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Public and Private Partnership for Sustainable Resource Use Initiative (Strategically Comprehensive Management To Back Up Formal Status of The ‘Cagar Biosfir Berbak-Sembilang’ as Another Targeting Site for The World Biosphere)

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Abstract As clearly indicated in Lima Action Plan as adopted by MAB-ICC on March 19th 2016; UNESCO’s MAB will harness lessons learned by communicating and sharing information so that the WNBR (World Network of Biosphere Reserves) could develop appropriate but effectively functioning model of sustainable development for each site of World Biosphere. Appropriate management model for an ecosystem including its potential natural resources should get improved over time, “mainly in terms of governance, collaboration, and net working within the MAB and WNBR, by developing effective external partnership to ensure long term viability” (MAB-ICC, 2016). Clearly, a totally comprehensive ecosystem and multi-resource management must be prepared in order to fulfil the UNESCO’s expectation. Ecosystem management is more on-site oriented action, while multi-resource management is needed to control all socio-economic interests of the nearby people for the sake of their livelihoods. Of course the indigenous interests to those resource potentials must be fulfil selectively and directly connected with innovative roles of all other business actors as off-site economic beneficiaries. Hence, all activities (on-site and off-site CBBS-WB) have to come along with environmentally sound development strategies. There are 30 points of integrated management being offered herewith for effective execution.

1. Introduction

1.1 Significance of CBBS-WB to People and Local Governments

The targeting site, to be called herewith ‘CBBS-WB’, is of consider-able importance to the people living in the eastern part of South Sumatra and of Jambi provinces (Figure 1). The site is mostly wetland ecosystem, typified by peatland and tidal swamp ‘forest’ [1-3] ; and to the local dwellers it offers various natural resources that they have perceived and utilized as dependable economic basis for local livelihoods. This type of man and biosphere inter-dependency is unique [3-6]. *For* example, it has become source of traditional roof made from *nipa* leaf and *gelam* trunks that are cheaply harvested from the area sustainably (in facts *Nipa* buds could be utilized as source of glucose as raw material for sugar). All these must be taken into account when special approaches should be designed to maintain



sustainable use and ecological functions of the CBBS-WB including all potential natural resources that support local livelihoods.

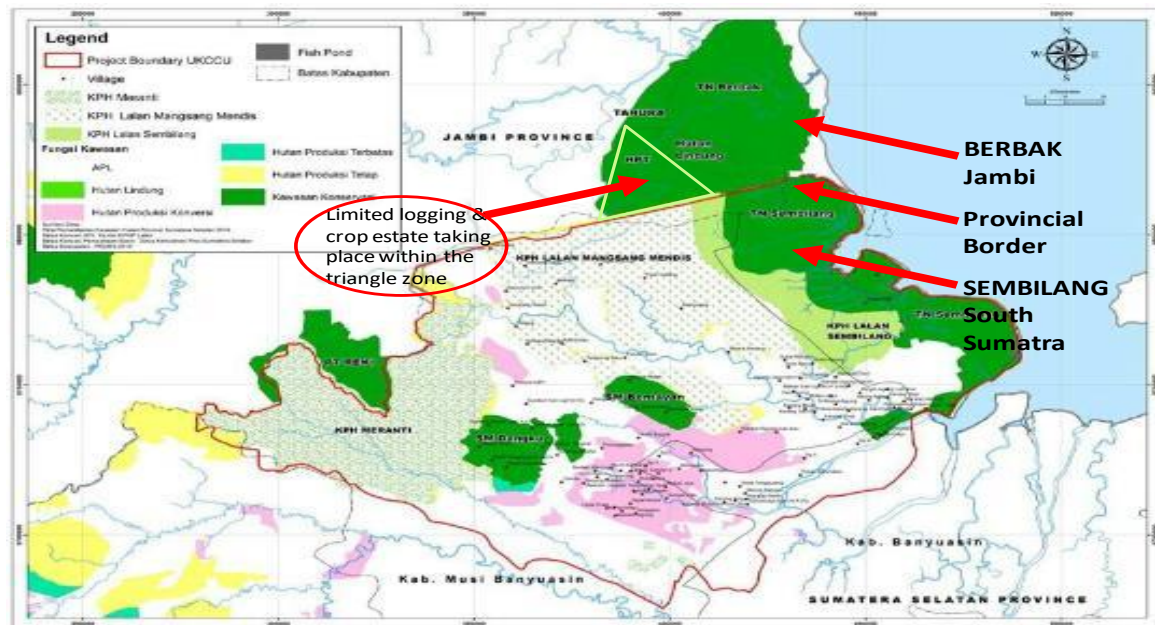


Figure 1. Map of CBBS-WB Site and Its Current Status Roughly Illustrated

Conceptually speaking, therefore, the area of would be CBBS-WB site is really a unique landscape of tropical and wetland forest ecosystem, previously dedicated as national park and now being assigned as a new site of world biosphere. Hence, the following attributes truly apply:

