RESEARCH PROPOSAL
Resilience of Communities in Pontian District from Rapid Development of Iskandar Malaysia

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1. Research Topic

Resilience of Communities in Pontian District from Rapid Development of Iskandar Malaysia

2. Research Aim

The aim of this study is to examine the land use pattern change of Pontian district impacting by Iskandar Malaysia on its social, economic and environment attributes. By assessing the land use changes pattern in Pontian, it will provide the opportunity to evaluate the fast growing urbanization process which eventually can assist in developing a Community Resilience Land Use Map for Pontian.

3. Research Objectives

The following objectives are formulated to achieve the stated aim.

i. To investigate the land use pattern change in Pontian district;
ii. To evaluate the impact of land use changes on three types of resident, fisherman, farmers and urban dwellers; and
iii. To develop a resilience land use map that will become a guide for sustainable land use planning in Pontian district.

4. Assumption

In understanding the community resilience, the analytical framework based on economic, social and environmental capitals will be interpreted and used to develop land use resilience map of Pontian. This study will evaluate and investigate on how the land use changes pattern influences the integrated community people’s life in Pontian district. Changes in term of level of resiliency in three different types of community are expected. It is assumed that the fisherman community living along with the coastal zone will be most negatively affected, followed by farming community and the least affected is urban dwellers.
5. **Research Questions**

The research questions dealt here are:

i) What is the pattern of land use change in Pontian district since 2002 that is the inceptions of Pontian district council local plan?

ii) How does the pattern impact on the resilience of fisherman, farmers and urban dweller communities in 3 aspects, social, environment and economy?

iii) What is the projection of land use pattern in Pontian shown by community resilience land use map in 2030?

6. **Research Background**

State of Johor is located in Peninsular Malaysia's which is at the southernmost end of mainland Asia. Historically, Johor has already play an important and strategic role in the development of Malaysian and the surrounding area. Johor has grown rapidly until become the second most important economic conurbation in Malaysia. The economy is various consisting of electronic industry cluster, logistic, food and agriculture, tourism and oil and petrochemical. The position is strategically located at the busiest shipping routes in the world and close to the big international market center of Singapore, Indonesia, china and India. Overflowed with natural resource and human resource have affirmed Johore success and accentuate the state potential in the future.

Under 9th Malaysian Plan, southern Johor was identified as national development center and in 2005, Khazanah Nasional was given responsibility to provide a blueprint to ensure that these area which was then known as South Johor Economic Region (SJER), will be develop to become a sustainable metropolis with a vision to be known at international level. Since 2006, when Iskandar Malaysia was introduced as one of the economic corridors in Malaysia, Iskandar Malaysia has brings in more focused in the area of economic and infrastructure investments to an
already established urban conurbation which is strategically located at the southernmost tip of Peninsular Malaysia.

Established in 2006, the region is now moving into its third phase of growth, whereby Iskandar Malaysia has progressed rapidly and has managed to draw in a large number of investments from both domestic and international investors. Iskandar Malaysia encompasses five local authorities, namely Johor Bahru City Council, Johor Bahru Tengah Municipal Council, Pasir Gudang Municipal Council, Kulai Municipal Council and part of Pontian District Council. These local authorities fall under the jurisdiction of the three districts of Johor Bahru, Kulai and Pontian. Iskandar Malaysia also easily can be access through multiple entry point. Visitors from Singapore for example can use Malaysian-Singapore second link and Johor Causeway, whereas visitor from the north of peninsula Malaysia can use North-South Expressway. It is less than four hours’ drive from Kuala Lumpur and an hour from Singapore. Iskandar Malaysia covers a total area of 2,300 sq km or 230,000 hectares and has a total estimated population of 1.91 million in 2015 and projected increase to 3.0 million by the year 2025 (CDP ii, 2015).

Iskandar Malaysia contributes significantly to the economy of the State of Johor and the southern part of the country. At state level, it contributed nearly three quarter of the state’s Gross Domestic Product (GDP) and about 47.0 percent of the employment. The GDP of Iskandar Malaysia in 2012 was estimated at RM47.01 billion with GDP per capita estimated at RM27,025 (CDP ii, 2015). Iskandar Malaysia is expected to continue growing although slightly affected by the global economic downturn at its early stage of the development.

