1. Introduction

1.1 Background of the workshop

The last round of activities of the JICA's Project Formulation Study on Program for Disaster Prevention was the conduct of a PCM workshop (WS) in Infanta, Quezon. After the successful PCM workshop (WS) in Lagazpi city, the JICA In-house Consultants (and WS moderators) went straight to Infanta on March 2, 2008 and spent 2 days "ground-working" the officials of target barangays to ensure participation to the PCM workshop.

1.2 Preparatory activities

In addition to meetings with the barangay officials, the WS moderators checked the venue, met the Mayors of Infanta and Gen Nakar, finalized the "programme of activities" of the workshop and prepared the presentation and workshop materials. In an area like Infanta and Gen Nakar where people's frustrations on surveys, seminars and workshops are quite deep, different psychological strategies and "improvisational ways of moderation" had to be applied to "pump-up" active participation in the workshop. The WS moderators conducted "internal brainstorming meetings" as part of the "self-preparation" process for the workshop.

1.3 Objectives

As part of the information-gathering of the project formulation study, the PCM workshop was aimed at generating situational analyses. Thus, the workshop was expected to produce stakeholders' analysis, problem analysis and objectives analysis.

1.4 Venue and dates of the workshop

The workshop was held at Fiesta Infanta in Infanta, Quezon on March 5 and 6, 2008 from 8:30 in the morning to 5:00 in the afternoon. The workshop was a "live-out type of gathering" but the Japanese consultants (Mr Kadota) offered reimbursements of actual expenses of participants for transportation. Snacks and lunch meals were served to participants for 2 days.

1.5 Participants

The total number of participants was 53. The municipal governments of Infanta and Gen Nakar were represented by 15 and 11 employees, respectively. Eleven (11) persons represented the barangays of Infanta and Gen Nakar (7 and 4, respectively) while 7 persons represented the NGOs operating in Infanta and Gen Nakar. The regional office of the Department of Health (DOH) and the local PAGASA office sent 1 representative each, while 2 representatives each came to represent the local Philippine National Police (PNP) and the Bureau of Fire Protection (BFP). Out of the 11 barangay participants, 6 were ordinary residents. See Annex 1 for the list of participants.

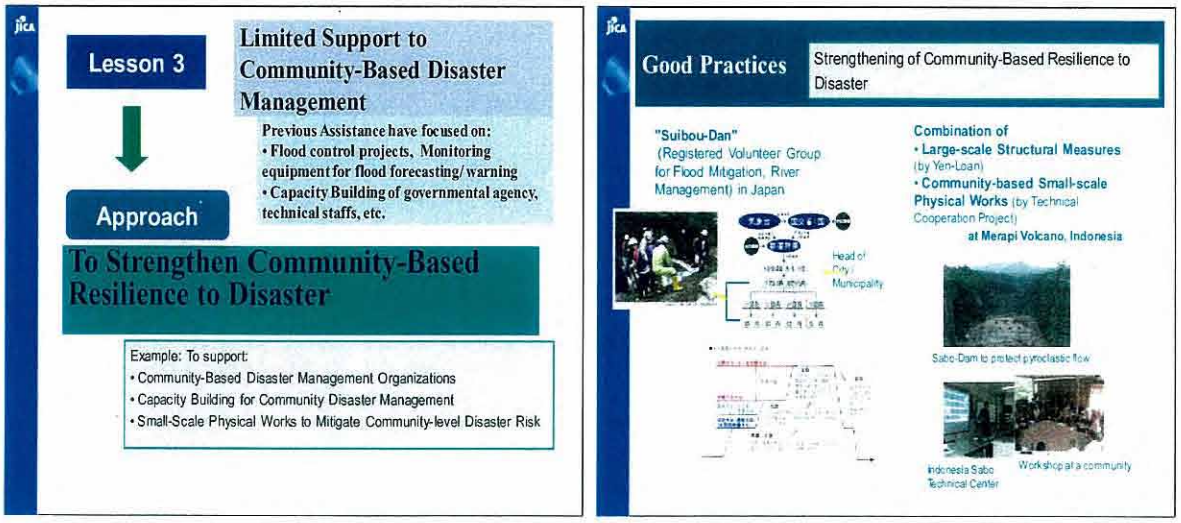
The JICA study mission team was represented by Mr Takashi Kadota. Mr Masaki Ishii went to Infanta on March 4, 2008 with Mr Kadota but had to go back to Makati to re-print the erroneous "certificates of participation".

