

# MAMBERAMO NOW

QUARTERLY NEWSLETTER

VOL. 1 No. 1

APRIL 1997



E.I.D  
MAMBERAMO  
RIVER  
PROJECT

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## Editorials

First of all, I would like to thank everybody for his/her kind support to make this newsletter finally can reach you all.

As a new circulation of a new project, of course we believe that there are many things that need to be improved. Therefore, any supportive critics and suggestions from our readers, or anybody who is concerned about this quarterly newsletter in particular, and Mamberamo River Catchment Area (RCA) development project in general, are always welcome.

We started this newsletter just right after the seminar and workshop on Mamberamo project was over about two weeks ago. Therefore, one of the main purposes of this newsletter is to keep the concerned individuals, organizations, companies, and government bodies, in touch with the state-of-the-arts and recent status and development of the project.

In this virgin issue, we try to summarize the results of the seminar and workshop above. Yet the people who are interested in more details on each topic may have to read it from the proceedings. Then, we brief about what is going on with this project through a special section, "What's Next". This issue was concluded by the news on our recently internet accessible information center, that is Mamberamo Information Center (MIC). We believe that this newsletter, with your support, will be able to visit you regularly in every April, July, October, and January.

Secretary General

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## From the Seminar and Workshop on Mamberamo RCA

As an initial step to the implementation of the Mamberamo river basin project in Irian Jaya, a seminar and workshop were held on the April 7-8, 1997 in Jakarta Convention Center. This occasion had attracted interests and opened by the State Minister for Research and Technology, Prof. B.J. Habibie, and attended by the representative from the Minister of Public Work, the Governor of Irian Jaya, and many high-rank officials from the central and local governments and private parties from Indonesia and foreign countries as well, such as the United Kingdom, Japan, France, Germany and the Netherlands. The seminar and workshop were jointly organized by the Agency for the Assessment and Application of Technology (BPPT), the East Indonesia Development Council (DP-KTI), CIDES and the Provincial Government of Irian Jaya.

The objectives of the seminar are : 1) to identify and analyse the supporting factors to establish the Mamberamo River Catchment Area (RCA) as a center of growth for economy and industry; 2) to disseminate the natural resources potentials of the Mamberamo RCA and their prospective utilizations; and 3) to illustrate the feasibility on the utilization of the natural resources in the area and its surroundings. While the goals of the seminar are: 1) the establishment of an integrated approach on the prospects of Mamberamo RCA development project in satisfying various strategic challenges in order to support national development policy; and 2) the preparation of a strategic concept in utilizing and managing the natural resources of the Mamberamo RCA.

In his welcoming remarks, the Governor of Irian Jaya, Drs. Jacob Pattipi expressed his salutation on the development concept for the Mamberamo RCA region, which is more focus and integrated. The

development scenario of the development project which will include the participation of the local people in the area since its preliminary stage, are highly appreciated by the governor. Therefore, he expects that this occasion will be able to gather more constructive comments and suggestions on the development of Irian Jaya, and Mamberamo in particular. In doing so, the improvement on the living conditions and welfare for the people of Irian Jaya can be optimally realized and hopefully in a very short time. With these intuitive and indigenous thoughts, contributed by experts from various disciplines and backgrounds, to the development measures of the region, Mamberamo will be ready for the coming era of free market, subregional cooperation of ASEAN, and the Pacific Rim. To anticipate this project, the governor also expect that Sarimi could be promoted as a Regency.

While Prof. Dr.-Ing. B.J. Habibie with his optimism, briefed the general overview on the development scenario of the Mamberamo RCA. He said that this development must satisfy the environment criteria in applying innovative technologies for supporting the development of intensive energy industries in the area. The former scenario was based on the development of agricultural sector. It was found that this scenario was infeasible since the cost for constructing the dam for irrigation system, was merely fulfilled by the agricultural products. Obviously, the cost of agro-industrial products will be significantly high and are not competitive. Yet the Mamberamo RCA was developed to serve as the national food reservation. Therefore, in the new scenario, the cost of constructing dam are assigned to both the irrigation system and hydroelectric power plant (HEPP). Thus, at least the cost is now splitted between those two activities, the electric customers and the irrigation system users.