People might not know that Iskandar’s main economic growth is in services and manufacturing, not property. Since 2012, the total committed investment in Iskandar has remained consistent at around RM40 billion (33%) (CPD ii, 2015). This is why the property prices grow rapidly first. Big services businesses will come in, you need working highways, infrastructure, and a minimum number of workers and consumers. So the first wave of the Pontian growth are property and manufacturing especially in Pekan Nanas. The manufacturing segment had a big jump in 2013 when the Singaporean government started giving incentives for Singaporean factories to
relocate across the causeway. With Singapore introducing the RM1,000 foreign worker levy for every worker in Singapore, businesses are now under a lot of pressure to relocate to areas with lower manpower costs and similar infrastructure, and within close proximity to Singapore. And since then it has been growing at a slow but significant pace. Why is these become an issue? If we look from the angle on how these will increase local economic activities, we might think that it is fine, but as most of employee of this sectors are foreigners, it might create social issue especially at residential area in Pekan Nanas where most of the factories were located as most of the factory did not provide proper accommodations to their employee (MDP, 2016).

In the sector of residential and property markets, Chinese developers account for a significant portion of the overall new high rise units in Iskandar (>15,000), and their price ranges are beyond the upper limits of most Malaysians’ salaries. There will be a huge negative impact financially and psychological on the market if the developments cannot sell (REDHA, 2015). Instead, as we are seeing now that despite the slow market, some project like Forest City, Country Garden and even R&F Princess Cove are still selling units every month to Chinese nationals and Singaporeans. Now as the majority of the locals cannot afford them, the demand for affordable housing will increased in Pontian. This is due to relatively lower land price and close proximity to Johor Bahru and Iskandar Malaysia. To add that the recent government ruling that properties valued at RM300,000 and below be only available to first-time buyers, may end up with developers deliberately marking up properties to just beyond RM300,000 to appeal to more buyers in this difficult market, which is never good for either first time or repeat buyers.

7. **Problem Statement**

This section discusses the problem of increasing population an urbanization impact the land use changes, the discussion on National Policy on the Environment (NPE) in Malaysia and Land use changes in Pontian for the last 10 years and the impact to the communities.
To date, more than 7 billion of people inhabit the earth, an increasing of more than 4 billion people for the past 53 years compared to 1960 (World Bank, 2014). As a consequence, people demand more land and resources for habitation, recreational uses, and to sustain their daily needs. Over population has brought undesired environmental and social problems such as shortage of all resources, climate changes, war and social conflict, habitat fragmentation, limited space and overcrowding (IPS, 2014). In a recent study, urbanization appear positively contribute to environment problem such as energy consumption and carbon emission (Liddle, 2013). Rapid urbanization has inducing change of ecological functions and processes of the natural resources thus effecting reduction of cultivated fields and natural amenities (Shrestha, York, Boone, & Zhang, 2012).

As development escalate with demand, more natural resource such as forest lands are replaced with plantation, infrastructure and housing to accommodate the excessive growth in human population and industrial development. Unrestrained and uncontrolled development and urbanization has appeared to further degrade the condition of environment in sustaining life on earth. This phenomenon is happening in most of the developing countries, and one of it is Malaysia in the tropical region (Foo & Hashim, 2014). The attention given to the community involved in this changes is still inadequate. The first National Policy on the Environment (NPE) in Malaysia was established in 2002. NPE aims at “continue economic, social, and cultural progress of Malaysia and enhancement of the quality of life of its people, through environmentally sound and sustainable development” (MOSTE, 2002, pp. 2). NPE emphasizes eight principle: Stewardship of the environment, the conservation of nature’s vitality and diversity, the continuous improvement in the quality of the environment, a sustainable use of natural resources, an integrated decision-making, and the role of the private sector, the commitment and accountability and active participation in the international community.

All these eight principles are used as a basic guidelines in the development of the economic without jeopardies harmonize environmental imperativeness. This means any type of development that facilitate economic advancement such as harvesting natural resources, farming, commercial planting, housing development and industrialization should never neglect the environment aspects. But the problem is
how many agencies comply and abide by the policy still remains subtle. The reason might be at the moment no specific guidelines is being tailored in the policy thereby the implementation by practitioners and developers seem to be unwieldy.

   Somehow NPE is not seriously accentuating the importance of development that benefits people and communities in environmental, economic and social cultural aspects. The degree of this aspect was explain by Costanza et al. (1997, 2014), when the nature contributing significantly to human welfare, it is the major contributor to the real economy, hence, natural capital that benefit human well-being should be given adequate weight as well in the decision making process. This indicates that each decision makes pertaining to development, the concern should be given to society welfare rather only looking at how best to proliferate the economy. In this case, the researcher suggest to rectify the sustainable concept and instill community resilience land use map delivered into policy particularly in Pontian. Therefore providing a starting point to think policy in real sustainable way.