2. Highlights of the PCM workshop

2.1 Day 1-March 5, 2008

The first day of the workshop was opened by "welcome speeches" from the Mayor of Gen Nakar, the Vice Mayor of Infanta, the Mayor of Infanta and Mr Kadota. Mr Ruzol, mayor of Gen Nakar, welcomed the participants and hoped that the outputs of the workshop would be utilized as inputs to project cooperation between JICA and the municipalities of Infanta and Gen Nakar which may be formulated in the future. Mr Velasco, the Vice-Mayor of Infanta, encouraged the active participation of the participants so that meaningful workshop outputs would be generated. Ms America, the Mayor of Infanta, wished that the outputs of the workshop would not be put to waste but would instead generate a project cooperation between the Japanese government and the municipal governments of Infanta and Gen Nakar. Mr Kadota used his time for a "welcome speech" by making a long presentation about some lessons and good practices on disaster management.

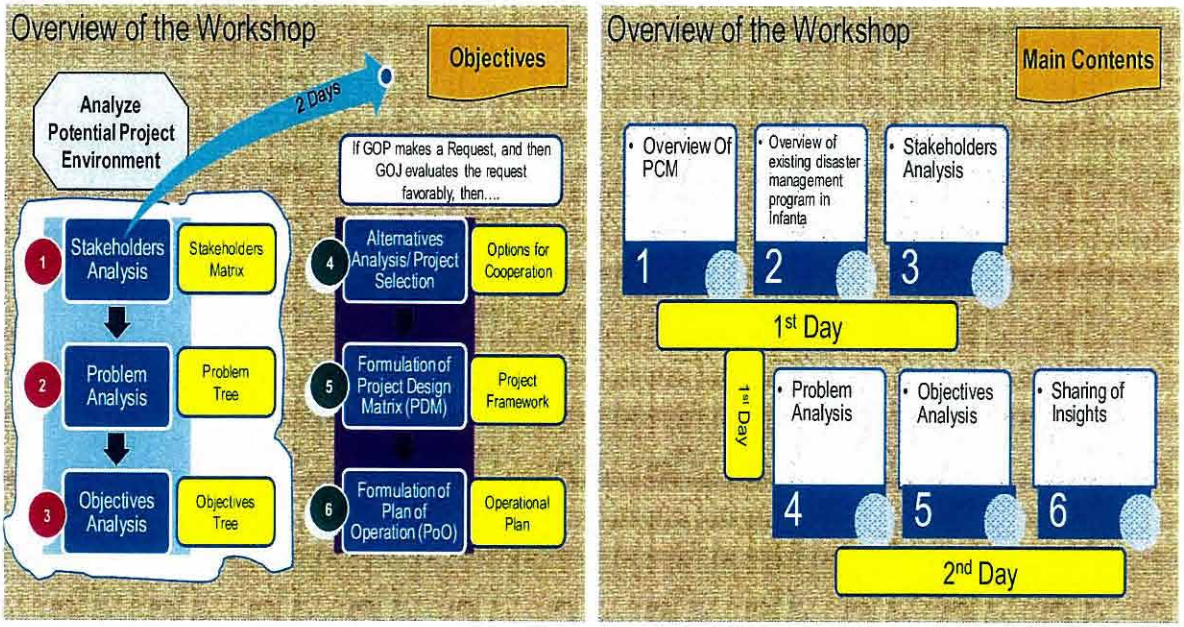
Figure 1: Some lessons and good practices on community-based disaster management



