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Authors:	Prasetyo Adi, Managing Director, PDW Architects Dwi Hergawan, Manager of Research and Development, PDW Architects Achmad Zakaria, Architect Team Leader, PDW Architects Pandu B. Siswotomo, Architect, PDW Architects
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# Connectivity in Future Density Indonesia Archipelago

## 未来高密度印尼群岛的连通性



**Prasetyo Adi**  
Managing Director | 总经理

PDW Architects  
PDW建筑事务所

Jakarta, Indonesia  
雅加达, 印度尼西亚

Mr. Prasetyo Adi is the Managing Director of PDW Architects. He has academic background in Architecture and Urban Design and more than 17 years experience in Indonesia and Australia, working as consultant and developer.

Prasetyo Adi 先生是PDW建筑事务所的总经理。他的学术背景为建筑和城市规划, 并在印尼和澳大利亚拥有超过17年的从事咨询与开发商的经验。



**Dwi Hergian**  
Manager of Research and Development  
研究与发展部经理

PDW Architects  
PDW建筑事务所

Jakarta, Indonesia  
雅加达, 印度尼西亚

Mr. Dwi Hergian is Senior Architect of PDW Architects, He is also the Head of Research and Development Division in PDW Architects since 2013. He has academic background in Bachelor of Architecture and also Master of Architecture, both from University of Indonesia.

Dwi Hergian 先生是PDW建筑事务所的高级建筑师, 也是PSW建筑事务所研究与发展部门的经理。他拥有印尼大学建筑学学士与硕士学位。



**Achmad Zakaria**  
Architect Team Leader | 主持建筑师

PDW Architects  
PDW建筑事务所

Jakarta, Indonesia  
雅加达, 印度尼西亚

Mr. Achmad Zakaria is one of Design Head Division of PDW Architects. He was graduated from Architecture Department Trisakti University, Jakarta. He has experience working with international architecture environment and sustainable design issues (LEED, Greenmark, Green Building Council Indonesia).

Achmad Zakaria 先生是PDW建筑事务所设计部的负责人之一。他毕业于雅加达特利沙克蒂大学建筑学院。他拥有国际建筑环境下的工作经验和可持续设计问题 (LEED、Greenmark、印尼绿色建筑委员会) 的工作经验。



**Pandu B. Siswotomo**  
Architect | 建筑师

PDW Architects  
PDW建筑事务所

Jakarta, Indonesia  
雅加达, 印度尼西亚

Mr. Pandu Bambang Siswotomo is an architect in PDW Architects. He has academic background in Architecture and graduated from ITB Bachelor and Master of Architecture program. He is an active member of Indonesia Institute of Architects. He is in PDW Architects Research and Development Team, which study about architectural and urban design issues. He is also a member of Institute BIM (Building Information Modeling) Indonesia to develop BIM Protocol in Indonesia.

Pandu Bambang Siswotomo 先生是PDW建筑事务所的一名建筑师。他拥有建筑学背景, 拥有ITB建筑学院的硕士与学士学位。他是印尼建筑师学会的活跃会员, 他任职于PDW建筑事务所建筑研究与发展小组, 研究建筑和城市设计问题。他还是印尼BIM学会的会员在印尼研发BIM提案。

### Abstract | 摘要

*The paper will discuss about the development of Indonesia metropolitan cities. According to national census of 2010 there are 11 cities in Indonesia with population over 1 million and easily become 15 cities in 2016 with current growth rate. Out of the 11 cities, 8 are located in Java, a heavily populated island with an area of 126,700 square kilometers (approximately more than half the size of Great Britain) with more than 160 million populations.*

*Indonesia's archipelago spans as far as west to east cost of the US or from UK to Turkey in separated more than 17,000 island. The challenge for the nation is always the connectivity amongst the archipelago, distribution of wealth, information, logistic and mobility.*

*The paper can offer to propose; the potential growth is enormous in other large island, with different economic activities and hub. The paper will discuss about regional planning for growth hub across the archipelago. The growth of each metropolitan city with its characteristics is also discussed as case study. How the cities can accommodate future growth with higher density. Cities in Indonesia tend to sprawl than grow vertically, the paper will propose a simulation of the future growth in these cities.*

**Keywords: Connectivity, Mobility, Regional Planning and Urban Density**

本文探讨了印度尼西亚大都市的发展。根据2010年全国人口普查, 印尼人口超过100万人的城市有11个, 以目前的人口增长率在2016年将轻松增加到15个。在11个城市中有8个城市位于爪哇, 它是一座人口稠密的岛屿, 在这126,700平方公里 (规模相当于英国的一半多) 面积的土地上居住了超过一亿六千万的人口。

印度尼西亚群岛包括17,000多个分散的岛屿, 其跨度相当于美国从西到东的距离或从英国到土耳其的距离。这个国家的发展挑战一直在于群岛的连通性, 财富的分配, 信息, 物流和流动性。

本文将提出在其他的大岛屿上的不同经济活动和枢纽有着巨大的增长潜力。文章还将讨论关于在整个群岛增加枢纽的区域规划。以案例研究结合大城市的特征分析其增长, 并研究城市如何适应未来的高密度增长。印尼城市更趋向于水平蔓延而不是垂直发展, 本文将模拟这些城市未来的增长。

