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Horizontal Coherence in Environmental Policies of Iskandar Malaysia

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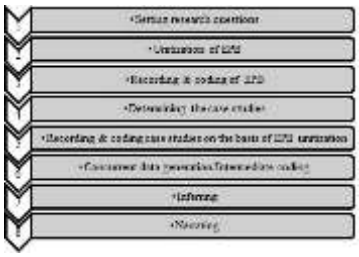
Graphical Abstract



Abstract

To achieve a sustainable development, all related levels and sectors of policy making need to be in line with environmental considerations. Iskandar Malaysia, the second significant regional economic project of Malaysia, in an effort to be recognized as an international standing sustainable development, has formulated its policies in the form of 32 blueprints. Each of these documents targets a specific development aspect. Out of these blueprints, Environmental Planning Blueprint (EPB) aims at ensuring that all aspects of development are environmentally sustainable. This study tried to figure out if other blueprints are in line with principles and guidelines of EPB. Therefore, we selected Livable Neighborhood and Design Guidelines Blueprint (LNDGB) as a sample and assessed its horizontal policy coherence with EPB. Content analysis used as the main method of the assessment. Results showed that LNDGB mostly was coherent with policies of EPB and no serious contradiction found between them. However, LNDGB did not cover all features determined by EPB.

Keywords: Policy coherence; environmental sustainability; iskandar malaysia; content analysis; environmental planning blueprint; livable neighborhood and design guidelines blueprint.

Abstrak

Peningkatan ketara bilangan polisi-polisi antarabangsa, negara, wilayah, tempatan serta wujudnya kepelbagaian dalam bidang-bidang, jawatankuasa dan bahagian-bahagian polisi telah menunjukkan kepentingan konsep 'keseragaman polisi'. Kebanyakan negara cuba merangka polisi-polisi terbaik untuk menuju ke arah pencapaian ekonomi, sosial dan alam sekitar berterusan dalam jangka masa panjang. Dalam konteks ini, Iskandar Malaysia telah dikenalpasti sebagai projek ekonomi kedua terpenting di Malaysia yang memfokuskan kepada pembangunan mapan bertaraf antarabangsa. Pihak berkuasa pembangunan Iskandar Malaysia, IRDA (Iskandar Region Development Authority) telah merangka 32 'blueprint' bagi memastikan pembangunan yang lestari. Kajian ini menilai dua 'blueprint' iaitu 'Livable Neighborhood Design' dan 'Integrated Land Use' dari segi keseragamannya dengan garis panduan dan polisi alam sekitar melalui perbandingan dengan 'Environmental Planning Blueprint'. 'Content analysis' digunakan sebagai kaedah kajian dengan menilai isi kandungan teks 'blueprint' tersebut. Hasil kajian menunjukkan kedua-dua 'blueprint' yang dinilai adalah konsisten dengan prinsip-prinsip 'Environmental Planning Blueprint' walaupun alam sekitar difokuskan kepada ciri-ciri ketara alam sekitar, tiada percanggahan antara 'Environmental Planning Blueprint' dengan 'Livable Neighborhood Design'.

Kata kunci: Kepaduan dasar; kelestarian alam sekitar; iskandar malaysia; analisis kandungan; environmental planning blueprint; livable neighborhood and design guidelines blueprint.

1.0 INTRODUCTION

Given in mind the strong tendency of developing countries for economic growth and simultaneously their challenges for protecting the environment, this study investigates environmental aspects of Iskandar Malaysia (IM), one of the biggest regional developments of Malaysia, at policymaking phase. Malaysia especially after independence, due to its economic goals has intensely practiced planning and policy making.[1] In date, National Physical Plan (NPP) is one of the prominent planning documents released once every five years. NPP widely delineates long-term spatial guidelines and policies of the country. This influential planning text in 2005 identified 5 main economic corridors which shall guarantee the future economic growth of Malaysia (Fig.1). On the national level, the second important conurbation is named Iskandar Malaysia. IM is envisioned to be a rival of international city regions of East Asia like Hong Kong and Singapore.[2]

