Developing Water-related Tourism for Infrastructure and Economic Development:
Case study on Kali Banger, Semarang, Central Java, Indonesia

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Abstract

Kali Banger is a river located in the City of Semarang, Central Java, Indonesia. This project is a protection measures from river and oceanic tidal-flood by making polder system. This area was selected as a pilot of polder development, cooperation between Republic Indonesia and Dutch Government, in year 2003-2004 then has been carrying on several stages of development afterwards. The Operation and Maintenance (O&M) costs of polder system will require contribution from household (hh) of IDR 70,000/year/hh (=8.2 USD/year/hh) or IDR 6,000/month/hh (=0.7 USD/month/hh). The question of affordability arises from the figures that (a) 48% of population are below poverty line indicating 48% population having no budget for O&M except for daily sustenance, (b) 80% population works in informal sectors indicating irregular income hence risk of unstable supply for O&M costs, (c) only 8% population have degree from higher education confirming the two former conditions and indicating the barrier for entering the formal sector.

This research aims at (1) explaining the necessity to incorporate water-related tourism as an economic generator in water-based infrastructure development, (2) how to utilize the existing system to reach the designed condition, and (3) the important principles of this sort of strategy. Methodology being used is policy analysis combined with Local Economic Development (LED) analysis.

Research finds, in general, that (1) water-related tourism (water-based attractions incorporated with products from small medium enterprises) can draw investment hence giving bigger opportunity to increase affordability to finance infrastructure, (2) the system of Kelompok Swadaya Masyarakat (Self-Sufficient Community Group) and Badan Keswadayaan Masyarakat (Self-Sufficient Community Board) are able to be used as tools to create institutional framework for integrating environmental protection (river quality)-infrastructure (polder)-economic development (household saving and O&M costs), (3) integrating of all developmental sectors into single management is key principle to lead community, governmental, private towards the balance of economic and development.

Keywords: tourism, water, community, finance, infrastructure

1. Polder Development to Solve Flooding

Semarang is a waterfront city that experienced flooding problems due to land subsidence of coastal areas and the rise in sea water level; damages and economic losses are occured following daily flood and inundation.

The idea to build an urban polder system (Figure 2) in Semarang as a pilot project was the result of cooperation between Indonesia and the Netherlands; several objectives consisted of (i) the exchange of knowledge at a high level, (ii) adaptation of technology and methodology of the Dutch version through the provision of stimulant activity, (iii) the implementation of Integrated Water Management and Flood Control Models in urban context.
Figure 1. Drainage Systems Division of Semarang
(Sources: Anonymous)\(^1\)

Figure 2. Banger-Polder Area boundary (in north of central Semarang system)
(Sources: Joint Working Group, March 2009)\(^2\)

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\(^2\) Joint Working Group, March 2009 (d), P. 3
Solutions being offered were in the form of structural solutions (technologies)\(^3\) and non-structural (spatial)\(^4\); the implementation was planned according some stages due to the need to optimize certain dynamic factors (knowledge, financial, institutional). The successful development and management of polders requires community involvement, sustainability management systems flood protection and water management; those can only be achieved if communities living in the polders has a good support and participation enabling various programs to work properly.\(^5\) The Polder organisation needs commitment from the government, settlers, as well as property owners in the polder area. Polder Board will play a crucial role in the structure of the organization.\(^6\)

2. The Reasons for Local Economic Development (LED)

**Municipality’s limited financing capacity.** The municipality of Semarang was only able to finance 32.5% of the total construction cost\(^7\)\(^8\). The minimum scenario of O&M phase was IDR 322 million/year or 0.3 billion/year and the maximum scenario was IDR 1.5 billion/year\(^9\)\(^10\). Ratio of O&M’s cost of 1 polder to Municipality’s capability for 1 polder construction is between 1%-3%. Although it appears to be possible for Municipality to spend money on O&M cost but if another polder, outside Banger polder, has to be built then the O&M cost of the former polder (Banger polder) will have no support from Municipality due to simultaneous financing difficulty. This view is supported by (i) the fact that at the same time there was a Kali Semarang polder funded by Japan Bank for International Cooperation (JBIC) at the west side of Banger polder and (ii) the future need to build 5 polders at Pekalongan\(^11\). Although flood protection steps have been implemented but there remains a risk of flooding and inundation (IDR 40.24 billion)\(^12\) which lesser the chance for Municipality’s budget as the only source for financing O&M stage.

