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Sustainable Livelihood-Based Coastal Area Development Model in Surabaya Coastal City, Indonesia

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ABSTRACT
Multidimensional poverty that is closely related to the social, economical and environmental vulnerability remains happen among fisherman society as. This occurs among the fisherman society who live in coastal area of Surabaya city as well. Therefore, there should be effective effort in managing, allocating and utilizing resources available in the coastal area continuously. Such efforts should be done to reduce the poverty and vulnerability of fisherman community by using coastal area sustainble development model. This research uses differensial statistical method through Structural Equation Modelling (SEM) analysis. This analysis is conducted in three steps: path diagram, testing each variable, selecting input matrix and model estimation.The result showed that there were direct influences of sustainable livelihood assets toward coastal area development in Surabaya city.
Keywords: Fisherman's Poverty, sustainable livelihood approach (SLA), Structural Equation Modeling (SEM).

1. INTRODUCTION

Urbanization rapid process remains happens. It causes a half of world populations today are living and staying in the big cities and this remains happens in the developing countries (Li, 2003). Migration from village to city is the impact of different condition in terms of economy, social, politic, demography, geography, environment and the others (Sriwinarti, 2005).

One of the characteristics of urbanization happens in a big city is the enhancement of the number of citizens in the city coastal area since today, a half of world populations are living at 60 km from beach line and it is predicted will be multiple in around 30 years later (Li, 2003). The growth and development in the city coastal area will open some opportunities in terms of economy, social and culture. However, it is possible to lead into economy crisis and the damage of social relationship, the decreasing of traditional culture values that have been preserved since long time ago and many other matters (Cicin-Sain, 1998).

Smith and Doherty (2006) say that sub-urbanization in the city coastal area at least can cause two kinds of pressure: (1) 'direct' pressure occurs in life environment as the impact of coastal establishment, and (2) continuous pressure as the impact of developing city area like domestic nd industry wastes. Such pressure occurs in the city coastal area gives impact to the enhancement of poverty in the city coastal area since the parameter of poverty today is related to not only the income level but also the vulnerability and insecurity in which poor people are more socially, economically and environmentally vulnerable (Kulidwa, et al., 2008).

Poverty is a condition of material and social deprivation that causes an individual lives under feasible life, or a condition in which an individual undergoes relative deprivation compared to other individual in a society (Hall et al, 2004).

Multidimensional poverty and its relation to social vulnerability remain happen in fisherman community (Neiland and Bene, 2004), especially in fisherman or production-unit household level. This level is the smallest unit or level in a fisherman community system as the part of household population in coastal area.

Fisherman household is often known as those who live in crowded condition, with limited access to social services, low level of education, and do not have skill as well as main asset, especially land (Adrianto, 2007). Such conditions cause fisherman community is vulnerable to the attack of social, political and economic changes, as well as the fishermen's inability to counter capitalist intervention, the presence of stakeholder. Therefore, ultimately, poverty always becomes a trade mark to fishermen community (Razali, 2004).

Similar to the problem of resources management in coastal areas in Indonesia, Surabaya also has complex problems in its coastal areas (Bappeko Surabaya, 2011). Surabaya that is known as the center of industrial,

commercial and marine area, has important role in some parts of East Indonesia (Prihandrijanti and Firdayati, 2011) and becomes the center of orientation in East Java. Surabaya develops rapidly in terms of physical and social-economical contexts and gives some impacts to the coastal environment and fisherman community life. Fishermen in Surabaya are those who live in concerning prosperity level with slummy residence (Agriculture Department of Surabaya, 2012).

Seeing some problems occur in coastal area related to fisherman poverty and some pressures, the researchers here assume that there should be effective managing, allocating and utilizing resources in coastal area sustainably so that the vulnerability and insecurity of fisherman community can be reduced through a comprehensive model of developing coastal area the is able to accommodate all aspects related to sustainable livelihood capital and fisherman household access.

2. METHODOLOGY

This research was conducted in East coastal area of Surabaya (Pamurbaya) which is the main area of fisherman residence development with great potential of resources such as mangrove, embankment, poultry and eco-tourism facilities (Nugrahanti and Navastara, 2012).

