

2.2 Issues on Water Resources Development

Following two issues are the major issues on the water resources development within the Region:

- (1) The facilities will be multipurpose and require the coordination with the other existing and/or planned facilities; and
- (2) Impacts of the facilities will spread across two or more states.

Water resources development projects have been undertaken both by Federal and the State agencies. Constitutionally, responsibility for water supply is endowed to the States. The federal government cannot undertake water resources development projects with the exception of irrigation projects, unless it is entrusted by the state government. On the other hand, State agency cannot carry out water resources development project without financial and technical assistance from the federal government. Irrigation schemes have been mostly managed by the federal government. Power to manage the river and water is given to the States. Therefore, consent of the State is indispensable to undertake water resources development and use projects. Close cooperation between the federal and state governments is indispensable for water resources development and management of existing facilities.

Special arrangement among Federal and the States is necessary especially in undertaking regionwide or integrated water resources management within the Region. Only under such circumstance consistent and optimum planning and implementation of multipurpose projects will be ensured.

In the implementation of multipurpose and/or interstate projects, there will be possibly some difficulties to manage the project by the existing agency, due to the limitation of its entrusted function and powers. It is, therefore, necessary to reinforce the capability and function of the agency if the project is to be implemented by existing agencies.

While cost of single purpose water resources developments is borne by responsible agencies, cost allocation among agencies concerned will be necessary in case of multi-purpose projects. An appropriate method for the cost allocation needs to be established.

End users of D&I and irrigation water are paying charges to respective agency. Money collected is allotted to each work together with various subsidies. No standard for the financial system of those works is established. If sound financing system is not introduced, it may bring costly operation and maintenance or insufficient level of O&M due to the lack of funds.

2.3 Issues on the River Water Use

As present surface water demand is estimated to exceed the supply capacities, rationing of each water use shall be required so as to ensure equitable water use. Water takings are so far mostly undertaken by the governmental agencies, which is exempted from the obligation provided in the Waters Enactment. Thus some arrangement to coordinate the activities of those agencies is desirable.

An interstate river without agreement is enumerated in the federal list of the constitution. An agreement concerning the use of the Muda river has been discussed for a long time but not signed yet. Pulau Pinang State may suffer from lack of water if most water is diverted or used within the Kedah State. Arrangements for the use of the Muda river is necessary to ensure the use of Pulau Pinang State.

Arrangements for water use should be considered together with the operation of water source facilities. Systems to supply as much water as possible to every user shall be established, while coordination of water use in drought season shall also be sought.

2.4 Other Issues on Water Resources Management

Implementation of flood mitigation projects are carried out by responsible agencies. Close connection with other water development and use shall be maintained. Other controls on the river and water shall be managed along the existing laws, but coordination and keeping consistency of enforcement from the viewpoint of region wide basis shall be well managed.

3. RECOMMENDATIONS ON ADMINISTRATIVE SYSTEMS

3.1 Framework for the Integrated Management

Fundamental guidelines on measures to avoid predictable problems which may arise from inadequate administrative framework is already shown in the draft National Water Resources Code by NWRS. However it may take long period to legislate the Code. An interim measure is hereby recommended in a form of Master Agreement among Federal and the States of Perlis, Kedah and Pulau Pinang regarding the distribution of responsibilities.

The agreement shall, to satisfy the minimum necessity for the integrated water resources management within the Region, include following items:

- (1) Principle on responsibilities of the Federal and State Governments,
- (2) Establishment of Regional Master Plan,
- (3) Management of water use, especially in the interstate river,
- (4) Procedure of project implementation, including defrayment of the cost, and
- (5) Arbitration by the Federal when a discrepancy exist.

Detailed draft Agreement proposed as shown in the Annex 1.

To ensure the effectiveness of the Agreement, it shall be properly adopted or approved by the respective authorities after necessary co-ordinations in Federal and the State Governments. Subsidiary agreements shall also be prepared and authorized along the provision. After the authorization, the Federal and State Governments should be bound by the Agreement. The Federal Government shall prepare and follow the Regional Master Plan. The States shall also follow the plan, and adjust the water takings from the interstate river in accordance with the provisions in the subsidiary agreement. The Federal Government also shall prepare an arbitration plan in response to the request when there arises a dispute on the management of water resources among the States. The power to control water use within the State, power to undertake water use projects such as D&I and irrigation water supply shall be endowed to each state.