**Banger-community’s low income level\(^3\)**. World Bank determined that the income to USD 1 per person/day is categorized poor, the USD 2 per person/day is considered vulnerable to poverty. Based on the assumption that there are 4 people per household\(^14\) and the exchange rate of IDR 9,200 per USD then the poverty line would be worth the IDR 1.1 million and the line of vulnerable to poverty will be worth IDR 2.2 million. This determination will produce a picture that

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\(^3\)Various of solutions include: the construction of ponds, polders, and Dam offshore (DLP). See: Anonim, 12 Februari 2009, "Hasil Pertemuan Tim Rob sebranmas dengan Balai Sungai-Puslitbang Sumber Daya Air", -, Setbalitbang, Jakarta: Sebranmas.

\(^4\) Greening and water attractions; See: Ibid.


\(^7\) The shares were 35% Dutch Government, 32.5% Provincial Government of Semarang , and 32.5% Municipality of Semarang.

\(^8\) http://www.suaramerdeka.com/smcetak/index.php?fuseaction=beritacetak.detailberitacetak&id_beritacetak=72531

\(^9\) Total construction cost of Banger Pilot polder was IDR75.6 billion. The municipality’s financial capacity for the stage of construction 32.5% of IDR 75.6 billion is equal to 56 billion.


\(^12\) http://suaramerdeka.com/v1/index.php/read/news/2010/12/10/72689


\(^14\) Ibid., page 10.

These 4 people are assumed to have an income
on average 48% of the population in the area Banger categorized as poor while 38% are vulnerable to poverty. (Table 1)

If it is assumed that the financing of the O&M phase is charged at the household as a single contributors, then the total contribution per household will be around IDR. 70,000/year\(^{15}\) or IDR 6,000/month; it is equal to 0.5% of the poor household’s monthly income or 0.3% of the vulnerable household’s monthly income. The Municipality’s Minimum Wage (MMW/UMK\(^{17}\)) of Semarang at year 2008 was IDR 715,700\(^{18}\); this indicates that there is a possibility of larger poor/vulnerable households to exist (>86%) implying that the proposed polder tax (8% of MMW) could possibly not be affordabled as expected.

Most of population are graduates of elementary schools, junior high schools, and secondary schools, only 8% of residents who graduated from higher education/ university\(^{19}\) (Figure 3). Almost 80% population are in informal sectors\(^{20}\) (Figure 4); comparing MMW with education and professions profiles could also indicate that Banger community is indicated with risk of unstable financing for O&M costs.

<table>
<thead>
<tr>
<th>Kelurahan</th>
<th>households</th>
<th>&lt; IDR 1.000.000</th>
<th>IDR 1.000.000-2.000.000</th>
<th>&gt; IDR 2.000.000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[#]</td>
<td>[%]</td>
<td>[#]</td>
<td>[%]</td>
</tr>
<tr>
<td>Kemijen</td>
<td>3,382</td>
<td>879 26%</td>
<td>2164 64%</td>
<td>338 10%</td>
</tr>
<tr>
<td>Rejomulyo</td>
<td>1,003</td>
<td>471 47%</td>
<td>331 33%</td>
<td>201 20%</td>
</tr>
<tr>
<td>Matiharjo</td>
<td>1,548</td>
<td>1223 79%</td>
<td>232 15%</td>
<td>93 6%</td>
</tr>
<tr>
<td>Matibaru</td>
<td>2,087</td>
<td>1607 77%</td>
<td>313 15%</td>
<td>167 8%</td>
</tr>
<tr>
<td>Bugangan</td>
<td>2,342</td>
<td>1382 59%</td>
<td>773 33%</td>
<td>187 8%</td>
</tr>
<tr>
<td>Kebon Agung</td>
<td>1,224</td>
<td>857 70%</td>
<td>367 30%</td>
<td>0 0%</td>
</tr>
<tr>
<td>Sarirejo</td>
<td>2,603</td>
<td>989 38%</td>
<td>1302 50%</td>
<td>312 12%</td>
</tr>
<tr>
<td>Rejosari</td>
<td>4,659</td>
<td>1957 42%</td>
<td>2003 43%</td>
<td>699 15%</td>
</tr>
<tr>
<td>Karangturi</td>
<td>904</td>
<td>606 67%</td>
<td>298 33%</td>
<td>0 0%</td>
</tr>
<tr>
<td>Karang Tempel</td>
<td>1,408</td>
<td>253 18%</td>
<td>324 23%</td>
<td>831 59%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21,160</strong></td>
<td><strong>10224 48,32%</strong></td>
<td><strong>8108 38,32%</strong></td>
<td><strong>2828 13,36%</strong></td>
</tr>
</tbody>
</table>

(Sources: Survey 2007)\(^{21}\)

\(^{15}\) This amount is based on the O&M cost of IDR 1.5 billion/year.
Herman Mondeel, 5 Maret 2009, Development Banger Pilot Polder Semarang, slide 35, Semarang: Witteven+Bos.

