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EDITORIALS

In this issue, we present a comparative case study on the regional development in our neighboring countries, that is the Mekong Sub-region Cooperation. The main objective of that discussion is to give a better illustration on the potential of the hydropower project development in the nation economic development. Then, we continue our discussion on the results of some preliminary studies that conducted by the Mamberamo Study Team of BPPT. As you may recall that we presented the results of three preliminary studies in our last issue. In this publication, we present the results of two more studies. The first study covers some brief results on the regional transportation system study. The second study briefly illustrated the results of the social, economic and cultural aspects for the Mamberamo REC development.

Finally, we presented some recent activities in regular section, BRIEF, followed by some related information on MIC NEWS. In MIC NEWS we informed that Web Site and E-mail for MIC was established.

Editor-in-Chief

Dr. Hari Suharyono ♣

MEKONG SUB-REGIONAL COOPERATION – A CASE COMPARISON

Meirios Moechtar, Ph.D., P.E.

During the Okinawa Energy Business Forum, held prior to the 3rd APEC Energy Ministers meeting, last October in Okinawa, Japan, a representative from the Thai government presented the current status of this sub-region hydropower development project. Below are some excerpts from that presentation, which is followed by some lesson-learned and possible scenario for the Mamberamo hydropower project development, that is through the so-called “fostering system”.

Overview of Hydropower Development

The Greater Mekong Sub-region consists of countries of Cambodia, the People’s Republic of China (Yunnan Province), Lao’s People’s Democratic Republic, Myanmar, Thailand and Vietnam has a total area of about 2.3 million sq.-km. with a population of about 237 million (1996). The sub-region is endowed with rich national resources of which hydropower resource is abundant.

With many great rivers such as Mekong and Salaween meandering through the sub-region, the potential for hydroelectric power development is immense. The total theoretical hydropower potential in the sub-region is estimated at around 333,700 MW and the potential use for power generation is about 178,500 MW as shown in Table 1.

Table 1: Hydroelectric Power Potential in the Mekong Sub-Region (in MW)

Country	Theoretical Potential	Power Generation Potential
Cambodia	15,000	6,500
Lao PDR	26,000*	23,000
Myanmar	100,000*	37,000
Thailand	12,700*	7,000
Vietnam	30,000	15,000
Yunnan (PRC)	150,000	90,000
Total	333,700	178,500

* excluding mainstream Mekong

Despite the hydropower resource potential for use in power generation in the sub-region is huge and the need to make use of internal energy resource in the sub-region to fuel the economic development is undeniable, only a tiny portion of the great hydropower potential is realized. Differences in political ideologies and economic systems have impeded multilateral cooperation in the sub-region to develop the hydropower resource to a desirable level. Moreover, the strategy of developing hydropower resources and selling surplus energy as a means to earn export income has not been taken seriously in the past. By the end of 1996, the total installed power capacity in the sub-region is around 10,403 MW. It comprises of Lao PDR (203 MW), Cambodia (1 MW), Myanmar (328 MW), Thailand (2,861 MW), Vietnam (2,880 MW) and Yunnan, PRC (4,130 MW), as compared with the total electricity demand in the sub-region in the same year which was about 22,055 MW. Only Thailand, which has experienced long rapid growth over the past three decades, has had high power demand of about 13,310 MW followed by Vietnam (4,900 MW), Yunnan, PRC (2,900 MW), Myanmar (700 MW), Lao PDR (145 MW) and Cambodia (< 100 MW).

Since the disintegration of Cold War and the rise in globalization, the economic interactions among the countries in the sub-region were greatly improved and encouraged. Opening up of the countries from centrally planned economies to more market oriented economies has enhanced and strengthened economic cooperation. Cross border trade and investment within sub-region have expanded rapidly. Favorable political and economic developments make it possible for the countries in the sub-region to joint cooperate to develop their relatively untapped huge hydropower resource. This development can be expected to meet the needs of rising electricity demand and to improve living standards of the people in the sub-region.