**关键词: 连通性、流动性、区域规划、城市密度**

### Introductions

Density in Indonesia's metropolitan cities is one of several problems that require a comprehensive solution. The limitation of lands means these cities cannot grow horizontally. Urban sprawl is the impact of the incomprehensive planning and leaves many problems behind. The horizontal growth makes the mobility between the city center and suburban area that is not supported by sufficient public transportation is making the traffic even worse. The increase of job (in terms of number of and type of work) is not supported by adequate public transportation system for the workers (Poerbo, 2012). The Population of Jakarta, for instance, has grown by 2.42% in 1980-1990 and 0.17% in 2000-

### 引言

印尼大都市的密度是个需要全面解决的问题之一。土地的限制使那些城市不能横向发展。城市蔓延受不全面规划的影响并留下许多问题。横向发展使城市中心与郊区之间缺乏足够的公共交通支持, 这使得城市中心与郊区间流动性变得更糟。增加的工作 (在数量与类型方面) 并没有足够的公共交通系统的支持 (Poerbo, 2012)。例如, 雅加达的人口由于城市内部已经变得密集, 在1980年至1990年增长了2.42%, 而在2000年至2010年增长了0.17%。印尼许多大都市的模式相同, 城市中心是高密度环境, 而低密度住宅环绕城市, 没有公共交通文化。这种状况需要根据城市规划和大城市战略, 共同改

## Five ASEAN countries rank among the world's 50 most connected nations

MGI Connectedness Index and overall flows data, 2012<sup>1</sup>  
Rank of participation by flow as measured by flow intensity and share of world total



Rank	Country	Goods	Services	Financial	People (2010)	Data and communication (2013)
1	Germany	3	5	7	5	2
2	Hong Kong, China	1	4	3	14	n/a
3	United States	8	9	5	1	7
4	Singapore	2	3	4	18	5
5	United Kingdom	13	6	9	7	3
6	Netherlands	6	7	15	29	1
7	France	9	10	36	15	4
8	Canada	16	22	13	9	18
=9	Russia	19	30	16	2	21
=9	Italy	11	20	31	16	10
<b>ASEAN<sup>2</sup></b>						
4	Singapore	2	3	4	18	5
18	Malaysia	10	23	34	26	32
36	Thailand	12	19	27	94	56
45	Philippines	53	45	47	52	54
48	Vietnam	25	56	41	90	58
56	Indonesia	31	49	39	113	65
91	Cambodia	81	82	59	109	104

1 Index calculations use migrants data for people flows and cross-border Internet traffic for data and communication flows.  
2 Brunei, Laos, and Myanmar are not included due to data limitations.

SOURCE: Comtrade; IHS; World Trade Organization; Telegeography; World Bank; McKinsey Global Institute analysis

Figure 1. Five ASEAN countries rank among the world's 50 most connected nations. (Source: McKinsey Global Institute)

图1：世界上50个最有联系的国家中的五个东盟国家（来源：McKinsey Global Institute）

2010 due to the already dense inner city areas (Poerbo, 2012). The pattern is the same in most of the big cities in Indonesia, the high density environment in the city center and low density residential surround the city with no public transportation culture. This situation needs solutions based on a city planning and metropolitan strategy to get the city center and suburban areas to work together in terms of density and mobility (Figure 1).

### State Budget Proportion

The centralized development in Indonesia has been substantial; consequently other cities have been left behind in terms of infrastructure and facility development. The state budget of Indonesia defines the cities needs proportionally. Indonesia's APBN (state budget) 2016 decided to give IDR 770.2T (trillion) from total IDR 2095.7T to be distributed to the less developed cities. From those numbers, there is IDR 85.5T for physical allocation funds in general and IDR 47T for village development funds. In the report explicitly said some provinces get specific amounts of funding, Such as IDR 5.4T for Papua in general and IDR 1.2T for the infrastructure, IDR 2.3T for West Papua and IDR 1.2T for the infrastructure, and IDR 7.7T for Aceh (Figure 2) This report indicates that the government wants to develop the remaining province from the west and east. This action hopefully could

make this urbanization spread across the entire country and make local residents return to their hometown and invest and build these cities after leaving their current job in big cities.

### Landed House Culture and Horizontal Development

Urban sprawl is one of the outcomes of unpreparedness of population growth. In Indonesia, generally the landed house is in the highest demand of residential building. Tall residential buildings only have demands in big cities, and culturally are not compatible

善城市中心与郊外区域的密度与流动性（图1）。

### 政府预算比例

印尼以中心发展为主，而其它城市在基础设施与开发建设方面落后。国家预算决定了城市需求的比例。2016年印尼政府预算把总共2095.7万亿印尼盾中的770.2万亿印尼盾分配给不发达的城市。在这些数字中，有85.5万亿印尼盾用于总体的实物分配，47万亿印尼盾用于村发展基金。在报告中明确表示一些省份获得资金的具体数额，如巴布亚总体5.4万亿印尼盾和基础设施1.2万亿印尼盾，西巴布亚2.3万亿印尼盾与基础设施1.2万亿印尼盾，以及亚齐7.7万亿印尼盾（图2）。这份报告表明，政府希望能够从西部和东部低区这些仍然落后的省份进行开发。希望通过这一举措能使城市化向全国蔓延，并使当地民居从脱离其所在的大城市的工作，从而投资和建设自己的家乡。