\(^{16}\) WTP (Affected Residents)= Rp. 1,100,-/month; WTP low due to public mistrust of the success of the project so that people tend to take action on an individual basis rather than collective measures. ATP is assumed to be 25% of family income. See: Anonym, 25 Sept 2008, Summary ESA Report: Identification of Environmental and Social Impacts, Development Pilot Polder Semarang and Guideline Polder Development, P. 49

\(^{17}\) UMK stands for Upah Minimum Kota

\(^{18}\) http://regionalinvestment.com/newsipid/ekonomiumrd.php?ia=3374&is=45

\(^{19}\) Anonim, 25 Sept 2008, Summary ESA Report: Identification of Environmental and Social Impacts,
Development Pilot Polder Semarang and Guideline Polder Development, P. 12, Jakarta: Witteveen+Bos Indonesia


The Municipality of Semarang - as an entrepreneur, coordinator, facilitator, and stimulator\textsuperscript{22} - has not yet established a framework for a comprehensive and integrated development enabling Banger Pilot Polder to optimize its potentiality towards a level which self-reliance\textsuperscript{23} is possible. The sustainability of Banger polder will depend on the availability of the budget for O&M tasks and the ability of create financial sources outside governmental scheme. For Banger polder organisation to have entrepreneurship and good managerial capability then Banger community has to make initiatives and collaborative works to create structure and behavior which dynamically adaptive to any changing situations. This kind of strategy is better pursuit by Local Economic Development (LED).

**LED and poverty alleviation.** The Partnerships for Local Economic Development Project (Kemitraan Pembangunan Ekonomi Lokal:\textsuperscript{24} KPEL) was jointly developed by the UNDP and UN-HABITAT in consultation with the National Development Planning Agency (BAPPENAS) to respond to the growing poverty resulting from the financial crisis in 1997. The project was implemented from 1998-2004 with a piloting phase, followed by replication that continued through the end of the project. The National Planning Agency has until recently continued this replication, but limited funds have constrained further scale-up. Although there is no clear definition, Local Economic Development (LED) is generally defined as a strategy to promote economic opportunities and growth at the sub-national level by addressing constraints and

\textsuperscript{22} Role of Local Governments in the process of regional economic development include (1) entrepreneur: responsible for running a business especially economically manage local assets, (2) coordinator: acting as a coordinator to establish a policy or proposed strategies for development in the region, (3) facilitator: acting as a facilitator to speed up development through environmental improvement in the area, and (4) stimulator: acting as an incentive for the creation and enterprise development through specific actions that will affect the companies to enter the area.


\textsuperscript{23} Economic independence is an important thing to be learned from the economic crisis Indonesia in 1997, which is "economic development is not based on the strength of its own, but relies on debt and imports, was very susceptible to changes in external factors and bring the State into a prolonged crisis." See Amran Husen, "Strategi Penguatan Usaha Mikro, Kecil, dan Menengah" dalam Ahmad Erani Yustika, Juli 2005, Op. Cit., page 39.

\textsuperscript{24} Owais Parray & Abdurrahman Syebubakar, Poverty Reduction through Local Economic Development: “Pathway out of Poverty” in Indonesia, page 1-2,\textsuperscript{\textsuperscript{-1}}

Israel Jacob Massuanganhe, 2008, Capacity Building For Integrated Rural Development Systems And Local Economic Development In Least Developed Countries: The New Inclusive Rural Development Paradigm Based On Experiences And Practices page 26-27, Mozambique : UNCDF in cooperation with UNDP.
improving the overall business environment to encourage entrepreneurial behaviour and investments. The interventions to promote LED can therefore take various forms and its scope depends largely on the context.

