

1 ワークショップ開催

(1) 日時：2007年11月9日（金）8:30AM - 5:30 PM

(2) 場所：PAGASA 会議室

(3) 参加者：

FFWSDO の関係機関である PAGASA, NIA, NIA-Pantabangan Dam, NIA/Magat Dam NPC, NWRB, DPWH, OCD から 31 名、JICA 調査団 4 名、JICA フィリピン事務所 1 名の合計 36 名が参加した（添付資料“Attendance”参照）

モデレーターは JICA 調査団の評価分析担当が務め、PAGASA のスタッフが記録を取った。

(4) 目的

FFWSDO の関係機関による参加型ワークショップを通じて、ダム放流のための洪水予警報の課題を共有化し整理を行った。ワークショップ期間が 1 日と短いこともあり問題分析に重点をおいて実施した。目的は；

- ・ PCM 参加型計画立案手法の概要を理解する。
- ・ 関係者分析／問題分析を通じてプロジェクト形成のアプローチを整理する。
- ・ 関係機関それぞれが持つ問題を共有化すると同時に問題の因果関係を整理する。
- ・ 調査者は、プロジェクトの計画内容や目標の達成見込みについて情報を得る。

2 ワークショップ結果

(1) PCM ワークショップの説明

準備した資料（添付プレゼンテーション資料参照）に沿って、PCM および参加型計画手法の特徴、ワークショッププロセス、ワークショップの位置づけ、関係者分析、問題分析、目的分析の手法を説明した。

(2) プロジェクトのフレームワーク確認

JICA 技術協力プロジェクトとしての本プロジェクトのフレームワークを確認した。

(3) 関係者分析

- ・ FFWSDOに関わる各機関、洪水予警報に関する各種協議や取り決めを行っているJOMC、最終受益者であるダム下流住民について整理を行った。
- ・ 短い所要時間を考慮し、関係者分析で重要と思われる部分を実施した。それぞれの関係機関の“権限と役割”、“弱さ”、“問題点”について分析を行った（添付資料“Stakeholder Analysis”参照）

(4) 主な分析結果

主要関係機関に係わる“弱さ”および“問題点”の主な内容は以下の通りである。

「PAGASA」

“予警報のための通信ネットワークが弱く切断される”

“機器の維持運営の予算が十分でない”

「Dam Operator of NIA/NPC」

“PAGASA, NWRB, OCD間の調整が欠けている”

“PAGASAとの情報の交換がうまくいっていない”

“PAGASAから雨の予測データが来ない”

“ダム管理所で行うダム流入量予測モデルが適切でない”

“スタッフが流入量予測の知識に欠けている”

“規定に基づいたダム操作ができていない”

“ダム管理所スタッフの能力が欠けており、人数も少ない”

“関係機関の利害衝突がダム管理者の操作に影響がある”

“警報パトロールカー、観測機器が稼動しなくなっている”

「NWRB」

“ダム管理者の操作決定結果に対する責任が無い”

“ダム管理者との調整を取り持つ関係機関が無い”

「DPWH」

“ダムゲート操作時にダム管理者とPAGASAで情報交換がなされていない”

「OCD」

“ダム操作に関して住民の誤解がある”

「JOMC」

“JOMC会議にレギュラーを出席させない機関がある”

“ルールカーブが無いダムがある”

「Beneficiaries」

“住民は洪水警報に対して理解が少なく行動も乏しい”

“洪水警報が技術的すぎて住民に理解できないことがある”

(5) 問題分析

- ・「中心問題」が“ダム放流のための予警報が適切で効果的に機能していない”と設定された。（添付資料“Problem Analysis”参照）
- ・「中心問題」の「直接原因」が次のように設定された
 - “信頼できる雨量・河川流量の観測データが得られていない”
 - “雨量・河川流量の適切な予測結果が得られていない”
 - “ゲート操作が適切に実施されていない”
 - “ダム放流警報と洪水警報が適切に発令されていない”
 - “警報に対する住民意識が弱い”
 - “関係機関の調整能力が弱い”
- ・「直接原因」を2つに分け、2グループによりそれぞれの原因を掘り下げ「原因－結果」のプロブレム・ツリーを討議してもらった。
- ・「直接原因」の主な原因として挙げられた主要問題は以下の通りである。（添付資料“Problem Analysis”参照）