   District of Pontian which is located west of Iskandar Malaysia has received an economic gain including development of infrastructure that come with development of Iskandar Malaysia. This is because, the key economic activities for the part of Pontian in Iskandar Malaysia is mostly on industrial and trade based activities (CDP, 2006) where most of the land banks in this area are agriculture land and Mangrove forest. As such, large tract of its land are purchased by developers and turned into industrial, residential and commercial uses. As a result most of the development on this district fail to conform the Pontian Structural Plan and the trend of non-conformation is accelerating to this date. This phenomenon appears to change social, economic and environmental structures of Pontian communities. Tanjung Bin Power Plant, Seaport Worldwide (2222 acres of petrochemical and hydrocarbon hub), Spectrum Kukuh (3000 acres of Petroleum and Petrochemical storage) to name a few, are located where most of the people in the area nearby are the people that work as farmers and fisherman.

   Apart from the urbanization threat, communities in Pontian district are also facing increasingly complex socio-political, economic and environmental disturbances, effecting their life. For example the drastic drop of area that the
fisherman can catch a fish have badly affected the fisherman communities who have depended highly on for income. To certain extent, it has caused the fisherman to abandon their boat and fishing net, forcing them to search for alternative mean of living. Therefore, the understanding of the resilience issues at community level is vital.

7.1 Land use Comparison

Table 7.1: Comparison of Land use 2010 and 2015

<table>
<thead>
<tr>
<th>LANDUSE</th>
<th>2010 (HEK)</th>
<th>%</th>
<th>COMMITED DEVELOPMENT (HEK)</th>
<th>2015 (HEK)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landuse (housing, business, industrial, institution &amp; public infrastructure)</td>
<td>2,552.60</td>
<td>2.78</td>
<td>6,252.82</td>
<td>8,805.42</td>
<td>9.60</td>
</tr>
<tr>
<td>Infrastructure &amp; Utility</td>
<td>3,958.55</td>
<td>4.32</td>
<td>18.93</td>
<td>3,977.48</td>
<td>4.34</td>
</tr>
<tr>
<td>Forest &amp; RAMSAR</td>
<td>12,182.71</td>
<td>13.29</td>
<td>-</td>
<td>12,182.71</td>
<td>13.29</td>
</tr>
<tr>
<td>Agriculture</td>
<td>72,993.04</td>
<td>79.61</td>
<td>-</td>
<td>66,721.28</td>
<td>72.77</td>
</tr>
<tr>
<td>TOTAL</td>
<td>91,686.90</td>
<td>100.00</td>
<td>6,271.75</td>
<td>91,686.90</td>
<td>100.00</td>
</tr>
</tbody>
</table>


Table 7.1 shows the comparison of land use in the year of 2010 and the land use projected in the year of 2015 base on the changes made in 2010 to the Pontian district council local plan 2002-2015. The table indicate the drastic increased in the housing, business, industrial, institution and public infrastructure. An increase of 345% from 2,552.6 he to 8,805.42 he at the expense of agricultural land use.
Table 7.2: Pontian district Land use plan 2010

7.2 Application of planning permission

Data obtained from Pontian Municipal Council shows that there was a drastic increased in the numbers of application of the planning permission after the announcement of the development of Iskandar Malaysia. For the year of 2001 to 2005 there is only 51 applications for Planning Permission were submitted, 144 applications between the year of 2006 to 2010, an increase of 282% and 319 application for the year 2011 to 2015, an increase of 625% for the interval period of five years. The statistics suggest that the rapid and massive development of Iskandar Malaysia could give the early indication an impact to the pattern of land use and have altered the social, economic and environment attributes of community in Pontian.

Due to the rapid economic growth and urban development of Pekan Nanas, its population is expected to increase rapidly by the year 2025 (MDP, 2015). The prediction is supported by the data collected from Pontian Land Office which shows the application for land conversion has increased from 307 applications for the year 2006 to 2010 to 731 application for the year 2011 to 2015. An increase of 138% for the interval period of five years. (Refer Table 7.4)
Table 7.4: Land conversion 2006-2015

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Building to building</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>11</td>
<td>6</td>
<td>21</td>
<td>19</td>
<td>16</td>
<td>16</td>
<td>21</td>
</tr>
<tr>
<td>Nil to building</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Agriculture to building</td>
<td>7</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Industrial to Industrial</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Building to Industrial</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>None to Industrial</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Agriculture to Industrial</td>
<td>13</td>
<td>16</td>
<td>12</td>
<td>4</td>
<td>17</td>
<td>32</td>
<td>18</td>
<td>22</td>
<td>43</td>
<td>13</td>
</tr>
<tr>
<td>Agriculture to Agriculture</td>
<td>33</td>
<td>33</td>
<td>38</td>
<td>37</td>
<td>39</td>
<td>83</td>
<td>99</td>
<td>74</td>
<td>89</td>
<td>86</td>
</tr>
</tbody>
</table>

Source: Pontian land office

The land conversion shows an active activities following the demand created by the economic activities (refer Table 7.4).

