Journal of Coastal Development ISSN: 1410-5217
Volume 6, Number 1, October 2002 : 55-64 Accredited: 69/Dikti/Kep/2000

Original paper

WILL CO-MANAGEMENT APPROACH BRING A GOOD PROSPECT FOR BABON RIVER MANAGEMENT IN SEMARANG, CENTRAL JAVA-INDONESIA? [1]

By: Indah Susilowati [*)]
The Faculty of Economics, Diponegoro University, Jl. Erlangga Tengah 17 Semarang 50241-Indonesia

Received: September 10, 2002 ; Accepted: September 28, 2002

ABSTRACT

Semarang Municipality is passed by Babon river in the Eastern part. This river flows from Ungaran in Semarang Regency at the upper-stream and streams down to Java sea in Demak Regency.This river is utilised by various parties for multi-purposes. Thus, to manage Babon river and its watershed need coordination among the stakeholders. In this case, community as one of the competent stakeholders is considered as the most important role player who determine the success of sustainable river management.

Babon river passes Semarang City longer than Semarang and Demak regencies. It seems when the stakeholders of Semarang pay more attention to Babon river will harvest more benefits compared to its costs. It indeed needs sharing in responsibility and understanding among the stakeholders along the watershed of Babon river. Collaborations between G to G (such as Germany and Indonesia) and Local Government (LG) to LG are seriously needed to support the success of the river management. Nevertheless, many efforts have been made on it. As mentioned by Lilin (2000), the existing participation contributed by community and key-persons along the Babon watershed in Semarang City were relatively low. The preliminary survey indicated that introducing co-management approach among the stakeholders in managing Babon river will provide a good prospect in the future. Many evidences have shown the success of co-management approach in managing natural resources in the third world countries in Asia, Africa and the developed ones.

Babon river is a common resource, open-access to any parties and transboundary along three regions, thereby, need protocol concept to achieve the optimal management. What are the priority and how co-management should be implemented in Babon river are not easy questions but subject to further research.

Key words: Co-management, participation, Stakeholders, Babon River, Semarang, Indonesia.

[*)] **Correspondence**: Tel:62-24-8442273; Fax:62-24-8449212; E-mail: indah-susilowati@rocketmail.com

INTRODUCTION

There was no significant evidence of success in coordinating the stakeholders in maintaining environment attained by Bappedal so far. In fact, one of the main tasks of The Environmental Impact Management Agency at local level *(Bapedalda)* is to coordinate the relevant parties/institutions in environmental impact surveillance. This is perhaps caused by many reasons, such as improper approach used in

[1] *An earlier version of this paper was presented in International Conference of Southeast Asian Natural Resources and Environmental Management (SANREM) in Sabah-Malaysia, organised by Universiti Malaysia Sabah, 17-20 October 2002.*

management action. Top-down approach dominated management style for almost all state institutions in their governance system rather than bottom up approach, including in the context of Babon river management.

Bappedalda Semarang City in 1999 conducted pollution assessment for Babon river. It was found that BOD, COD and DO of Babon river were increasing and exceeding the minimum standard in 1999. The BOD ranged between 18.98 – 80.28 mg/l, while the DO about 2.20 – 3.80 mg/l. Water temperature was between 30-33 °C. In the other hand, awareness of several stakeholders in maintaining Babon river seemed to be low and less social control towards the resources. As consequence, the collaboration between industrial parties with community and the government are less effective in contributing to efforts for river management and conservation of the environment. Many industries are located along the Babon river stream. Because of that, Babon river is potentially high in pollution. In order to achieve the goals of clean river program (prokasih), thus clean-production program should be imposed to the business activities along the river. In comply to this requirement then awareness among the stakeholders to conserve the river is highly stipulated. In fact, it is often found that people are not friendly toward the environment while doing their daily activities. In addition, river in Indonesia is used for multi-purposes and multi-function. Moreover, people in this country have image that river is a place for the last destination to dispose the unused things. Therefore, the phenomenon referred by Lucas and Arief (2000), i.e. when the dog is dead it will be thrown in the river, as in Babon river.