The advantages of cooperation and sharing of the sub-region’s natural resources are obvious; the development of hydropower resources bring mutual benefits to the countries concerned in the sub-region. For the

countries in which hydropower resources are located and are in need of funds for economic development, the promotion of hydropower schemes and export of surplus electric power to energy deficit neighboring countries will bring in valuable export income. This in turn will enable the countries to carry out the development activities in accordance with their planned objectives. For those countries that purchase hydropower from power surplus neighbors, it means the replacement of fossil fuel in electricity production by environmentally-friendly hydropower at competitive prices. Moreover, it also implies the reduction of financial burdens in funding the necessary large capital investments needed to build electric power plants.

Cooperation in Hydropower Development

Despite the recent economic crisis, Thailand whose economy is the most robust in the sub-region, still plays a major role in fostering the cooperation. This couples with the fact that Thailand still cannot satisfy the growth in power demand, despite the discoveries of substantial domestic energy resources such as natural gas and lignite. Thus, Thailand is an energy importing country and serves as a major power market for energy surplus countries in the sub-region. Since the adoption of market oriented economic reforms in recent years, the pace of cooperation in harnessing the sub-region's hydropower resources has speedily increased. By the end of 1997, Thailand imported about 195 MW from Lao PDR comprising of 150 MW from Nam Ngum power plants and 45 MW from Xeset power plant. At present, a list of 8 hydropower projects with a total capacity of 2,923 MW from Lao PDR are aimed to supply 3,000 MW electric power to Thailand under the MOUs signed, to be completed between the year 1998 and 2006.

On July 4, 1997, the Thai government and the government of Myanmar signed the MOU on power purchase from Myanmar. It was agreed that Thailand would purchase 1,500 MW of electric power from Myanmar by the year 2010 and both countries would cooperate in transmission interconnection.

The purchase of electricity from the Yunnan Provincial Electric Power Corp. (YPEPC) of PRC constitutes the cooperation arrangement in the development of electric power between China and Thailand. The cooperation began in June 1993 with the signing of an agreement between the Electricity Generating Authority of Thailand (EGAT) and YPEPC with the objective to encourage the private sector to invest in hydropower development in Yunnan province and to sell part of the electricity generated to Thailand. YPEPC will sell 1,200 MW of 1,500 MW installed capacity of the Jinghong hydropower plant in Yunnan, to EGAT. Since the transmission of power from Yunnan to Thailand will have to go through Lao PDR, consent on a transmission route by the third country was required. In this connection, the issue of routing was resolved through a multilateral forum organized by the Asian Development Bank in December 1995. The Lao PDR agreed in principle to allow transmission lines pass through its territory with the understanding that the interest of Lao PDR would be taken into account in the transmission line feasibility study.

Other cooperation in hydropower development between countries in the sub-region, so far, has not produced a significant exchange or purchase of power. However, much progress has been made. For example, the Lao PDR and Vietnam signed an MOU for Lao PDR to export 2,000 MW of electricity to Vietnam in the year 2010. An MOU between Lao PDR and Cambodia to collaborate on hydropower development in Southern Lao to supply electricity to towns along their common border was signed in April 1996.

Future Cooperation

Prior to current economic crisis in the Asian region, it had been estimated that the demand for electricity of the sub-region would grow from 22,055 MW in the 1996 to 58,000 MW in 2010. As for Thailand, the fostering country of the sub-region in the electric energy sector, it was forecasted that the peak electric demand would increase from 13,310 MW in 1996 to 39,247 MW in 2010.

However, the current economic crisis which began in July 1997, has been severely affected Thailand. Although it is expected that the economy will be recovered slowly in 1999 and afterward, the slowdown in economic development directly affects the demand of electricity of the country. The entire electricity demand forecast for the country has been revised and updated taking into account the impact of the current economic crisis. So instead of the projected 39,247 MW by the year 2010, it is revised that the projection will be at a level of about 28,310 MW in 2010 using a moderate economic recovery case scenario. The slow growth in electricity demand in Thailand, which is the largest power market in the sub-region, is a limiting factor in increasing the pace of hydropower development in the sub-region, at least in the near future. This, however, does not mean the cooperation on the further utilization of hydropower resource in the sub-region has to slow down too, instead, it should be further strengthened so that full benefits of development can be realized when the economic crisis is over.