- Wetland ecosystem (peatland in particular) is basically kidney of the land scape (ginjalnya bentang alam), and this natural attribute ought to be maintained sustainably healthy [7].
- Wetland ecosystem also function as biological supermarket perfecting food chains to its neighbouring ecosystems; so beware of not cutting natural complexity of the food chains [8]
- Wetland ecosystem throughout Indonesia is recognizable as natural ATM to people living nearby; for which the symbiosis mutualistic between them should always be comprehensively managed so as to remain ecologically conducive and socio-economically beneficial over time [6].

Surely, one has to keep in mind that the CBBS-WB site essentially needs specific wetland ecosystem management. It has quite high value of natural resource endowments and the only remaining site visited seasonally as terminal and playing ground for some avian species of inter-continental migratory birds [5,9-11]. The site is somewhat isolated and rather sterile zone out of the other zones of fast growing economy (i.e. the capital of Districts). Nevertheless, the significance of the CBBS-WB to both provinces may be highlighted as the following arguments:

- The Sembilang National Park (202.896 Ha located in South Sumatra) and the other ‘half’ called Berbak (142.750 Ha) in Jambi; the area is divided administratively by the provincial border without any hard or concrete infrastructure, and the site is mostly accessible through river and sea transportation vehicles only.
- The position of the national park is about 3 hours away either from Palembang (the capital of South Sumatra) or from the capital of Jambi to the nearest jetty to be continued by speedboat for another 2 more hours of cruising along the coast of the Strait of Bangka.

- The ecosystem is very fertile due to lots of sediment coming from the up-stream, constantly sent down through some small creeks and also big rivers flowing from the hilly side in western side down to eastern side where the river flow meets the Strait of Bangka.

1.1.1. The Problematic Issues

Ecosystem management is certainly location specific¹. Therefore, ecosystem management with respect to the CBBS-WB as a target must then generate a set of differentiated responsibility to the central GOI as well as provincial governments of South Sumatra and also Jambi beside role of the UNESCO's MAB team. Even the nearest districts (*kabupaten*) have to play each own role in accordance with the specified task and responsibility specially design for the sake of sustainability of CBBS-WB ecosystem. In this paper, several important questions that need to be answered are then stated as the following:

- Would it be possible to minimize socio-economic unrest following some changes against on-site local livelihood, should later the new international status of CBBS-WB become formally enacted?
- What kinds of pragmatic strategies that could be implemented in order to sustain sources of income and uplift living standard of people living within and nearby the site of CBBS-WB?
- Which set up institutional should be introduced in order to back up the traditional but localized *in-situ* livelihoods without having to cause environmental disturbance or social protests against unfairness?

1.1.2 Relevant CD Programs Needed

The above problem statements need to be accurately answered in order to get prudent but comprehensive management of the CBBS-WB ecosystem. The objective of sustaining the ecological function and socio-anthropological entity by way of specific management endeavour should therefore be essentially aimed at 3-targets stated as follow:

- Maintaining ecological sustainability and socio-environment harmony by way of promoting prudent CBBS-WB site management for people as well as regional economic prosperity.
- Activating creative business web leading to the so-called Green Commitment that may effectively become new sources of retribution and VAT revenues to the local government.
- Modelling institutional base for uplifting economic potential but using most acceptable method of harvesting any natural resource that may be feasibly determined and accessible.

2. Conceptual Framework for Effective Intervention

The wetland ecosystem argument signifies the importance of various economic potential in that particular CBBS-WB site especially to fulfil various local livelihood activities which are basically supported by legal rights of indigenous people in accordance with indigenous law. Any kind of threat to such traditional accessibility onto any natural resource potential is surely perceivable by the local people as violation of their right [12,13]. Hence, vigorous management model leading to a green commitment by all stakeholders are certainly needed.

