and the component in details should be identified through legal interpretation, legal reasoning, and legal argumentation of

the law.<sup>17</sup> The law itself belongs to, at least, two major legal system backgrounds, civil law and common law systems. In this respect, civil law is the body of written law imposed by the state consisting of codes and detailed statutes organized in hierarchical order, while common law is the body of law derived from judicial decision by virtue of being stated in written opinions organized based on the doctrine of *stare decisis*.<sup>18</sup> Without ignoring a bunch of legal theory and legal thought of so many prominent legal experts behind these two legal systems, here with allow me to mention that both legal systems recognize and apply written laws with different sources they are derived from. Therefore, the law discussed in this paper is focused on written laws. It should be pointed out here that the law itself should be implemented by stake holders in continuous changes of their daily life activities, while the written law remains. The law should then be interpreted in order that it can continuously follow the changes. On the other hand, implementation of the law should always maintain its conformity with the law through legal interpretation. Legal interpretation on the law should be done under the bright light of stake holder daily life activities and, vice versa, legal interpretation of the daily life of stake holder activities should be carried out under the bright light of the law. This kind of legal interpretation is understood as hermeneutic legal interpretation<sup>19</sup> aimed at legal finding and legal formation (if not found) of legal norms of the aspect and the component. In this context, legal interpretation, legal reasoning, and legal argumentation are used here as methods of legal analysis to identify the aspect and the component of the law.

<sup>16</sup> For more discussion on moral and attitude, and the morality of authority, see *Opcit.*, John Rawls (pp. 405-409; 425-429).

<sup>17</sup> For more discussion on legal interpretation, legal reasoning, and legal argumentation, see "Penafsiran Konstitusi" (Constitutional Interpretation) in *Hukum Acara Mahkamah Konstitusi (The Legal Procedure of Constitutional Court of the Republic of Indonesia)*. Jakarta: Sekretariat General of Constitutional Court of the Republic of Indonesia, 2010 (pp. 63-80). For comparison, see Antonin Scalia, *Common-Law Courts in A Civil-Law System: The Role of United States Federal Courts in Interpreting Constitution and Laws*. Princeton, N.J.: Princeton University Press (pp. 3-15). <http://assets.press.princeton.edu/chapters/s10859.pdf>. See also Mark Greenberg, "Legal Interpretation", *Stanford Encyclopedia of Philosophy* (Fall 2021 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/fall2021/entries/legal-interpretation/>.

<sup>18</sup> Brian A. Garner (Editor in Chief), *Black's Law Dictionary. Deluxe, Seventh Edition*. St. Paul, Minn.: WestGroup, 1999.

<sup>19</sup> *Opcit.*, *Hukum Acara Mahkamah Konstitusi* (pp. 77-80).

### What Legal Analysis Used to Conduct Legal Harmonization?

The aspect and the component that should be harmonized can be identified by analysing rules and legal norms within the law. Not all of the aspects and the components, however, are clearly stated and defined in the law. Several of which should be found, formed, and explained by the use of legal interpretation, legal reasoning, legal argumentation, which will end up with legal harmonization (LIRAH). LIRAH is, therefore, legal analysis to conduct legal harmonization of the law. It consists of legal content analysis (LCA), legal institutional analysis (LIA), legal functional analysis (LFA),

and legal MCS analysis (LMCSA).<sup>20</sup> LCA, in this respect, will be strengthened by SWOT (strength, weakness, opportunity, and threat), SOAR (strength, opportunity, aspiration, and threat), COS-BEN (cost-benefit), CBA (capacity building analysis) and DI-ILI (direct & indirect impact of law implementation) analysis.

**Legal Content Analysis**

Legal content of the law is legal norms and rules of the aspect and the component. All is object of LCA. Each sub-component of management activities, i.e. DB, PC, CC, AC, RA, RE, PP, MP, and MCS, has specific LO which gives LM to IO by the use of the best MI available and by developing NM to realize LT as part of LO (Table 4). It goes without saying, therefore, that LCA will analyse the whole legal substance of the law, i.e. legal norms and rules embedded in legal text and its application.