- a) 信頼できる雨量・河川流量の観測データが得られていない
 - ・観測スタッフが訓練されておらず、スタッフ数も少ない
 - ・観測機材が適切に機能しないものや壊れているものがある
 - ・観測機材の維持管理が適切に実施されていない
 - ・観測機材の部品が国内で調達できないので割高になり、予算確保が難しい
 - ・観測データが携帯電話の混線で通信が遮断される
- b) 雨量／河川流量の適切な予測結果が得られていない
 - ・予測解析モデルのキャリブレーションがなされていない
(予測と実績の照合がされていない)
 - ・データベース管理が適切にされていない
 - ・解析モデル運用のための訓練が適切に行われていない
- c) ゲート操作が適切に実施されていない
 - ・予測した流入量結果が適切でない
 - ・オペレーション・ルールが実情に合わない
 - ・ゲートオペレーターの技能が欠けている
- d) ダム放流警報と洪水警報が適切に発令されていない
 - ・警報固定局やパトロールカーの数が少ない
- e) 警報に対する住民意識が弱い
 - ・意識向上キャンペーンへの関心や参加が少ない
 - ・洪水ハザード・マップが作られていない
- f) 関係機関の調整能力が弱い
 - ・ダム放流のための洪水予警報全体を見渡し評価し管理する機関が無い
 - ・JOMCの権限が無い
 - ・洪水時にダム・オペレーション・マニュアルが厳格に守られていない

(5) 目的分析とプロジェクト形成

- ・「原因－結果」の関係から、内容が“望ましい状態”である「手段－目的」の関係に作り直すことを説明した。この目的分析を基に具体的なプロジェクトの選択をする方法を説明し、ワークショップを終了した。

2 添付資料リスト

- a) PCM Attendant List
- b) Stakeholders Analysis
- c) Problem Analysis
- d) Highlight of discussion
- e) Presentation for PCM WS
- f) Picture of PCM WS

ATTENDANCE

PROJECT CYCLE MANAGEMENT (PCM) WORKSHOP

09 November 2007 * 8:00AM - 5:00 PM

Facilitator: TOMITA Shimpei (JICA Study Team)
Opening statement by Dr. NILO Prisco D. (Director of PAGASA)

| | Name | Office/Agency | Division | Position/Designation | Contact Nos. |
|----|--------------------------|---------------|--|---|--------------|
| 1 | ESPINUEVA, SUSAN R. | PAGASA | Flood Forecasting Branch | Head of Flood Forecasting and Warning | 928-7731 |
| 2 | DUNGCA, MARIO I. | PAGASA | Flood Forecasting Branch | Head of Telemetry System Service | 434 5869 |
| 3 | BORJA, HERACLIO JR., M. | PAGASA | Flood Forecasting Branch | Supervising Weather Specialist | 929-4065 |
| 4 | PAGULAYAN, ROSALIE C. | PAGASA | Flood Forecasting Branch | Weather Specialist I | 928-7731 |
| 5 | PERALTA, MAXIMO F. | PAGASA | Flood Forecasting Branch | Weather Specialist II | 0916 6417892 |
| 6 | MICLAT, MARIO S. | PAGASA | Project Management Office | Secretariat | 928-7731 |
| 7 | PAJARILLO, MA. TERESA M. | PAGASA | Project Management Office | Secretariat | 928-7731 |
| 8 | VILLABLANCA, PABLITO E. | PAGASA | Project Management Office | Secretariat | 928-7731 |
| 9 | LANCE, NANCY T. | PAGASA | PPDS-OD | Supervising Weather Specialist | 434-2618 |
| 10 | ENRIQUEZ, MARIBEL G. | PAGASA | Plans & Program Development Staff- Office of the Director | Weather Specialist II | 434-2618 |
| 11 | ADORA, ROQUE A. | PAGASA | Office of the Director | Official Photographer | 928-7731 |
| 12 | GONZALES, LILLIBETH | PAGASA | Finance & Management Division (FMD) | Chief, Budget Division | 434-2632 |
| 13 | CAMBAY, DANILO F. | PAGASA | Engineering & Maintenance Division (EMD) | Weather Facilities Specialist I | 433-0744 |
| 14 | ESTRELLA, ERIE S. | PAGASA | Engineering & Maintenance Division (EMD) | Weather Facilities Specialist I | 433-0744 |
| 15 | MANOOS, ARNEL A. | PAGASA | Engineering & Maintenance Division (EMD) | Weather Facilities Specialist III | 433-0744 |
| 16 | ROSANA, JOSE | OCD | Operations Center | Communication Equipment Operator (CEO) II | 0917 9259083 |
| 17 | SISON, FLORENTINO P. | OCD | Operations Center | Dep. Chief, Operations Division | 911-1406 |