8. Research Gap

Most journal articles that deal with resilience related studies focus on how each cities can withstand or resist from any potential threat to society, economy and environment. While much work has discussed how communities respond and react towards sudden natural catastrophes, such as hurricane, earthquakes or volcanic eruption, little of them discussed in depth the impact of rapid development of a city to the neighbouring district. This scenario is happening now in Pontian district. Therefore, it is essential to investigate how the communities adapt in term of their economy, social and physical environment.
9. Literature Review

Recently the word ‘resilience’ has been a popular word along with sustainability, particularly in the field of urban planning. It is not a new word or concept. The concept of resilience in the context of planning and urban design was actually borrowed from the study of how the ecological system can cope with the disturbances caused by the external factors and stresses (David & Welsh, 2004). Holling (1973) is the first who coined the word from the ecological perspective. Since then the notion of resilience has been extended and frequently redefined across disciplines.

Table 9.1: Definition of resilience in different discipline

<table>
<thead>
<tr>
<th>DISCIPLINE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGINEERING</td>
<td>As a design objective for buildings and infrastructure, it is the ability to absorb or avoid damage without suffering complete failure.</td>
</tr>
<tr>
<td>ECOLOGY</td>
<td>“a measure the persistence of systems and of their ability to absorb change and disturbance” while still continuing to function (Holling, 1973)</td>
</tr>
<tr>
<td>PSYCHOLOGY</td>
<td>“the process of adapting well in the face of adversity, trauma, tragedy, threats, or even significant sources of stress (American Psychology Association)</td>
</tr>
<tr>
<td>ORGANISATIONAL DEVELOPMENT</td>
<td>The ability to anticipate, prepare for, respond and adapt to events -both sudden shocks and gradual change (BSA, 2014)</td>
</tr>
<tr>
<td>COMMUNITY AND SOCIAL DEVELOPMENT</td>
<td>The ability of these social systems to “to sustain and advance their well being in the face of challenges to it” (Canadian Institute for Advanced Research 2013)</td>
</tr>
<tr>
<td>URBAN STUDIES &amp; GOVERNANCE</td>
<td>“a city become more able to respond to adverse events, and is overall better able to deliver basic functions in both good time and bad, to all populations (Rockefeller Foundation)</td>
</tr>
</tbody>
</table>

As highlighted by Folke, (2006), the early analysis of resilience as a research topic has started in late 1960s and early 1970s which was an understanding on how ecosystem responded to disturbances in term of evolutionary change (e.g. Holling, 1973), where the focus is on ecological resilience. Resilience come from the Latin ‘resilire’ which mean to leap back, rebound or recoil. Wilson (2010) highlighted the research of resilience in social ecological and social system started in the late 1970
and 1990 which marked the beginning how resilience seen as a boundary between natural and social sciences (Brand and Jax, 2007).

Figure 9.2: Topic related to resilience city.

The framework shown in Figure 9.2 are the topic that are related to resilience city. The group of topic that highlighted with yellow are the topic that will be explored further as it closely related to the problem of resilience face by community of Pontian due to stresses imposed by the development of Iskandar Malaysia.

9.1 Resilience Community

Resilience is a new concept which lately has been rapidly gaining ground in the societal development process, where this concept is in parallel to the idea of sustainable development (Kamarudin et al., 2014; Wilson, 2012). In general, research on social resilience is still new and many key questions still remain unanswered (Brand and Jax, 2007; Davidson, 2010). Debate on resilience is actually already there.
since 1973. Holling (1973) has built on concepts established in research on the resilience of ecosystem. Gunderson and Holling (2002) than Folke (2006) establish the understanding of resilience processes in interlinked social-ecological system. However the discussion on urban planning only been studied in the last two decades, when the risk of disasters in urban area become more eminent.

In the late 1990 and early 2000 reference towards social resilience is still in its early stages, and many key questions still remain unanswered (Brand and Jax, 2007; Davidson, 2010). The definition and explanation very wide and still in the area of conceptual. Little work exist on the possible interlinkages between a different forms of human and environment capital and community resilience. Folke (2006, p. 260) argued that the “efforts to understand the resilience of social-ecological system are still in an experimental stage and there is opportunity for creative approaches and perspectives”. However lately begin emerge definitions that are more measured and more practicable and realistic. This research will propose to examine on how a land use changes pattern and give its impact on social, economic and environment attributes of Pontian communities.