**Table 4: Objects of Legal Content Analysis**

Aspects		LO	LM	IO	MI	NM	LT
PO	DB	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	PC	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	CC	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	AC	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	RA	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
A	RE	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	PP	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
	MP	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH
C	MCS	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH	LIRAH

With respect to IO and NM, legal analysis may involve the use of SWOT, SOAR, COS-BEN, CBA and DI-ILI methods of analysis.<sup>21</sup> SWOT method is applied to engage in internal and external analysis on legal strategic used by an IO in relation to NM development in assessing legal text (*ius constitutum*) (Table 5) and its implementation (*ius operatum*) (Table 6), including impact analysis of its implementation through COS-BEN, and DI-ILI methods (Tables 7 and 8). Legal text as written legal norms and rules will always be left behind by continuous development in society. As a result, problems and constraints of *non liquet* will always appear. In addition, since application of the law includes several laws and regulations, overlapping and conflicting legal norms and rules will always exist. Also, since at least five stake holders involve in implementing the law, overlapping legal mandate and conflicting interests among IO will constantly appear. Furthermore, a constant interaction between legal text and its implementation will show agap between *ius constitutum* and *ius operatum* which constantly appears. These problems will be dealt with by the use of SOAR and CBA analysis (Tables 9 and 10).

<sup>20</sup> Tommy Hendra Purwaka, *Legislation Study Method to Save the Environment*. 2021 Indonesian Journal of Applied Environmental Studies, Vol. 2 No. 1 (pp. 1-4).

<sup>21</sup> Tommy Hendra Purwaka, *Hukum Lingkungan dan Kebijakan Publik (Environmental Law and Public Policy)*. Jakarta: SIL-UI, 2022. See also Barry M. Mitnick, *The Political Economy of Regulation: Crating, Designing, and Removing Regulatory Forms*. New York: Columbia University Press, 1980.

**Table 5: SWOT Analysis of Ius Constitutum**

External Analysis	<b>O</b>	<b>T</b>
	Opportunity and Challenge in the application of legal norms and rules of the aspect and the component	Problems and Constraints in the application of legal norms and rules of the aspect and the component
Internal Analysis	<b>S</b>	<b>W</b>
Strength of the Aspect and the Component	<b>SO Strategy</b> A good formulation and design of legal norms and rules is internal strength to make best use of external opportunity offered by other related legal norms & rules. This is called in sourcing strategy of respective legal norms and rules.	<b>WO Strategy</b> A strategic alliance to eliminate internal weakness of legal norms and rules through amendment for the purpose of appropriating external opportunity offered by other related legal norms and rules
	<b>ST Strategy</b> A strategic alliance to solve external problems and constraints imposed by other related legal norms and rule through amendment for the purpose of accommodating them in order that respective legal norms and rules can be implemented	<b>WT Strategy</b> This is called out sourcing strategy conducted by removing legal norms and rule, followed by creating the new ones for the purpose of eliminating internal weakness and overcoming external problems and constraints imposed by other related legal norms and rules

SWOT analysis as shown in Table 5 explain that SO strategy is applied based upon the existence of valid and just legal norms and rules containing in legal text. Valid and just status of legal text is derived from the result of LCA which shows that formulation and design of legal norms and rules have been in conformity with values of moral truth, social justice and legal certainty. While, in WO strategy, SWOT analysis carried out in the framework of LCA finds internal weaknesses which should be removed through amendment of legal norms and rules by considering external opportunity offered by other related legal texts. Similar amendment should also be done through ST strategy by applying prudential approaches in accommodating interests which come up from external problems and constraints imposed by other related legal texts. WT as the fourth strategy is implemented in dealing with internal weaknesses and external threat of legal norms and rules which are not possible to be overcome through amendment. In another words, the existing legal norms and rules should be removed and create the new ones. These four strategies of SWOT analysis can be applied simultaneously due to object of legal analysis involves a number of laws and regulations.