The users of the irrigation system are the agro-industries and agro-business. While

the electricity is used to support the development of intensive energy industries. In supporting the new concept, State Minister of Research and Technology had recalled for a coordination meeting in October 1996, attended by the Minister of Mines and Energy, Minister of Public Work, Minister of Communications, Minister of Agriculture, and the representative from the Department of Industry and Trade. In this meeting it was committed that the theme of the Mamberamo RCA development project is "Environment, Innovation, and Development" (E.I.D.) Intensive Energy Industries. The river of Mamberamo which has the economic potential to generate around 7000 MW of electricity, will be used to meet the needs of the industrial, commercial, residential and all other supporting activities. Taking into consideration the potentials of the natural resources in the area, various metal and mining industries, petrochemical, agricultural, forestal, and their downstreams, and service industries and trade, will be economically developed in the surroundings of the project. With this integrated scenario, the project is a lot more feasible to be developed. While considering environmentally-friendly and sustainable hydroelectric power, a special attention has to be given for the participation of the local people in this project development.

To achieve the objectives and goals above, the seminar covered two main topics. The first is the Establishment of Infrastructure and Intensive Energy Industries to Support the Development of Mamberamo RCA. In this session, the Minister of Public Work presented the government policy in constructing the infrastructure to support the development of the area. He also suggested that the area is divided into two development areas, upstream and downstream Mamberamo, taking into account the huge size of the area involved. The downstream area will

be developed for main (pioneering) industrial estate with dam, HEPP, and main industries, followed by the development of supporting areas devoted for commercial, residential, downstream industries, agricultural and forestal industries, business center and services and all of the necessary infrastructures. The upstream is mainly used for agriculture, framing and forestry. The directorate general of electricity and energy development presented the government policy in utilizing the hydro power potential in the Mamberamo river to meet the need for the energy in the future. The CIDES discussed the possible impacts on the development of Mamberamo RCA to the welfare distribution and economic growth in the eastern part of Indonesia.

The second session covered the Potentials of Mamberamo RCA and Participation of Society in Supporting the Development of Agricultural, Petrochemical, and Metal Industries through Partnership. The deputy chairman of BPPT for technology development, commenced this session with his speech on supporting measures to develop intensive energy industries in Mamberamo RCA. Three other speakers are from private sector, coordinating body for investment (BKPM), and CIDES. Each of them discussed about the opportunities and constraints from the private sector point of view in supporting the project development, the mandatory investment policy as a measure to distribute the development in the east of Indonesia, and development of growth center through partnership.

In the second day, the workshop was divided into 6 commissions, that is Metal and Mining Industries; Petrochemical Industries and Transportation of Natuna CO<sub>2</sub>; Dam Construction and Electric Power; Agricultural and Forestal Industries; Regional Development and Infrastructure; and Assessment of Social-economic-cultural Aspects and

Environment Impact. Followings are the briefs of all the commissions.

### **Metal and Mining Industries**

There were four topics covered in this commission. The first topic was presented by the speaker from the directorate general of mine. It described the general overview on the mining potentials in Irian Jaya, such as nickel, copper, laterite, silver, lead, gold and so on. While for non-metal minings are mica, kaolin, limestone, feldspar, zeolite, phosphate and marble.

The second and third topics were on the development of steel and nickel industries. The former was presented by the expert from Ferrostaal of Germany which discussed the possibility of developing the hydrogen-reduction process for the steel industry. The utilization of hydrogen for this industry is due to the availability of inexpensive hydrogen from the proposed electrolysis plant. Nickel industry was discussed by PT. Aneka Tambang (a state-owned mining company). They showed the potentials of nickel deposits in the project area, that is in Waigeo and Cyclops. One of the available nickel processing technologies is bleaching, which uses sulphuric acid. This acid is a by-product from a copper concentrate smelting process. Currently, PT. Freeport Indonesia, located in the south of the project, is exporting about 70% of its copper concentrate. If this process can be established in Mamberamo which has the potential to offer inexpensive, environmentally-friendly and sustainable source of electricity from HEPP, the benefits will be for both nickel and copper industries. This integration will be a giant economic motivator for the development of the Mamberamo RCA. Consequently, the downstream and related industries can be established economically, such as stainless steel industry, as pointed out by the fourth speaker from PT. Meta Epsi Engineering.

It is also worth it to note about the

feasibility on the development of the aluminium industry, which one of the most intensive energy industries. The bauxite ores can be imported from Australia, which is in the neighborhood of Mamberamo. With inexpensive and environmentally friendly energy, for sure this industry can be established economically in the area.