Lesson-learned and Possible Scenario for Mamberamo Hydropower Project

Compare to the Mekong Sub-region, Mamberamo River Catchment Area is a lot smaller in many aspects. It comprises of some districts in the Province of Irian Jaya instead of many countries in the Mekong Sub-region. It covers an area of 100,000 sq.-km. with total population of around 1 million, compare to Mekong's of 2.3 million sq.-km. with occupied by around 237 million people.

However, there are many similarities in both development projects. First, the backbone of the project development is the abundant potential of hydropower resources. This potential can be optimally utilized as the prime mover for the economic development of the area. But more importantly is the existence of the foster for the project. As described above that Thailand plays a major role in fostering the cooperation. As the major power market in the sub-region, Thailand imports energy surplus from its neighboring countries. This in

turn, stimulate the economic development of the countries in the sub-region.

In the case of Mamberamo RCA development, one of the largest copper mining exploitations is just hundred kilometers away. So far, the copper concentrate produced by this mining company is exported to Japan and Gresik (in Java Island, Indonesia) to be further processed to become copper metal. Therefore, it is very reasonable to consider the feasibility of establishing the copper concentrate smelting plant in the area. The mutual benefits of this scenario is obvious. For the industry, they can take advantage of more competitive, environmentally-friendly and sustainable source of electricity for their energy intensive smelting plant and its downstream industries. In addition, they can significantly save the transportation fare as they send their product in the form of copper based semi- or end-products to their customers, rather than in the form of copper concentrate. As mentioned above that the copper concentrate needs to be further processed using less competitive and may not be environmentally accepted source of electricity.

For the area itself, obviously, this activity will stimulate the economic of the area and its surroundings. Therefore, the role of this mining company and industry in fostering the development of this hydropower is essential if we don't want say it as mandatory.



TRANSPORTATION SYSTEM IN MAMBERAMO RIVER CATCHMENT AREA (RCA)

Dr. Hari Suharyono

Currently, most of Mamberamo RCA is still isolated and the economic activities in the area is low. Transportation is a key factor in Mamberamo RCA development. It can open an isolation of the RCA and can reduce the cost of goods and services in the RCA.

The RCA, which is geographically located in between 1°27' and 4°32' South

Latitude and between 136°21' and 140°49' East Longitude, administratively is located in four regencies, i.e. Jayapura, Jayawijaya, Paniai and Yapen-Waropen. Few people live in those four regencies. The population density of those four regencies in 1995 and the population growth rate during 1990-1995 can be seen in Table 2.

Table 2: Population density and growth rate in 1995

REGENCY	POPULATION DENSITY (people/km ²)	POPULATION GROWTH RATE (%)
Jayapura	2.33	6.75
Jayawijaya	7.96	3.44
Paniai	6.74	4.00
Yapen-Waropen	4.12	1.90

Source: Irian Jaya Province Statistic Office

The economic activities of the area does not develop yet, it is dominated by agriculture sector. The share of agriculture sector to the total gross domestic product in 1995 is 37,8 % for Jayapura, 61,7 % for Jayawijaya, 54,2 % for Paniai and 38,0 % for Yapen-Waropen.

Transportation facilities and infrastructures such as road, bridge, airstrip and port are developed during Five year development (Pelita) III to VI (1979-1999). The purpose is to improve economic activities of people in Irian Jaya generally and those four regencies particularly.