3.2 Regional Master Plan

The Regional Master Plan, one of the subsidiary agreement for the Master Agreement is to establish the optimum water development and use within the Region. It shall determine the schedule or priority among planned water resources development projects.

The Plan shall specify the present and future water use by sector and area as a basis of water resources development plan. The area of paddy field, both existing and planned shall be specified by basin, together with the irrigation water demand. Population and major industrial developments shall be specified by town as well as D&I water demand by basin. The Plan shall also specify the implementation schedule of water resources facilities. Name, purpose, location, capacity and implementing agencies and construction schedule shall be also specified.

The Plan shall be prepared by Federal coordinating agency. Concerned agencies both in Federal and State Governments shall submit informations and opinions. Coordination to modify draft plan shall be carried out under the management of Federal and State coordinating agencies. It shall be coordinated and finalized at higher level and be approved by the Cabinet and adopted by the State EXCOs. Review and revision, if necessary, of the Plan shall be carried out every five year or so in the same procedure as the original plan.

Facilities shall be constructed according to the schedule established in the Master Plan. Federal Government shall give technical and financial support for the implementation of the project. The States shall undertake acquisition and reservation or alienation of required lands. Each water user shall not use or develop water beyond the specified in the Plan.

3.3 River Management and Operation of Facilities

The recommended Master Agreement left the management of the river to each state. This is because the State is the primary authority responsible for the river and water management administration. The Agreement endowed the States the power to manage and control the water use so as not to bring unfair water allocation. Each state shall determine the possible amount of intakes for every taking point, and always monitor the river flow and water use condition. The State is also responsible to manage the water allocation in the drought season. In drought season the States shall order each user to diminish the water intake. Amount of water to be rationed shall be indicated by each user. This procedure will be undertaken in two steps. First drought period will be determined by observing the river water flow at a standard point. Then, water will be allocated to each user. Uniform water use rations will be the most adequate method, but as water requirement will change from time to time, consideration on special condition is sometimes necessary.

As for the management of the interstate rivers, the Master Agreement provides that each state is responsible to manage part of the river which is located within the State. However to secure the water use in the downstream State, the Agreement prepares the interstate coordination system. Declaration of drought based on the preliminarily fixed standard may be initiated by any of the States. Establishment and observation of standard flow at one point will be also a useful methods for this purpose. Scheduled target for such standard flow shall be prepared and agreed every year among relevant States.

After the completion of water resources development facilities, its operation shall be carefully managed to satisfy the planned performance. Because there are many water users in downstream areas and the facility is constructed to meet various needs, the operational program of the facilities shall be prepared and be agreed by every water user in the downstream area. Allocation of water shall be determined at the same time. The schedule will be determined on a daily basis and be revised every year from the engineering viewpoint.

Operation of facilities on the international river system can be managed under the same principle. Administrative systems to coordinate the water allocation is desirable, and for the case there is a dispute which cannot be solved within mutual compromise, an arbitrating system shall be established.

4. RECOMMENDATION ON INSTITUTIONAL SYSTEMS

Recommended institutional systems in MAP are still valid except some elaborations. Hereinafter the role of each agency or committee will be elaborated. Committees and coordinative agencies in the Federal and State level shall be established together with the implementing agency.

There shall be a Federal Water Resources Committee (FWRC) to undertake necessary coordinations. Its members are the head of Federal water related agencies and be appointed by the NDPC. The Committee shall undertake necessary coordination for the preparation of the Regional Master Plan. Plans for the respective water resources development also shall be coordinated by the committee. All those plans shall be finally approved by the Cabinet. The committee shall also be in charge of the establishment of various technical and administrative standards and guidelines such as maintenance flow, environmental standard, standard design flood and cost allocation rule for the multipurpose facilities. The adoption of the technical standard will be undertaken by respective State WRD.