### 宅基地文化和水平向发展

城市蔓延是人口增长带来的措手不及的影响之一。在印尼，宅基地一般是最受欢迎的住宅形式。高大住宅楼只有在大城市有需求，而且文化与大多数公民是不兼容的。土地所有权作为未来投资是普遍认为宅基地比高层建筑好的原因。对经济承受力较低的公民而言，住在高层建筑内有如下担忧：从文化上他们担心建筑系统故障，生活在一定高度的恐惧，还有更多的原因（图3）。

开发商了解印尼文化，他们对宅基地情有独钟并持续加以建造。较低的资金要求与最大的需求量促使宅基地的不断建造来取代中高层或高层住宅。这种情况使得城市密度不断的横向增长。但人们恰恰需要中高层和高层住宅保持城市的平衡并创造更多的共享空间，因为城市密度与所有的限制需要垂直增长。雅加达在有限的土地上仍然不断横向增长。雅加达是印尼的首都，所有其它城市也在效仿雅加达。城



Figure 2. Transfer Policy and Regional Funds (Source: APBN INDONESIA 2016)

图2：转移政策和区域基金（来源：2016年印尼政府预算）





Figure 3. Jakarta Urban Sprawl Illustration, Residential Development is Growing Outside Jakarta (Source: PDW 2016)

图3. 雅加达城市蔓延插图，住宅发展正在雅加达外增长（来源：PDW 2016）

yet with most of the citizens. Land ownership as a future investment is the most common reason why the landed house is still more desirable than high rise residential. For the lower economy citizen, living in a tall building has its own hesitation. This happened because culturally, the hesitation comes from the worries from building system failure, afraid of living in certain heights, and many more (Figure 3).

The Indonesian culture that prefers the landed house is captured by the developers and they keep creating them. The lesser funding and highest demand are enough to build landed housing instead of mid-rise or high-rise housing. These factors lead to a situation that makes the urban density keep growing horizontally. Mid-rise and high-rise residential is needed to keep the city balanced and create more open space, because urban density with all the limitation needs to grow vertically. Jakarta with limited land keeps growing horizontally. As the capital city, this pattern could be implemented in other cities that see Jakarta as the role model. Jakarta's city planning evaluation needs to respond by providing mid-rise residential development. The gap between the landed house and high-rise housing is massive. The typology between them is missing, considering that it could be a long-term solution. People moving from a landed house to a tall building might be hard to do. Therefore mid-rise residential development will give people more choices to move from their landed house to a density-based form of residential construction (Figure 4).

### Metropolitan Cities

The rise of Metropolitan cities in Indonesia is growing across the country. Medan, Padang, Palembang are metropolitan cities on Sumatra Island. On Java Island, there is Jakarta,

Bandung, Semarang, Surabaya, Madiun. While in Nusa Tenggara Islands there are Denpasar and Mataram. In Kalimantan Island there is Banjarmasin, and in Sulawesi Island there are Makassar and Manado. With each different character the development can adapt to the culture with the same basic knowledge that metropolitan cities need to provide facilities for high density living, without reducing the quality of the space. Jakarta as the role model of urban development in Indonesia should not be followed due to its sprawling growth through the city. This urban sprawl creates a disparity in social life of those that are rich and those that are poor (Figure 5).

### Infrastructure that Lead to Prevent Disparities

Without funding from the state budget (APBN), most of the cities can't thrive by themselves. The implementation of decentralization has been linked to increased regional disparities (Brojonegoro, 2003). As devolution gives authority to district governments who lack the talents and experienced bureaucrats, local economic development might depend on the local government's capacities (Booth, 2005). As globalization progressed, economic growth engine shifted from manufacturing to knowledge and creative-based economy (Aritenang, 2012). The dependence for central funding means that they can't upgrade the infrastructure to a certain extent. This makes it difficult for the local growth to be optimized

市规划评估显示雅加达需要开发中高层住宅来适应现状。宅基地和高层住宅之间的差距如此之大，可能作为长期解决方案的二者之间的过度类型缺失。人们一下子从宅基地迁移到高层建筑是很难适应的。因此，开发中高层的住宅给人们提供了更多的选择——从他们的宅基地搬到密度相对更高的住宅类型（图4）。

### 大城市

印尼的大城市在全国各地崛起。苏门答腊岛的大城市有棉兰、巴东、巨港。在爪哇岛有雅加达、万隆、三宝壟、泗水、茉莉芬。而登巴萨和马塔兰在努沙登加拉群岛。在加里曼丹岛有马辰，及苏拉威西岛有马卡萨和万鸦老。大城市需要提供适合高密度居住的生活设施而不降低空间品质，基于此基本共识，住宅开发可运用不同的特质来适应当地文化。雅加达作为印尼城市发展的模范，其城市蔓延增长方面不应该被效仿，它使富人与穷人之间的差距尤其是社会生活方面更加的悬殊（图5）。