To attract the investors, it is imperative to create an interesting investment climate and to offer some healthy incentives. This is due to the high risk investment scenario for the area, either for industries or infrastructure. Local people participation need to be considered from the early stage of the project. This is to eliminate any frictions that happened in the nearby mining project.

#### **Petrochemical Industries and Transportation of Natuna CO<sub>2</sub>**

The main objective of this commission is find an alternative solution to integrate the Natuna gas and Mamberamo river projects. The natural gas from Natuna consists of around 70% of CO<sub>2</sub>. It is proposed that this exhaust gas to be reinjected to the earth through the structure which is called aquifer. However, rather than to finance this requirement, it is suggested to utilize this gas in Mamberamo to produce some useful petrochemical raw materials. In doing so, the feasibility of the Natuna gas project will be significantly improved. Note that the Natuna project is expected as a source for foreign currencies, to sustain the national development program.

The CO<sub>2</sub> gas will be combined with the hydrogen produced through electrolysis process in Mamberamo. The combination of those gases can be utilized through various processes to produce petrochemical products, such as methanol and fertilizer. Methanol is a raw material for various downstream petrochemical industries as discussed by the speaker from directorate general of metal, machinery and chemical industries, Department of

Industry and Trade. Yet for this alternative, it needs support from economic and financial sectors, as proposed by the speaker from the TNO, The Netherlands. It is necessary to create an optimal structure for the CO<sub>2</sub> management, which includes the activities to cover the production, transportation, storage, and distribution of the gas. This integrated management needs a clear price policy in order to support the competitiveness of the product, produced from the combination of both gases.

The third speaker is from Linde AG, Germany which discussed the electrolysis process. This plant is used to produce hydrogen and oxygen. This plant is proposed to be included in the project due to the availability of inexpensive source of electricity. The produced hydrogen will be utilized in various industries and transportation system. The pioneering industry that may use hydrogen is the steel industry. Of course, the petrochemical industry as previously described which will combine hydrogen with CO<sub>2</sub>. While the oxygen can be used as bleaching agent in the pulp and paper industries.

The speakers from PT. Chandra Asri and LEMIGAS, presented the possible development of downstream petrochemical industries. These include the plastic, fibre and composite manufacturings which use the combination of CO<sub>2</sub> and H<sub>2</sub> as their raw material. This commission is concluded by the joint paper from FCDIC, Japan and BPPT, on the development of fuel cell technology for transportation in Mamberamo RCA project. Fuel cell can be expected to replace the conventional Internal Combustion Engine (ICE) for transportation system due to its excellent advantages, such as higher efficiency (more than double than that of ICE), no noise, and no emissions. This technology is also proposed in this project to its commercialization phase in the near future. The readiness of this technology to penetrate the market can be observed from the operation of fuel cell powered public

buses by the city of Chicago in the USA and city of Vancouver in Canada, this September.

### **Dam Construction and Electric Power**

In order to reduce the fuel consumption, the Indonesian government has been promoting the utilization other energy sources, such as hydropower. With the flow rate of the Mamberamo river is about 4530 m<sup>3</sup>/s and rainfall of 2788 mm/yr, its hydroelectric potential is estimated at around 10,000 MW. Of that, about 7,000 MW can be developed economically, especially in the downstream region which is appropriate for the area development. To justify this potential, a feasibility study needs to be performed which will also considered all the previous hydropower plant development projects, either the ones done in Indonesia or in other countries, as proposed and discussed by the director of planning, PT. PLN.

For the multipurpose dam construction, that is for irrigation and power plant, it is necessary to collect more accurate primary and secondary data on topographical and geological aspect of the proposed dam sites, as suggested by the director general of water resources development, Dept. of Public Work. This is determined the design criteria of the dam, especially its undaunted area. It may be more appropriate to construct a water tunnel or a run-off river dam, rather than a conventional dam, due to this undaunted area. Another consideration is whether it is more economic to develop one big dam to support irrigation system, or several smaller dams. This also will affect the scenario of the dam construction. No matter what kind of dam will be constructed, this activity for sure will stimulate the development of agriculture, fishery, metal industries, and tourism.