A Federal Water Resources Division (FWRD) shall be established within Federal EPU, and its engineering staff should be seconded from DID, PWD and others. FWRD is in charge of preparation of the Regional Master Plans. In the same time, it will prepare and collate various technical standards. Being a secretariate to FWRC, giving technical advice to the State and preparing for the establishment of various water related laws and the Water Resources Development and Management Corporation (WRDMC), responsibility for the supervision and control in general of WRDMC if established will be endowed to the Division.

State Water Resources Committee (SWRC) shall be in charge of coordination for the preparation and establishment of various plans. Coordination for the water use and enforcement of various technical standard shall also be carried out by the Committee. It shall be headed by one of the EXCO members -- preferably the state secretary -- so as to keep close contact with EXCO. It shall consist of representatives from water related agencies, including MADA. MADA may only send representatives to SWRC of Kedah. State Water Resources Division (SWRD) shall undertake coordination for the water allocation, prepare the plans, maintain river record and others. Water resources development for the maintenance flow shall be undertaken by DID.

There shall be a WRDMC to undertake implementation and operation of water resources development facilities by the entrustment from other responsible agencies within the area. The regional headquarters shall be established to manage the integrated operation of various facilities. Management of existing facilities i.e. the operation and management of the Muda and Pedu dams shall be entrusted to the Corporation.

In addition, there shall be an interstate committee consisting of representatives from each water user and SWRDs. Federal WRD may send representative as an observer or advisor. The committee is for the coordination of interstate issues which cannot be settled by a single state, but can be solved by mutual coordination among the States and need no Federal intervention. Thus, the committee will not be given positive role in the establishment of the formation of plans and agreements.

5. RECOMMENDATION ON FINANCIAL SYSTEMS

5.1 Cost Allocation

Development cost for the proposed dam reservoir should be borne by responsible agencies both in Federal and the States. Development cost of irrigation schemes have been financed by the Federal DID. D&I water supply is due to be financed by the State PWD/PWA, however usually receiving the financial assistance from or through the Federal PWD. Cost for flood mitigation schemes are in many case financed by the Federal DID. No example of water resources development has been seen for the river maintenance flow yet. DID will be the most adequate agency to manage it, because DID's coverage in river management has been the widest.

Because of the limitations of the State fund, all the cost has to be mostly expensed from the Federal fund. Budget allocated to the respective agencies will be transferred to the implementing agency. Allocation shall be made along the established formula. Later on, the States will undertake debt services along the agreement with the Federal Treasury.

The rule for the cost allocation shall be established and be applied uniformly to every recommended project. There are many methods for the cost allocation of multipurpose facilities. Each way has merits and demerits. There is no standardised method for the allocation. Method shall be determined in consideration of the desirable socio-economic target and solvency of each sector.

The cost to meet present water deficit shall be equitably shared by every water user within the basin. In general, the cost for the water sources development is billed to whom the deficit is brought. But the causes of the existing deficit cannot be discriminated. Thus, as a second alternative, it shall be borne those who are suffered from the water deficit.

The agency which made an application for the development of water use project in the Regional Plan shall be responsible to expence the cost for necessary development. The cancellation of water use plans will not always absolved from this obligation.

5.2 Water Charging System

Effort to the self financing of the water use business shall be continued, however present water charges are not sufficient to cover the water resources development costs.

Unit water charges for the D&I water supply are distributed between M\$0.17/m³ and M\$0.44/m³, depending on the purpose and States. Kedah and Perlis water supply funds are producing deficits recently. Cost for the construction of distribution facilities occupy the major part of water supply cost. If it will be expanded into the suburban or rural area, unit cost will increase more and more. The average unit

cost of water will be M\$0.60 - 0.70/m³, after the recommended developments are completed.

It is recommended to continue the effort to maintain sound financing system by saving the unnecessary expenses and raise the water charge at a reasonable pace.

Irrigation water rates are collected from each paddy farmer at the unit rate between M\$7/ha and M\$25/ha. The money is going into the State fund, and there is no direct financial relation established between the irrigation rate collected and the costs of irrigation facilities. If dare compared, the rate collected corresponds to only a minor portion of O&M cost: even in the MADA area, it is less than 1/3 of O&M cost.