### 防止差距的基础设施

没有政府预算的支持，绝大多数城市几乎不能自我繁荣。去中心化的举措增加了地区间的差距（Brojonegoro, 2003）。如授权给缺乏人才和具有官僚作风的区政府，则当地的经济可能仍要依靠当地政府的能力（Booth, 2005）。随着全球化的进展，经济增长引擎从制造业转移至知识和创新性的经济（Aritenang, 2012）。依赖中央的资金将使地方无法将基础设施升



Figure 4. The Horizontal Development in Jakarta (Source: PDW 2016)  
图4. 雅加达的横向发展（来源：PDW 2016）



Figure 5. The Skyline Gap in Jakarta (Source: PDW 2016)  
图5. 雅加达的天际线差距（来源：PDW 2016）

2014												
Main Airport 主要机场	January 一月	February 二月	March 三月	April 四月	May 五月	June 六月	July 七月	August 八月	September 九月	October 十月	November 十一月	December 十二月
Polonia	259,256	241,508	252,182	236,090	248,371	306,942	241,200	316,737	262,390	262,136	248,748	258,578
Soekarno-Hatta	1,712,529	1,306,951	1,685,568	1,504,102	1,860,120	1,793,386	1,575,907	1,749,146	1,644,321	1,786,361	1,724,281	1,950,020
Juanda	617,838	479,197	538,497	510,996	554,213	609,753	455,747	743,304	604,342	636,143	593,137	644,533
Ngurah Rai	400,459	321,076	333,199	328,577	381,608	407,208	458,378	458,378	378,289	388,697	379,706	391,516
Hasanuddin	287,815	235,540	255,067	236,644	262,107	273,007	306,915	306,915	245,300	284,951	272,188	268,411
2015												
Main Airport 主要机场	January 一月	February 二月	March 三月	April 四月	May 五月	June 六月	July 七月	August 八月	September 九月	October 十月	November 十一月	December 十二月
Polonia	294,748	211,984	240,988	248,491	265,442	268,027	316,429	308,179	245,614	249,646	276,671	290,476
Soekarno-Hatta	1,478,308	1,332,181	1,490,037	1,492,524	1,655,718	1,556,379	1,798,426	1,759,884	1,467,594	1,603,937	1,620,867	1,875,545
Juanda	565,027	474,994	501,031	513,301	568,271	518,583	608,491	699,259	545,042	605,010	587,291	671,396
Ngurah Rai	356,314	292,316	315,635	333,421	375,761	356,428	380,438	404,915	327,845	354,721	317,524	306,862
Hasanuddin	263,245	215,298	252,525	234,491	281,906	261,900	309,799	322,679	256,807	308,115	292,726	306,862
2016												
Main Airport 主要机场	January 一月	February 二月	March 三月	April 四月	May 五月	June 六月	July 七月	August 八月	September 九月	October 十月	November 十一月	December 十二月
Polonia	317,318	317,318	300,626	297,024	322,226	280,360	—	—	—	—	—	—
Soekarno-Hatta	1,746,840	1,514,119	1,669,840	1,654,878	1,863,374	1,542,497	—	—	—	—	—	—
Juanda	656,208	571,726	318,357	596,085	675,702	523,451	—	—	—	—	—	—
Ngurah Rai	322,876	338,482	388,148	349,140	427,732	381,772	—	—	—	—	—	—
Hasanuddin	376,967	282,961	309,626	302,431	349,507	277,715	—	—	—	—	—	—

Figure 6. The Amount of Passenger in Domestic Flight in Major Airports in Indonesia (people) from 2014-2016 (Source: Biro Pusat Statistik, 2016)  
图6. 2014年至2016年的印尼主要机场国内航班乘客数额（人）（来源：统计局，2016）

for years, whereas the state budget (APBN) has an important role to increase infrastructure development. To solve the urban sprawl problem, the infrastructure is the first thing to develop and they will manage population growth by distributing them to the right place. The urban sprawl, basically, the population is growing horizontally. Tall building is one solution that can be solve the sprawl, distribute population, and save more land to become public places.

### Transportation and Local Identity

The proportion of funding provided for the village development also indicates that the government wants to enhance the welfare of average Indonesian. As the Indonesian village has a vital role to supply the basic needs to the rest of the nation. The high numbers of urbanization makes the transportation is one of the most important infrastructure needs for the Indonesian people. During the big religious holiday in Indonesia, there will be a massive migration from the cities to their homeland in the village, or to other cities. This culture, actually, is a potential for the professionals and the government to take advantage of. Many opportunities in this culture that can be economical upgrade both for the hometown and destination cities. As a case study, this culture builds an image that the Indonesian development is not well distributed. It can

be seen from many citizens from outside Java Island to come to get work in the limited choice of place. Jakarta is the city providing the most opportunity to many citizens from all over Indonesia but only a few that could survive. This situation creates another poverty problem that needs to be solved, by not making Jakarta the only big city that creates such economic opportunities. Distributing these opportunities throughout Indonesia would be more desirable. The data from Biro Pusat Statistik (BPS) showed that the amount of passengers is increasing every year. This growth could be seen as an opportunity to develop more mobility facilities to satisfy the future needs of Indonesians (Figure 6).