2.1. Management Approach #1: Spatial model.

This particular approach is aimed at ensuring harmonious function and quality of biogeophysical and socio-anthropological condition [14] [15] [16]. It is commonly understood (GOI Act

¹ There are 5+5 guiding and operational principles of ecosystem management for wetland ecosystem as reference (Maltby *et. Al.* 1999) RH-UL & IUCN.

#26/ 2007 on Spatial Planning), that in order to serve social interest in a development space of an ecosystem typified by high population density, then three categories of geo-physical zoning must have been determined. There must be clearly indicated, which landscape is protected zone, buffer zone, and the appropriate convertible zone. Only within the so-called convertible zone, however small it is, that socio-economic endeavour could be made permissible.

Schematic illustration of cross-sectional space as described above to represent the ground condition of the CBBS-WB ecosystem (Figure 2). Firstly, spatial conditions of A, B, C, D, E may be considered as on-site space as target spots of spatial management; while off-site activities at F and G coined with policies of H and I that will be required in order to make local government (on the district and sub-district levels) always in connection with day to day dynamic of on-site development. Secondly, those portion spots of A up to E shall become *in-situ* 'agribusiness' management targets after the associated convertible zone being already determined in accordance with the existing formal spatial arrangement. Thirdly, those H and I portion spots must be evaluated every five years time period by a specific coordinating (authoritative) body, which is ideally to be stationed just near the site, namely a building at point H to be assigned active for triple function: "(a) central point as coordinating office; (b) guiding point for tourists; (c) resting point (restaurant) for lunch and breakfast. By so doing there will exist an institutionalized management system that could make the far distant decision makers persistently get alert and always ready for interactive involvement and positive contribution to on-site dynamic of intended and un-intended change and development.

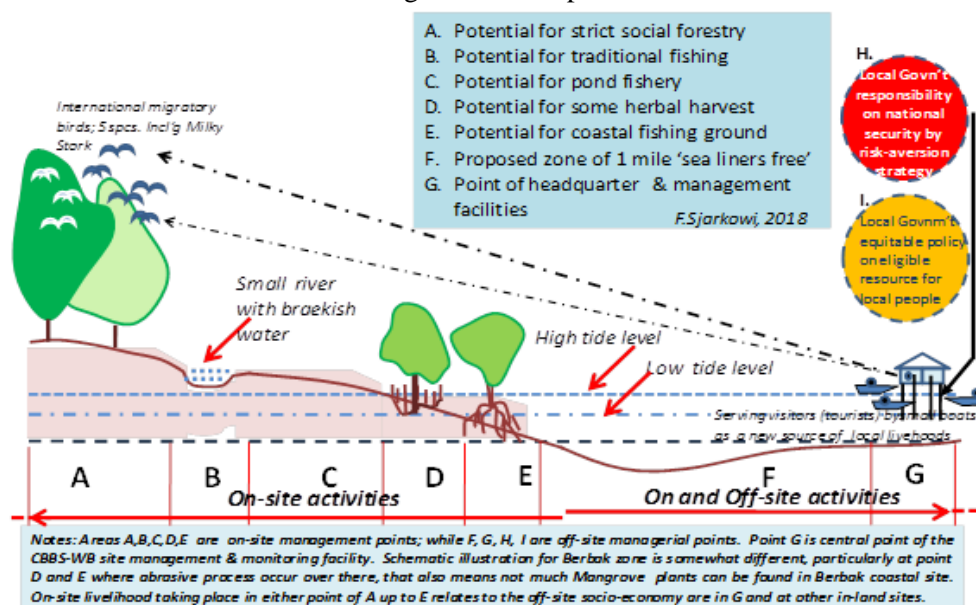


Figure 2. Management Approach #1 : spatial model (the 'CBBS-WB' site as source of livelihood or economic potential as it might be seen by indigenous people and the local governments.

2.2. Management Approach#2: Socio-anthropological model.

The following 9-issues belong to 3-managerial perspective, that may surely be found in the field. One must take them into consideration for the better policy on sustainability of bio-geophysical function and attributes as well as continual socio-anthropological benefits:

2.2.1. Cultural Perspective: This is to ensure all ecological functions of a wetland ecosystem (sub-system) to remain intact, and that must be attempted especially by promoting local wisdoms. The

attempt should be in a more pragmatical but more scientifically sound of wetland ecosystem management. This must include the following: : a) tackle off collective disturbance to ecosystem (Food chain disruption), b) tackle off collaborative dissatisfaction (Crop failure and price downward), c) tackle off collegial land-plot encroachment (Slush and burn arrogance).