Similar LED concept received by Banger community was Program Nasional Pemberdayaan Masyarakat “Mandiri”\(^\text{25}\) (National Community-Empowerment Program, NCEP) which used soft loans as a stimulant for income improvement and poverty alleviation. One of NCEP program called Program Penanggulangan Kemiskinan di Perkotaan (Urban Poverty-Alleviation Program, UPAP) uses Badan Keswadayaan Masyarakat (Self-Supporting Community Board, SSCB) or Lembaga Keswadayaan Masyarakat (Self-Supporting Organisation, SSO)\(^\text{26}\) as a coordinator of all NCEP programs. Unit Pengelola Keuangan (Financial Management Unit, FMU) is a direct implementing unit, under SSO, which lending the loans to Kelompok Swadaya Masyarakat (Self-Sufficient Community Group, SSCG).\(^\text{27}\)

3. Water-related Tourism and SME as Economic Generators

"Concepts and development. The particular-feature unique to Banger polder would be the potentiality of tourism along with Small Medium Enterprises (SME/Usaha Kecil Menengah) development. The SME was given supports by NCEP/UPAP but still reached a less significant achievement in term of sustainable financial source for O&M stage.

*Kali Banger* Festival, a river-related tourism activity, could have bigger opportunity to be improved as a significant financial source; in year 2006, it was covered by the 6 TV media which later made Banger had grants enabling to build 500 m dikes.\(^\text{28}\) *Kali Banger* Festival II held from August 19\(^\text{th}\)- 29\(^\text{th}\) year 2007 consisted of boat races and batik exhibition which later attracted Hoogheemraadschap van Schieland en de Krimpenerwaard (HHSK) of Rotterdam, the Netherlands, convincing HHSK to give some grants for this event. *Kali Banger* Festival III held from August 1\(^\text{st}\)- September 30\(^\text{th}\) year 2008 exhibited local products by distributing the outlets to every Rukun Warga (neighbourhood board). *Kali Banger* Festival IV held from October 29\(^\text{th}\) – November 1\(^\text{st}\) year 2009 consisted of ornamental boats competition, boat races, SME exhibitions, green&clean environment competitions.\(^\text{29}\)

![Composting](image1.png) ![Ornamental Plant Cultivation](image2.png) ![Reuse-textile doormat](image3.png) ![Reuse-plactic bag](image4.png)

**Figure 5.** Variety Production of Souvenirs from Banger Polder Community

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26 Ibid., page 51.


29 Ibid., page 1-2
Future Development. Focused-Group Discussion (FGD) on Urban Polder Guidelines was held on November 19th year 2009 disseminating certain findings on how local economic can benefit from Banger potentialities. Background studies for this stakeholders meeting consisted of several propositions: (1) financing O & M of Banger Polder (IDR 70,000/year/household) could still vulnerable to swelling due instable household’s income, and potentiality of flooding/inundation31, (2) the fact that 48% of the population Banger was poor,(3) 80% of the population worked for informal sector, (4) there were groups initiatives, members of the Temporary Polder Board12, to create alternative financing sources through (i) Kali Banger Festival, (ii) community empowerment through the processing of plastic waste, (iii) composting, and (iv) souvenirs from recycle/ reuse material.

Despite of current success achieved by Kali Banger Festival, there is no really future plan enabling Banger community to upscale the positive impacts on financial capacity at the expected rate. It is therefore to maintain the former achievements and to deal with O&M cost then a plan has to be built as a direction where development scenarios are referred to. Tourism documented-policy analysis33 showed that Kali Banger Festival and other local-group initiatives related to it were in accordance each other:

i. Banger Polder Area is located in the WP I (Development Area I) which is allocated for commercial activities of business, public service centers serving as development centers of North Semarang as well as Tourism Business District (TBD) consisting attractions and tourist accommodation, particularly the urban tourism (with typical culinary and cultural of Semarang);(Figure 7)

ii. The directions for Banger tourism development are (i) Community Based Tourism (tourism based on the activity/ potency of communities), (ii) Edutainment Tourism (tourism based on educational activities and entertainment), (iii) Tourism Business District (urban tourism with the central business district) with the main character culinary tourism, art appreciation, and recreational tours of the city.(Figure 8)

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30 Petrus Puji Sarwono and Dwi Ratih Sartika, 2009, Membidik Potensi Wisata Banger Pilot Polder, slide 12-13, Semarang: -
32 Petrus Puji Sarwono and Dwi Ratih Sartika
It signifies that for short-medium term period then incorporating Kali Banger Festival into Tourism Master Plan should be a strategic step (Table 3). Taking this step means tourism activities are justified by legal policy-document which later could attract more investments as indicated by support from *Asosiasi Perusahaan Perjalanan Wisata Indonesia* (Indonesia Association for Tourism Travel Bureau) who attended the FGD.