ATTENDANCE

PROJECT CYCLE MANAGEMENT (PCM) WORKSHOP

09 November 2007 * 8:00AM - 5:00 PM

| 18 | Name | Office/Agency | Division | Position/Designation | Contact Nos. |
|----|-------------------------------|---------------------|----------------------------------|--|------------------|
| 19 | ROQUE, JESUSA T. | NWRB | Policy & program Division | Engineer III | 920-2724 |
| 20 | BARBA, PACITA F. | NWRB | Monitoring & Evaluation Division | Engineer III | 920-2654 |
| 21 | ARAJA, RAMON JR., M. | NPC | FFWSDO-Angat | Principal Engineer B | 924-5704 |
| 22 | BARRO, VALERIANO JR., C. | NPC | | Principal Engineer B | 924-5647 |
| 23 | DALISAY, ROEL O. | NPC | | Principal Engineer B | 924-5704 |
| 24 | PALADA, GREGORIO ALEXANDER A. | NPC | Dams & Reservoir Division | Manager, FFWSDO for Angat, Binga-Ambuklao & San Roque dams | 924-5436 |
| 25 | PONCE, ONOFRE O. | NPC | FFWSDO-Angat | Principal Engineer A | 0928-5005251 |
| 26 | RIGOR, RUSSEL A. | NPC | Dams & Reservoir Division | Principal Hydrologist | 924-5436 |
| 27 | PASION, EDWIN A. | NIA-Magat Dam | FFWSDO-Magat | Sr. Engineer A | 0916 7620470 |
| 28 | SALAZAR, RONALDO C. | NIA-Pantabangan Dam | FFWSDO-Pantabangan | OIC, FFWSDO, Pantabangan Dam | 0918 4066998 |
| 29 | MICLA, ZOILO JR., U. | NIA-Pantabangan Dam | FFWSDO-Pantabangan | Sr. Instrument FFWSDO | 0906 2447308 |
| 30 | DELA CRUZ, ARTHUR | NIA | Equipment Management Department | Principal Engineer A | 928-4130 |
| 31 | FLORENDO, EVTH RENAN C. | DPWH | PMO-MFCP Cluster II | Engineer II | 304-3764 |
| 32 | TOKUNAGA, YOSHIO | DPWH | FCSEC-DPWH | JICA Chief Advisor for DPWH | 0921-699-1330 |
| 33 | ARAI, Minoru | JICA | JICA Study Team | Japan Water Agency | |
| 34 | KATAYAMA, Hideki | JICA | JICA Study Team | Disaster Management, JICA | 0920-4827415 |
| 35 | KODAMA, Makoto | JICA | JICA Study Team | IDEA | 0920-4827415 |
| 36 | MIMURA, Satoru | JICA | JICA Study Team | Team Leader | |
| 37 | MINNIE, DACANAY | JICA | JICA Philippine Office | Planning & Coordination Section | 889-7119 loc.216 |

Project Cycle Management (PCM) Workshop
09 November 2007 * *:00 a.m. – 5:00 p.m.
Amihan Conference Room, PAGASA Science garden Complex,
BIR Road, Diliman, Quezon City

HIGHLIGHTS of DISCUSSION

I Opening of the Workshop:

The PCM workshop started with brief messages from Dr. Prisco D. Nilo of PAGASA and Mr. Hideki Katayama of JICA.

The workshop proper was facilitated by Mr. Shimpei Tomita, Evaluation Analyst of the JICA Preparatory Team. He gave an overview of the activities that will be carried out, particularly the expected outputs, which will be presented by the participants at the end of the workshop. Lectures were carried out in a participatory manner, allowing each participant to interact freely with the facilitator.