Population of this research were 624 fishermen's households live in Pamurbaya area in Bulak Subdistrict, 142 households live in Mulyorejo, 50 households live in Sukolilo, 45 households live in Rungkut, 17 households in Gunung Anyar and 228 households in Kenjeran (Agriculture Department, Surabaya, 2012). Number of sample was determined by purposive sampling method was conducted by using purposive sampling. The amount of sample is an important thing in estimating and interpreting the result of Structural Equation Modeling (SEM). According to Ferdinand (2006), the appropriate amount of sample is around 100-200. If the sample is too large, for example it is more than 400, the method will be 'very sensitive' so that it will be difficult to get the well goodness of fit. Ferdinand (2006) also suggests that the minimum sample is 5 observations for every estimated parameter. The number of sample is similar to indicator multipled by 5-10. If we refer to Maximum Likelihood Estimation (ML), the number of sample comes from 34 indicators multipled 5, and thus the sample is around 170-200 respondents.

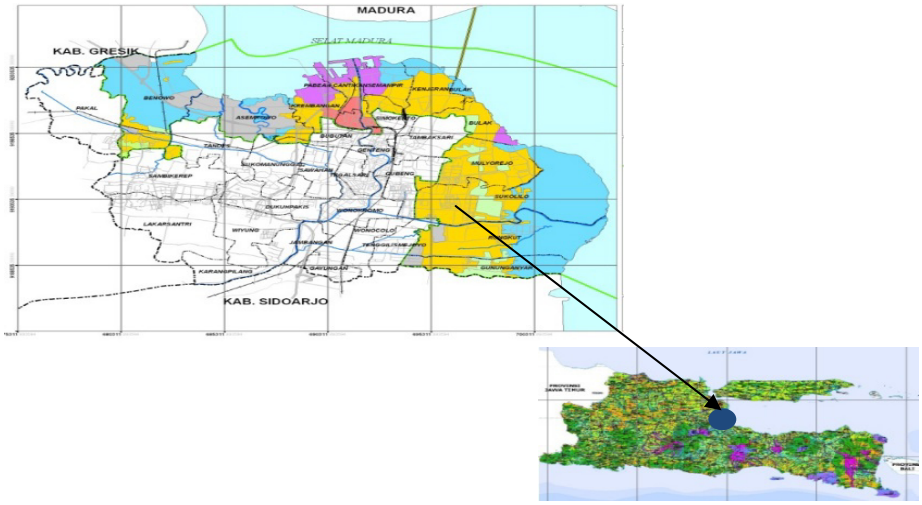

Figure 1. City Coastal Area of Surabaya
(Source: Bappeko Surabaya 2011)

Analysis and model of sustainable livelihood based- Surabaya coastal area of development use Structural Equation Modeling (SEM) that is a group of techniques in which the test of dependent and independent variables is possible to exist simultaneously (Ferdinand, 2006)

Development model is conducted by using theoretical approach. Theoretical approach aims at obtaining justification toward the developed concepts and thus the ultimate model obtained can be accounted and get scientific truth. Regarding this, literary review, exploration of research results are correlated each other and the experts' discussion is important to do.

Data analysis procedure is abreast with the following steps of forming structural equation model (Hair, 2006):

1)Test of path diagram

2)Test of each variable
3)Selecting input matrix and estimation model

3. RESULT AND DISCUSSION

There are seven aspects used to form a Sustainable Livelihood Approach (SLA) based-coastal area development model:

1) Sustainable Coastal Area Development (Y2)
Duhari (2003) writes that the indicators of sustainable development in managing sea- biodiversity resources should minimally involve 4 dimensions:
- Economy dimension
  Fishing sector contribution toward fisherman's family (Y2.1)
- Social dimension
  Work culture; (Y2.2
- Ecology dimension
  - ✓ It is related to the influence of activity in caoastal area toward coastal area ecosystem degradation; (Y2.3)
  - ✓ Influence of city development toward coastal area degradation (Y2.4)
- Governance dimension
  - ✓ It is related to the policy in coastal area; (Y2.5)
  - ✓ It is related to the policy transparation and society participation (Y2.6)