Most of the large cities in Indonesia have lost their uniqueness because of the advancement of civilization. Industrial materials are replacing home-made local material for price and efficiency reasons. Local wisdom transformed into tourism attractions has become the main identity for many cities. This phenomenon happened in many cities in Indonesia, they have to keep it up by catching the opportunity to stay developed. Identity is an important attribute of a good environment in order to be called as a place and a valuable component for its sustainability (Oktay, 2002; Pušić, 2004; Sepe 2009). Each place or city contains identifiable special local attributes which produce a

级到特定的程度。这将使地方的增长在若干年内无法优化，而国家预算中很重要的一部分恰恰是增加基础设施的发展。为了解决城市蔓延问题，基础设施是第一个需要发展的，通过它能将人口进行正确的位置分配。城市蔓延问题也就是人口水平向的增长。高层建筑是解决这一问题，节约土地并提供公共空间的途径。

### 交通运输和地方特质

投入乡村发展的资金比例也表明，政府需要加强普通印尼居民的福利，因为印尼的乡村发挥着向全国其它地区提供基本需求的重要作用。城市化的高速发展使交通运输成为印尼人民最重要的基础设施之一。特别在印尼的大宗教节日，大量的人群从城市迁移到他们的农村家乡。这种文化实际上可为专业人士和政府很好的利用，使得家乡和目的地城市两个都可以实现经济升级。作为一个案例研究，这种文化给人的印象就是印尼的发展很不均衡。从爪哇岛之外来的公民会在这有限的选择范围内找一份工作。雅加达也正在给印尼各地的许多公民提供最大的机会，但只有少数的公民能够生存下来。这种情况还造成了需要解决的贫困问题，我们需要让雅加达成为非唯一一个能够创造机会的大城市，而是将这样的机会遍布整个印尼。统计局（BPS）的数据表明，飞机乘客数量每年都在上涨。这一增长为开发更多的交通设施来满足印尼人未来出行的需要提供了机遇（图6）。



spirit of place that can be understood and communicated (Garnham, 1985). Besides local material, streetscape is one of the identities that we could see from a city. Road infrastructure construction will change the townscape characteristic and typical existing streetscape (Widjananto, 1999). The street character will become memorable to define the people's perception for a specific city.

## Culture of Indonesia Archipelago in General

Indonesia's archipelago span starts from west to east divided into islands that are connected only by air and sea. This kind of geography creates the opportunity to have many attractions as tourist destination, and enhance the economy of those cities who can take advantage of their natural environment. To get the best out of the potential, the connectivity between cities in Indonesia needs to get more attention from the professionals, private sector and the government (Figure 7).

Cities in the coastal area mostly rely on the sea and tourism for their livability. If the cities have some distance from the coast or the mountains in the lowlands, they will live from the commercial area, many public housings and public facilities that could be the center of civilization. In this kind of city, they will treat the coastal cities and mountain cities as their holiday destination. So, the pattern must be clear in some ways, that lowlands will be the center of economy, and will gave their surrounding cities the support by any potential that they have. The proximity between cities can be defined by how well the transportation between them has developed. The basic infrastructure such as roads, toll roads and bridges must be in a good shape to support the cities system of relationships.

For the cities that have been transformed into more advance infrastructure, their income will be built up not only from the government funding, but also from their increasing tax, retribution, and many public facilities that are making a profit. The transformation should enhance the quality of the people. There are many opportunity in the cities with well-educated citizens. With good education, the city will not depend on central government funding, and they could make their own infrastructure from their private sectors. In some cases, the private sector could be the answer to assist with infrastructure development. This investment could be the catalyst for cities development.

## The Rise of Tall Buildings

In Indonesia, the classification of tall building especially residential building is divided by its end user class society. The apartments are

## Large, mid-sized, and small middleweight cities will continue to grow faster than Jakarta

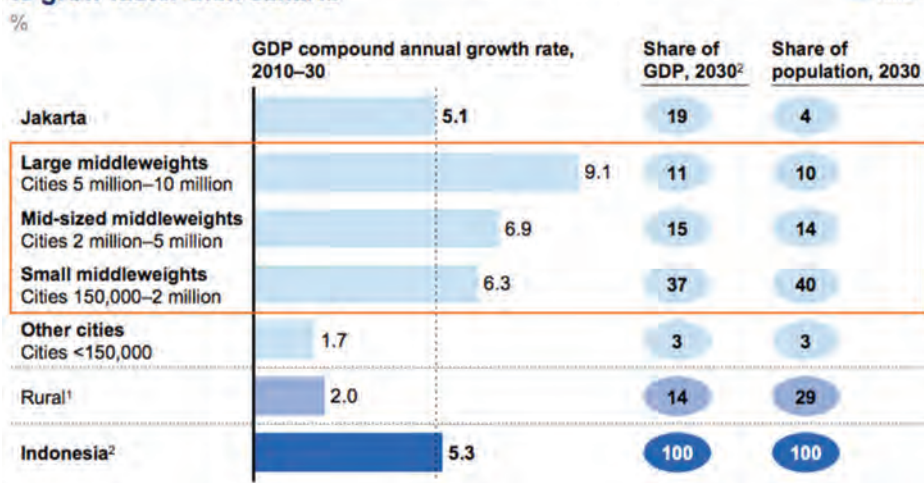


Figure 7. Indonesian City Growth (Source: McKinsey Global Institute)  
图7：印尼城市的发展（来源：麦肯锡全球研究所）