II Workshop Proper

Part I – Each agency representatives were given time to present their respective agencies' mandate and roles as well as identify the agencies' weaknesses and problems relative to FFWS

PAGASA:

Representatives from PAGASA discussed about its mandate, its role as an early warning agency for hydro-meteorological hazards.

With regards to the concerns that need to be addressed is the improvement of the communication link between PAGASA and other concerned agencies. The telecommunication facilities utilized by PAGASA, particularly that of the FFWS, were greatly affected by the expansion of the Cellular Mobile Telecommunication System (CMTS) and consequently the transmission of hydrological data from the monitoring stations. It was also noted that the pilferage/vandalism of some of the stations has aggravated the situation since the capability of PAGASA to monitor the hydrologic condition within the monitored watershed were lessen. The outmoded equipment and inadequate budgetary allocations for the maintenance of the monitoring equipment that has also contributed to the further degradation of the equipment was also given emphasis.

Another problem that was also discussed was the "brain drain" issue, wherein most if not all of the trained FFWSDO personnel were already resigned, leaving PAGASA with personnel who lacked the proper

training in the operation and maintenance of the FFWSO equipment. Almost all the representative from other agencies aired this concern.

NIA:

Mr. De La Cruz explained about mandate of the NIA as well as the functions of the dams under its jurisdiction. Mr. De La Cruz articulated that aside from the antiquated and obsolete FFWSO equipment, the lack of budgetary allocation for the operation and maintenance of the equipment have contributed further to its non-operational condition. Mr. De La Cruz also emphasized that most of the trained FFWSO personnel were already resigned, leaving the dam operators with limited knowledge and capability to operate and manage the reservoirs.

The lack of comfortable patrol cars, which could help in the dissemination of warnings and flood information to areas which were not reached by sirens, was also noted.

NPC:

The reservoirs of NPC, Binga, Ambukalao, San Roque and Angat dams, aside from providing safe and reliable electricity to the population, except for Binga and Ambuklao dams, were also being utilized as a flood control structures in areas where they are constructed. NPC also provide dam discharge warnings to the communities living in the downstream areas of these dams whenever they conduct spilling/gate operations. Mr. Palada noted that one of the problems of NPC, particularly the reservoirs, was the lack of an Inflow Forecast model and the appropriate trainings of dam personnel. NPC also aired the same sentiments of other agencies, particularly the worn out patrol vehicles and antiquated FFWSO equipment and the limited allocation of budget for the operation and maintenance of the system. The frequency interference of the communication facilities were also noted, further complicating the problem on the exchange of vital information, especially during inclement weather situations.

The privatization of the major reservoirs was also emphasized, articulating that the conflicting interests by the stakeholders affect the decision of the dam operators, specifically in the event that there is a need to conduct spillway operation.

Another point emphasized by Mr. Palada was the lack of an updated or revised Flood Operation Manual. He also aired his dilemma that the Joint Operation and Management Committee (JOMC) cannot decide yet on which Agency has the mandate to review and approve the said manual for dam operations. He also noted that the NWRB has yet to provide approval on the said manuals.

NWRB:

Ms. Barba explained that the NWRB has the following mandates:

- Responsible for the management of water resources for the whole Philippines. She noted that the management of water resources would include the management of dam operations and reservoir management.
- Provides the policy formulation on water resources management as well as economic regulation on water resources.
- Monitors the water resources development.

The lack of expertise and tools to meet the demands and challenges of Extreme Climate Events (ECEs) and climate change and limited budget were some of the problems discussed by Ms. Barba.

Ms. Barba also noted that the lack of coordination and the non-compliance of dam operators with defined polices and regulations were among the problems of the Board.

In response to what Mr. Palada said, Ms. Barba said that the mandate of NWRB is to review the Flood Operation Rule, for them to be able to evaluate and assess the operational activities of the reservoirs. The review of the Dam Discharge and Flood Warning manuals is not within the mandate of the Board.

OCD:

Mr. Sison discussed the mandate of the OCD, which is primarily the formulation of a Comprehensive Disaster Management Program for the Philippines. The OCD is also the agency mandated to disseminate all the warnings/bulletins/other related information to the Regional Disaster Coordinating Councils (RDCCs) and the local Disaster Coordinating Councils (DCCs) thru fax, SMS and e-mail.

Mr. Sison noted that the limited availability of communication facilities to the areas often affected by flooding is one of the problems of the OCD. The low level of understanding of the localities to the information contained in the flood warnings often results to the communities putting the blame on the dam operators in the event that flooding occurred in their areas.