2) Asset/ Capital in Sustainable Livelihood Approach (SLA)
According to World Bank (Mukherjee et al., 2002), the study of factors that influence life dynamics of poor society can be focused on the pentagon asset of poor society households or accessible for them, they areL (a) poor household human resource, (b) nature resource asset, (c) financial asset, (d) physical asset, and (e) sosial asset.
- Human asset (X1)
  Refering to Claire's research (2005):
  - ✓ Education (X1.1)
  - ✓ Skill (X1.2)
- Social Media (X2)
  Refering to Muhammad (2012)
  - ✓ Culture/tradition/custom (X2.1)
  - ✓ Institutional (X2.2)
  - ✓ Kinship(X2.3)
- Nature Asset (X3)
  Refering to Rabbance (2012) and Claire, 2005)
  - ✓ Land ownership (X3.1)
  - ✓ Land capacity (X3.2)
  - ✓ Mangrove condition (X3.3)
  - ✓ Fishery productivity (X3.4)
- Financial Asset (X4)
  Refering to Claire (2005)
  - ✓ Income (X4.1)
  - ✓ Expenditure (X4.2)
  - ✓ Savings (X4.3)
  - ✓ Loan (X4.4)
- Physical Asset (X5)
  Refering to Claire (2005), Rabbance, 2012), and Baker *et al* (2004)
  - ✓ Availability of electric (X5.1)
  - ✓ Availability of clean water (X5.2)
  - ✓ Avalilability of telecomonication tools (X5.3)
  - ✓ Availability of Waste Collecting Area(X5.4)
  - ✓ Road condition (X5.5)
  - ✓ Drainage condition (X5.6)
  - ✓ Vailability of transportation facility (X5.7)

3) Access (Y1)
Society household empowerment in coping with poverty needs seven accesses (heptagon access) (Muhammad, 2012). In addition, according to Muhammad, heptagon access empowerment model is an implementation

expansion of pentagon assets empowerment model. In other words, poverty tackling is comprehensvely multidimensional and multilevels (Mukherjee, Hardjono and Carriere, World Bank, 2002).
The access variable refers to heptagon access empowerment model toward fisherman household in small scale in coping with poverty (Muhammad et al, 2007).

- Education access/ Human Resource (Y1.1)
- Natural access (Y1.2)
- Social access (Y1.3)
- Technology access (Y1.4)
- Capital access (Y1.5)
- Political policy access (Y1.6)
- Market access (Y1.7)

3.1. Confirmatory Factor Analysis

Confirmatory analysis aims at ensuring that the indicators are well used in defining the latent variable that is observed. Based on the confirmatory analysis endogen (Y) and ecsogen (X) variables, it can be obtained the following things:

a) Test of Endogen Variable (Y)

Bassed on probability value, it is explained that all indicators used have defined the latent variable of each indicator since it has smaller probability value than alpha used. From the probability value of research result, it shows that variable of fisherman's household access (Y1) has valid indicator and can form well access variable (Y1). It means that indicator of each variable of fisherman's household access is a proper indicator to measure the level of fisherman's household access.
Afterwards, variable of sustainable development of coastal area (Y2) has valid indicator and can form well the variable of coastal area sustainable development (Y2). Therefore, indicator of coastal area sustainable development assessment has defined the context of coastal area development.

b) Test of Ecsogen Variable (X)

Based on the probablitiy value, it is explained that all indicators used has defined the latent variable of each indicator since they have smaller value of probability that alpha used. The result of analysis showed that human asset variable (X1) has valid indicator and can form well the human asset indicator. In addition, social asset (X2), nature asset (X3), financial asset (X4) and physical asset (X5) variables have valid indicator and can form well each asset variable.

3.2. Analysis of Sustainable Livelihood Approach Based-Coastal Area Development Model

Sustainable development model of coastal area functions to measure the correlation among variables of Sustainable Livelihood Approach (SLA) toward poor fisherman's household access variable and sustainable livelihood based-coastal area development variable. In such correlation, it shows that there is correlated influence of SLA variable toward strategy of sustainable development of coastal area through structure transformation and processes. However, it is explained as well that in other side, there should be access of SLA variable to undergo transformation process into sustainable development of coastal area.

From figure 2, it is described that development of Surabaya coastal area is directly influenced by the five assets in sustainable livelihood approach such as human asset, social asset (X2), nature asset (X3), financial asset (X4) and physical asset (X5). It means that the better the five sustainblae livelihood assets the better development of Surabaya coastal area. The other away around, the worse the five sustainblae livelihood assets the worse development of Surabaya coastal area.