**Table 6:** SWOT Analysis of Ius Operatum

External Analysis	<b>O</b> Opportunity offered by the existence of good cooperation, coordination and integration among IO	<b>T</b> Problems and Constrains created by diverse perspective of IO concerning implementation of the law
Internal Analysis	<b>S</b> Strength in applying good governance or good corporate governance to implement the law	<b>W</b> Weakness due to lack of professionalism in implementing the law
	<b>SO Strategy</b> A strategy to combine internal strength and external opportunity in implementing the law	<b>WO Strategy</b> A strategic alliance to appropriate external opportunity offered by good cooperation, coordination, and integration among IO for the purpose of eliminating internal weakness in implementing the law
	<b>ST Strategy</b> A strategic alliance of using internal strength to prudentially accommodate interests of other IOs imposing problems and constraints for the purpose of implementing the law	<b>WT Strategy</b> This is called out sourcing strategy conducted by renewing and improving SO strategy through decentralization of authority of IO concerned to other IO having competency in solving internal weaknesses and external threat

Table 6 shows legal analysis by the use of SWOT to analyse implementation of legal text of the law. Implementation of the law is legal phenomena consisting of legal activities of IO, legal interaction and communication between two of more IOs, and result of the two kinds of legal activity. In this regard, SO strategy is applied to maintain legal phenomena will always be to conform with legal text. As a matter of fact, however, legal problems and constraints, legal cases and obstruction of justice are reported almost every day. All these problems are caused, among other things, by lack of professionalism of IO in and occurrence of diverse perception and different perspective of IO on the application of the law. With respect to internal weakness, professionalism of IO includes professional capability, professional responsibility, professional accountability, professional credibility, professional ethics and professional liability. While, with respect to external threat, different perspective and diverse perception of IO on the implementation of legal norms and rules are materialized in conflicting interests and overlapping rights, legal mandate and authority. To deal with such legal problems, WO, ST and WT strategies should be applied in conducting LCA.

**Table 7:** COS-BEN Analysis of Ius Operatum's Impact

	<b>COST</b>	<b>CC</b> <b>Concentrated Cost</b> Costs are borne by limited stake holders	<b>DC</b> <b>Diffused Cost Costs</b> are borne by many stake holders
<b>BENEFIT</b>	<b>CB</b> <b>Concentrated Benefit</b> Benefits are enjoyed by limited stake holders	<b>CB/CC</b> Benefits are enjoyed and costs are borne by limited stake holders as an impact of implementation of the law	<b>CB/DC</b> Benefits are enjoyed by limited stake holders and costs are borne by many stake holders as an impact of implementation of the law
	<b>DB</b> <b>Diffused Benefit</b> Benefits are enjoyed by many stake holders	<b>DB/CC</b> Benefits are enjoyed by many stake holders and costs are borne by limited stake holders.	<b>DB/DC</b> Benefits are enjoyed and costs are borne by many stake holders

Table 7 shows that implementation of the law from the cost-benefit point of view will have four impacts, i.e. concentrated benefit/concentrated cost (CB/CC), Concentrated benefit/diffused cost (CB/DC), diffused benefit/concentrated cost (DB/CC), and diffused benefit/diffused cost. With respect to CB/CC, benefits are enjoyed and costs are borne by limited stake holders as the result of implementation of the law. This kind of legal phenomena can be considered as just legal implementation if limited stake holders which enjoy the benefit and bear the cost are the same stake holders. If the two are different stake holders, then the implementation of the law may be understood as unjust. With respect to rights of the whole community, CB/CC will almost always create unjust situation. In this connection, CB/DC will always result in unjust legal text and so does its implementation. Similar to CB/CC, DB/DC will produce just implementation of the law when many stake holders enjoyed benefits are the same with those of borne costs. On the other hand, if the two are different stake holders, they will always create unjust situation. The most ideal situation is DB/CC, in which benefits are enjoyed by many and costs are borne by view people. Government subsidy on energy for the people and community health care is a good example of DB/CC situation.

Result of COS-BEN analysis will give us clarity of pros and cons position of each stake holder, i.e. government, private entity, community, legal practitioner, and legal academia, concerning legal harmonization. In this respect, DI-ILI analysis may help us in finding whether the cost in COS-BEN analysis include direct and indirect impact of legal harmonization. COS-BEN and DI-ILI analysis will, therefore, be able to provide us with understanding on how to exchange cons to pros position. Both model of analysis will apparently also capable of delivering us a rough picture on institutional capability and competency of each IO. Insufficient capability and competency will lead an IO to come up with a decision not to join with legal harmonization efforts. In this respect, program of capacity building and strengthening NM may be able to overcome these problems. For this purpose, LCA may apply SOAR and CBA analysis as discussed on page 15-16.