2.2.2.Livelihood Perspective: This is considerably important in an effort to promote wiser agro-ecosystem development that could maintain natural balance as part of environmental managment of the vulnarable wetland ecosystem ; a) controllable wild-life hunting (wild fishing, frog and crab catching; etc) , b) controllable plant-harvesting (*gelam* log, *jelutong* gum, *nipah* leaves), c) controllable revenue-pursuing (Risk mini-max and Revenue maxi-min)

2.2.3.Institutional Perspective: This is important aspect of community development which will encourage local dwellers to get strongly motivated in dealing with a new set of working options. The option must be clearly perceivable to the people and other stakeholders as economic but scientific based recommendation, that may be stated as 3-E target as the following performances. a) environmental safety (w.r.t. national security risk) by way of more anticipative mission but economically productive arrangement, and this should be made institutionally workable, b) equitable opportunity (w.r.t. local people and corporation roles) for tapping economic benefits in accordance with the relevant SOP that must be formulated by way of action researches, c) eligible resource development (w.r.t. more economic gain upon ex-post harvest marketing) due to innovative product processing and market inspiring CSR programs [17,18].

2.3. Management Approach #3: Evaluation model

What success criteria that might be used in routine evaluation to check as to whether or not a better income level eventually achievable from year to year, following a new status of the Berbak-Sembilang site legally enacted latter as a new zone of a world biosphere (CBBS-WB)?

2.3.1. Proactive evaluation. Say that average income of people nearby CBBS-WB should never get worsened than say 'A' level. In other words, should there be $(A - \delta Y)$ predictably occurred, δY supposedly obtained from on-site CBBS-WB must be substitutable by some new sources of income presumably from off-site spots by way of special CD program. Assuming that average economic fortune as $\delta Y = f(CD_{CSR})$ and $\delta Y > 0$, then for those people of limited income, assuming that baseline $C_o = Y_o$ then there could be two alternative ways that each family would actually utilize δY for zero or an additional consumption (δC), such that; 1.a) $\delta C < \delta Y$ meaning that the family may get motivated positively, 1.b) $\delta C = \delta Y$ meaning that the family may feel hopeless, 1.c) $\delta C > \delta Y$ meaning that the family may get intimidated steadily. Outcome (1.a) indicate successful implementation of CD program, and otherwise for (1.b) not to mention (1.c); however, from either one of which then some determining factors may be revealed.

2.3.2. Reactive evaluation. A set of CD program (specially targeted to help the affected people) could be made parallel with effort to socialize the importance of WBBS-WB to fellow countrymen and the world in general. This CD contribution must be steadily moving forward towards an integrated but innovative agro-processing & creative agro-related industries. Assuring that financial gain is supposed to prosper each family of CD participants, then counter productive achievement may actually happen. Such a negative response must be checked from 3 prospective of farming based livelihood, namely: 2.a) efficiency improvement; that suppresses average production cost, 2.b) effectiveness attainment;

that minimizes waste & maximizes yield, 2.c) equitability achievement; that tends to save energy and other resources.

2.3.3. Interactive evaluation. Partnership agribusiness and innovative agro-industries at either on-site or off-site CBBS-WB could be of special interest to every District of adjacent distance to the ecosystem, simply due to opened opportunity earning VAT and other collectable retribution fees. Financial support for various people mattered programs is certainly the appropriate way of local government intervention. By so doing then the following social tendency may happen positively: 3.a.) small is weaken; but then the peasants need to unite so that they could perform a partnership business entity and become institutionally manageable without having to get provoked by external agent to trigger any socio-psychological entropy; 3.b) small is beautiful (when they become agreeably abided by government law), then the more organized is the peasantry group the quicker they may consistently adopt intensive production management without causing socio-ecological entropy; 3.c) small is flexible, then as the more formal business entity managed by the more responsive peasantry, the peasant community eager to innovate and capture added values, so as not to become tempted agent of socio-economic entropy; 3.d) small is risk-averter, then peasantry group may generate trustful economic power and perform actively within an agribusiness system, and successfully free from being inhibited culturally by any kind of socio-cultural entropy. Of course achievement 3.a) could bring stability with it, and then 3.d) could promote sustainability. Such group achievement is an essential element of controlling socio-entropy, a kind of ‘Chayanov [19] from coming into reality to cause social disturbance that may fail a partnership deal.