As explained in Table 3, there are several other types of tourism having potentiality to be developed further (city recreation and culinary). It is also found that market segmentation (age and profession) are important due to correlation between each tourism programs with the specific type of segments. By detailing the professions involved could be a prospective way to draw public and private funds since those professions are distributed in public/private sectors. Moreover, all the actions will lead to self-supporting community for Banger Polder development enhancing environmental protection (river quality), infrastructure (polder), and economic development (household saving and O&M costs).

**Table 3. Matrix of Economic Potentialities as Business Unit Program in Area Polder Banger**

<table>
<thead>
<tr>
<th>Types of Tourism</th>
<th>Business Unit</th>
<th>Program</th>
<th>Market Target</th>
<th>Profession</th>
</tr>
</thead>
</table>
| Community Based Tourism| Composting:                | · Organic fertilizer  
                              |                      |                                                                 |
|                        | · Liquid fertilizer         | Composting, marketing, sales                                           | 18-55 years old     | Household wife, student, informal sector, entrepreneur |
|                        | Reuse                      | Small Medium Enterprise, marketing, sales, training, modeling           | 12-65 years old     | Household wife, student, informal sector, entrepreneur, etc |
|                        | Trading Waste              | Buy waste from society                                                  | 18-55 years old     | Household wife, student, informal sector, merchant |
| Waterfront Area:       | · Planting Jatropha        | · Planting & cultivation Jatropha                                       | 12-65 years old     | Household wife, student, informal sector, employee, entrepreneur |
|                        | · Producing vegetable oil  | · Small Medium Enterprise, marketing, sales, training                   |                     |                                                 |

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34 Miya Irawati, 2009, slide 6, Jakarta: Sebranmas-Ministry of Public Works of Indonesia
<table>
<thead>
<tr>
<th>Retention pond</th>
<th>Fishing competition, fish farming training, marketing, sales</th>
<th>12-65 years old</th>
<th>Student, informal sector, merchant, entrepreneur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Appreciation</td>
<td>Banger Festival</td>
<td>cultural &amp; art performances, race boat, ornamental boat competition</td>
<td>All ages</td>
</tr>
<tr>
<td>City recreation</td>
<td>Water tourism</td>
<td>Rent water bike, fishing, water bike race, water tour</td>
<td>All ages</td>
</tr>
<tr>
<td>Fishing pond</td>
<td>Fishing competition</td>
<td>12-65 years old</td>
<td>Student, informal sector, employee, entrepreneur, etc</td>
</tr>
<tr>
<td>Promenade</td>
<td>Public space for society, art installation</td>
<td>All ages</td>
<td>All</td>
</tr>
<tr>
<td>Culinary</td>
<td>Fishing pond</td>
<td>Restaurant</td>
<td>All ages</td>
</tr>
</tbody>
</table>

(Source: Miya Irawati, 2009) 35 36

### 4. Conclusions

Research finds, in general, that (1) water-related tourism (water-based attractions incorporated with SME’s products) can draw investment hence giving bigger opportunity to increase affordability to finance infrastructure, (2) the system of Badan Keswadayaan Masyarakat (Self-Supporting Community Board, SSCLB) or Lembaga Keswadayaan Masyarakat (Self-Supporting Organisation, SSO) and Kelompok Swadaya Masyarakat (Self-Supporting Community Group) are able to be used as tools to create institutional framework for integrating environmental protection (river quality)-infrastructure (polder)-economic development (household saving and O&M costs), (3) integrating of all developmental sectors into single management is key principle to lead community, governmental, private towards the balance of economic and development.

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Herman Mondeel, (13 Agustus 2008), SIA Results for EIA Report, page 3, Jakarta: Witteveen+Bos Indonesia Joint Working Group, (March 2009), Jakarta

35 Miya Irawati, 2009, slide 20-24, Jakarta: Sebranmas-Ministry of Public Works of Indonesia
36 Miya Irawati, 2009, Penetapan Potensi Ekonomi, slide 12, Jakarta: Sebranmas.


Mohamad Wahyudi, (Juli 2005), ”Ketahanan Ekonomi, Daya Saing Daerah, dan Pasar Bebas” dalam Ahmad Eriani Yustika, p 95