It is estimated that O&M cost of irrigation facilities after the implementation of the recommended development is M\$218/ha for MADA including O&M costs for existing facilities and that of tertiary development and M\$170/ha for minor irrigation schedule. This cost seems to be well within the farmers' capacity-to-pay, but it is impossible to raise the irrigation charge at once. It is recommended to increase water rate gradually and in a long run all O&M cost should be covered by water rate collected.

5.3 Compensation System

While water resources development brings many benefits, it will also induce adverse effects on both beneficiaries and non-beneficiaries. The most affected will be peoples in the reservoir area who are forced to loose their bases of livelihood. Including this, adverse effects may be classified as follows:

- (1) Loss of alienated land
 - (a) Alienated Malay reserved land
 - (b) Other alienated land,
- (2) Loss of the leased land
 - (a) Mining lease
 - (b) Temporary lease for forest production
 - (c) Other lease,
- (3) Loss of houses, trees and other private properties which are closely connected to the alienated or leased land,
- (4) Loss caused by shifting private properties,
- (5) Loss in business of employment opportunities,
- (6) Adverse effects to the environmental or ecological system,

- (7) Loss in public properties or their functions
 - (a) Facilities for public use
 - (b) Other properties belonging to the Governments, and
- (8) Loss in potential resources
 - (a) Mining resources undeveloped
 - (b) Forest resources
 - (c) Others.

Among all these effects, only the loss of alienated land is provided by the Land Acquisition Act. However the Act is a procedural law to acquire alienated lands compulsorily and not much for the compensation. Amount of compensation shall, according to the Act, be determined based on the market value of the land and properties whereon. It is not an exceptional measure to the ordinary commercial dealings. From the viewpoint of monetary or non monetary terms, no additional measures are prepared by the law. Consequently, all the compensation problem shall be dealt with by the mutual consent and common law system.

In the actual administrative process, various measures have been taken to assist the affected people, especially when they are on the poverty level and have no alternative way of living. Such measures include giving priority to join the land development scheme and lending funds for rehabilitation through the public financing authorities. There are cases that a substitutional land is leased in exchange to the cooperative surrender. Sometimes, development of substitutional and additional facilities such as roads, bridges, schools and other are undertaken in the vicinity of submerged areas. Compensation to the public facility is made within the administrative coordinating systems. Transfer of fund between the agencies are sometimes undertaken.

The compensation on potential resources is by no means justified. The first reason is that the market value of the land shall theoretically include or be reflected these potentials. Secondly, the project is implemented because it is more beneficial than the development of other potential resources in the same area.

In addition to the payment of market value of the land to be acquired, following measures are desirable for the welfare of the submerged or affected peoples:

- (1) To make additional payments sufficient to obtain the substitutional land or to give priorities to join the settlement schemes when the market value of the land is relatively low and the amount is not sufficient to obtain the substitutional land;
- (2) If the land which has been leased is to be surrendered, lease of other land is sometimes desirable;

- (3) For the loss of business opportunities, payment on future wages or incomes at present value or to give assistance for the job training, soft loan and other helps for the resettlement will be desirable;
- (4) Relocation or construction of substitutional public facilities shall be undertaken; and
- (5) Other resettlement or rehabilitation schemes shall be considered.

Since most of these measures are already taken within the existing administrative framework, additional system is not required to be introduced. Just a well organized management of this system should always be maintained.

Cost for the land acquisition is usually born by the project. All or part of the construction cost of substitutional facilities shall be also borne by the project.

6. RECOMMENDATIONS ON LEGAL SYSTEMS

As recommendations made in the previous Chapters are all providing for the relation among Governments and governmental agencies. Under the present Malaysian legal systems, administrative systems is not be established by law, unless it does not control the activities of private person.

However from the viewpoint of promoting the uniformity and transparency, administrative procedures also shall be clearly established in a form of law. Agreements and arrangements will be all tentative measures and it is more recommendable to enact an integrated law for water resources development and management. Efforts to materialise such laws, could be erabolating from the National Water Resources Code, recommended in MAP.