3. Partnership Working Instruments

Several socio-economic and bio-geophysical constraints could be clearly seen by paying attention to actual living condition of our fellow countrymen. In particular the condition of people that live in the rural and isolated areas nearby (some of them already within) the CBBS-WB site.

3.1. Strategic Program Instruments

Better understanding about the bio-geophysical and socio-anthro-pological constraints is very important in an effort to establish program partnership between the people and the authority (or institutionally speaking, between the private and public actors). Several constraints should be overcome by providing the mission with at least 3-key factors towards effective working partnership:

- Pragmatic green concept of permissible livelihood activities by and among the local people who are highly dependants of the site;
- Pragmatic financial back-up to people involved in the on-site ‘agri-business’ and its positively contributing off-site partners..
- Paternal relationship between industrial actors as marketing partner to the people who produce various fresh products and raw materials.

The green principles that must be consistently applied in field are: a) every on-site crop farming must have direct effort to uplift quality of ecological function of nearby zone of conservation, namely by way of making successful an agreeable plot of SFMU (social forestry management unit); b) every livelihood effort must do an on-site field action only up to the maximum permit given right from the beginning.

Meanwhile, the financial back-up may be obtained by the people in accordance with two possible schemes, namely: a) bio-right scheme, which is a right given to the indigenous people to take various NTPs (non tree products) out of a on-site forestland plot and a right to use the associated REDD

(reduced emission from forest degradation and deforestation) fund for the sake of sedentary farming as Green Livelihood activities on the convertible zone, and; b) Bio-credit scheme, that is an opportunity for the on-site livelihood actors to take advantage of an easy and cheap scheme of credit to be used at off-site CBBS-WB, as long as they help a rehabilitation program at on-site area.

It is then industrial company or home industrial community as the existing market for land based products that may legally utilized the fresh and raw materials with full guidance by the CBBS-WB management. Both types of interactive partners should get special treatment from the local government and the CBBS-WB team of management. Either one of: a) Special SME's credit facility, or; b) a kind of tax subsidy and business support could be provided for such contributing business actors.

3.2. Strategic Pragmatic Commitments

Clearly a very serious effort needs to dedicate in doing a landscape management over an isolated area that covers a huge size (> 300.000Has) of an already disturbed eco-system such as the one to be assigned as the CBBS-WB. Two important supporting factors needed to be prepared properly, namely: a) a set of stimulant needed for every potential on-site and off-site resource based activity; b) a set of partnership program linking up mutual interest of private (*on-site* livelihood actors and *off-site* SMEs).

The required stimulants are needed, such that every actor will be fully committed to environmentally sound principles which supposed to be implied in the SOP of Sustainable Development CBBS-WB so as to:

- Maintain ecological sustainability and socio-environmental harmony by ensuring prudent management of CBBS-WB.
- Motivate business web to be more innovative & creative leading to the so-called Green Commitment leading to some new sources of retribution fee and VAT revenues to the Districts governments that provide support with managerial responsibility.
- Modernize institutional base for effective clearing house to direct every effort to uplift economic potential with acceptable method of harvesting, especially over the most valuable resources to be developed feasibly in due time.

With respect to the specific partnership program, matrix table can be developed (Table 1). This matrix is conceptually formed by referring to issues targeted in the spatial model, socio-anthropological model as well as the evaluation model mentioned before. The matrix table is the following:

Table 1. Matrix of The Required Private and Public Partnership Roles

The Targeted Zone to Be Managed	On-site Recommendation	Role of Local People (<i>Private</i>)		Role of Government (<i>Public</i>)	
		Indigenous (on-site zn)	SMEs Unit (off-site loc.)	Provincial & / Districts	GOI (Ministry)
A. Potential for strict social forestry (1)	Allow units of reomm'ed SFMU (max 1 Ha /indiv'l in a Buffer zone.	Ok doing live lihood onsite in ac.w SOP+ Bio-right	Do off-site agro 7rocess-sing for the on-site yields.	Arrange CSR commitment to support bio - credit schem	Legal support by ministry of Env; State Entrep'z & Coop.
B. Potential for tra-ditional fishing(2)	Only by small & silent boats, using trad- instruments.	Can get bio-credit but must follow SOP & signs	Do off-site agro proces-sing unit for on-site yiled	Provide signs & season tm schedule for OK activity	Protect & monitor dolphins