Iskandar Malaysia is going to be a development of a strong, sustainable conurbation of international standing, a vision that has largely been marketed for new developers and investors. The cornerstone of this vision is undoubtedly the term "sustainability".[3] From environmental point of view, the dilemma is that while more than 80 percent of the proposed development area has been covered by natural features, including three Ramsar sites, tropical forests, agricultural lands and one of the world's longest mangrove shoreline that is 124 Km long, a huge physically visible

development is prospected by 2020.[3] Now the question is that whether IM would be able to address environmental concerns. At the planning stage, the study tries to answer the question through assessing policy coherence in relevant policy texts.

Iskandar Regional Development Authority (IRDA), the authority responsible for planning and monitoring of IM's development, has published 32 distinct blueprints. These documents shall provide a policy framework for directing the development in a sustainable manner. This paper evaluates the horizontal coherence between one of these policy domains namely Livable Neighborhood and Design Guidelines Blueprint (LNDGB) and IM's main environmental document namely Environmental Planning Blueprint (EPB). LNDGB produced for the planning, design and assessment of residential development in the region. It aims at achieving more effective, efficient, responsive and environmentally sustainable approaches to housing and residential development at local level.[4] EPB, the other blueprint, designated to ensure that all aspects of development are environmentally sustainable.[5] This document will be considered as a guideline for future planners as well as local and state authorities in terms of environmental aspects of any development within IM. Qualitative content analysis applies as the main method of this study.

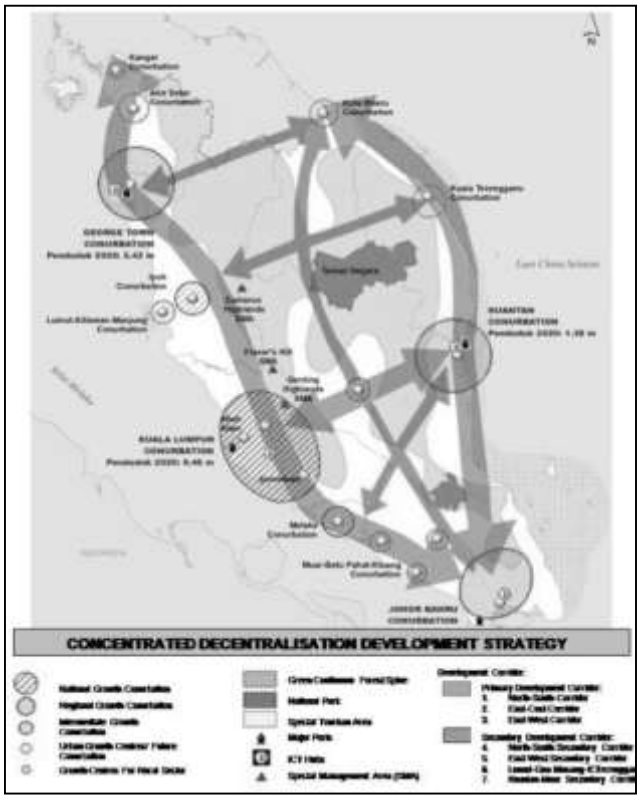


Figure 1 Spatial development strategy of peninsular Malaysia [2]

■2.0 POLICY COHERENCE

2.1 Policy Coherence And Sustainable Development In International Context

From the last decade of 20th century, several international events tried to call for the urgency of policy integration for Sustainable Development (SD). The first one, Rio Summit, held in 1992 is widely well-known for Agenda 21. This action plan emphasized on SD at national and local levels with special regard to policy coherence quoting: "As an important aspect of overall planning, each country should seek internal consensus at all levels of society on policies and programmes needed for short- and long-term capacity building to implement its Agenda 21 programme".[6] In the beginning of the new century, in 2000, due to an evident global lack of policy coherence on SD, Millennium Development Goals also set one of its targets as "integrate the principles of sustainable development into country policies and programmes and to reverse the loss of environmental resources".[7] Two years later, in 2002, when integrating SD into policy making was still an issue, the World Summit on Sustainable Development (WSSD) in Johannesburg asked for "relevant authorities at all levels to take sustainable development considerations into account in decision-making, including on national and local development planning, investment in infrastructure, business development and public procurement".[8] Although, the WSSD's deadline to reach the set target by 2005 has already passed, the decision makers yet have a long way forward to cohere the policy frameworks toward SD.