There are few factors either it internal or external forces found in various literature that can influence the community resilience, such as threats, stresses, shocks, perturbations, disasters, hazards, disruptions, and disturbances (Folke, 2006; Forbes et al., 2009; Magis, 2010). Rockefeller Foundation (2014) defined it as acute shock and chronic stresses. Acute shock is referring to unexpected event such as hurricane, flooding, terrorism, disease outbreak, etc. and chronic stresses referring to poverty, inequity, safety, transportation network, affordable housing, land use, environmental degradation, etc.

The study on community resilience will be based on the understanding of the equal value interlink concept brought by Wilson (2012). The vulnerability of the community measured by three interlink capitals and the concept of capital links resilience theory to economic, social and ecology (environment or natural) (Abel et al., 2006). Social capitals include political and cultural (Adger, 2000; Western et al., 2005; Kinzig et al., 2006; Magis, 2010). The definition extended to include non-monetized attributes at social network, interconnection of people, trust, institutional
and cultural that binds communities together (Fine, 2001; Bodin and Crona, 2008). It is become a benchmark for the ills of modern society (Bryant, 2005). Economic is the other notion of capital which mean material property (Bourdieu, 1987). Sociologist and geographers in particular have extended on Bourdieu’s notions of economic capital as the monetary value of the build environment in community, which in a sense, economic capital can also be converted to social capital and vice versa. And the last but not least the notion of environmental capital. This capital has been used largely by biologist, ecologist, anthropologist and human geographer to conceptualize human environment interaction linked to the sustainable use of natural resources for human consumption such as soil, water quality, and availability of forest resources for community (Costanza, 1992; Harte, 1995; Thompapillai and Uhlin, 1997; Forbes et al., 2009).

Interrelation among three major components of community development, according to Wilson (2010) has the potential to create different classification of resilience/vulnerability (refer to Figure 9.1)

![Figure 9.1: Community resilient and vulnerability measure using economic social and environmental capitals. Source: (Wilson, 2010).](image-url)
Figure 9.1 shows how community resilience and vulnerability has been conceptualized and the interaction based on the triangle of economic, social and environment capital.

As describe by Wilson (2010), the center core/core area, where there are balanced interception of economy, social, and environmental capitals of the communities, would represent strong resilience communities. As for communities with any two capitals which are well developed are considered as moderately resilient/vulnerable communities, while for communities with only one well-developed capital (or none) are categorized as weakly resilient or highly vulnerable communities. Costanza et al. (1997, 2014) on the other hand looking at different perspective by giving a different weightage where natural capital (environmental capital) that benefited human being have more weight followed by two other capitals.

The community resilience would be achieve through a community’s efforts in striking balanced focuses and actions in all three development components. A simple example can be used to clarify the mentioned statement: for a weakly resilient/highly vulnerable community, an issue might prolong if the community only focuses on one components, for example focusing on the local economic development but neglecting the environmental component. Acceleration of economic activities might increase the income and improve the financial standing of certain groups of people in the community, but in return they might pose threats towards the environmental resources and quality. A similar situation could happen if the community heavily emphasizes on protecting their environment by limiting agriculture activities and local industries using local natural resources, which in turn might increase economic vulnerability and weaken the financial capability of the community.

From the above understanding, a resilient community can be described as a community which is able to create and maintained the balance needs in environmental, social, and economic capitals. Balancing the needs of three components however is not without a challenge. Therefore, it is necessary for this study to understand characteristic of a community, in terms of the level of resilience and vulnerability, as these characteristic might directly influence the resilience attitude of the community (refer Table 9.2).
Table 9.2: Characteristic of Strong and Weak Capitals