Source: Presentation materials of Mr Takashi Kadota

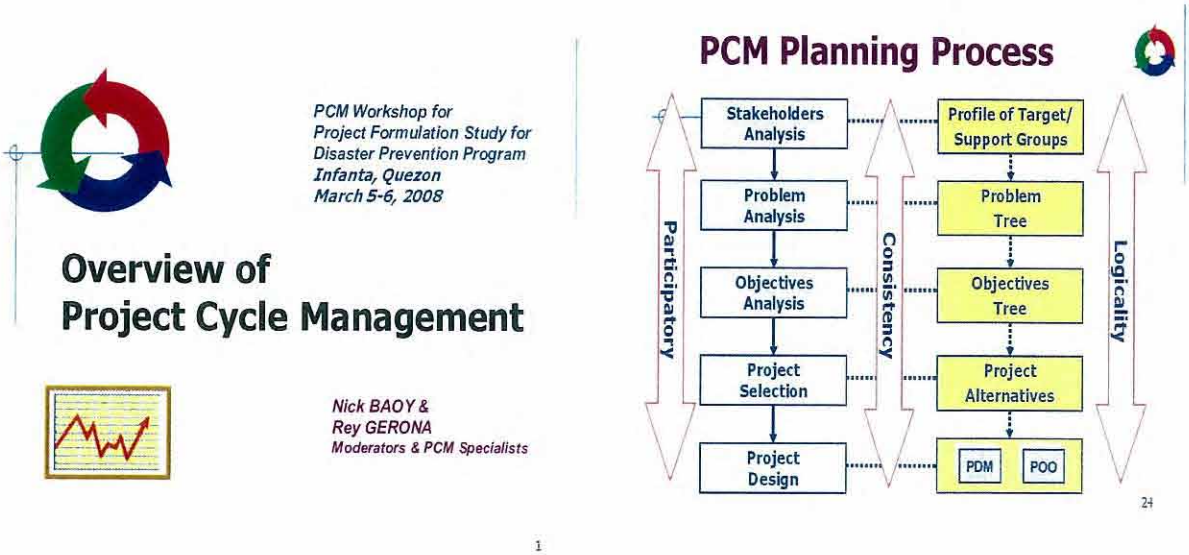
Mr Rey Gerona gave a comprehensive overview of the workshop by explaining the background, objectives and expected outputs of the workshop. He emphasized that the workshop was about "storming the brains" and therefore had no set of rules to follow. He encouraged everyone to be "expressive" and as "participative" as anybody could be to secure a relaxed workshop environment and ensure "maximum" participation.

Figure 2: Objectives and contents of the PCM workshop



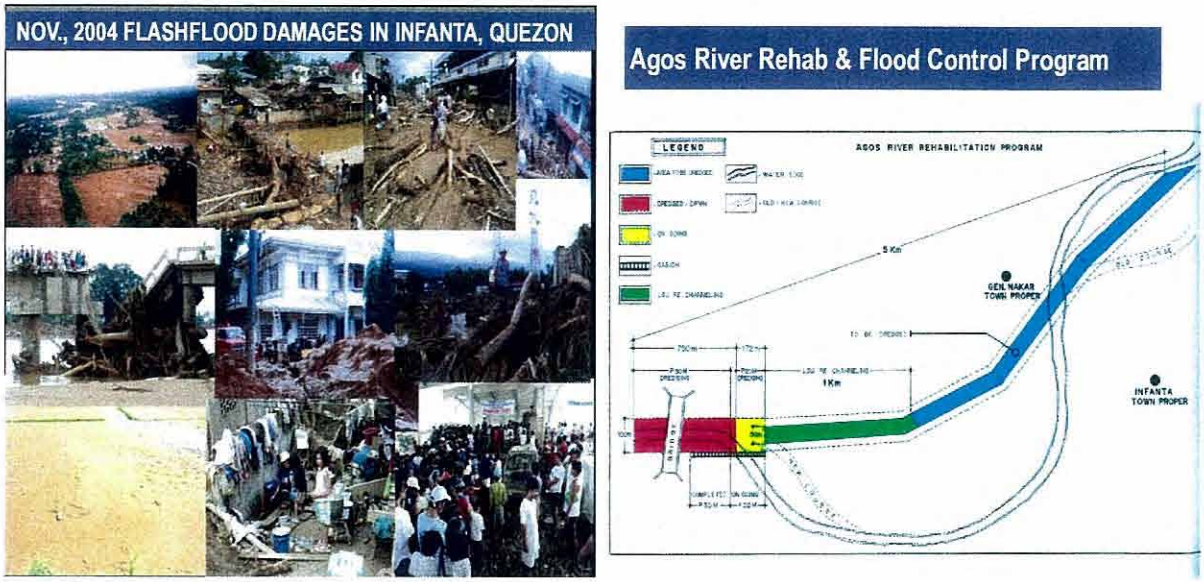
Mr Nick Baoy gave a short but comprehensive overview about the Project Cycle Management (PCM) that put the workshop environment in proper context. Mr Baoy explained the significance of the stakeholders' analysis, problem analysis and objectives analysis within the whole project cycle process. All the participants were "first timers" on PCM and the presentation of Mr Baoy generated much interest. The 2-day workshop was too short for the participants to learn to "think and write logically". In the presentation, Mr Baoy emphasized "learning tips" on analyzing stakeholders, problems and objectives.