In fact, what all the international efforts including Agenda 21, MDGs, and WSSD have in common is that no individual policy can guarantee SD. In other words, policy coherence means that environmental issues shall not be only limited to environmental or just covered by environmental blueprints; but all policy making departments and horizontal sections should be integrated.[9] What we need is a cross-sectoral and multidimensional policy mix to achieve this broad and multi-pillar concept.[10]

2.2. What Does Policy Coherence Mean?

The need for policy coherence has been widely accepted by scholars; however, the concept has not been theorized thoroughly and lacks a strong and well-defined literature.[11] The concept of policy coherence attracted significant attentions after unifying the European countries and establishing the Organization for Economic Co-operation and Development.[12] It is truly claimed that: "the most of the active debate on policy coherence has taken place in EU law and foreign policy".[13] According to OECD, policy coherence is "The systematic promotion of mutually reinforcing policies across government departments and agencies creating synergies towards achieving the defined objectives".[14] Policies are coherent when they are in line with each other in terms of goals, objectives, procedures and applied tools.[15] Policy coherence occurs when policies go along together and share common ideas.[11] Another main component of policy coherence is avoidance of contradiction. In this respect, coherent polices are those which have the least contradiction with each other. It can be said that the concept of policy coherence consists of two main aspects: the absence of contradiction and conflict (consistency) and synergy between polices.[13-16] Policy coherence is something which enables the whole set of polices to get a win-win situation. Consistency can be considered as a precondition of policy coherence.[17] OECD has defined policy consistency as "Ensuring that individual policies are not internally contradictory, and avoiding policies that conflict with reaching for a given policy objective".[18] Policy coherence and any other term referring to the same meaning is considered vital for any body of policy, particularly regional, national or international scales where it decreases overdoing activities and burden on countries, increases integrity, and applies the existing resources of members in a more efficient ways. [15]

Policy integration and policy coherence are interrelated keywords. The final target of policy integration is coherence. [18] Persson (2004) assumed that there are three criteria for policy integration. The first criterion is "comprehensiveness" which is about the inclusiveness of the policy in respect of time, space and actors. The second is "consistency" which refers to the level of consensus and agreement of policies on different types of issues.

Lastly, "aggregation" which implies using the same tools for assessing the current policies.[19] Policy coherence and policy integration are so close to each other thus Turnpenny et al. (2008), for example, claimed that the policy coherence is the major strand of integration. In this word, policy coherence is: "enhancing the flexibility of policy systems to cope with cross-cutting issues through the integration or 'joining up' of policy making".[20]

In the field of policy coherence, indeed, one of the major influential concepts is Environmental Policy Integration (EPI). EPI searches for adopting processes and mechanisms to integrate all levels and sections of policies in a way that environmental sustainable development will be ensured. The model originates from debates on combining economic and environmental concerns which were internationally recognized on World Commission on Environment and Development in 1987.[19] From then onward, governments and authorities are looking for mechanisms which help them to deal with environmental concerns more comprehensively and effectively. Precisely, "EPI involves a continual process to ensure environmental issues are taken into account in all policy-making, generally demanding changes in political, organizational and procedural activities, so that environmental issues are taken on board as early as possible and continuing during implementation".[21] Article 6 in EU Treaty, "Cardiff Process" and EU "Strategy for Sustainable Development" which adopted in June 2001, were three pillars pulling EU towards EPI. [19]