The problems faced by this study is mostly due to low in people's and other stakeholders' participation in managing the Babon river and its watershed toward green environment. The study seeks several answers of the research questions, among others are: (1) whether co-management approach has good prospects to manage the Babon river; and (2) what kinds of strategy should be formulated to empower the stakeholders for managing the Babon river in the study area.It should be noted that the previous researchers (Pomeroy and William, 1994; Pomeroy, 1993; Nik, 1998; Susilowati, 1999 and 2001a;2001b) claimed that co-management approach is considered as a good approach to manage the competent stakeholders in resources management.

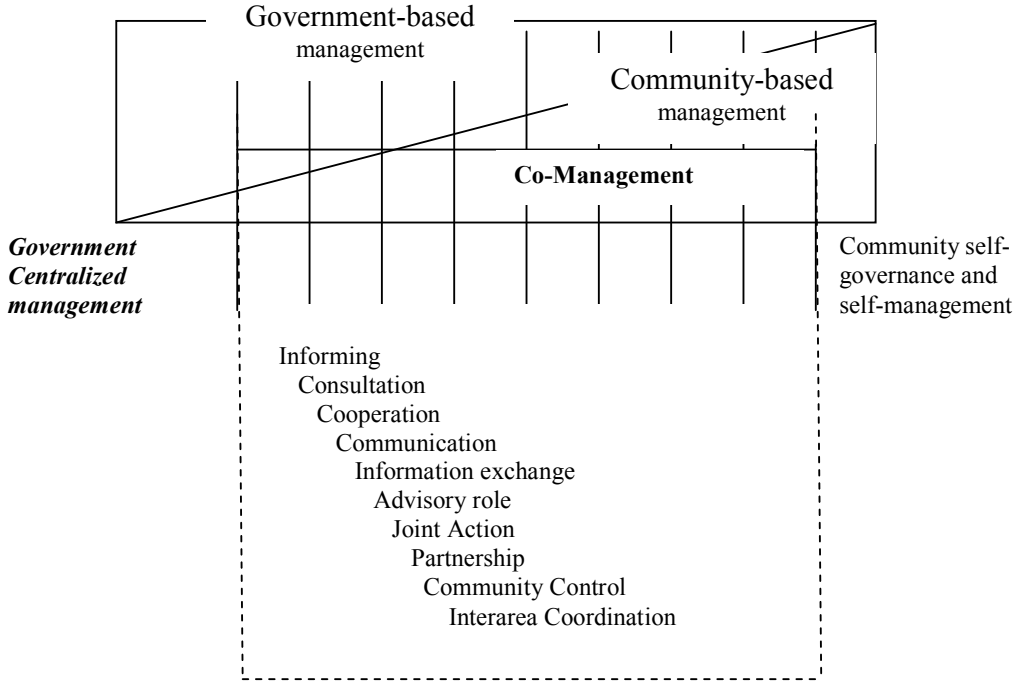
MATERIALS AND METHODS

Study Area and Sample: Selection of the study areas was arrived at after pre-survey and discussions with the competent people. Locations of the study were Rowosari village (upper-stream); village of Penggaron Kidul (middle-stream) and Banjardowo village (down-stream) by using multistages sampling method. There were 120 respondents taken from 40 household samples for each location. In order to identify problems, suggestions, aspirations, and other relevant information, then interview with key-persons in the study area and Focus Group Discussion (FGD) with the competent stakeholders were also employed. In order to provide alertness for the used enumerators, then training was given to all enumerators before they undertook survey which was supervised directly by the researcher. A standardized questionnaire was used to guide the data collection.

Data: Data from field survey is considered as the main materials for analysis in the study. Moreover, informal discussion with key-persons, and focus group discussion (FGD) with the competent persons in the study areas were also done to get the necessary information for analysis. The secondary data were also collected from the concerned institutions (Bappedalda, Irrigation Office, Central Bureau of Statistics, and the Provincial Government Offices) and some other various related references.