The consideration to develop road network is to open the isolation of remote area, to improve social and economic activities, to support transmigration, agriculture, mining and other service activities and to support government, security and defense activities. The current target is to develop a road that can become part of Trans Irian highway and national highway. One major development was to construct 585 km national highway from Jayapura-Wamena. A 235 m hanging bridge located about 283 km from Jayapura was built in that road. The Jayapura-Wamena road is the first road that connects two capitals of the regency. Another important road for Mamberamo RCA is the Wamena-Nabire road through Enarotali, which is located at the southern part of the Mamberamo RCA, and the

Jayapura-Sarmi road located at the north-east of the Mamberamo RCA. The map of the Irian Jaya road can be seen in Figure 1. Based on the spatial development plan for Irian Jaya province until 2007, the development of road network that connect areas in the Mamberamo RCA will become priority. Currently, the public transport is served mainly by government owned company (DAMRI) bus.

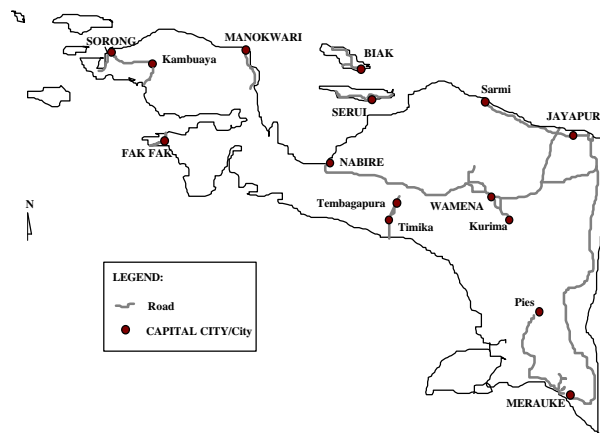


Figure 1: Irian Jaya road map (BPPT study)

Mamberamo River, which has a length of 870 km with a width of 175 to 800 m and a depth of 25 m to 100 m, has a flow rate of 4.5 km/hour. About 450 km of the river can be sailed by boat. In order to support development of river transport in Mamberamo RCA, several wood ports will be built along the river. The ports will be located at Debra, Pagai and Hulu Atas villages. Furthermore, the realization of Jayapura-Wamena road will open a possibility of inter mode transportation, between river and land transportation, i.e. river transportation from Dabra, Pagai and Hulu Atas to port near the hanging bridge then it is continued by land transportation. Currently, the river transport is served mainly by speedboat and long boat owned by local people.

The purpose of sea transport development is to accelerate the movement of people and goods between coastal area/city and between island in Irian Jaya region, to support trading between island and foreign trade and to support development of industry, tourism, forestry, agricultural and fishery sectors. There are many ports available along

the northern coast of Irian Jaya. However, only Jayapura is considered seaport in the Mamberamo RCA. The port, which has a berth length of 132 m and a depth of 11 m, has capability to handle container. The sea transport is served by PELNI and pioneering ships, which are owned by the government. The pioneering ships stop at 74 port in Irian Jaya either with berth or without berth.

Irian Jaya province has 238 airstrips. Out of those airstrips, 208 of them are located in Jayapura, Jayawijaya, Paniai and Yapen-Waropen regencies. The airstrips are operated by government, missionaries and private companies. Local route air transport is served mainly by Merpati Nusantara, Trigana, Airfast and Manunggal Air, while the connection to outside Irian Jaya is served by Garuda Indonesia and Merpati Nusantara. Due to the accessibility of some areas with road transport, in which the road has been constructed recently, several airstrips in those areas are closed. It is expected that more airstrips will be closed with the expansion of road network in the future. In Mamberamo RCA, the priority of air transport facilities development is to upgrade Sentani airport (Jayapura), Enarotali airport (Paniai) and several pioneer air strips located at the sub-district capital in order to serve a larger air plane.



SOCIAL, ECONOMIC, AND CULTURAL ASPECTS FOR MAMBERAMO RCA

Agus Sugiyono, MEng.

