Measures for Solving Drought, Flood & Wastewater

1. Basin System Integration 2. Focus on area faced proble

3.1mmediately implement





Strategy and Measure





- 1. Protection & Rehabilitation of Upstream Forest for Healthy Ecology
- 1.1 Upstream Rehabilitation
- 1.2 Upstream Weir Construction
- 1.3 Reed Cultivation
- 1.4 Soil & Water Conservation

Risk Area for Inundation

Risk Are-High Flood & Land Slide Risk Area-Medium Flood & Land Slide Risk Area for Low Flood & Land Slide



Urgent



Next Phase



- 2. Rehabilitation on Water Resources, Water Way, & Wetland
- 2.1 Survey & Make Inventory of Wetland, Water Resources, & Natural Stream
- 2.2 Define Guidelines on Sustainable Use of Wetland
- 2.3 Improve/Rehabilitate Stream, Water Resources, Wetland in Pilot Area
- 2.4 Dredge the Stream for Drain& Boundary Marking
- 2.5 Retaining Wall for Bank Protection

รวม **50,000** ตร.กม.





- 3. Development/ improvement of Water Resources, Drainage System & Diversion
- 3.1 Reservoirs
- 3.2 Develop/Improve Diversion System
- 3.3 Develop/Improve Water Resources & Drainage System
- 3.4 Groundwater Management



เชียงใหม unu ລາພບ HUS KUDVAIU pasaan นกรพบที่ . ວດຮຣານ aluna บางระกำ พิษณโลก มกดาธาร luoos unsdossn อบัลราชธานี สพรรณบร WS:UNSASDUSU • กรงเทพมหานคร สมกรสาคร จันทบรี ประจวมก็ริตันร **32 Cities** duws (15 Area Groups) เมื่อยา สราษกรรานี นกรศรีธรรมราช สบขลา

เชียงราย

Management of Land **Use & Flood Protection** in Economic Area 4.1 Plan, Layout, Define the Land Use Measure 4.2 Improve the Structures Obstructing water way along Communication Routes 4.3 Study & Construct the Flood **Protection System in Community & Economic** Areas



- 5. Improve Agricultural Pattern & Use Agricultural Area as Retarding Pond
- 5.1 Pilot Project on Use of Agricultural Area as Retarding Pond
- 5.2 Develop Rice Cultivation in Flood Risk Area





6. Flood Mitigation Management

- 6.1 Enhance the Participation of Local Administration Organization & People
- 6.2 Develop Tools & Mechanism for Management e.g. National Water Center, Decision support System. Etc.

6.3 Research on Flood Prevention & Mitigation6.4 Oversee & Monitor the Project Implementation



Proposal on Water Management Mechanism in Critical & Normal Situations





1) Measure on Increased Water Provision

- 1.1 Artificial Rain Project
- 1.2 Upstream Weir
- 1.3 Water Resources Rehabilitation
- 1.4 Water Resources Development

- 1.5 Water Quality Improvement for Shallow Well
- 1.6 Construction of Water Supply System & Groundwater Well
- 1.7 Farm Pond



Work Plan and Project for Drought Mitigation



2) Measure on Water Distribution 2.1 Water Conveyance System 2.4 Mobile Unit of Groundwater Quality 2.2 Field Water Supply System Improvement Water Distribution Point 2.5 2.3 Pump & Truck Improvement/Conปรับปรุง จุดจ่ายน้ำเพื่อการบริโภค 1,000 จุด ปรับปรุงจุดจ่ายน้ำเดิม 2,000

Work Plan and Project for Drought Mitigation



3) Measure on Increased Efficiency of Water Supply System

3.1 Village Water Supply System Maintenance

3.2 Groundwater Well Washing



Work Plan and Project for Drought Mitigation





4) Measure on Water Management

- 4.1 Increase Water Use Efficiency
- 4.2 Improve Dry Season Crop
- 4.3 Training on Water Supply Maintenance
- 4.4 Reservoir Control
- 4.5 Investigation on Status of Water Resources
- 4.6 Orient & Monitor the Water Quality
- 4.7 Research & Study for Drought Mitigation
- 4.8 Public Relation & Campaign for Water Saving
- 4.9 Knowledge transfer on Farm Pond

4.10 Drought Management Organization

Increase Water Use Efficiency in Irrigation Area

Measure for Solving Wastewater Problem



- 1. Rehabilitation on water quality in critical basin and urgent
 - 1.1 Management on wastewater from community
 - 1.2 Management on wastewater from
 - agriculture
 - 1.3 Management on wastewater from industry
 - 1.4 Salinity intrusion Control
- 2. Oversee & control the waste &wastewater disposal
 - Law enforcement via participation
- 3. Enhance the participation of local authority & people
 - Campaign and disseminate for having knowledge & understanding in management of wastewater from community, agriculture & industry



Wastewater 134.8 MCM/day BOD Load 6.19 M kg BOD/day

Industry 6.8 / 2.7

Improve the effluent standard & monitor the law enforcement
Enhance the clean technology application & usage of industrial wastewater

Agriculture 114 / 0.89

Define standard for wastewater disposal control
Develop & enhance the application of best practice for pollution prevention & mitigation
Reduce the usage of chemical fertilizer & substance Comunity 14 / 2.6

Promote wastewater treatment at the sources: households & building
Promote the construction and improvement of treatment system as Cluster Treatment & Central Treatment)
Promote Polluter Pay Principle

Measure on Management



1. Promulgation of Water Act 2. Water Organization Reform 3. Promulgation of sub-provisions 4. Enhance and Strengthen RBC **5. Establishment of Management** Organization **6.National Water Resources Information** Center 7.Water Resources Fund 8. Water Resources Sustainable **Management Research Project**

Structure of River Basin Management Organization



Urgent priority to solve Water-Related Disaster

1. Reforestation and construct check dam



Reforestation



2. Vetiver grass for soil and water Conservation





3. Warning System- Early Warning System

- Telemetering System





Permanently Resolution : Move the settlen Antema tive the path of flood or the hazardous areas



Permanently Resolution : Alternative 2 Constructing the dam on the upstream channel





Sharing and provide the information to the people for preparedness







Promote information on Web site / internet system

www.dwr.go.th



Water Situation report in every day

In the Critical Situation will report to director, and Ministry's director will report to the cabinet for decision making

Promote information on Web site / internet system

BANK LEVEL AND CHANNEL CAPACITY

Ex. UPPER NORTHERN REGION MAIN RIVERS





4.Participatory Watershed Management

Institutionalize water

management unity

- Provided basic information appropriate technology
- Strengthening water user organizations
- meeting training and study
- Making conscious of hea watershed protection







Organization

Organizational Structure for National Water Resources Management



Structure of River Basin Management Organization







2007

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Proposal on Water Management Mechanism in Critical & Normal Situations