Tools of Analysis: In order to explore the prospect of Co-Management approach in managing Babon river in Semarang

Municipality, a research framework outlined by Pomeroy dan Williams (1994) was applied to identify the hierarchy of co-management level. Prospect of Co-management was analysed by using the key conditions suggested by Ostrom (1990, 1992) and Pinkerton (1989) with modification accordingly. .



Source : Pomeroy dan Williams, 1994
Figure 1 : Hierarchy of Co-managemet

RESULTS AND DISCUSSION

The Utilisation of River

Babon river has been utilised by many parties for multi-purposes, from disposing garbages, discharging industrial waste, washing, bathing, irrigation and even taping for raw drinking water of Semarang city. Utilisation of Babon river as perceived by respondents is shown in Table 1.

Table 1. Utilisation and Dependency of Community Towards Babon River

Utilisation Pattern of Babon River	Up stream (%)	Middle stream (%)	Down stream (%)	Notes

ISSN: 1410-5217
Accredited: 69/Dikti/Kep/2000

	N = 40	N = 40	N = 40	
	(%)	(%)	(%)	
For waste disposal	35.0	67.5	51.2	
For drinking water	2.5	0.0	2.4	
For washing, bathing	47.5	10.0	14.6	
For irrigation	7.5	0.0	14.6	
For washing buffalo, cow,sheep, etc.	0.0	2.5	0.0	
Others	7.5	20.0	17.1	- Sand mining (under C classification) - Fisheries - producing brick
Level of dependency *	High	Low	Moderate	

*) : based on researcher and key-persons judgement.
Source: Primary data, processed in 2000.

About 70% of respondents in upper-stream perceived that Babon will sustain their utilisation in the long term. Attitudes of people in this area tend to be more environmentally friendly than community in middle- and more particularly in down-streams. If exploitation of Babon river remains the same as of now, then only 20% of respondents in down-stream perceived that Babon river will be sustainable to meet their needs as shown in Figure 2.

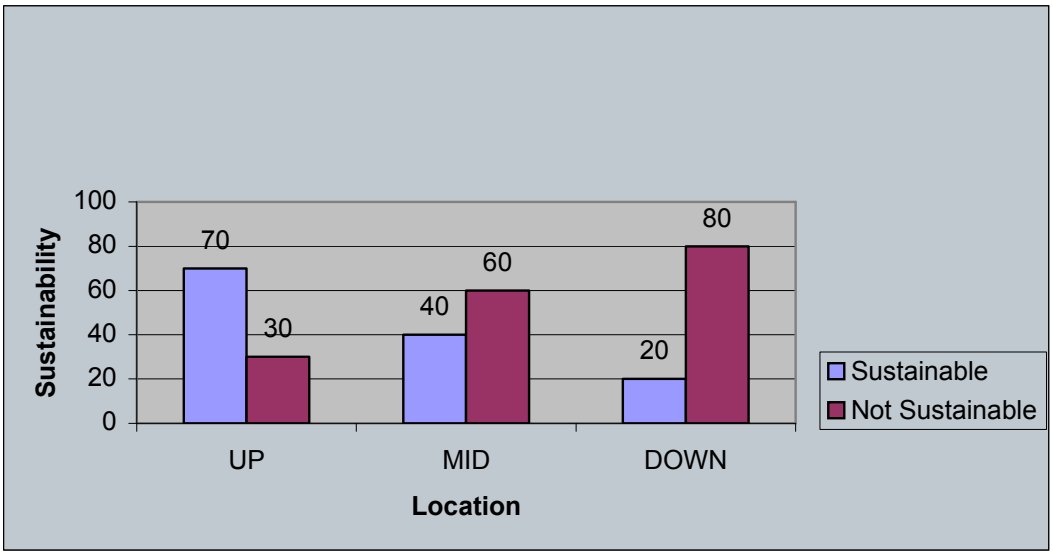


Fig. 2. Sustainability of Babon River Utilisation as Perceived by Respondents
Source: Primary data, processed, 2000

Occupation of the Inhabitant

Concerning occupation profile of the inhabitants in the upper stream, most of them are labour and business as shown in Table 2, whereas close to half (42% of respondents) who settle nearby the middle and down stream areas have their own business or private economic activities; many of them

work as labour and few of them has occupation as farmer.