**Table 8:** DI-ILI Analysis of Ius Operatum’s Impact<sup>22</sup>

			Regulated Party					
			Direct Impact			Indirect Impact		
			Yes There is Impact		No Impact	Yes There is Impact		No Impact
			+	-	o	+	-	O
Regulator Party	Yes There is Impact	+	I	I	D	I	I	D
		-	I	I	D	I	I	D
	No Impact	o	D	D	S	D	D	S
	Legend:	I : Interdependent			D : Dependent			S : Separation

In addition to COS-BEN, LCA may apply analysis of direct and indirect impact of law implementation (DI-ILI) in order to know positive (benefit) and negative (cost) impacts and no impact situation. The law, in this respect, can be viewed as an act that regulates relationship between regulator and regulated parties. So, implementation of the act will have direct and indirect impacts to both parties. For example, banking act will have direct impact on banks and indirect impacts on bank’s customers. If both parties get impacts, directly or indirectly, they will be coded by (I); if only one party get impact, directly or indirectly, it will be coded by (D); if both parties do not get impacts at all, directly or indirectly, they will be coded by (S). If both parties get positive impacts or negative impacts, they will be considered as having the same interests. In a such situation, cooperation between both parties can be developed. Cooperation of both parties, in this respect, may aim at improving positive impacts or eliminating negative impacts in order to be able to move towards positive impacts. Each party in (D) position, both directly and indirectly, may develop joint efforts to obtain a greater good as a result of implementation of the act. In (S) situation, implementation of the act will have no impact. This means that both parties do not have direct or indirect relationship. In a such situation, it is advisable that regulator party takes initiative to activate an idle act so that its implementation will give benefits, directly or indirectly, to both parties. It should be pointed out here that process of DI-ILI analysis is a static model of analysis. Static model of analysis is not meant as analysis which gives a standstill result, but a predictable one. Result of static model of analysis can be predictable as arithmetic series or as geometric progression. This static model of analysis is used in LCA for the purpose of simplifying dynamic process occur in real life of the implementation of the act. By so doing, legal harmonization of environmental management law can be made possible.

<sup>22</sup> As comparison, see Figure 1.1. Inferences of Barry M. Mitnick, *The Political Economy of Regulation: Creating, Designing, and Removing Regulatory Forms*. New York: Columbia University Press, 1980 (p. 3).

**Table 9:** SOAR Analysis of Institutional Networking and Its Mechanism

External Analysis	A	R
Internal Analysis	List of stake holders’ aspiration on legal harmonization	List of reliable and measurable expected results of stake holders (IO) which can be used as substance of legal harmonization
S	SA Strategy	SR Strategy
List of internal strength of stake holders (IO)	By the use of IO’s internal strength to meet external aspiration on legal harmonization	By the use of IO’s internal strength to produce external reliable and measurable results expected by stake holders, i.e. legal harmonization
O	OA Strategy	OR Strategy
List of external opportunity hold internally by stake holders (IO)	To make the best use of list of external opportunity data available in internal DB and external aspiration to produce legal harmonization	To make the best use of list of external opportunity data available in internal DB to produce legal harmonization as reliable and measurable expected result