2.3 Policy Coherence Directions

Most of the texts in the literature, in order to break down the concept into more measurable components, categorized the policy coherence.[22-23-17] One of the most prevailed categorization divided policy coherence into vertical and horizontal. Vertical policy coherence refers to: "Coherence between different levels of government".[22] It aims at creating integration between national policies at lower scales of regional, provincial or local.[24] From the top to the bottom, policies shall share common ideas and search for achieving the most desired goals formulated by the upper level. In this direction, the goal, objectives, instruments and tools might differ from one level to another but the theme of policy levels should remain the same. This common theme called vertical coherence. Horizontal coherence, on the other hand, refers to inter-sectoral integration. It includes "coherence between the policy and external (e.g. trade) and internal (e.g. agriculture) policies of the same political entity".[17] At each level of policy-making, large number of committees, agencies, actors and departments with many experts and specialists might be involved. As a result, there is a high risk of policy fragmentation and decentralization. If members of one particular department put their focus only on their own fields of study and do not consider the common theme of policy entity, this risk then most probably threatens the whole set of policies. This study, particularly by assessing the blueprints prepared by the different committees at the same policy making level, has been focused on assessing the horizontal policy coherence.

■3.0 RESEARCH AND MATERIALS

3.1 Research Material & Process

The main material of this research is "text". Therefore, content analysis best suited as research method for answering the main question of the study. Berelson who was among the first to give definition on content analysis, described the method as: "A research technique for the objective, systematic and quantitative description of the manifest content of communication".[25] Krippendorff (2004) believed that "content analysis is a research technique for making replicable and valid inferences from texts (or other meaningful matter) on the context of their use".[26] In this definition, "texts" assumed as messages sent by the senders to receivers excluding content analysts and "context" stands for the purpose of the analysts out of the message pool.[26] Based on Krippendorff's definition, the study texts were selected blueprints and our context referred to the concept of policy coherence.

Most of the works on the method acknowledged that conducting the study systematically, is a key success factor of content analysis and more importantly main part of its nature.[25-27-28] Among various models, the framework given by Krippendorff (2004) has identified as the basis of the analysis in this study. Some parts of other frameworks such as processes given by Neuendorf and Grounded Theory also applied whenever they matched the nature of the work.[29-30] The study utilized more descriptive and qualitative instruments rather than quantitative ones. Thus, results are more illustrative rather than mathematical. The study also tried to deploy figures, tables and rating models for implying findings of the assessment. As shown below, the research process includes (Fig. 2):

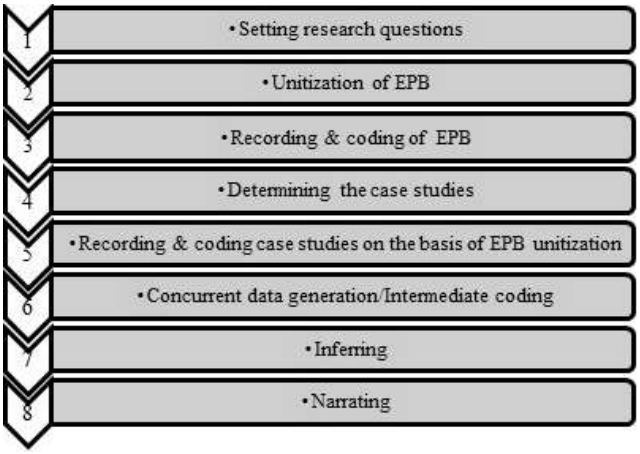


Figure 2 The research process based on the process presented by Krippendorff (2004) [25]

1. Setting research questions: The research question is:
Are Iskandar Malaysia's blueprints coherent with environmental policies of EPB?
2. Unitizing EPB: within the EPB, thematic areas that consisted of seven themes considered as primary categories of the document (Table 1).
3. Recording and coding EPB: based on seven identified categories, EPB reviewed for pertinent keywords and phrases. For instance, under theme two which was climate change, keywords of "carbon intensity" and "carbon emission" and under theme six, green economy, keywords of "green building" and "energy efficiency" coded
4. Determining case studies: out of 32 blueprints released by IRDA, the study selected was Livable Neighborhood and Design Guidelines Blueprint (LNDGB).
5. Recording and coding of case studies based on EPB unitization: LNDGB recorded and categorized under seven identified themes.
6. Concurrent data generation/Intermediate coding: during the process of coding and recording EPB, some related keywords were found within the text that have not been categorized under any of so-called thematic areas. The instance was general environmental keywords such as "sustainable development", "livable community" and "efficient use of space". In another case, the coders encountered environmental areas in LNDGB which have not been

underpinned by EPB. The example was storm water management policies. This situation led us to use "intermediate coding and concurrent data generation" which was presented by Ground Theory.[30] The outcome was adding two more thematic areas: "environmental sustainability" and "storm water management". Besides, after initial coding of blueprints, due to high amount of overlaps, thematic area two and three, climate change and air quality management merged in one category.