JOMC:

Dr. Espinueva explained that the JOMC oversees the operation of the monitored reservoirs for flood forecasting and warning purposes. Furthermore, all the activities of PAGASA, NIA and NPC as well as the other agencies involved in flood forecasting and warning are also being coordinated by the JOMC.

Although the JOMC can assist the other agencies in making proper representation to proper authorities with regards to the concerns of the other FFWS agencies, the JOMC lacks the institutional mandate. The meeting of the JOMC was also not defined. The regular members often send representatives during the meeting, hence there is no continuity. The lack of operational budget is one of the problems of the JOMC. Most of the expenses of the JOMC are charged to PAGASA or in the event of trainings/workshops, budgetary requirements are shouldered by the dam operators.

Although the non-approval of Flood Operation Rule Curve for the dams is also the concern of the JOMC, Ms. Barba explained the actions done by the NWRB relative to this matter. She articulated that the Flood Operation Rule for San Roque was already approved 2 years ago. For Pantabangan Dam, the FOR was approved in 1976. Communications were sent to the Pantabangan as well as Magat dam operators to submit an updated Operation Rule Curve for the review of NWRB. The Angat dam Flood Operation Rule is still being reviewed.

She also explained that the NWRB has a limited manpower to attend to its concern that the regular representative to the JOMC often delegates the task of attending the meeting.

Although no representative of LGUs was present, Dr. Epsinueva explained that during the conduct of PID, the localities often complain about the content of the bulletins/warning. Most of the communities affected by flooding often comment that the Flood Bulletin/Warnings are too technical and suggested that visuals showing the extent of inundation within their area be included in the bulletins.

One concern discussed by Mr. Palada was the situation of water allocation in Bulacan Province, which is highly political. Most people from Bulacan complain about the spilling which often contributes to the inundation in some areas of Bulacan, whereas the priority of Angat Dam is the water supply for Metro Manila. Mr. Estrella also commented that the lack of first-hand information from the dam operators often creates confusion within the localities downstream of the Angat Dam.

DPWH:

Mr. Renan explained the mandate of the DPWH in so far as the installation of flood control is concerned. DPWH not only prepare the Flood Mitigation Plan for each river systems but also implements the flood control projects/structures within the river systems as well.

Mr. Renan also explained that the problems being encountered by the Department is the absence of a clear link for flood control activities

with the non-structural measures and the limited communication link of the Department with PAGASA and the dam operators, especially during spillway operation, which could directly affect the improvement works along the river banks.

Dr. Espinueva articulated that the non-structural measures for flood mitigation being implemented by PAGASA are supposed to augment/complement the structural measures being implemented by DPWH, although this was not clearly defined.

With regards to the over-lapping mandates of Flood Control and SABO Engineering Center (FCSEC) and Bureau of Research and Standard (BRS) as one of the problem of DPWH, since both agencies are depository of hydrological data, Mr. Tokunaga, JICA Expert at FCSEC, explained that the data from these agencies should be made available in the preparation of a comprehensive river plan.

A data sharing between the FCSEC and other concerned FFWSDO agencies could be worked-out by the JOMC. Dr. Espinueva also requested that the results/outputs of the analysis conducted by the FCSEC be provided to the members of the JOMC. It was decided that this would be one of the recommendations of the PCM.

The presentation of the mandate, problems and weaknesses of each agency is presented in a matrix format as Annex ____ (*Stakeholder Analysis*).

Part II – Formulation of Problem Analysis

Mr. Tomita gave an overview of the concept of the formulation of the Problem Analysis, wherein the participants will identify the *CAUSE* and *EFFECT* of the existing problems in the form of a problem tree. A core problem should be identified first. Mr. Tomita emphasized that participants should refrain from writing negatively, avoiding such terms as “*no solution*”, “*not enough budget*” and to write on simple sentence. Items that will be written on the cards should be specific.

Long discussions ensued on the written core problem. The identified core problem “*The Flood Forecasting and Warning System for Dam Operation does not work properly*” merited a comment from Ms. Barba. She explained that the FFWSDO is working but not efficiently because of the changing weather patterns. Writing negatively on the FFWSDO could create negative impacts with the LGUs. Dr. Espinueva also explained that a lot of events have led to the non-operational condition of some equipment of FFWSDO. Another comment made by Mr. Rigor was that it should be delineated which part of the FFWSDO is inefficient.