C. Potential for pond fishery (3)	OK only for the existing activity otherwise prohibited strictly	Follow tech'l guidance from CBBS mgnt. Authority	Do off-site agro processing & marketing	Encourage agroindustry for fish feed supply	None !
D. Potential for her-bal & NTPs harvesting (4)	Use of allowable tools must be checked at 'G' points (Jambi, SS)	Continue to harvest the listed NTPs i.a.w. SOP	Develop marketing links with the harvester	Every NTPs harvest must be monitor'd regularly	None !
E. Potential activity on coastal fishing ground (5)	Only by small & silent boats, using SOP condition.	In & out of the CBBS-WB zone report to 'G'.	Must have marketing link with fishermen	Seasonally (start & end) monitor cond.	Receive report (=4 report /yr) of local gov't
F. Proposed zone of 1 mile 'sea liners free' (6)	No passing, no anchorage within a radius on signs	Must report to point G on any violation	None !	Inform this rules to District Police station	Legal sup't to be social ized by Ministry
G. Point of central headquarters with management facilities (7)	A headquarter in front of B&S zone as Central, Guid'g & Resting points	May do small boat service & food support for visitors	Provide support for supply, intermediary transport	Regular check on the spot by Governm't & News-media	Financial support annually for 'G' head-quarter
H. Political will of local and central governments to make the CBBS-WB functioning with zero risk for national security (8)	Off-site activities are to be linked with onsite efforts for controlling any threat to national security; issues of Drugs, weaponry, & military insurgence into the site	Active people of the surrounding have to be part of special training on the issues of national security.	The related off-site SMEs which depend much on natural resources harvested from on-site must also get special training.	The local gov. must take management leadership on CBBS-WB i.o.t. develop an effective coordination with all stakeholders incl' with central gov.	Central government must develop team work involving military & police agents i.o.t. promote the CBBS-WB role but without any kind of national security risk and loss.
I. Local government policy on equitable resource allocation for people of surrounding the CBBS-WB site. (9)	Off-site coordinative works across central government and local government institutions to uplift economic welfare and to eradicate rural and social poverty.	Active people of surrounding the CBBS-WB must obey spatial arrangement set by local government along with SOP for all possible parts of beneficiaries.	The related off-site SMEs have to be consistent in opening their agro-processing industries for the allowable commodities from on-site.	Every 5 years local government need to re-evaluate the existing condition of spatial arrangement of CBBS-WB and make a better & more effective spatial arrangement	Several government institutions in Jakarta such as LIPI, Department of Forestry, and BPN-Agraria are expected to give necessary support to government of

ment for the
next 5 years.

South Sumatra
to bring the
mission into a
success..

Note: SFMU = *Social Forestry Management Unit, specially needed to empower those people already doing crop farming in the buffer or protected zone but management needs to minimize their activity while encourage them to keep an eye on a plot of planted trees in a forest zone [6][20].*

3.3. Strategic Institutional Instruments

Formal institution to control all activities in the CBBS-WB site is certainly needed for 2-main purposes. First is for ensuring every local government to take their management part of activities. Second is for constantly maintaining and controlling national security. The coastal site of CBBS-WB eventually includes a coastal line of about 125Km long. Hence the area is very good target for foreign agents to smuggle narcotics, weapons and even mankind, which are supposed to be detectable by possibly activated management system.

The author of this paper strongly believes that a special institutional body is badly needed to ensure authoritative management does work effectively for the sake of sustainable function of CBBS-WB. An authoritative management institution is supposed to coordinate all issues in the field while acting as a representative clearing house. The GOI must assign a team of qualified men power so that the so called 'strategic and comprehensive management system' becomes fully active. Six monthly report must be sent regularly to UNESCO headquarter as well as the GOI and the local governments of Jambi and South Sumatra provinces.

4. Concluding Remarks

This paper reveals a set of comprehensive strategy for sustainable management of CBBS-WB ecosystem and natural resources use. The conceptual discussion above, it can be stated here 3-points of conclusion:

- A golden opportunity for Indonesia to be an important part of world community in providing a unique landscape for world biosphere; it is unique in terms of bio-geophysical entity and socio-anthropological community that could be managed sustainably in harmony.
- As long as an issue of national security is always kept in mind then the coastal line of CBBS-WB could be effectively controlled from any effort by foreign agents to smuggle narcotics, weapons and even mankind, which are supposed to be detectable by management system.
- A special authoritative body is ideally assigned to coordinate field management strategy; an institutional body that shall be responsible for all area's potentials and people interaction harmoniously; while becoming a management interface between all stakeholders.

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