Table 1 Primary and finalized categories

Thematic areas	Primary categories	Finalized categories
1.	biodiversity and habitat management	environmental sustainability and efficient use of space
2.	climate change management	biodiversity and habitat Management
3.	air quality management	climate change and air quality management
4.	river water quality management	river water quality management
5.	geo-terrain, soil and groundwater management	geo-terrain, soil and groundwater management
6.	green economy	green economy
7.	environmental governance	environmental governance
8.	-	storm water management

Analysis process consisted of two phases. The first phase examined LNDGB to see if environmental concerns of EPB have been incorporated into the blueprint. For this phase, the document was investigated firstly on absent/present checklist and secondly on frequency of keywords and key phrases regarding the final eight categories. The final step of this phase was designing a rating system based on distribution, coverage and frequency of keywords. In the second phase, the study examined LNDGB in terms of any potential contradictions with EPB. To do so, not only manifest content analysis but also latent content analysis was undertaken. The reliability of the study was assured by overdoing the process and double testing. By reviewing and following established theories, it can be said that empirical validity was fulfilled.

3.2 Key words

Now the study will observe the recorded keywords in LNDGB under eight thematic areas. Table 2 lists all the eight thematic areas except for Area 7 since no keywords were found within the text under this theme.

Table 2 LNDGB's recorded keywords

Thamtic Areas	Keywords and key phrases
1. Environmental sustainability and efficient use of space	• Sensitive to environment • Harmony with the environment • Enhance and protect natural environment • Limiting land disturbance • Protecting natural features • Efficient use of space • Environmental health • Environmentally sustainable • Minimizing negative environmental impacts • Avoiding unusable space
2. Biodiversity and Habitat Management	• Protect natural areas and habitats • Buffering ESAs • Retain significant vegetation • Retain trees • Integrate facilities with parks and green networks • Preserving trees • Providing sufficient and convenient open space • Rare /significant vegetation and natural habitats • Tree planting
3. Air Quality and Climate Change Management	• Safety and convenience of pedestrian and cyclists • Integration of pedestrian and cyclist routs with other facilities • Convenient, secure and comfortable bus stops • Support and promote Iskandar Smart Growth Vision • Transit Oriented Development • Walking as an alternative • Bus stops ease of access
4. River Water Quality Management	• Protection of natural water bodies • Minimize exposure to pollution
5. Geo-terrain, Soil, Ground water Management	• Corresponding to the site contour • Accordance with site topography • Minimizing and considering soil erosion • Topography relatively flat • \considering the slope • Hilly and slope area
6. Green Economy	• Energy efficiency • Innovative Green building design • Resource efficiency • Minimizing solar access • Provide adequate daylight to dwellings • Efficient lighting • Reduce the amount of energy • Reuse water • Encourage use of renewable energy sources • Recycling waste • Minimizing energy consumption • Adopt Green Building Index assessment criteria
8. Storm water Management	• Limiting impervious surface • Protection of main natural drainage-way • Considering flood risk • Storm water management • Treatment of floodways • Avoiding affect adversely up and down stream • Minimizing modification of natural drainage patterns • Creation of swells, gutters, planter and boxes • Drainage function of open space

3.3 Blueprint Structure

To better understand the analysis results, a briefing on LNDGB structure is required. LNDGB consisted of three main parts: Part A (planning context) provided overview of principles to outline the expectations and prospects for the creation of livable neighborhood; Part B, established the development and site context, and referred to the relationship of the site to the local community, adjoining properties and off-site aspects of the environment; Part C, applied the design guidelines, contained design elements in encompassing housing its environment and related facilities and services at different scale of development. All the items under these three parts had the hierarchy of intent, policy and regulations. Each item including these three hierarchies is called a "policy package" (Fig. 3).