Discussion above mentioned explain that legal text has normative problems, its implementation has empirical problems, and relationship between the two has gap problems. To deal with these problems, LCA may apply SOAR analysis to develop NM as an illustration of legal harmonization. In developing NM, IO should have data on (S), (O), (A), and (R) available in its DB so that IO can apply strategies of (SA), (SR), (OA), and (OR) in promoting institutional cooperation, coordination, and integration. In SA strategy, IO can make the best use of its internal strength in collaboration with other IOs which have the same aspiration to establish NM for the purpose of carrying out legal harmonization. In SR strategy, IO can make the best use of its internal strength for convincing other IOs that it has capability to realize legal harmonization through reliable and measurable manner as expected, i.e. by accommodating their interests. If other IOs can be able to be convinced, they will, together with the IO initiator, form NM to engage in legal harmonization. In OA strategy, IO can empower its knowledge on external opportunity and external aspiration to provoke other IOs to develop NM for the purpose of formulating legal harmonization. In OR strategy, IO can view expectation of other IOs as external opportunity to establish NM for jointly doing legal harmonization in line with their reliable and measurable expectation. Implementation of SOAR analysis in LCA will strengthen IO and NM, since IO and NM are the prime mover of legal harmonization. For the purpose of strengthening IO and NM, LCA may implement CBA together SOAR analysis. It is expected, therefore, that result of SOAR and CBA will come up with solid organized IO and NM. Character of solid NM is that each IO member of NM has attitude and behaviour to always comply with the law. Solid organized IO and NM may,



therefore, be considered as reflection of the occurrence to be of legal harmonization.

**Table10:** CBA Analysis of IO and NM

Legal & Inst Aspect		Law	Law on Human Resources	Law on Natural Resources	Law on Man-MadeResources
		LO	LM	IO	MI
ia	LO	1. Capacity Building of Human Resource/CBHR = f (ia) (pc,cc, ac);			
	LM				
	IO				
	MI				
	NM				
if	IO	2. Capacity Building of IO/CBIO = f (if) (pc, cc, ac); and			
	MI				
if	NM	3. Capacity Building of NM = f (CBHR, CBIO) (n); where:			
	LT				

The aspect and the component regulated by the law can be used to improve capacity building of IO and NM. The law which regulates the component consists of legal norms and rules of LO, LM, IO, MI, NM, and LT. This means that the component, i.e. DB, PC, CC, AC, RA, RE, PP, MP, and MCS, is embedded in those legal norms and rules of the aspect. In this context, IO and NM are prime mover of the implementation of the law.

NM itself is formed by a number of IO members. So, IO is actually the principal player in law implementation business. IO as an organization is managed by professional leader who has leadership character and supported by a number of human resources as staff members. As discussed above, IO obtains legal mandate to implement legal norms and rules by making the best use of MI and NM available to achieve stated LT as part of LO.

With respect to dynamic internal activity of IO, IO has institutional arrangement to run the organization. What I mean by institutional arrangement is the internal regulations and procedures, including formal good corporate governance that shape interpersonal interaction among staff members within the framework of organizational structure of IO. This institutional arrangement (ia) consists of LO, LM, IO, and MI. By analysing legal norms and rules which regulate LO, LM, IO, and MI, potential capacity (pc) of IO can be identified. Then, carrying capacity (cc) and absorptive capacity (ac) can be derived from potential capacity. Potential capacity of IO is maximum capacity that IO has to carry out legal mandate. In this respect, carrying capacity of IO is capacity derived from potential capacity to hold workload mandated by law. Absorptive capacity, on the other hand, is capacity derived from potential capacity to absorb positive (benefit) and negative (cost) impacts of implementation of the law without resulting in changes of IO identity. From this under-

standing can be formulated that capacity building of a staff member of IO (CBHR) is a function of geometric-progression relationship between institutional arrangement on the one hand and potential capacity, carrying capacity and absorptive capacity on the other [CBHR = f (ia) (pc, cc, ac)].

Dynamic interaction among staff members within the framework of organization structure of IO can be considered as internal NM of IO to meet LT. With respect to this dynamic interaction, capacity building of IO is defined as a function of geometric-progression between institutional framework on the one hand and potential capacity, carrying capacity and absorptive capacity on the other [CBIO = f (if) (pc, cc, ac)]. What I mean by institutional framework, in this regard, is the system of formal laws, regulations, good corporate governance and procedures, and informal corporate culture that shape organizational activity and behaviour.<sup>23</sup> Based on understanding of CBHR and CBIO, capacity building of NM as cooperation, coordination, and integration between two or more IOs can be defined as function of geometric-progression relationship between CBHR and CBIO times number of IO members of NM [CBNM = f (CBHR, CBIO) (n)].