The purpose of Mamberamo River Catchment Area (RCA) development is to increase the overall regional income in particular and in more general, the national income. The area development is also expected to improve the quality of life and welfare of the people of Irian Jaya. In order to prepare an integrated development plan, all aspects should have been taken into account including social, economic and cultural

aspects. This article is excerpted from the study conducted by Multimera Co. in 1997 under the contract from the Department of Public Works, Republic of Indonesia.

Based on the result of 1994 census, the population of Irian Jaya is around 1,892,200 consists of 221 ethnic groups. It consists of 988,600 male and 903,600 female. While the population in Mamberamo RCA is only 420,035. Population density in Irian Jaya is around 4 people/km². Average population growth in the period 1980-1990 is about 3.5 % per annum. More than 75 % of population are living in rural and isolated areas. The communities in Irian Jaya are still maintaining traditional culture. Although Christianity is the major religion in the rural and isolated areas, but traditional religion likes animism is still has strong influent. The religions in Irian Jaya are Protestant (56.6 %) followed by Catholics (21.8 %), Islam (21.3 %), Hindu (0.2 %) and Buddha (0.19 %), see Figure 2.

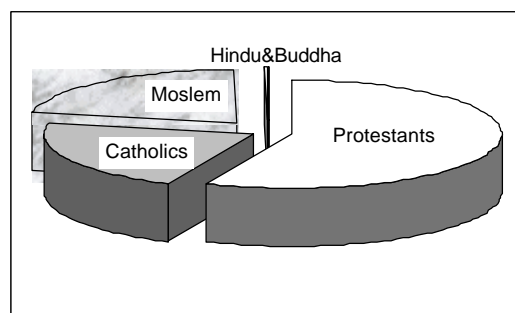


Figure 2. Religion in Irian Jaya

The communities in Irian Jaya have common point of view about land. The land is a collective right that can be used by the communities subject to the approval of traditional leader. The right called *Hak Ulayat*. In daily life, the communities do not commonly sell lands. The land can then be used by the others as long as there is any compensation on land and plants, again with the approval of traditional leader. The land could be used in the long term, as far as the land is really utilized. If the land is not utilized again, the land will be owned by the communities again.

In 1994, the total elementary school students in Mamberamo RCA is 37,505. Ratio

of student to teacher in elementary school is about 22. It means that 1 teacher is responsible for 22 students. Ideally, this ratio should be around 8 and unfortunately, it was indicated that the Mamberamo RCA will be lack of teachers in the foreseeable future. The total junior high school students is 4,550 (only 12 % of the total elementary school student). In 1993/1994, about 4,600 students graduated from elementary school but only 1,550 students continued their education to junior high school (33.7 %). In other words, about 66.3% of the children of the school age (12-15 years) enter the job force or work to help their parent. It needs serious attention because it is not suitable to the basic education program established by the government which enforces the minimum 9-year education system. In general, the education condition in Irian Jaya is shown in Figure 3.

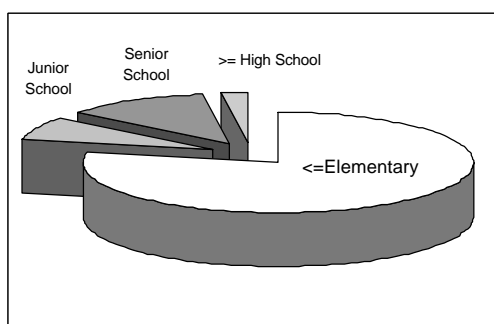


Figure 3. Education condition in Irian Jaya

Infrastructure for public health is well enough but the quantity of medical employee is insufficient. According to the standard of World Health Organization (WHO), the quantity of medical worker is considered as sufficient 1 employee serves no more than 5,000 people. While for the Mamberamo RCA, 1 employee serves more than 15,000 people. Therefore, the number of health workers in the area should be increased in order to sustain the quality of health service to the communities.

The main disease is malaria, followed by bronchitis, skin disease, and diarrhea. The main cause of disease is the environmental condition of dwelling. About 58 % of the population need information and guidance on healthy live.