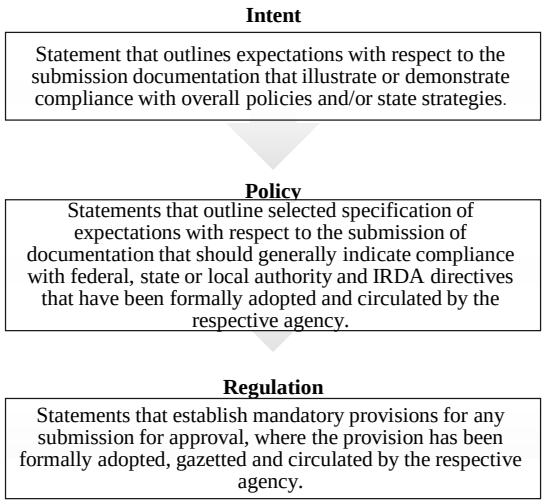


Figure 3: Hierarchy of each policy package within LNDGB[4]

The policy packages have been listed below:
A2: Design principles
B1: Establishing the development and site context
C1: Neighborhood planning
C2: Transport network
C3: Streetscape design
C4: Pedestrian and cyclist routes
C5: Infrastructures and utilities
C6: Open space
C7: Public facilities
C8: Lot sized and building envelop
C9: Public housing-special requirements

4.0 RESULTS AND DISCUSSION

4.1 Absent-Present Checklist

Table 3 shows the absent-present checklist for all keywords and key phrases within LNDGB. The table is about the distribution pattern of the keywords.

At the intent level, eight out of ten policy packages, pointed out environmental objectives once. Among all, C7, which is about public facilities, and A1, which is about design principles, were the only policy packages that did not encompass any terms and phrases under environmental issues at intent level. Most of the policy packages covered keywords under thematic area one at the intent level.

Table 3 Absent-present checklist

Themes / Policy packages	1			2			3			4			5			6			7			8		
	Policy hierarchy*			Policy hierarchy			Policy hierarchy			Policy hierarchy			Policy hierarchy			Policy hierarchy			Policy hierarchy			Policy hierarchy		
	I	P	R	I	P	R	I	P	R	I	P	R	I	P	R	I	P	R	I	P	R	I	P	R
A1		■			■												■						■	
B1	■	■				■						■				■								■
C1	■	■			■									■			■						■	
C2	■							■	■															
C3	■		■		■	■		■	■														■	■
C4					■		■	■																■
C5	■	■										■		■	■								■	■
C6		■		■	■	■																	■	
C7									■															
C8		■			■											■	■						■	
C9	■	■	■		■			■	■					■			■							

*I=Intent, P=Policy, R=Regulation Present= ■ Absent= □

Policies are cornerstones of LNDGB. They are neither very general nor detailed. They can be taken as guidelines of planners in the future of Iskandar Malaysia development. Policies are more diverse and spread among all eight themes. Amongst all policies, C7, which is about public facilities, overlooked environmental concerns thoroughly. Sustainable development and biodiversity management were the most widespread themes in the whole policy packages in the policy level. Besides, river quality management and environment governance did not discuss at all.

At the regulation level, keywords under theme three and eight have been present more than any other keywords. Out of ten policy packages, three did not address environmental issues at all in the guideline level. C3 had the most comprehensive regulations in terms of natural environment debates.

Table 3 shows that keywords under theme one and theme two have been the most present keywords within the whole text. In terms of coverage, which means whether policy package has covered the theme in all policy hierarchies, four policy packages that were fully covered are: C1 in theme one, C2 in theme three, C4 in theme three, C6 in theme two and C9. Environmental governance was the only thematic area which was totally absent in the whole text.

4.2 Frequency

The next step is certifying the abundance of keywords. Table 4 displays the frequency of keywords and key phrases under each category.