<table>
<thead>
<tr>
<th>Capital</th>
<th>Characteristics of a Strong Capitals</th>
<th>Characteristics of a Weak Capitals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Capital</td>
<td>• Good economic wellbeing</td>
<td>• Living in poverty / debt ridden</td>
</tr>
<tr>
<td></td>
<td>• Diversified income stream (e.g. balance in primary, secondary, and tertiary sectors)</td>
<td>• Over-depending on agricultural or primary production</td>
</tr>
<tr>
<td></td>
<td>• Low dependency on external funds (e.g. subsidies, community aid programs, etc)</td>
<td>• Poor infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Diversified businesses</td>
<td>• High dependency on external funding</td>
</tr>
<tr>
<td></td>
<td>• Integration into the wider capitalist system</td>
<td>• Communities as net importers of food, goods, etc</td>
</tr>
<tr>
<td>Social capital</td>
<td>• Close interactions among people (i.e. established relationship among neighbour, tight-knit communities etc.)</td>
<td>• Migration of young people (i.e. ‘greying’ of rural communities)</td>
</tr>
<tr>
<td></td>
<td>• Ability to rely on neighbours at times of crisis</td>
<td>• Service desert</td>
</tr>
<tr>
<td></td>
<td>• Availability of skills training and education</td>
<td>• Lack of leadership</td>
</tr>
<tr>
<td></td>
<td>• Good health and sanitation</td>
<td>• Distrust among neighbours</td>
</tr>
<tr>
<td></td>
<td>• Availability of multiple services</td>
<td>• Lack of control over the destiny of the community</td>
</tr>
<tr>
<td></td>
<td>• Low levels of corruption</td>
<td>• High death rates and low life expectancy</td>
</tr>
<tr>
<td></td>
<td>• Good communication and interaction among stakeholder groups</td>
<td>• Poor communication among stakeholder group</td>
</tr>
<tr>
<td></td>
<td>• Female/religious minorities empowerment</td>
<td>• High levels of corruption</td>
</tr>
<tr>
<td></td>
<td>• Open-minded communities (i.e. ready to accept change)</td>
<td>• Female over-dependency; lack of self-determination through gender, ethnicity, or religion</td>
</tr>
<tr>
<td></td>
<td>• Good and transparent land ownership regulations and control over means of production</td>
<td>• Weak land ownership patterns (i.e. high level of tenancy and dependents farmers)</td>
</tr>
<tr>
<td></td>
<td>• Stakeholders in control of development trajectories</td>
<td>• General dissatisfaction with community’s pathways</td>
</tr>
<tr>
<td></td>
<td>• Strong governance structure at multiple geographical scales (i.e. demographic participation etc.)</td>
<td>• Poor public space management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Weak governance</td>
</tr>
<tr>
<td>Environmental capital</td>
<td>• High levels of biodiversity</td>
<td>• Soil degradation</td>
</tr>
<tr>
<td></td>
<td>• Good water quality and availability</td>
<td>• Desertification</td>
</tr>
<tr>
<td></td>
<td>• Sustainable soil management</td>
<td>• Salinization</td>
</tr>
<tr>
<td></td>
<td>• Predictable agricultural yields</td>
<td>• Poor water quality and availability</td>
</tr>
<tr>
<td></td>
<td>• Sustainable management of environmental resources in rural community</td>
<td>• Uncertainty over agricultural yields</td>
</tr>
<tr>
<td></td>
<td>• Localized energy supplies</td>
<td>• Peak oil and the inability of community to source energy locally</td>
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<td>• High carbon footprint</td>
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<td>• Multifunctional environmental resources</td>
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Source: [(Ekins et al., 2003; Lebel et al., 2006; Smit and Wandel, 2006; Parnwell, 2007; Chaskin, 2008; Cutter et al., 2008; Ostrom, 2009; Magis, 2010; Oudenhoven et al., 2010) in Wilson, 2012: 28-29]

The table presented the characteristic to differentiate between a strong and a weak community based on the understanding from environment, social, and economic capitals of the community. Environmental capital gives more emphasis on issues of pollutions and poor management of natural resources. Social capital, on the other
hand, highlights the need for self-development among the members of the community through training and education, for example acquiring appropriate skills and knowledge for the current situation and needs. The social capital of a community also encourage the maintenance of the relationship among the members of the community through participation in decision making processes, leadership and organizational structures as well as empowerment of minority/female group. And finally economic capital of a community generally stresses on the importance of maintaining the community’s financial stability through provision of jobs with more stable income, and diversification of economic activities. These factors in turn are expected to improve economic wellbeing of the people within the community. The understanding on these weak and strong capitals will become a guide to formulate the questionnaire to suite with all three type of community that will be measured.

**9.2 Economic Capital**

Economic capital can be define as monetary income and financial assets Bourdieu (1987). Adger (2000) define economic capital as economic well-being of a community key foundation. This definition was argued by Magis (2010) which referring economic capital as a financial resources available to be invested for business development in community. Where strong economic capital can be defined as available of funding which come from the high level of household and community income and well developed community infrastructure or well establish trade flows (Bardhan, 2006). The spread of global capitalism in nineteenth and twentieth century has make economic capital an important and greater indicator for community well-being (Gray, 2000; Carrier, 2004). Some critical commentator have argued as economic capital has become so important and have been overemphasize in the assessment of community resilience (Young et al., 2006).

Although a lot of economic development happening in Pontian since the inception of Iskandar Malaysia in 2006, the economic benefits to the community is not continuous as most of the development project in a form of “one off” kind of investment. Tanjung Bin Power Plant for example, at one time the total of workers that work on site exceed 6000 people, but when the project completed only few
numbers of professional required to work. Local community which is mostly fisherman and farmers cannot be able to work there except for the menial task as cleaners and security personnel. The same is happening in the industrial sectors. Where most of the workers are foreigners.