Table 2. Occupation and Dependency Rate of Respondents

Description	Up stream (%) N = 40	Middle stream (%) N = 40	Down stream (%) N = 40
OCCUPATION:			
Labour	26.0	18.0	24.0
Private/ Business	29.0	43.0	42.0
Factory labour	21.0	18.0	10.0
Farmer	18.0	8.0	12.0
Employee	8.0	13.0	12.0
UNEMPLOMENT			
Respondents who has jobless family members	27.0	17.5	12.2

Source: Primary data, processed in 2000.

Rule in Use

So far, there is no rigid rule(s) produced by the relevant authorities to regulate the use of Babon river. Nevertheless, there are several rules in place to manage Babon river, but it seems weak in law enforcement. As a consequence, low compliance is attained by the stakeholders. It is timely the Government to establish the formal rules and regulations to manage the use of Babon river. This is particularly to anticipate the effect of reformation euphoria, i.e. by occupying and/ or utilising buffer area of the river (such as bank, stream, etc) in illegal ways. In fact, there is tendency of '*privatisation'* for certain part of Babon river as found in the field.Several permits have been issued by certain institutions to do mining (sand, gravel and clays, etc.) illegally.

Table 3. Related Rules and Regulations for Babon River Management

No	Rules / Regulations	Description
1	UU No. 23/ 1997 (amendment of UU No. 4/ 1982)	Guideline for environmental management

No	Rules / Regulations	Description
2	PP No. 20/ 1990	Monitoring of water pollution
3	PP No. 51/ 1993	Environmental impact assessment
4	PP No. 19/ 1994	Dangerous and poisonous waste disposal management
5	Minister of Environment Decree No. Kep.02/ MENKLH/ 1988	Quality standard of liquid waste disposal of the running activities
6	Provincial Regulation of Central Java No. 1/ 1990	Guideline for Environmental management in Central Java
7	Provincial Regulation of Central Java No.660.1/ 26/ 1990	Water quality standard in Central Java Province
8	Provincial Regulation of Central Java No.660.1/ 27/ 1990	Classification of liquid waste disposal in Central Java Province
9	Governor of Central Java Instruction No. 660.1/ 11/ 1988	The procedure on alleviation of pollution and environmental destruction
10	Mayor of Semarang Decree No 660.2/ 992/ 94	Guideline for Babon river utilisation in the segment of Semarang Municipality Appointment to Bapedalda as the institution to monitor Babon river in Semarang Municipality

Note : UU = law; PP = government regulation
Source : Various publications, 2000.

Hierarchy of Co-Management

This study found that voluntary participation of the community remains low and even the Government as well. Indicator of Co-Management hierarchy as used by Pomeroy and William (1994) is applied in this study in some extent (particularly on management function: planning, orga-nizing, actuating and controlling). Participation between Government and Community has been contrasted as shown in Figure 3. The participation sharing between these two parties is more or less equivalent in the study area. This situation perhaps is coloured by the centralised system which was done for quite long time before decentralisation was introduced in January 2001.