**Legal Institutional Analysis**

Tables 2 up to Table 11 discussed above have shown the way how to conduct LCA. LCA can be done by each stake holder (IO), i.e. government, private entity, community, legal practitioner, or legal academia, by the use of LIRAH. LM and NM of the five IO should be described through LIRAH for the purpose of understanding viewpoint of each IO in seeing the law as an effective and efficient law. In this context, legal institutional analysis (LIA) is legal analysis taken by IO to analyse legal content of the law of whether it is effective or efficient or effective and efficient. Effective and efficient law means that legal content of the law is right and has been implemented on the right way. LIA is, therefore, LCA carried out by an IO from different viewpoint. As a result of LIA, the law will be viewed by IO as an effective and efficient law, if:

- a. the law provides government with legal certainty in delivering authority for the benefit of the people. In this respect, public interest is more dominant than private interest (pub>pri)<sup>24</sup> (Table11).

**Table11:** LIA from the Viewpoint of Government

Aspects		LO	LM	IO	MI	NM	LT
		LO	LM	IO	MI	NM	LT
PO	DB	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	CC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	AC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	RA	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
A	RE	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	MP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
C	MCS	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri

B. the law provides business entity with legal certainty for realizing and improving investment, for ease in doing business, and for maximizing profit. In this respect, public interest is less dominant than private interest (pub<pri) (Table12).

<sup>23</sup> See FAO, "Evolving Institutional Framework." In <http://fao.org/docrep/W4345E/w4345e09.htm>. Downloaded on 22 March 2023.

<sup>24</sup> For discussion on public interest and private interest, see foot note number 2 in page 2 of this paper.

**Table 12:** LIA from the Viewpoint of Business Entity

Aspects		LO	LM	IO	MI	NM	LT
PO	DB	Pub<Pri	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	PC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	CC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	AC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	RA	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
A	RE	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	PP	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	MP	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
C	MCS	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr

C. the law provides community with legal certainty in obtaining social justice, social welfare and prosperity. In this respect, public interest is more dominant than private interest (pub>pri) (Table 13).

**Table 13:** LIA from the Viewpoint of Community

Aspects		LO	LM	IO	MI	NM	LT
PO	DB	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	CC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	AC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	RA	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
A	RE	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	MP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
C	MCS	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri

D. the law provides legal practitioners with legal certainty in delivering legal services to clients. Public interest is more dominant than private interest (pub<pri) (Table 14).

**Table 14:** LIA from the Viewpoint of Legal Practitioner

Aspects		LO	LM	IO	MI	NM	LT
PO	DB	Pub<Pri	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	PC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	CC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	AC	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	RA	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
A	RE	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	PP	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
	MP	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr
C	MCS	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr	Pub<Pr

E. the law provides academicians with legal certainty in obtaining freedom of education, freedom of research and freedom of delivering community services. In this respect, public interest is more dominant than private interest (pub>pri) (Table 15).

**Table 15:** LIA from the Viewpoint of Academician

Aspects		LO	LM	IO	MI	NM	LT
PO	DB	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	CC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	AC	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	RA	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
A	RE	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	PP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
	MP	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri
C	MCS	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri	Pub>Pri

**Legal Functional Analysis**

The result of LCA and LIA should be evaluated in order to know of whether or not it will properly function. In this connection, legal functional analysis (LFA) will be applied by the use of eight functional parameters which consist of political, economy, social, culture, defence, security, environment, and law. The result of LCA and LIA will function, if it is capable of meeting the eight functional parameters (Table 16):

- From political perspective, the result should be able to promote a stable interaction between public interest and private interest so that environmental management can be conducted peacefully.
- From economical perspective, the result should be capable of promoting an efficient relationship between public interest and private interest for the purpose of facilitating efficient environmental management.
- From social perspective, the result should be able to facilitate a mean for achieving compromise between public interest and private interest so that community-

based approach can be applied in environmental management.

- From defence perspective, the result should be capable of encouraging public interest and private interest to work together in strengthening environmental management.
- From security perspective, the result should be capable of encouraging public interest and private interest to work together in protecting environmental management.
- From environment perspective, the result should be capable of encouraging public interest and private interest to work together in promoting continuous improvement of environmental management.
- From legal perspective, the result should be capable of encouraging public interest and private interest to work together in promoting public order for environmental management.