Figure 3: Overview of the PCM



The presentation and interactive lecture of Mr Baoy was followed by the presentation of Mr Ron Crisostomo on the existing community-based disaster management of Infanta municipality. The community-based disaster management program of Infanta municipality was awarded one of the ten most outstanding local innovations on governance by the *Galing Pook* Awards Foundation recently. In addition, the municipality of Infanta was also awarded special citation for good practices in local fiscal management.

Figure 4: Overview of the community-based disaster management program of Infanta municipality



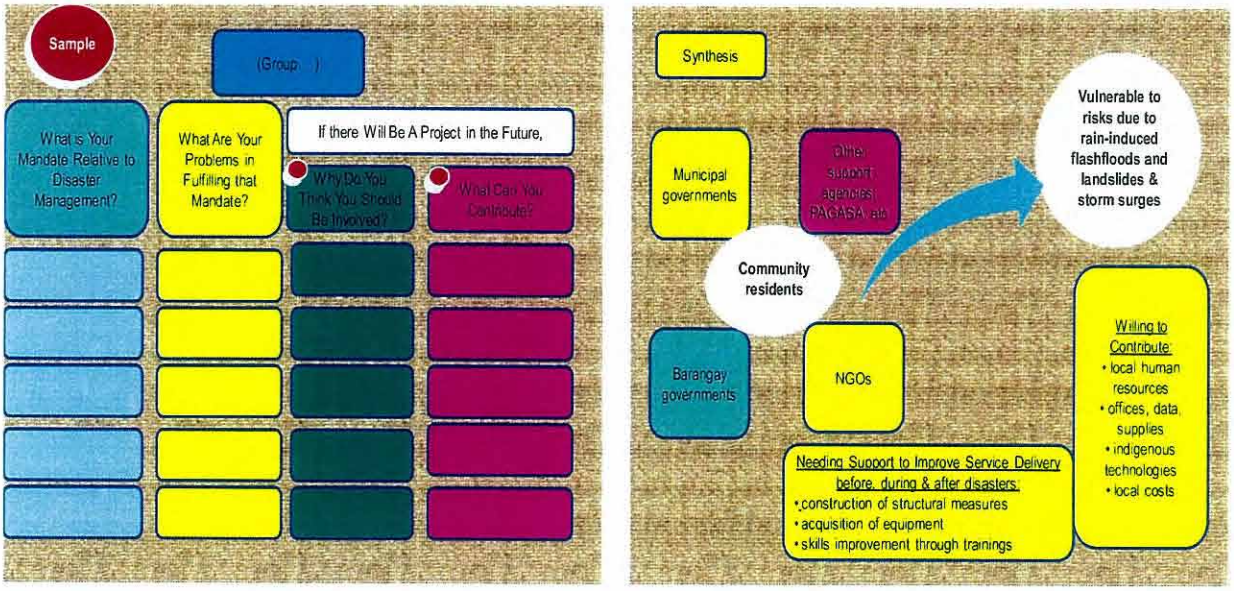
Mr Rey Gerona explained the "purpose" and "how tos" of doing the stakeholders' analysis. After which, the participants were grouped in the following categories: (i) municipal government of Infanta, (ii) municipal government of Gen Nakar, (iii) all barangay governments and residents of Infanta, (iv) all barangay governments and residents of Gen Nakar, (v) all NGOs, (vi) the PNP and BFP, (vii) the PAGASA, and the (viii) DOH. With guided questions, the participants interactively "brainstormed" during the small-group workshops. In plenary form, each group rendered a report about the group's outputs.