The speaker from Siemens AG, Germany proposed a two-stage approach for supplying electricity in the Mamberamo RCA project. Phase I:

construction of oil-fired or other thermal power plants to support the need for electricity at the initial development stage. Phase II: utilization of hydroelectric potential of the Mamberamo river to meet the energy needs when the intensive energy industries are already well established and fully operated. It is anticipated that this activity will span a 25-30 year development plan. Therefore, it is also imperative to perform an early approach to local people in respect to the construction of the dam. This is due to the relocation of the population in the dam sites and other social-cultural related aspects. Electricity also may affect on the living conditions of the local people, urbanization, and the increment in the property values.

The last speaker from Nippon Koei, Japan suggested that an integrated development scenario which is based on a comprehensive "Master Plan" is mandatory. The preparation of the Master Plan must be executed by an independent agency, under the coordination of the government. Their suggestions are mainly based on their experience in developing the Mahaweli river catchment area in Sri Lanka.

### **Agricultural and Forestral Industries**

The area which is potential to be developed for agriculture in Mamberamo RCA is around 2 million hectares. This area can be developed due to its fertility, flat topographical condition, and its various vegetations. Due to its appropriateness for agro-business and agro-industries, this commission discussed the strategic development for both activities. Other issues include the strategic development for food supply and sustainable forest management to support the development of the Mamberamo RCA project.

Problems need to be solved at the current stage are low productivity and efficiency of the agriculture activity, high risk,

traditional way on land ownership, human resources with low level of education, and various social-economic-cultural aspects. All have caused the agri-business and industries as unprofitable or worth to invest. While the tropical forest, it needs to serve a two-fold functions. One is to be developed as tourist attractions, with its various and specific flora and fauna. The other is to be maintained as watershed for the Mamberamo river.

The main challenges on this sector are the fact that almost 86% of agricultural products are dominated by the developed countries; the population of Indonesia will hit 260 millions by the year 2020; high conversion rate of farming area to the one of non-farming; uneven distribution and supply of food in the entire Indonesia; and there are no coordination and development on efficient production, distribution and marketing system for food crops. In this conjunction, it is proposed to establish an agroecological zoning system as a basis for agriculture development. Therefore, in this commission some main ideas from BPPT, Institute of Agriculture Bogor (IPB), agriculture R&D institution, and forestry society were discussed sufficiently.

### **Regional Development and Infrastructure**

Main issue of this commission is to replace the problems on the unequal distribution of welfare, poverty, lack of education and isolation to the utilization and development of the potentials on the Mamberamo RCA with all of its opportunities.

The objective of this project to accelerate the development of the East Indonesia region. This is in accordance to the national development policy on sustainable growth, that is the stable economic growth and equal distribution of wealth and job opportunity. Therefore, in this development concept as presented by the director general of human settlements, the growth center must be supported by the seeded sectors from industries, mining and

agriculture. Yet it is mandatory to consider the environment impact on such execution, especially in the upstream area of the river, through conservation of agricultural activities, rehabilitation of critical area, and so on. This concept can only be achieved if it is supported by the development policy, that is the development of specific activity with its certain economic scale, competitive management and improvement of facility and utility efficiencies, allocation and investment which must consider the readiness of infrastructure, and partnership between private sector and government in constructing the basic infrastructure. Without this supportive measures, the development of the project will be infeasible. To reduce the burden on the initial investors, this project must be divided into several stages, which spans on a 25-30 year period of time procurement, included its feasibility studies.

The head of the Irian Jaya development planning board discussed about the main local problem, that is isolation. For example, he noted the land transportation facility. If this sector is merely depend its development on the government budget, it will be a very heavy load for the government. Therefore, the private sectors need to participate in this activity. For example, the forest concession holder, must developed the road access in its concession area. The directorate general of land transportation, Dept. of Communications, has suggested the development of alternative to the road infrastructure, such as railroad transportation system. This alternative is well suited to connect all the northern cities. The fact that these coastal cities are not accessible by sea transportation system for almost 6 month in a year, due to the wild wave. Therefore, coastal transportation system is not a good choice. Another alternative, especially for the inner valley region is the river transportation system. This system may be

a complement to the land transportation system, with the possibility of an intermode system. Both the railroad and river transportation system were also suggested by the transportation expert from Systra, France.