多数的大城市因为文明的进步而失去了它们的独特性。工业化材料因价格和效率原因取代了国产的当地材料。当地智慧象征转化成旅游景点已经成为许多城市的主要特征。这现象发生在了印尼的许多城市，他们必须保持抓住这个机会继续开发。象征是良好环境的重要特性，以便称为一个地方与可持续发展的一个有价值的组成部分 (Oktay, 2002; Pušić, 2004; Sepe 2009)。每个地方或城市包含可识别的当地特征而产生一种可以被理解和沟通的地方精神 (Garnham, 1985)。除了当地材料，街景是我们可以从某个城市看到的特征之一。道路基础设施建设将改变城市景观特征和典型的现有街景 (Widjananto, 1999)。街道的特性将定义人们对特定城市的记忆。

## 印尼群岛文化概述

印尼群岛从西向东的岛屿都需要空运与海运连接。这种特有的地貌创造了许多绝佳的旅游景点，并为有这些自然资源的景点城市带来了很高的经济效益。为了挖掘最佳的潜力，印尼城市之间的连接需要得到专业人士、私营部门和政府的更多关注 (图7)。

沿海地区的城市大多数依靠海产和旅游业生活。如果城市位于距沿海或山区有一段距离的平原低地，他们将在商业区、许多公共住宅和公共设施生活，这也会是文明的中心。在这些城市的人们会把沿海城市与山区城市作为他们的旅游目的地。因此我们可以明确这一模式，平原将为经济中心，并给予周围城市支持使其充分发挥潜力。城市之间的距离是由它们之间的交通运输状况决定的。为支持城市的交通系统，基础设施如道路、高速公路和桥梁必须完好。

对于已拥有更先进的基础设施的城市来说，他们的收入不仅仅从政府的资助，而且还从它们的增税、各类补偿以及许多公共设施获利。城市进步将提高人民素质。

对受过良好教育的人民在城市里有许多机会。有了良好的教育，城市就不再依赖中央政府的资助，并且他们可以依托私营部门来创建自己的基础设施。对于某些状况下，私营部门会协助基础设施建设，他们的投资可能成为城市发展的催化剂。

## 高层建筑的崛起

在印尼，高层建筑的分类尤其是住宅类往往由使用者的社会等级决定。高级公寓是针对中高产阶级，普通私人公寓和出租公寓的对象是低收入阶级。在2014年，12,000个高级公寓中有很大一部分没有被市场消化。在郊区的中段市场，高级公寓的需求量下滑了6亿到10亿卢布，而在雅加达则下滑了7亿到20亿卢布。买家的减少使得开发变缓，建筑质量也有所下降。在2015年，市场上有47,269个新的高级公寓单元，但到2016年只有36%的数量。经济和政治因素是造成增长下滑的两个主要原因。

印尼的房地产业通常是一种投资行为，所以大部分的房子是没有人居住的。这种情况造成错误的目标市场，很多投机者购买廉价的公寓来不断的出租而获利。因此，高层住宅的需求被廉价公寓的崛起和高端公寓的昂贵价格约束了。在2014年，投资购买者和真正居住的购买者的比例为60 : 40 (Collier: Kompas Properti)。这显示了房地产业对投资者和居住购买者来说都是有利的。

在某些情况下，高层建筑创造了优良的社区，增加了购买价值并为城市创造了更好的环境。在雅加达，高层建筑开发会增加地产价值。开发导致更多的活动和交易；住宅增长集中在某几个区域，更多的人住在普通公寓和高端公寓从而减少了城市蔓延。作为城市蔓延的解决方案，高层建筑需要公共交通系统的支持。没有公共交通，高层建筑只会产生更多的停车场。住宅的集中开发会创造更好的连通性。这种模式将会很特别，并且支持连通方案。总

for upper middle economic class, and the Rusunami (flats with ownership) and Rusunawa (rental flats) are for lower economic class. In 2014 there are 12,000 units' apartments and many of them did not absorbed very well by the market. The decline in demand for apartments is from the middle segment in suburbs area is from 600 million to 1 billion rupiahs segment, while in Jakarta, the same situation happened in 700 million to 2 billion rupiahs segment. The lack of buyers will slow down the construction and lower the quality of the building. In 2015-2016, there are 47,269 units new apartment and there is only 36% comes in 2016 (Colliers: Kompas Properti). Both economic and political situation are major factors that slowing down the growth.

Housing property industry in Indonesia is commonly seen as the investment, therefore the property mostly do not have resident that live in. This situation leads to wrong target markets, as many speculative investors buy cheap flats to rent them again to gain profit. Therefore, the needs of tall building residential are limited by the rise of the flats or apartment pricing. In 2014, the comparison between investor buyers and end-user buyers is 60:40 (Colliers: Kompas Properti). The comparison shows that how the property industry is a good investment for both the investors and end-users.

For some case, tall building created a decent neighborhood, added the value to their consumers, and creating a better environment for the city. In Jakarta, tall building development raises property values. The development creates more activity and economic transactions; centralized housing growth into several specific spaces, and reduce urban sprawl from cultural approach by invite people to live in flats and apartments. As the urban sprawl solution, tall buildings need to be supported by integrated public transportation. Without the public transportation system, tall building will only increase the needs of parking area for centralized residential parking lots. The centralized development for housing will create better connectivity. The pattern will be distinct and the connectivity plan will be well supported. In general, the centralized development in tall building concept will generate better connectivity throughout the city and the country.