The overall result of the stakeholders' analysis revealed that:

- The community residents in Infanta and Gen Nakar are exposed to risks or hazards brought about by rain-induced flashfloods and landslides and storm surges
- That the local government units (municipalities and barangays) and other service-providing agencies, such as the PAGASA (warning), the PNP, BFP and DOH (search and rescue, evacuation and rehabilitation) are also needing support such as funding for structural and non-structural measures, skills improvement and equipment to improve service delivery

- That the local government units and other support agencies are willing and interested to provide counterpart contributions in the form of local human resources, indigenous technologies and local costs for any project operation

Figure 5: Guide questions and synthesis of the overall output of the Stakeholders' Analysis



After being clarified of the results of the Stakeholders' Analysis, the participants were briefed about the "purpose" and "mechanics" of doing the Problem Analysis. Mr Nick Baoy explained to the participants the of analyzing problems. He emphasized the "techniques" in formulating "problem statements" and skills in "card-writing". He gave concrete examples on analyzing core problem, causes and effects in a "tree form" and allowed everyone for an actual "practice" in "card-writing" by "thinking" and "writing" any problem related to disaster risks and management that came to the participant's mind, and discussed each "practice problem card" in plenary for massive "learning effect".

From the selected "acceptable" "practice cards", Mr Baoy facilitated the plenary discussion to identify a "starter card". With the "starter card" identified in consensus, the participants proceeded in identifying some "causes cards". This process capped the first day of the PCM workshop.

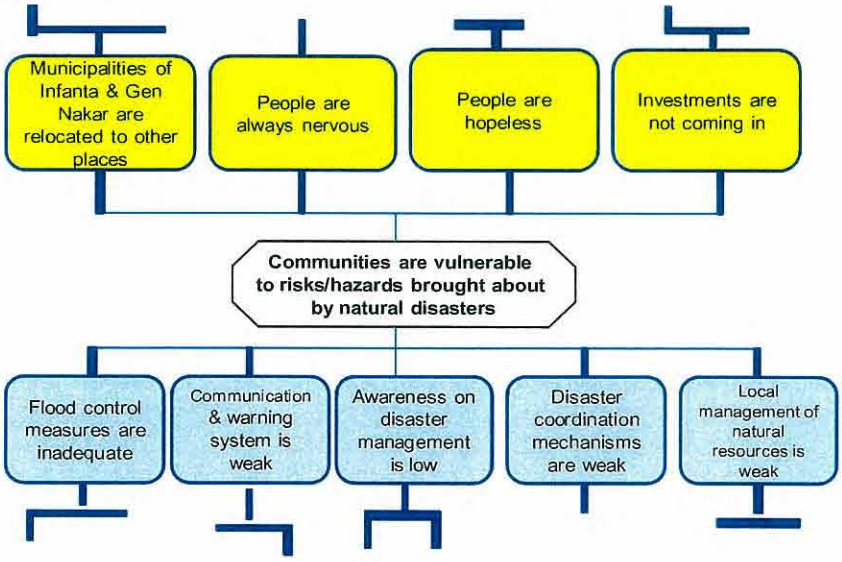
2.2 Day 2-March 6, 2008

With the same number of participants, Mr Rey Gerona gave an "energizing" recapitulation, reminding the participants of the reasons of being in the workshop, the expectations "placed on the participants' shoulders" and the "whereabouts" of the day's activities in the whole workshop process.

Mr Nick Baoy and Mr Rey Gerona interchangeably discussed the "mind cards" (improved versions of initial cards) on the "core problem", "direct" "causes of the core problem", and "immediate" "effects of the core problem". The participants then reached a consensus on the proper statements of the "core problem" and the "direct causes". With 5 identified "direct causes", the participants were grouped in random in 5 groups. Each group was tasked to identify "sub-causes" of assigned "direct cause card". All the 5 groups finished reporting the group outputs towards noontime. As there were plenty of "sub-causes cards" being identified, the moderators had to lay down the "report cards" on the floor and form the "initial problem tree".