APPENDIX

APPENDIX A. DRAFT MASTER AGREEMENT ON WATER RESOURCES
DEVELOPMENT AND MANAGEMENT IN THE PERLIS-
KEDAH-PULAU PINANG REGION

An Agreement dated this ____ day of _____ and made between the Government of Malaysia (hereinafter called the Federal Government) of the one part, the Government of the States of Perlis of the second part, the Government of the States of Kedah of the third part and the Government of the State of Pulau Pinang of the fourth part.

Whereas water resources are among the most important means for the nation's socio-economic development and their most beneficial use in the Region can be ensured only through a regional integrated approach.

And whereas the legislative and executive power on water resources development, use and management is distributed among the Federal and State governments by the Federal Constitution.

And whereas the Constitution does not provide the relation and/or coordination among concerned States or States and Federal Governments in the integrated and regionwide water resources development, management and conservation except that the interstate river comes under State list when there is an agreement, however there is no written form of agreement among States concerned or between States and Federal except for that regarding the Kulim river.

Now therefore, it is hereby agreed as follows:

1. Interpretation

Wherever the following terms shall appear in this Agreement they shall bear the respective meaning set out hereunder:

"the corporation" means an agency which can and shall be responsible for undertaking of implementation, operation and maintenance of water resources facilities.

"Implementation Program" means the plan to be established in accordance with the provision in the 5th chapter.

"Interstate River" means the river which is not wholly within one State.

"the Region" means the area including the State of Perlis, the State of Kedah, the State of Pulau Pinang but excludes Pulau Langkawi and the Kurian river basin.

"Regional Master Plan" means the plan to be established in accordance with the provision in the 3rd chapter.

2. Principle

- (1) The States of Perlis, Kedah and Pulau Pinang have the rights and responsibilities for the reasonable and beneficial use, development and management of water resources within the Region.
- (2) The Federal Government has the responsibility to give necessary assistance for the water resources development and use within the Region and shall initiate, study, coordinate, give technical and financial support and take initiatives in the implementation of water resources development projects.
- (3) Every water user has the responsibility to bear the cost for the planning, construction, operation and maintenance of water resources development facilities.
- (4) Every water user has to reduce water intakes when there is a drought so as to ensure equitable water distribution among all users.

3. Regional Master Plan

- (1) Outline of the water resources development and use within the Region shall be provided in the Regional Master Plan.
- (2) Draft Regional Master Plan shall be prepared by the Federal Government, and shall be authorized both by each State and the Federal Government.
- (3) The Regional Master Plan shall include:
 - development target for irrigation, D&I water supply and the river maintenance flow,
 - target water demand to be met, and
 - outline of water source projects to be implemented for the short-term target.
- (4) Every water resources development within the Region shall be coordinated in the process of the preparation and authorization of the Plan.
- (5) All the project for water resources development and management shall be authorized.

4. Water Use

- (1) The use of the Muda river shall be coordinated in a manner to ensure equitable use between the States of Kedah and Pulau Pinang.
- (2) Existing water use shall be resistered.
- (3) A schedule of discharge in the lower reaches of the Muda river shall be agreed between the States of Kedah and Pulau Pinang.
- (4) Any of the States may require drought coordination when the river flow is going to lower than the scheduled rate and each state shall rationalize water use within its territory based on an agreed schedule.
- (5) An interstate committee shall be established to coordinate and prepare the annual flow schedule and to undertake co-ordination for water distribution in a drought time.
- (6) The corporation shall inform the Federal Government and the States the water level of reservoirs, inflow to the reservoirs, and outflow from the reservoir.

5. Project Implementation and Operation

- (1) Technical and economic feasibility shall be studied for the projects nominated in the Regional Master Plan.
- (2) Implementation program shall be prepared and be authorized by the Federal Government and the States concerned before its implementation.
- (3) The program shall include allocation of costs among the Federal Government and the States for construction, operation and maintenance.
- (4) The implementation, operation and maintenance of source facilities may be entrusted to the corporation.
- (5) The operation of the facilities within the Region shall be managed from the viewpoint of minimizing the adverse effects.
- (6) Standard schedule of the river flow shall be established based on the agreement among related agencies and the operation shall be managed so as to realize the targetted standard.
- (7) The schedule shall determine the river flow at certain locations on monthly basis, and shall be revised every year.