In order to facilitate the formulation of the Problem Tree and to maximize the time that will be spent for PCM, Dr. Espinueva suggested to have the Problem Tree prepared during the PCM in 2003 be revalidated. Mr. Tomita decided to treat the PCM for FFWSDO as a new undertaking.

After a lengthy discussion on what should be the core problem, Dr. Espinueva suggested that the participants first analyze the direct causes and in the workshop, identify the resulting effects of the problem concerning the FFWSDO. The core problem can be decided on the later part of the workshop after the participants were able to write/identify the underlying causes and effects resulting to the ineffectiveness of the FFWSDO.

The participants were divided into two groups, corresponding to the number of main causes. Each group was tasked to arrange the problem cards using the problem tree to determine the sub-causes. A Rapporteur for each group was assigned to present their outputs.

Part III – Presentation of workshop outputs

While the members of each group were preparing for the formulation of the problem tree, Mr. Kodama and Mr. Tomita were reviewing the outputs of each group. They also provided clarifications and facilitate the group ideas.

Each group member were also discussing openly and collaborating on their outputs.

Group I members:

1. Mr. Maximo F. Peralta
2. Ms. Rosalie C. Pagulayan
3. Ms. Jessie T. Roque
4. Mr. Arnel Manoos
5. Mr. Erie T. Estrella
6. Mr. Onofre Ponce
7. Mr. Arthur De La Cruz
8. Ms. Sylvia Davis
9. Mr. Florentino Sison
10. Mr. Ramon M. Araja, Jr.
11. Mr. Roel O. Dalisay
12. Mr. Zoilo U. Micla, Jr.

Group 1 worked on the three main causes identified, namely: **(1)** Reliable observation data (Rainfall and River Flow) are not obtained (timely); **(2)** Correct Forecasting Results (Rainfall & River flow) are not obtained timely; and **(3)** Weak institutional set-up among concerned

agencies. The members were asked to identify the sub-causes and effects.

Ms. Lance presented the outputs for Group 1. For the first main cause, the group agreed that the "*FFWSDO is unable to generate adequate and accurate data*" as one main cause since it would cover the whole effects presented.

Mr. Peralta presented three reasons on the weak institutional set-up among concerned agencies. He stressed the absence of an oversight committee to assess and regulate FFWSDO activities. The roles of the agencies involved in the FFWSDO activities are also not clearly defined, which often results to the absence of coordination among these agencies during emergency situation. He also noted that the Flood Operation Rules are not being followed, which is further complicated by the non-compliance of the dam operators to the existing policies and guidelines on dam operation.

Mr. Tomita assisted the Group in analyzing the ideas presented. He also encouraged the group members to write down its corrections or additional issues that they think should be included in the presentation. Re-arrangement of the sub causes were openly done so as to cluster problems with similar thrust.

The following were the points considered in the revisions made in the Problem Tree:

- Mr. Dungca stressed that one of the reason for the late data transmission is interference from the cellular mobile telecommunication system (CMTS).
- Mr. Palada pointed out that no manual observation is being done with the FFWSDO equipment.
- Mr. Tomita inquired why the lack of dedication of personnel would be included in the problem tree.
- The lack of understanding stems from the lack of training by personnel concerned, as pointed out by Dr. Espinueva.
- Forecasting "*data*" should be replaced with "*results*", reasoning that first problem stated covered already the problems relative to the data (hydrological). The processing of data to produce a timely and accurate forecast result, access to new technology is required. The new technology could also help agencies establish a database management system and calibrate the models. Likewise training of personnel on the operation of the forecasting models could also be done.

The members of Group 1 also agreed that the first main cause presented "*FFWSDO is unable to generate adequate and accurate data*"

will be changed to "*Reliable observation data ((Rainfall and River Flow) are not obtained (timely))*".

The members of Group 1 agreed on the regrouping of cards into "causes" and effects" as presented in Annex _____.