The connectivity potential is a major idea to start the development of all the Indonesian islands. The transportation will get the government facilities to control the development. Logistics from Java Island to Papua is one of the most expensive expenditures for the government. We can



Figure 8. Indonesia Sea Toll Program (Source: BAPPENAS via finance.detik.com 2016)  
图8. 印尼海上高速公路项目 (来源: BAPPENAS via finance.detik.com 2016)

see that in Papua, the cost of the industrial building material is very expensive due to the lack of connectivity from Java. This problem is solved temporarily by materials. With the current supply of wood in their forests, they create their house, weapons and utensils using this wood. This is where the local material developed, from the limitation and nature given material. This situation created stagnant development in eastern Indonesia, while the connectivity system needs logistics to build facilities from the airport to the pedestrian in order to support their internal city connection (Figure 8).

The contribution from the local citizen is very important in order to develop their villages to get the best out of the village potential. "Hence, no government can be efficient and equitable without considerable input from the citizen" (Ostrom, 1996). The system that makes the communication between local people and government is maintained by the Indonesian parliament. That should give each of the cities a proportional funding from the central government. Sometimes, the lack of talent and experience of the local

而言之，集中开发高层建筑会在城市乃至整个国家产生更好的连通性。

连通性是所有印尼岛屿开始开发的主旨。交通将由政府设施控制发展。从爪哇岛至巴布亚的物流费是个最昂贵的政府支出之一。在巴布亚，工业建筑材料成本非常高是因为从爪哇岛交通连接的缺乏。所以他们使用当地的材料，这个问题暂时解决了。他们使用了当地的树林提供木材来建造自己的房子、武器与用具。当地材料有很多限制。这种情况造成了印尼东部的发展停滞，而连接系统需要物流来建造机场到社区的设施以支持他们城市内部的连通需要（图8）。

为了开发乡村而获得外界的最佳支持，当地居民的贡献是至关重要的。“因此，没有公民的相当投入就没有有效和公平的政府”（Ostrom, 1996）。印尼议会是当地人民和政府之间沟通的桥梁。中央政府给每个城市一定比例的资助。但有时候，缺乏人才和经验的地方政府很难产生最佳方案。

**发放的优先顺序以及担责机构**  
在有限人力和资金的状况下，印尼需要设置自己的优先级。首先要建立含有公共设



bureaucrats makes this optimization more difficult to happen.

### Distribution Priority and Responsible Institution

With the limited man power and funding, Indonesia needs to set priorities. The First priority is to build the infrastructure that contains public facilities to support the basic needs of the cities including airports, train stations, bus stations and harbors. This distribution of infrastructure will be the basic ingredients needed to distribute logistics to all over Indonesia. After the basic infrastructure is provided, the public transportation must get further development. The importance of public facilities in every aspect is inevitable. The annual loss because of traffic in Jakarta is IDR 45 Trillion as calculated by the Office of Transportation DKI Jakarta, which includes cost components for fuel, vehicle operation, loss of time value, loss of economic opportunity and air pollution. [3] The smallest element of mobility is the pedestrian. Sidewalks as public open space is one of the most important aspects in urban design, therefore the urban realm in Asian cities did not happen in the park or city square like Europe, but at the streets and their alleys (Poerbo, 2004). Sidewalks around the city must be design to persuade citizens to walk instead of using a private car. Pedestrians also need to be part of city culture, not only just a facility. These procurements need to be planned in programs and held by certain institutions such as university, government and the private sector.

The role of local universities as the institutions who have researched and developed human resources is the initiator to drive the professional to create the research-based master plan. The discussions between stakeholders need to be held to formulate the best programs to be applied in Indonesia. After the master plan is set, the professionals must get involved in order to realize the program by the order from the government. The funding from the private sector will infiltrate the process to implement the project.

### Case Studies

Kalibata City is a mixed-use complex with middle segment apartments. The various apartments consumers makes the liveliness in the public space inside the complex is more vibrant. Many activities to attract more consumers to live in and reasonable apartments' price are a main selling point of the place. The multi-tower concept could be suitable for absorbing consumers and increasing density in Kalibata area.

On the other hand, the lack of integrated transportation system makes the traffic congestion inevitable. Private cars still dominate the parking lots and makes the inner circulation is not so pedestrian-friendly. The interactions between buildings are diverse from parallel parking lots to public facilities. There are many potential from the complex that can be improved to be an urban sprawl solution. If the formula of multi-towers with affordable price and various types of social community could be a solution, the concept should be fine to be implemented in many sites in other Indonesia metropolitan cities.

BSD city is an example of integrated living that contains tall building as the part of residential development in a 6000 ha land area. In contrast to the previous example, the BSD City has an integrated transportation system to support the property business. There are Transjakarta feeders, shuttle buses, KRL commuter lines and local inter-city public transportation or Angkot to connect BSD City to the city around them. The mixed residential types, from clustered landed house to upper middle apartments also create a various choices to the prospective consumers. These facilities improve the land value that makes the property expensive. The residential price range in BSD City cannot reach lower economy class segment as the development keep growing forward.