9.3 Social Capital

Social capital is known as the key fundamentals of community existence and usually describes base on how well community network are developed base on political, cultural and social (Coleman, 1988; Western et al., 2005). Added to that definition Magis (2010) was describing social capital

Social capital emerged in the 1980s as one of the key sociological foundations for community survival and generally describes how well social, political and cultural networks are developed in a community (Coleman, 1988; Western et al., 2005). Bourdieu (1987) defined social capital as capital mobilized through social networks and relations, while Magis (2010) argued that social capital refers to the ability and willingness of community members to participate in actions directed to community objectives, and to processes of engagement.

Indeed, many sociologists and geographers see well-developed social capital is the key ingredient for resilience communities, especially in the context of bonding (group cohesion), bridging (ties between groups), linking (vertical relationships), and capitals (e.g. Pretty and Ward, 2001; Magis 2010). Strong social ties, well establish trust and participatory, inclusive and democratic processes, are generally seen as key ingredients for strong social capital without which it is difficult for communities to thrive (Beierle and Cayford, 2002). Political capital may be the most contentious issues as the choice of strong indicators of political capital depends on the political background of the author. Johnston (1996) mentions that indicators linked to democratic processes, freedom of speech or participatory decision making, will be seen as less important than in democratic societies. Communities in Pontian which can be considered as 70% rural and 30% suburban, definitely will receive a mix impact in term of social capital. Some people will get new neighbour, some family
will have to move to other place, village will become small town, small town become bigger. The demographic composition will change, the management of political interest and needs of community will be different. Most journal articles who have studied the rural community find out that this type of communities will facing difficulties to adapt to change.

9.4 Environmental Capital

Environmental capital is the most recent type of capital enter the pantheon of capitals identified in the literature. It is self-evident that any community relies on a healthy environment for survival (Thampapillai and Uhlin, 1997; Magis 2010). Only since the threat of climate change has become globally prominent, and especially since research on complex interlink-ages between social-ecological system has highlighted that it is difficult to understand the resilience of human systems without acknowledging the importance of understanding environment processes affecting such resilience, has the notion of environmental capital been generally accepted as one of the three pillars of social resilience (Adger, 2000; Chaskin, 2008). Therefore there is increasing recognition that shifts between states in ecosystems are increasingly a consequence of human actions that cause erosion of resilience (Folke, 2006). While Magis (2010) argued that environmental capital is influenced by individual and collective human action, but also presents opportunities and constraints for communities. While environmental capital is also frequently referred to as natural capital or as ‘biocapacity’ that seeks to assess demand and supply of natural resources available to a community (Ekin et al., 2003; Ostrom, 2009). Maslow (1943) describe environment as the core variables linked to human survival needs. Gunderson and Holling, (2002; Folke, 2006) added that a healthy soils, water or resource availability or well managed land and environmental resources are the indicators that tend to resonate positively in all cultural settings.

Just to give a glance through the vast deposit of environmental or natural capital that belong to Pontian communities. Pontian is bless with the vast forest reserved. Three out of six RAMSAR site in Malaysia are located in Pontian. Two of them under the supervision of Johor National Park Cooperation (Tanjug Piai 326 hectares, Pulau
Kukup 647 hectares), and Sungai Pulai 9126 hectares under the supervision of Forestry department.

Community resilience and vulnerability can best be conceptualized on the basis of how well the economic, social and environmental capital are developed in a given community and how these capital interact (Wilson, 2012). Many authors and articles have emphasized that to understand community resilience, we must understand the complex relationship between individual, society and nature. Literature on sustainability has already highlighted the importance of economic, social and environmental processes as the three pillars of sustainability (Ekins et al., 2003; Ostrom, 2009). The understanding between the connection of social resilience and economic, and the relationship of social and environment has given a broader discussion about sustainability.

10. **Underpinning**

The underpinnings of this study area will be based on (1) Wilson (2010) measuring community resilience base on the level of vulnerability and interlinkages between economic, social and environmental capital. (2) LEDDRA (2011) cumulative methodology will be use to get a specific average score to each of the three capitals in each community, and an overall average for the three capitals could be establish.

11. **Scope of study**

The study will be conducted in Pontian district. The land use pattern change for the whole of Pontian will be examine to provide the understanding on how the development of Iskandar Malaysia give an impact to land use in Pontian for the last 10 years. To study the impact on communities of Pontian, the study will focuses on five sub-district namely Pengkalan Raja, Jeram Batu, Sungai Karang, Serkat and Air Masin. The three type of resident, fisherman, farmers and urban dwellers will received a different level of impact to the development of Iskandar Malaysia. These independent variable will be analyse by using questionnaires and interview.
The dependable variables that will be measured in relation to the level of impact are economic capital, social capital, and environmental capital. The value of high and low resilience score based on quantification of social, economic and environmental capital will then be analysed together with the value of land use pattern change to predict the projection of Pontian community resilience map in 2030.