Group 2 members:

1. Mr. Heraclio M. Borja, Jr.
2. Ms. Pacita F. Barba
3. Mr. Alexander A. Palada
4. Mr. Danilo F. Cambay
5. M. Mario I. Dungca
6. Dr. Rosa T. Perez
7. Mr. Russel A. Rigor
8. Mr. Edwin A. Pasion
9. Mr. Jose Rosana
10. Mr. Valeriano Barro
11. Mr. Ricardo C. Salazar
12. Ms. Lilibeth B. Gonzales

Group 2 worked on the four main causes identified, namely: (1) Dam operation activities are not carried out properly; (2) Discharge/Flood warnings are not issued properly and timely; (3) Public awareness among stakeholders is weak; and (4) Weak institutional set-up among concerned agencies. The members were asked to identify the sub-causes and effects to come up with a Problem Tree.

Mr. Palada discussed the reasons on why the dam operation activities were not carried out on a timely manner. Primarily, most problems were due to the antiquated and stolen facilities, the lack of training of the personnel manning the FFWSDO, lack of communication facilities and equipment and the absence of an updated Flood Operation Manuals and protocol for warning dissemination.

Dr. Espinueva gave an overview of the "*dam operation activities*", which includes data collection, analysis, formulation of warnings and dissemination of warnings to the concerned agencies and localities. She noted parallelism of the items presented by the 2 groups and suggested that there should be no overlapping/repetition of activities. Mr. Kodama suggested that the "*dam operation activities*" should be replaced with "*gate operation activities*" as all the causes presented pertain to the activities relative to gate/spilling operation of the dams.

Mr. Pasion presented the causes as to why the Dam Discharge/Flood Warnings are not issued properly and timely. Causes identified zero-in on the equipment and facilities, which are not properly maintained due to lack of budgetary allocation, limited fixed warning stations, the absence of historical rainfall and water level data, forecasting model

and rainfall forecast as well as trained personnel during spilling operation activities and the presence of informal settlers which often blocked the path of patrol cars during warning activities.

Dr. Perez presented three reasons causes as to why public awareness among stakeholders is weak. She cited that some stakeholders are often un-interested to participate in the IEC which could be due to the lack of understanding on the technical terms used in most IEC materials. She also stressed that the limited resources often limits the conduct of IEC programs only within the target areas. The absence of flood hazard/inundation maps and limited flood warning information also lessen the awareness of general public to the issued flood information.

Ms. Barba discussed about the weak institutional set-up of among the concerned agencies. She noted that the JOMC, which oversees the operation of the dams relative to the FFWS activities, lacks the defined institutional mandate, resulting to the uncertainty of the roles of other agencies involved in the FFWSDO activities. As a result of this undefined roles, top level management support to the JOMC is also very limited. The frequent changes in the management leadership also contribute to the lack of continuity on issues and concerns that need to be addressed.

Discussion also arose from the issue of the absence of a body to assess and evaluate the FFWSDO activities. Although the dam operators already have the manuals and operation rules to guide them in their routinary and emergency activities, Mr. Palada articulated that no agency monitors/oversee the activities during gate operation and the approval of the manuals utilized by the dams.

Dr. Espinueva clarified that the JOMC, thru PAGASA being the lead agency, oversees the operational activities during emergency situations. She opined that there should be an independent agency other than the JOMC which should oversee the day to day operation of the dams, to check the daily activities of the dams, like the PDCC. Mr. Palada further added that the dam manuals were not really reviewed by an independent body or agency so there is no check and balance that the JOMC would want to attain.

As clarified by Ms. Barba, based on the provision of the Water Code, the NWRB will only review and approve the Operation Rule Curve. She also stressed that NWRB can also review the flood operation manuals. However, upon consultation with their Legal Officer, since the Board is reviewing the manuals, it can also extend approval to the said manuals.

Since the approval of the manual is one of the problems that need to be resolved in the institutional set-up of the JOMC, should the Committee insist on the review of these manuals, Ms. Barba assured the appropriate action of the Board. Mr. Tomita requested that this matter be resolved during the JOMC meeting.

Mr. Tomita facilitated the clustering of the identified "causes" and "effects", which the Group 2 members agreed.

The integrated Workshop output is presented in Annex _____.

III Closing Remarks:

Mr. Mimura, who arrived in the later part of the Workshop, showed appreciation for all the participants for involving themselves in the healthy discussions and for coming up with outputs for the workshop. He stressed that all the outputs of the PCM were very vital inputs to their evaluation of the project.