At the intent level, as it was expected, general environmental keywords such as "environmental protection" and "environmental enhancement" were the most repeated keywords with the total score of 6.

At the policy level, keywords under thematic area three, climate change and air quality management, had the highest abundance with the score of 22. The focus of the text at this level was on the pedestrian and cyclist networks, accessibility, convenience and security of public transportations. The second most frequent category of keywords with the score of 20 was the ones under thematic area six, green economy. C9, public housing policy package, had the highest level of frequency for keywords under thematic area six with the score of 7.

At the regulation level, keywords under thematic areas three, climate change and air quality management, and five, geo-terrain, soil and groundwater management, with the score of 11 and 5 orderly repeated more than keywords in the rest of thematic areas.

Investigating the frequency of individual levels, we can now look through the table as a whole. In the column direction, it is noteworthy that keywords under theme three cited more than any other keywords with a total score of 32. The least frequency, excluding zero, is assigned to theme four, river quality management with the score of 6. In the row direction, C9 had the highest frequency for all coded keywords with the score of 22 and C7 stood last with the score of 1.

Table 4 Keywords frequency

Themes	1					2					3					4					5					6					7					8					GT
hierarchy*	I	P	R	T		I	P	R	T		I	P	R	T		I	P	R	T		I	P	R	T		I	P	R	T		I	P	R	T		I	P	R	T	
A1		3		3			1		1																		3		3								1		1		8
B1	1	1		2				1	1									2	2							1			1								1	1		12
C1	1	2	1	4																																				4
C2											1	6	3	10																										10
C3	1			1				4	4			6	1	7																						1	1		12
C4							1		1		1	5	5	11																										13
C5	1	2		3														4	4			1	5	6													1			10
C6	1			1		1	2	2	5																												2			16
C7													1	1																										1
C8		1		1			1		1																	1	5		6											8
C9	1	4	2	7			2		4			4	1	5								1		1			7		7											22
GT	6	13	3	22		1	6	7	17		2	21	11	32				6	6			2	5	7		2	15		20							5		2		102

*I=Intent, P=Policy, R=Regulation, T=Total, GT=Grand Total

4.3 Rating

The rating part designed to complete our analysis process and answer the main research question. To achieve so, we translated the analysis results into a four points scale starting from 0 to 3. Zero was given when the issues under thematic areas did not address at all within LNDGB and 3 was given to cases that strongly addressed thematic areas. The ranking system was based on the diversity, distribution, coverage and frequency of keywords within the whole text (Table 5).

Table 5 Rating policy packages

Themes / Policy packages	1	2	3	4	5	6	7	8	Total score
A1	3	2	0	0	0	0	0	0	5
B1	2	2	0	2	0	0	0	0	6
C1	3	2	3	0	2	2	0	1	13
C2	0	0	3	0	0	0	0	0	3
C3	2	3	3	0	0	0	0	2	10
C4	0	1	3	0	0	0	0	0	4
C5	3	0	0	1	3	0	0	3	10
C6	2	2	0	0	0	0	0	2	6
C7	0	0	1	0	0	0	0	0	1
C8	2	3	0	0	0	3	0	1	9
C9	3	1	3	0	1	3	0	0	11
Total score	20	16	16	3	6	8	0	9	78

As displayed in Table 5, Thematic area 1 with the score of 20 gained the highest score. This explains the document tendency to take environmental sustainability as a general concept into account. Thematic areas 2 and 3 followed with the score of 16.

The scores of climate change and air quality management accumulated in C1 to C4, while scores for biodiversity and habitat management distributed among all policy packages. The score of theme 3 comes from the concern of the document for pedestrians, cyclists and public transportation. The score of theme 2 mostly roots in the concern of the text for open space provision. Themes 8 and 6, storm water management and green economy stood as fourth and fifth thematic areas. C5, infrastructures and utilities, fully addressed the issues under storm water management. C9, public housing, showed considerable concern to green economy. Theme 4, river quality management and theme 5, geo-terrain, soil and ground water management gained the least scores. Issues under theme 7, environmental governance were totally absent in the LNDGB.