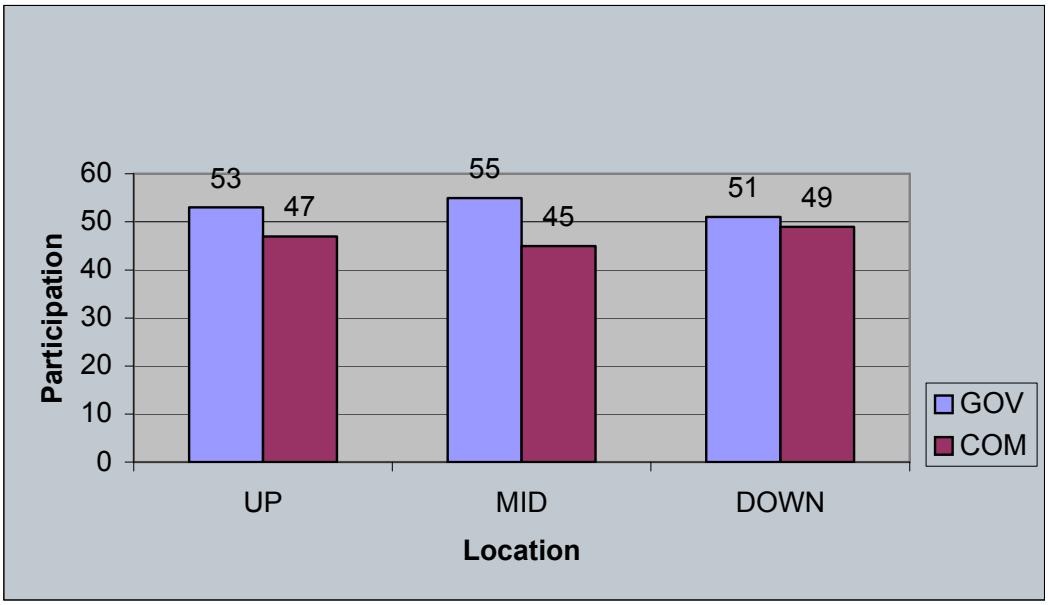


Fig. 3. Participation Level Between Government and Community in Management Process

Incentives for Co-Management

Although there are respondents who are still in doubt and/ or not optimistic about the prospects of Babon river Co-Management, particularly for respondents who stayed in the down-stream, a good incentive for Co-management approach is attributed by more than half of respondents in the study areas who were optimistic for the success of this approach to manage the river (see Table 4).

Table 4. Responses of Respondents Toward Co-Management Approach

Perception	Up Stream (%) N=40	Middle Stream (%) N=40	Down Stream (%) N=40	Reasons
Optimistic	62.5	82.5	56.1	- Uplift communities' economy - There is cooperation that employed community - Co-Management approach fit with what people's want - Collaboration with NGO
In Doubt	10.0	0.0	2.4	
Not Opti-mistic	27.5	17.5	41.5	- Coverage too wide - It is hardly to find fairness and equity - There are gaps among stakeholders/ actors of development
Total	100.0	100.0	100.0	

Source: Primary data, processed in 2000.

Prospects of Introducing Co-Mana-gement Approach

The results showed that the total score of 11 key-conditions for successful co-management [(Ostrom,1990, 1992) and Pinkerton (1989)] in *Babon* river are 70 (in upstream), 83 (in middle stream) and 87 (in down stream) as shown in Table 5. The average scores are 3.33; 3.90; and 4.13 for up stream, middle stream and down stream, respectively. Those average scores are close to scaling 4 of Likert. This implies that the prospect for successful co-management in managing community in the *Babon* river is pretty good. This situation indicates that co-management approach could have a good prospect in managing Babon river and its watershed. Among the emerging conditions for successful co-management is that the more of these key conditions that exist in a particular situation or system, the greater the chance for successful co-management (Pomeroy et al., 1994).

Table 5. Key-conditions for Successful Co-management (Ostrom, 1990, 1992; Pinkerton, 1989) and Implemented to the Context of *Babon River*.