6. Arbitration

- (1) The Federal Government shall show arbitration plan if there is a dispute between the States regarding the interpretation of this Agreement, or setting up of the subsidial agreements or rules provided in this Agreement and if it is required by one of the States.
- (2) The arbitartion proposal shall be duly considered by the States.

Signed at _____ this _____ day of _____

for and on behalf of the Government of
Malaysia in the presence of:-

for and on behalf of the Government of
the State of Perlis in the presence of:-

for and on behalf of the Government of
the State of Kedah in the presence of:-

for and on behalf of the Government of
the State of Pulau Pinang in the presence of:-

APPENDIX B. DRAFT REGIONAL MASTER PLAN

1. Direct Water Resources Development

The targets for direct water resources development in the Region are envisaged as follows:

Irrigation Development

Unit: 10³ ha

	1982		1990		2000	
	Main	Off	Main	Off	Main	Off
Perlis						
Kedah						
Pulau Pinang						
MADA						
Total						

Population

Unit: 10³

	1982	1990	2000
Perlis			
Kedah			
Pulau Pinang			
Total			

Service Factor of Public Water Supply System

	1982	1990	2000
Perlis			
Kedah			
Pulau Pinang			
Total			

2. Target Water Demand

Water demand to be supplied is envisaged as follows:

The State of Perlis

Unit: 10^6 m^3

	1982	1990	2000
From Perlis river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Kedah river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			

The State of Kedah

Unit: 10^6 m^3

	1982	1990	2000
From Perlis river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Kedah river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Muda river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			

The State of Pulau Pinang

Unit: 10^6 m^3

	1982	1990	2000
From Kedah river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Muda river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Perai river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Pinang island river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			

MADA

Unit: 10^6 m^3

	1982	1990	2000
From Perlis river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Kedah river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			
From Muda river basin			
Irrigation			
D&I water supply			
River maintenance flow			
Total			

3. Plan for Water Resources Development Facilities

To meet the present water deficits and increase in future demands, following facilities shall be constructed.

(1) Tawar-Muda dam

- (a) Purpose: to supply water for MADA area and downstream area of the Muda river
- (b) Location: Muda River Basin, Kedah
- (c) Active storage capacity: 54 million m^3
- (d) Scheduled year of commission: 1991

- (2) Beris
 - (a) Purpose: to supply water for MADA area and downstream area of the Muda river
 - (b) Location: Berlis River, Muda River basin, Kedah
 - (c) Active storage capacity: 101 million m³
 - (d) Scheduled year of commission: 1991
- (3) Arau
 - (a) Purpose: flood control and irrigation in the Arau river basin
 - (b) Location: Perlis River basin, Perlis
 - (c) Active storage capacity: 20 million m³
 - (d) Scheduled year of commission: 1990
- (4) Ahning
 - (a) Purpose: D&I water supply in Kedah and hydro power generation
 - (b) Location: Pdg. Terap river, Kedah
 - (c) Active storage capacity: 200 million m³
 - (d) Scheduled year of commission: 1989
- (5) Mengkuang
 - (a) Purpose: D&I water supply in P.Pinang
 - (b) Location: Bukit Merjam, Plau Pinang
 - (c) Active storage capacity: 24 million m³
 - (d) Scheduled year of commission: 1984
 - (e) Remarks: this will be implemented and managed by PWA
- (6) Jeniang
 - (a) Purpose: to supply water in MADA area
 - (b) Location: Muda river, Kedah
 - (c) Active storage capacity: 27 million m³
 - (d) Scheduled year of commission: 1991

(7) Timah-Tasoh

(a) Purpose: flood control and irrigation in the Perlis river basin

(b) Location: Perlis river, Perlis

(c) Active storage capacity: 37 million m3

(d) Scheduled year of commission: 1997

4. Revision of the Plan

This plan shall be revised if a significant change in the targets is necessary.