Basically, there are other things to be done before developing the tall building. The basic infrastructure such as the transportation system, public facilities and open public space are the primary tasks. The culture of people who will live in a tall building is another factor that needs to be concerned about. The difference between living in a well-integrated city and live in the suburb area should be explained to the social community who used to live in landed house to prevent social problem in the future. The movement from living in landed house to tall building could be started from any social segments.

### Conclusion

Future density in Indonesia is an inevitable situation that needs comprehensive planning to prevent urban sprawling. The pattern of the city development indicated by the current trend is that there are many missing links that need to get solved immediately. The growing population, jobs, metropolitan cities and everything in between have required more human and natural resources. Vertical development is a solution for urban sprawl to prevent the city growing in a horizontally. Public transportation needs to be accelerated.

施的基础设施，以支持城市的基础需求，包括机场、火车站、公共汽车站和港口。这些基础设施将使物流遍布印尼各地。在提供基础设施建设之后，公共交通必须进一步发展。公共设施在各方面的重要性是不可避免的。根据雅加达首都特区运输办公室的计算，因为雅加达的交通状况，导致每年损失45,198,085百万印尼盾，包括燃油、车辆运行、时间价值、经济机会损失与空气污染。最小单元的流动性就是行人。人行道是城市设计中最重要公共开放空间之一。因此，亚洲城市的城市空间并没有像欧洲国家那样在公园或城市广场发生，而是在街道和他们的小巷发生 (Poerbo, 2004)。城市中遍布的人行道设计必须吸引人们用步行代替私人汽车。人行道也需要成为城市文化的一部分，而不仅仅被视作设施而已。这些设施需要提前规划，由一定的机构如大学、政府和私营部门来管理实施。

作为研究单位并提供人力资源的机构，地方大学的作用是推动专业人员创造研究性的总体规划。各方需要举行讨论来制定最好的方案用于印尼。总体规划完成后，专业人士必须由政府任命来参与方案的实施。私营部门的资助将渗透全过程以确保方案完成。

### 案例研究

卡利巴塔城是一个有很多中等规模公寓的综合区。多样化的公寓使用者使得区域内公共空间生机勃勃。所提供的吸引住户多种活动以及合理的售价是小区的主要卖点。多塔楼的概念很适合卡利巴塔地区日益增长的密度需要。另外，缺乏一套完整的交通系统也使得交通拥挤不可避免。私家车充斥着停车场，这使得区域内部不利于步行。塔楼之间的联系，如从平行设置的停车场到公共设施都很分散。作为城市蔓延的解决方案这里有很多可以改进的地方。如果这种价格合理，拥有多样化社区的多塔楼方式能够成为解决方案的话，印尼的其他很多大都市都可以采纳。

BSD城是一个拥有6,000公顷土地的高层住宅区。和之前的例子相反，BSD城有一个支撑区域商业活动的交通系统。包括快速巴士，穿梭巴士，库勒通勤线路，城市内部公交或小型公共汽车等都可以将BSD城和周边相连。混合的住宅类型包括聚集开发的宅基地一直到中高端公寓给买家很多不同的选择。这些设施增加了土地的价值，并使房产增值。这样的开发持续的进行，使得低收入阶层无法负担住宅的价格。

简而言之，在开发高层建筑之前有一些必须要先行完成的，如交通系统，公共设施及公共开放空间等基础设施。同时还要考虑住在高层建筑的人群的文化背景。曾经





Figure 9. The Horizontal Development in Jakarta (Source: kabar24.bisnis.com, 2016)  
图9. 雅加达的横向发展 (来源: kabar24.bisnis.com, 2016)

Mobility of inter-city and intra-city must be developed to push the infrastructure development forward. This pattern is the one that must be implemented in all the growing metropolitan cities in order to prevent a chaotic housing and transportation scenario. Jakarta as the center of excellence in Indonesia must start to evaluate the planning of the City in order to be a better city role model for

the rest of the country. One thing that should never be forgotten is that urban and regional planning goals should be built from local the character and uniqueness of each region or city. The reliance of referencing western cities could be done only by filtering their methodology so that the local cultural values remain paramount (Figure 9).

住在宅基地的社区人群需要一定的引导来了解居住在整合良好的城市和居住在郊区之间的差别，以避免造成社会问题。这种转变可以从任一社会领域做起。

## 结论

印尼的未来密度持续增长已成必然，这就需要进行全面的规划，以防止城市蔓延。城市发展的模式表明，有许多缺失的环节需要立即解决。不断增长的人口、工作、大城市和这一切之间需要有更多的人力资源与自然资源。垂直发展是城市蔓延的一个解决方案，以防止城市的横向发展。公共交通需要加速发展，城市之间与城市内部的流动性必须推动基础设施的发展。这一模式必须在所有正在不断增长的大城市中推广，以防止出现混乱的住宅和交通状况。雅加达作为印尼优秀的中心城市，必须开始评估城市规划，为其他城市竖立榜样。我们要牢记任何一个城市与区域规划应建立在当地的地域特征和独特性基础之上。借鉴西方城市经验的时候需要过滤掉一些方法而保留本地文化中最具价值的精华部分（图9）。

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