**Table 16:** LFA on the Result of LCA and LIA

Aspects Components		LO	LM	IO	MI	NM	LT
		PO	DB	LFA	LFA	LFA	LFA
PC	LFA		LFA	LFA	LFA	LFA	LFA
CC	LFA		LFA	LFA	LFA	LFA	LFA
AC	LFA		LFA	LFA	LFA	LFA	LFA
RA	LFA		LFA	LFA	LFA	LFA	LFA
A	RE	LFA	LFA	LFA	LFA	LFA	LFA
	PP	LFA	LFA	LFA	LFA	LFA	LFA
	MP	LFA	LFA	LFA	LFA	LFA	LFA
C	MCS	LFA	LFA	LFA	LFA	LFA	LFA

Ideally, the result of LCA and LIA should meet all functional parameters of LFA in order that the result is to be called as functioning properly (complete functioning). If not, it will be called incomplete functioning. In this respect, Legal MCS Analysis (LMCSA) is needed to maintain the result in a position of continuous complete functioning.

### Legal MCS Analysis

LMCSA is a legal analysis to make sure that the result, which has been analysed through LFA, is functioning properly. Legal monitoring analysis will analyse physical relationship between stake holders (IO) and the result in implementing environmental management law (the law) in the form of, for instance, impact of heavy-duty mining, logging, and fishing on carrying and absorptive capacity of the environment. Legal control analysis will analyse administrative relationship between IO and the result in applying the law in the form of, for example, making annual report on exploration, exploitation, preservation and protection of the environment. Legal surveillance analysis will analyse geographical relationship between IO and the result in executing the law in the form of, for example, presenting a map of areas covered by oil pollution (Table 17).

**Table 17:** Legal MCS Analysis

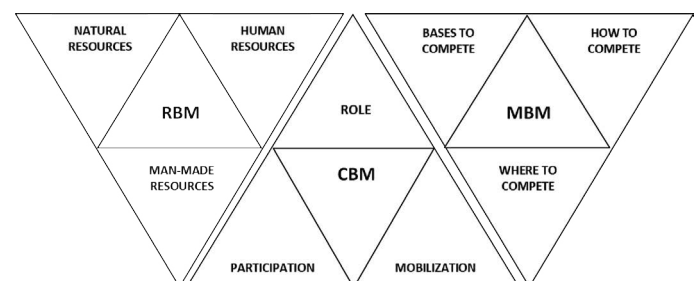
LMC-SA	LFA							
	Politic	Econ	Social	Culture	Defence	Secure	Environ	Law
Monitor	Physical Relation	Physical Relation	Physical Relation	Physical Relation	Physical Relation	Physical Relation	Physical Relation	Physical Relation
Control	Admin Relation	Admin Relation	Admin Relation	Admin Relation	Admin Relation	Admin Relation	Admin Relation	Admin Relation
Surveillance	Geog Relation	Geog Relation	Geog Relation	Geog Relation	Geog Relation	Geog Relation	Geog Relation	Geog Relation
Evaluation	Process Result	Process Result	Process Result	Process Result	Process Result	Process Result	Process Result	Process Result

LMCSA is accompanied by evaluation of every step of MCS to guarantee continuous improvement of MCS process and quality of MCS products, i.e. complete functioning of the result. If the result is a position of incomplete functioning, it will then be corrected through a restorative action so that it could be back to function completely.

### How to Conduct Legal Harmonization?

AI-P discussed here is an environmental management platform developed by the best use of all data and information presented in the above L-Matrixes and C-Matrixes mentioned below. This means that all matrixes should be integrated in one L-Matrix concerning harmonization of environmental management law. Three approaches and two frameworks will be used to facilitate the integration so that interaction and inter-relation among data and information of the aspects and the components will be able clearly to be shown in a matrix as a platform content to be. The three approaches are resource-base management approach (RBM), community-base management approach (CBM), and market-base management approach (MBM) (Figure 2). The two frameworks are legal framework management (LFM) and institutional framework management (IFM) (Table 18).