APPENDIX C. CONSIDERATION ON ALTERNATIVES

The possibility to manage the project by the existing agency will be reviewed hereinafter.

Based on the principle that the most benefitted shall in charge of implementation, following issues still remain to each agencies:

- (1) Difficulty for the implementation by PWA will be:
 - (a) that power of the PWA will not be extended outside of the States;
 - (b) that PWA will require technical and/or financial assistance from the Federal;

The first issue is the biggest and seemed to be almost fatal point. Even though the enactment will be amended, this point will not be evaded;

- (2) MADA is the biggest beneficiary in the most of projects. Above-mentioned points will not arise if MADA manages. The power and function of the MADA is however, legally restricted within what relates to the agricultural development of the Kawasan Muda. This point may bring some difficulty in the implementation of multipurpose facilities;
- (3) State agency such as State DID or State PWD may undertake projects within the State, if so entrusted among agencies concerned. Lack of financial and technical resources however, will bring some more issues; and
- (4) Federal agencies such as Federal DID and Federal PWD also may undertake projects if so entrusted. Considering the water use situations, DID will be more suitable agency for the implementation.

Observing from the construction of facilities, some of the alternatives may not have the essential problems. However, these ideas are based on the mutual entrustments and goodwills, and no measure for the arbitration and coordination is prepared. Once disputes are arisen, it will be difficult to solve the problem. This issue will mainly arise in the operation of facilities.

In conclusion, it is recommended to establish the Federal statutory body which is neutral from every water use for the implementation and management of water resources development facilities within the area. Introduction of the body will bring following merits:

- (1) Neutral from every water use.
- (2) May act everywhere and for every purpose.

(3) Easy to manage the facilities in an integrated manner.

(4) Easy to hold technical expertise.

Any of above-mentioned alternative cannot satisfy every of those matters. The concept on NWRDMC which is recommended in the MAP is suitable for this purpose.

APPENDIX D. FUNCTION OF THE PROPOSED STATES WATER DIVISION

1. Manage the water resource within the State:
 - (1) to be referred by the D.O. or Mines Inspector with regard to the licensing for the private water use.
 - (2) control the water intake by private person (actual enforcement will be carried out by D.O. or other agency)
 - (3) control the discharge of polluting effluents (cooperatively with DOE or other agency) (issuing of discharge licence shall be referred)
 - (4) designate the river area and control the land use within it cooperatively with L.O.
 - (5) referred and may make opinion in the licencing of sand, stone and rock outtaking from the riverbed.
 - (5) referred and may make opinion in the navigation of vessels within the river.
2. Undertake river conservancy and flood mitigation work (actual implementation will be carried out by DID, PWD or proposed Cooperation) such as river bund, dam for flood mitigation, retarding basin, flood channel, river dredging work, river training work and others.
3. Undertake coordination among agencies concerned in water use.
 - (1) To be referred when the agency want to alter the water intake. Division may make opinion after the calculation of the safe yield.
 - (2) May make opinion from the viewpoint of water resources in the formation of regional/town and country development plan.
 - (3) Prepare the agreement on the interstate river management with the necessary coordination with concerned States and manage the river along the agreement.
 - (4) Call the draught coordination committee when the riverflow is or predicted to be less than the designated level and difficulties for the normal use of the river is foreseen. The committee may control the water intake so as to meet the supply capacity and ensure the minimum demand in the downstream area.
4. For these purposes, the Division shall:

- (1) collect, collate and submit data necessary for the preparation of Plans.
- (2) to coordinate the opinion within the State and make opinion to the Federal in the preparation of the Plans.
- (3) collect, collate and be transfered informations regarding the hydrological data, water intake conditions, effluent discharge conditions and others.
- (4) prepare and maintain an inventory of intakes including the schedule of water taken by each intake.
- (5) prepare and maintain river record book.
- (6) establish, notify and administer maintenance flow, standard design flood, water quality standard, engineering standard for the facility and others.
- (7) announce flood warning
- (8) to be refered in the preparation of operation schedule of facilities.