12. Research Methodology

To measure the resiliency of Pontian communities, a method use by EU-funded LEDDRA Project (2010-2014). A list of questions as a proxy indicators, where this indicators is directly linked to measuring resilience addressing economic, social and environmental capitals will be use. The questionnaire will be based on key themes highlighted in the Table 9.2

The question will focus on variables that help identify key resilience issues of continuity, sources of innovation, threats and opportunities. As mention by Resilience Alliance (2007), most of the questions should be applicable in any research context assessing each community resilience and vulnerability (in the context of Pontian: Fisherman, farmers, urban dwellers).

The second step involving the quantification of resilience for each indicators for each community based on a ranking score from 0 which will be shown as the indication of high vulnerability, to 10 which will indicate of strong resilience. The same approach also been used by Gahin et al. (2003), Western et al. (2005), Thomalla and Klocker Larsen (2010), and Nurul Islam et al. (2011).

The 3rd step will be getting the specific average score which then be calculated for each of the three capitals in each community to establish overall average for the economic, social and environmental capital. (Refer Figure 12.1)
**Figure 12.1** Hypothetical example of two case study communities with high and low resilience scores based on quantification of social, economic and environmental capital (source: LEDDRA, 2011)

The quantitative approach is based on the assumption that the three capitals themselves are equal although they are likely to be based on different sets and numbers of questions and may operate on different temporal and spatial scale (Wilson, 2012). However these quantitative research approach for each community ensured that the quantitative community resilience score enough to get the levels of resiliency in each community.
LITERATURE REVIEW

COMMUNITY RESILIENT

COMMUNITY RESILIENT ECONOMY SOCIAL ENVIRONMENT

UNDERPINNING THEORIES

PONTIAN

FISHERMAN FARMERS URBAN DWELLERS

RESEARCH OBJECTIVES

1. To Investigate Land Use Pattern Change
   - Parameters
     - MDP Local Plan (2002-2015)
     - Pontian Land Office (Land Conversion)
   - Method of Analysis
     - GIS
     - SPSS (Descriptive Statistic)

2. To Evaluate the Impact
   - Parameters
     - LKIM Perikanan
     - Primary Data
     - Fisherman
     - Farmers
     - Urban Dwellers
   - Method of Analysis
     - SPSS (Linear Regression Impact Analysis)

3. Resilience Land Use Map
   - Parameters
     - Land Use Pattern
     - Level of Resilience
   - Method of Analysis
     - GIS, SPSS

Concept of Community Resilience Wilson (2012)
LEDDRA (2011)

Figure 12.2 Research Methodology
13. **Significance of Study**

The study will evidently show the impact of development of Iskandar Malaysia to land use and communities in Pontian. This study anticipate to find:

i. The drastic change of land use pattern in Pontian since the inception of Iskandar Malaysia in 2006

ii. The impact of land use change pattern to the fisherman, farmers and urban dwellers community in Pontian. It will shows the different level of resiliency from each community from the aspect of social, environment and economy.

iii. The projection of land use pattern in 2030 for Pontian if the trend will continue.

This study will eventually result to an important understanding between the development and the different level of resiliency in communities measured by social, economic and environmental capitals. The identification of land use change and the valuation of resiliency levels will lead to establishing the land use map at Pontian. The early identification of the relationship between the development of land use and the level of resiliency in communities will lead to assist the stake holders in decision making process, particularly in land management and policy innovation. The map will become a guide for sustainable land use planning and predict the direction of future development in Pontian district thus early measure can be made to reduce the chronic stress imposed to the community. The same analytical model may be applicable and use in other place as a measure to produce a resilience and sustainable development.

This might add a new boundary of knowledge into the application of land use planning. From Ecological understanding of resilience in early 1970st, than the application of resilience to Social-ecological and social system, and now resilience land use planning (map).
14. Research Schedule

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<td>7th International Conference &quot;Advancing Inclusive Rural Development and Transformation in a Challenging Environment&quot;</td>
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<td>Review of relevant literature</td>
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References:


Brand, F.S. and Jax, K. (2007) ‘Focusing the meaning(s) of resilience: resilience as a descriptive concept and a boundary object’ *Ecology and Society*, vol. 12, no. 1, article no. 23 (online) [www.ecologyandsociety.org/vol. 12/iss1/art 23/](http://www.ecologyandsociety.org/vol. 12/iss1/art 23/).


Davidson, D.J. (2010) ‘The applicability of the concept of resilience to social system: some sources of optimism and nagging doubts’, *Society and Natural Resources*, vol. 23, pp. 1135-1149