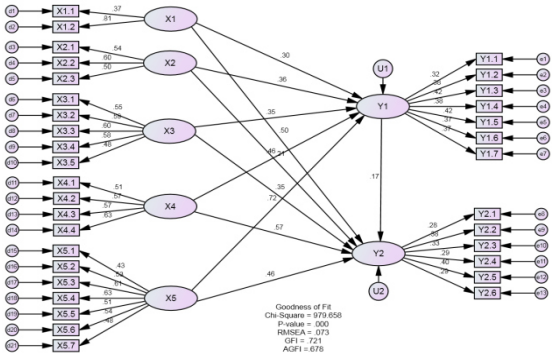

Figure 2. Path Diagram of Sustainable Livelihood Approach Based-Development of Coastal Area Model

Sustainable livelihood assets influence diretcly the fisherman's household access as well. Every asset directly influences the sustainable development of coastal area as well. Theoretical logical concept shows that human asset, social asset (X2), nature asset (X3), financial asset (X4) and physical asset (X5) can directly influence to be used in developing coastal area sustainbly, yet it should be remain sufficiently accessable toward fisherman's household in utilizing them. The analysis result has proven the theoretical concept in which the direct influence of sustainable livelihood assets toward coastal area development is similar to the direct influence of sustainable livelihood assets toward fisherman's household access. In other words, in influencing the development of coastal area, the sustainable livelihood assets are determined by the amount of fisherman's householnd acccess. Without good access, such assets will less support the sustainbale development of coastal area.

4. REFERENCES

Adrianto, L. 2007. Approach and Fishery Program Evaluation Methodology: Participatory Qualitative Modeling. Bogor: Study Center of Coastal and Naval Resources, Agriculture Institutoon of Bogor.

Agriculture Department of Surabaya. 2012. Profile of Fishery in Surabaya. Surabaya.

Cicin-Sain, Biliana. 1998. Announcement of the International Workshop on Coastal Megacities. Center for the Study of Marine Policy, University of Delaware.

Claire, Helen Quinn. 2005. Coping with Ecological Uncertainty in Semi-arid Tanzania: Livelihoods, Risks and Institutions', Ph.D thesis, University of New York. Supervisors: Dr Jon Lovett and Dr Meg Huby. New York.

Development and Planning Department of Surabaya. 2011. Strategic Plan of Surabaya Coastal Area. Surabaya.

Ferdinand, A. 2006. Structural Equation Modeling (SEM) in Management Research. Management Master Degree Program of Dipenogor University. Semarang.

Hall, Anthony and James Midgley. 2004. ocial Policy for Development. London : Sage Publications Ltd.

Kulindwa, Kassim., Kameri-Mbote, Patricia., Jennifer, Mohamed-Katerere., Chenje, Munyaradzi., and Sebukeera, Charles. 2008. The Human Dimension. Environment for Development. UNEP.

Li, Haiqing. 2003. Management of coastal mega-cities—a new challenge in the 21st century. Marine Policy 27 (2003) 333–337.

Muhammad, Sahri. 2012. Partnership Model of Coping with Poverty and Local Agreement: Social, Enviromental and Religious Approach. Malang : UB Press. Malang.

Mukherjee, N. J, Hardjono & Carriere. E. 2002. People, Poverty and Livelihoods: Links for Sustainable Poverty Reduction in Indonesia, The World Bank Office Jakarta DFID, Jakarta.

Neiland AE, and Bene C, editors. 2004. Poverty and small-scale fisheries in West Africa'. Dordrecht, Netherlands: Kluwer, Rome, Italy: FAO.

Nugrahanti, I. Mufida. and Navastara, Ardy Maulidy. 2012. Eco-tourism Based-Fisherman Residence development in East Coastal of Surabaya. Journal of Pomits Engineering Vol. 1, No. 1, 1-5.

Prihandrijanti, M. And Firdayati, M. 2011. Current Situation and considerations of Domestic Wastewater Treatment System for Big Cities in Indonesia (Case Study : Surabaya and Bandung)'. Journal of Water Sustainability, Vol. 1, Issue 2, 249-256.

Rabbanee, F. K.; Yasmin S., Haque, A, 2012. Women Involvement In Dry Fish Value Chain Approaches Towards Sustainable Livelihood, *Australian Journal of Business and Management Research* Vol.1 No.12 (42-58).

Razali, Ivan. 2004. Strategy of Coastal and Naval Society Empowerment. Journal of Social Welfare Science. Strategi. Medan Vol. 3, No.2, 61-118.

Smith, T and Doherty, M. 2006. The suburbanisation of coastal Australia. Paper prepared for the 2006 Australia State of the Environment Committee, Department of Environment and Heritage, Canberra.

Sriwinarti, Asih. 2005. Some General Characteristics of Six Big Cities Growth in Indonesia During 1980 – 2000. Journal of Development Economy and Developing Country Economy Study, page: 67 – 79.

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