The last topic discussed in this commission is the potential of the tourism sector, by the director general of tourism. He pointed out that Biak could be developed as the distribution point for the tourism development in the area. However, due to the lack of infrastructure support in the area, so this sector is developed as a complementary measure only. Yet the potentials that can be developed in the area include river, lake, dam, swamp area, mountain ridge with its yearlong snowcap, and its natural resources appreciation. This area is well known for its various specific and exotic flora and fauna. The industrial estates may also be developed as tourist attraction through the establishment of "industrial park" and "science park". Forestral potentials can also be prepared for tourist destination through the development of national park, which may be better than the Yellowstone National Park in the USA.

### **Social-economic-cultural Aspects and Environmental Impact**

Legal aspects on the development project were discussed in this commission. The principle base for this project is the Indonesian Constitution '45, which stated that the wealths of the Indonesian soil should be utilized for the welfare of the Indonesian citizens with justice and equally distributed. The second bases are the Broad Lines of State Guidance (GBHN) and Five-Year Development Plan (REPELITA). Other secondary bases are Governmental Regulation no. 51 year 1993 on environmental impact assessment, Proposition no. 4 year 1982 on living environment, Prop. no. 5 year 1990 on conservation of biological resources and ecosystem, Prop. no. 24 year 1992 on

zoning and Prop. no. 5 year 1994 on biodiversity.

The new development scenario as explained by Prof. Habibie in the seminar, must approached from the micro aspect and then to the macro one. Human resources development through formal and vocational educations, must be emphasized toward the readiness of the local people to participate in the project development, and by market driven. In doing so, the man powers can be absorbed by various activities in the project. Self reliance of the local people can be improved gradually to anticipate the project development. While the organizational aspect of the project will done through consultative organization such as religious groups or missionaries. Such an organization is needed to increase the added value for the society and to eliminate any possible friction. The private sectors must actively participate in the investment with the government direction guided by the "Master Plan". Socialization of the partnership aspect can be initiated by the local government in cooperation with society figures to increase the local people understanding on the proposed development concept. This joint effort is required as the purpose of this development is to provide welfare for everybody. Local people aspiration has to be inductively appreciated, and then deductively developed yet has to be within the development concept criteria. With a suitable partnership model, any enclave can be eliminated..

### **Mamberamo Information Center**

As the seminar and workshop were over, now one of the next steps is to prepare the plan of actions for the extended Terms of Reference (TOR). Note that the initial TOR had been prepared in November 1996. In this extended TOR, based on the suggestions from the occasion above, all studies will be intensively improved and focused. Then it will be used in guiding the execution of the proposed (pre) feasibility



studies. The results of these studies will further be used in preparing a “master plan“ for this integrated project. To anticipate such an activity, and to provide the society with the related issue on the project status and development, an information, called “Mamberamo Information Center” (MIC) was established in early April 1997. This center is accessible from internet, that is at <http://surya.pt.bppt.go.id/mambramo>. To whom who has such an access, is welcome to visit and explore this Homepage. Any comments and suggestions on the center itself, and the project as well, can be submitted through our e-mail address: [mambramo@surya.pt.bppt.go.id](mailto:mambramo@surya.pt.bppt.go.id) or regular mail, phone and fax. In doing so, any activity can be anticipated and evaluated based on inputs from the interested parties who concern about the successful of the project. For the time being, the members of the MIC comprise of various sectors, range from the government, consultants, contractors, to individuals, from Irian Jaya to Sumatra, and from Singapore to some European countries. Some members from other sectors and parts of the world are expected to join the group in the near future. This will serve and enable the information in a worldwide base, and will enhance the guidelines for the project execution. In addition, the proceedings seminar and workshop and the initial TOR, and hopefully later the extended TOR, are available from the center for a reasonable fee to cover the reproduction costs.

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## What's Next

The members of the seminar & workshop committees are also served as the formulators of the extended TOR.

The Mamberamo project will be included in the agendas for the German Indonesia Forum (GIF) in Berlin in October 1997, and Japan Indonesia Forum (JIF) in Jakarta

in July 1997.

A one day seminar on “Fuel Cell powered Vehicle” will be held in August in Jakarta.

BPPT and Dept. of Public Work are continuing their preliminary studies on the Mamberamo project.

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## MIC News

It's time to join the MIC. For the corporate member, they will receive two copies of this newsletter. They are also eligible to purchase up to three copies of any reports, proceedings of symposia or seminar at reduced rate. The individual member is only eligible for one copy. Both memberships (individual and corporate), will received four copies of this newsletter and up to 10 copies of those above at reduced rate.

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