From the results, it is evident that LNDGB takes environmental sustainability into account. In general, the text recognizes the importance of environmental SD as a broad sense by using phrases such as “protection and enhancement of natural environment” repeatedly. Highest score of the theme one in the rating table proves this discussion.

Biodiversity conservation is almost well-addressed in the text; however, the issue is limited to general guidelines for preservation of neighborhood trees and habitats. For instance, most of the particular guidelines and recommendations of EPB including establishing biodiversity monitoring system, rehabilitation of modified/degraded areas, increase coverage of forest area, establishing R&D centers, applying pertinent actions towards different ranks of Environmental Sensitive Areas (ESAs) and encouraging tree planting programs are absent in LNDGB.

Within the blueprint, the attention paid to the climate change, compared to other environmental areas, is prominently significant. This attention shows integrated approach of the document toward the issue. The repetition of following items displays the tendency of the document to cover climate change issues:

- Provision of convenient, accessible, safe and integrated pedestrian networks
- Provision of convenient, accessible, safe and integrated cycling networks
- Provision of accessible and integrated public transportation system.

The blueprint addresses river quality management in some extent. The document covers this concern under C5, infrastructure and utilities guidelines. Under this policy package, it is said that provision of proper sewerage system is mandatory. C1, neighborhood planning and C5, infrastructures and utilities are two policy packages that take geo-terrain and soil management issues into account. They talk about slopes considerations and hilly situations.

In terms of green economy, LNDGB considers the idea elaborately. Public housing, C9, specifically shows remarkable attention to green buildings principles e.g. best use of sunlight, air ventilation, use of energy efficient design, the application of renewable energy sources and durable materials. The rational of such detailed attention might come from the fact that public housing units are going to be resided by low-income families and any type of cost-saving design using less amount of energy is strongly encouraged in such this housing units. C8 which is about lot sizes and envelop also concentrated on green building design.

Environmental Governance which is mainly about amending the managerial process of decision making on environmental matters is completely absent within the whole text.

Storm water management which was a theme added by the coder and aimed at meeting Low Impact Development (LID) principles is cited by the blueprint with key phrases such as "minimizing the impervious surface" and "considering open spaces as tools for managing run-off". More modern means of LID such as swales, gutter and boxes are encouraged by infrastructures and utilities guidelines. Streetscape policy package also emphasizes on flood ways and drainage lines as ways to control storm water.

■5.0 CONCLUSION

This paper tried to explore the existence of horizontal policy coherence between EPB and LNDGB, two blueprints released by IRDA. The study method was more qualitative and descriptive rather than quantitative. The study investigated the LNDGB in terms of the presence and abundance of related keywords and key phrases of EPB. The study also analyzed LNDGB to see if there is any contradiction with EPB. By and large, the study can claim that principles set by EBP were reasonably addressed and covered by LNDGB. Majority of the environmental issues have been met and more importantly well distributed in formulated policy packages. Remarkably, reviewing the text, no serious contradictions were revealed.

Another striking aspect of this analysis was the coverage of current environmental global concerns in the selected texts. Climate change and loss of biodiversity globally are considered as two serious challenges. The aforementioned concerns, particularly the first one was well-addressed in the blueprint. Great emphasis has been given to public transportation, energy efficiency, and

pedestrian and cyclist routes connectivity. On the other hand, decision makers have to bear in mind that IM possesses sensitive and unique natural environment with three Ramsar sites and long shoreline of mangroves. All these precious possessions if not properly managed will be in danger of degradation, deterioration and in a worst scenario loss.

Resource efficiency which was among six set of environmental priorities of United Nations Environment Program (UNEP) has been well-elaborated by the livable neighborhood blueprint.[31] Given the fact that one third of irreversible sources of energy is consumed by building industry, pertinent guidelines and policies play the key role in housing design setting. All these clues demonstrate the inclination of the blueprint's policy makers toward sustainable development. Although we have to remember that sound planning does not necessarily guarantees good implementation and thus IM has still a long way toward being an international standing sustainable regional development.

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