No.	Indicators	Dimension
1	Clearly defined Boundaries	2
2	Membership is clearly defined	2
3	Group cohesion	3
4	Group cohesion	3
5	Benefit exceed cost *	1
6	Participation by those affected	1
7	Management rule enforced	2
8	Legal rights to organize	2
9	Cooperation and leadership at community level	2
10	Decentralization and delegation of authority	2
11	Coordination between government and community	1
	Total dimension	**21**
Total score (U=70 ; M=83 ; D=87) **Average score (U=3.33 ; M=3.90 ; D=4.13)**		
Conclusion: *The average score is close to 4. This can be interpreted that the prospect for successful Co-management for Babon river is good.*		

CONCLUSIONS

High in rate of voluntary participation as offered by the community, government and other stakeholders is the necessary condition for the success of resource management, including for Babon river. However, the study found that participation shared by the community and government in resource management still far from high. This study is along the way of efforts in finding an alternative system of resource management. A new approach of co-management system is suggested by many authors and it is planned to be implemented for Babon river management. The background is rather than 'no-management' system imposed to manage the important resource like Babon river, therefore it is better to try on one scheme of resource management, namely co-management approach.

The prospect of this scheme was tested in the study area in order to arrive at sustainable development in Babon river management and the results showed that co-management approach provides a pretty good prospect in managing *Babon* river. However, to implement this new scheme of management really needs further research.

ACKNOWLEDGEMENT

This paper was prepared under the auspices data granted by Lilin Budiati (The former of Head of Environmental Impact Mana-gement Agency-*Bapedalda* of Semarang Municipality). The paper benefited from the useful comments of Dr. Bakti Setiawan (Centre of Environmental Studies, Gajah Mada University) and Dr. Waridin (Faculty of Economics, Diponegoro University). Thanks to Yuni, Rukuh, Menik, Truly, Endang, Yanto and Halwi (in memory) for their efforts during the field survey. Useful comments from reviewer to improve this article is highly appreciated.

REFERENCES

Lilin, B. 2000. *Model Co-Management Untuk Pembangunan yang Berkelanjutan: Studi Kasus pada Sungai Babon, Semarang-Jawa Tengah*. Master Thesis. Magister of Management, Universitas Dipo-negoro. Semarang, Indonesian

Lucas, A., and A.W. Djati.2000. *The Dog is Dead So Through in the River: Environmental Politics and Water Pollution in Indonesia In East Java Case Study.* Paper on Southeast Asia. No. 51, Monash Asia Institute, Melbourne Paper.

Abdullah, N. M. R. and A. Radam. 1998. *The Socio-economic and Demographic Determinants of Fish and Meat Consumption in Malaysia.* Paper presented at the Fifth Asian Fisheries Forum, Chiangmai, Thailand, 11-14 November 1998.

Ostrom, E. 1990. *Governing the Commons: the Evolution of Institutions for Collective Action.* Cambridge University Press, Cambridge, England.

Ostrom, E.1992. *Crafting Insitutions for Self-governing Irrigation Systems*. Institute for Contemporary Studies Press, San Francisco, USA, 1992.

Pinkerton, E. 1989. *Editor. Cooperative Management of Local Fisheries.* University of British Columbia Press, Vancouver, Canada

Pomeroy, R. S. 1993. *A Research Framework for Coastal Fisheries Co-Management Institutions*. NAGA**,** The ICLARM Quarterly. Manila.

Pomeroy, R. S. and J.M. Williams. 1994. *Fisheries Co-management and Small-scale Fisheries: A Policy Brief,* ICLARM, Makati City, Philippines.

Susilowati, I. 1999. *"An Analysis of Co-Management Fisheries in West Sumatra Province, Indonesia: A Case Study of Ikan Larangan",* Research Report, International Center for Living Aquatic Resource Management (ICLARM), Manila, Philipines.

Susilowati, I. 2001a. "An Application of Fisheries Co-Management Approach of Ikan Larangan In West Sumatra, Indonesia: The Features And Attributes*".J. Coast. Dev*. 4. (2) : 63-72

Susilowati, I. 2001b. "Prospect of Co-Management Approach In Managing Fisheries In Indonesia: Closer Look On Ikan Larangan ("Forbidden Fish Farming") System In West Sumatra. *J. Coast. Dev.* 5. (1) : 41-45

File: Sanrem-babon-oct02-english.doc/ ~IS:29/12/02~