**Figure 2:** C-Matrixes of Three Management Approaches



RBM is an approach used to execute management of the result as a constant interaction among laws and regulations on natural resources, human resources and man-made resources. Natural resources consist of living and non-living resources. Human resources may include experts, skilled-



man power, and executing workers. Man-made resources are, among others, science and technology, law and institution, and public and business administration. The meaning of RBM can be matched with the idea of capital intensive. RBM is applied when community cannot be involved in environmental management activity due to several reasons, such as its location is in a remote area and its application involves a high risk. An example, in this regard, is the implementation of the law in offshore oil platform in the exclusive economic zone (EEZ).

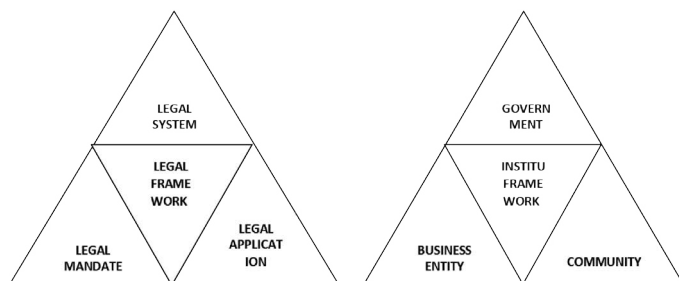
CBM is an approach applied for carrying out management of the result which involves community. An example is coastal fishery management. At least three roles of community will involve, i.e. political role such as Governor, social role such as leader of the community, and economic role such as local businessman. These roles of community should be mobilized through education, training, and other means of social awareness in order that community can involve as full-timer, part-timer or supporter in managing coastal fisheries.

MBM is an approach applied to running management of the result by making the best use of what has been produced by RBM and CBM as the bases for competition, i.e. the complete functioning law which regulates a constant interaction among natural resources, human resources, and man-made resources. MBM is, therefore, able to be understood in relation with competitive advantage strategy. In order to support the base to compete, strategy of how to compete and where to compete should be identified.

Strategy of how to compete involves knowledge on entry mode, entry barriers, and entry execution. While strategy of where to compete involves expertise on competitor selection, product selection and market selection.

RBM, CBM and MBM are applied by IO based on the law. This is why IO should have mastery of legal framework of management and institutional framework of management in order to be able to function the law properly in managing the environment. The two frameworks of environmental management are shown by C- Matrixes in Figure 3.

**Figure 3:** Legal Framework of Management and Institutional Framework of Management



Based on legal thought of Lawrence Friedmann, the law will be implemented by IO in conformity with national legal system of a country. Legal substance of the law contains legal norms, legal values and legal ethic which structurally provide government, business entity, and community with legal mandate to apply the law in accordance with legal culture to achieve legal objectives as stated in the law. Optimal

achievement of the legal objectives, however, looks possible only through harmonization of the aspects and the components of environmental management law. As discussed above, legal harmonization will be tried to be shown here in a simple L-Matrix which contains the integration of all matrixes (Table 20). Theoretically, drawing and reading matrixes look simple and easy to do. Practically, however, legal interpretation, legal reasoning, and legal argumentation are complex efforts to produce a complete functioning of legal harmonization. It seems that human efforts alone will not be possible to end up with an expected optimum result. Therefore, an AI-P with integrated matrixes as its content should be made available to assist human efforts in realizing harmonization of environmental management law.

**Table 20:** Proposed Integrated Matrix as AI-P Content

Aspects Components		Environmental Management Law					
		LO	LM	IO	MI	NM	LT
PO	DB	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	PC	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	CC	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	AC	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	RA	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
A	RE	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	PP	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
	MP	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes
C	MCS	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes	All Ma-trixes

## Conclusion and Recommendation:

### Conclusion

1. Combination of L-Matrix and C-Matrix placed together in L-Matrix shown in Table 21 are able to show legal harmonization process of the aspects and the components of environmental management law.
2. Integrated matrix can be made available for AI-P content.

### Recommendation

1. Legal harmonization process should be explained in a complete narrative version so that it will be able to give an understanding step by step legal harmonization process to readers.
2. The complete narrative should, then, be translated into computer language so that it will be able to train AI-P and be ready to be applied.

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