In Irian Jaya generally people work in agriculture sector (85 %), commercial sector (4 %), and trade sector (3 %). The rest work in industry, construction and mining sectors (8 %). The economic growth in 1994 is relatively high that is 7.25 % per annum. Regional gross domestic income in 1993 is about 4.7 quintillion Rupiah in constant price. The average household income in 1993 is about Rp. 225,000 per month (1 US \$ = Rp. 2,100). Income in rural household is about Rp. 186,000 and in urban household is about Rp. 338,000. Referring to the poverty standard, about 25 % of population are categorized as poor people.

Infrastructure development planning in Irian Jaya is focus on the availability of integrated transportation system. The main priority is the development of primary road. The road will be expected to stimulate growth in other sectors, such as: economy, social infrastructure and education infrastructure. The plan should suitable with the government capability and budget.

Recently, to stimulate development in Irian Jaya, government conducts transmigration program. This program should continue because there is still lack of manpower in Irian Jaya. In general, perception of the community about government policy is positive and supportive. Negative perception appears in the form of problem with utilizing *Hak Ulayat* land and social envious. Therefore, all of development should have priority to involve local manpower.



BRIEFS

Energy Business Forum in Okinawa, Japan

Dr. Moechtar of MIC was invited to participate at the Okinawa Energy Business Forum, held on October 6-8, 1998 in Okinawa, Japan. This forum was hosted by the Japan National Committee for Pacific Economic Cooperation (JANPEC) and was held as part of events associated with the Third APEC Energy Ministers' Meeting from October 9-10,

1998. The forum brought together business leaders to discuss energy issues in the Asia-Pacific Region, and their findings were presented at the dialogue session between APEC Energy Ministers and business leaders at the end of the forum.

During that occasion, Dr. Moechtar presented the Mamberamo River Basin project, along with the Mekong Sub-region Cooperation by Mr. P. Laparojkit of Office of the National Economic and Social Development Board of Thailand, which its excerpt is presented in the first article of this newsletter.

Team for Preparation of Development of Integrated Mamberamo Region was established

On July 31, 1998, the Team for Preparation of the Development of Integrated Mamberamo Region was established by a ministerial decree, signed by the Minister of Research and Technology. The main tasks of this team are: 1) to prepare the framework for the development of integrated Mamberamo region; 2) to prepare the Presidential Decree on the development of integrated Mamberamo Region; and 3) to initiate the cooperation with both domestic and foreign private sectors.

The team which is chaired by Prof. H. Djojodihardjo, consists of representatives from both governmental and private sectors. In the mid of October, some team members visited Irian Jaya and had a chance to fly-over some part of the Mamberamo River Basin Area.



MIC NEWS

Email & Web-Site

Now, MIC back to the cyberspace again. If you need contact via e-mail, just e-mail to :

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MIC has been established Mamberamo Homepage that maintain information on Mamberamo RCA development planning. You

can also download Mamberamo Now Newsletter, and the address is :

<http://www.geocities.com/TheTropics/Island/4175>

Renewal of MIC Membership

Times goes by and MIC is already in the second half of its second year of publication. To sustain the continuity of this newsletter, we do hope that our subscribers would support us by renewing their memberships. The due will cover your subscription from September 1998 (vol. 2, no. 3) to July 1999 (vol. 3, no.2).

We also would like to inform you about some adjustments in the membership due. First, we have to increase the membership due. We have no choice and do apologize for this inconvenience; but we have to do so to cover the sky-rocketing increases in all costs. For example, the shipping/handling cost in increased by a factor of 10 (ten), that is from Rp. 6000 to Rp. 55,000. Therefore, we do appreciate your kind understanding on this matter. Second, we are very sorry to inform you that we have to make the membership due based on the geographical location. We have to differentiate the dues between domestic and international memberships. However, there is something that still remain the same, that is you may send your due to the same address:

Mamberamo Information Center

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Once again, we thank you so much for your kind understanding and support.