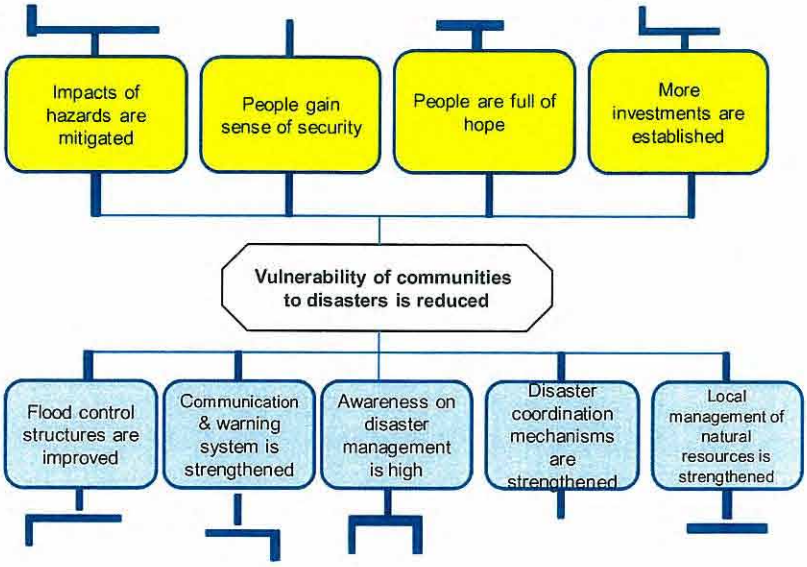
Using the floor, the moderators facilitated in plenary form the discussions on the "long-term effects" of the "immediate effects cards". The problem tree was then read by the participants concertedly, emphasizing "connectivity" of each card.

Figure 6: Summary of the Problem Tree



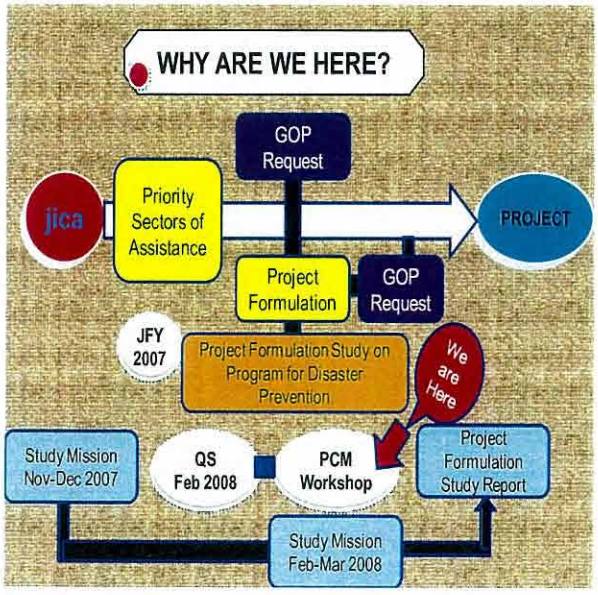
With the problem tree clarified and the participants enthusiastically satisfied with their outputs, the moderators explained the "purpose" and the "mechanics" of doing the Objectives Analysis. In plenary, the participants then transformed the "core problem statement" into an "objective statement". After which, the participants were divided into 5 groups again, each group working on assigned "direct cause card", analyzing "feasibilities" of converting "cause cards" into "means" or "strategies". Working on the floor, the participants' groups determined the "core objective", the "means cards" and the "end cards", and form the "objectives tree". The participants analyzed the adequacy and appropriateness of the "objectives tree" and ended the session overwhelmingly satisfied with their outputs.

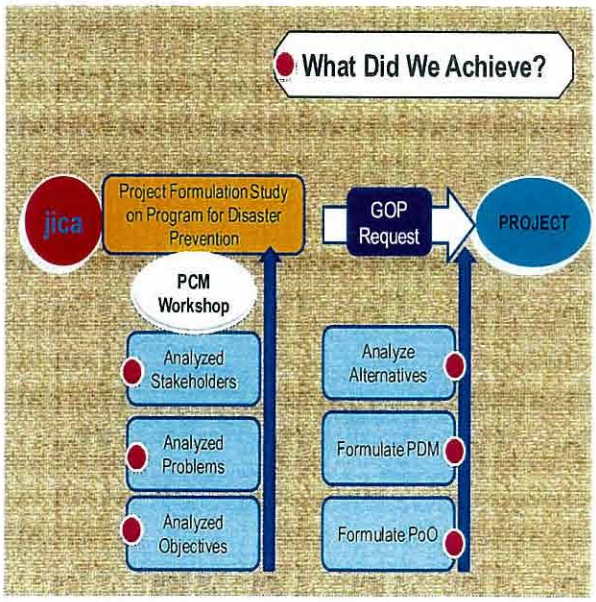
Figure 7: Summary of the Objectives Tree



With the problem tree and objective tree established, Mr Rey Gerona gave a comprehensive summation of the whole workshop processes and outputs and clarified each question the participants asked for clarification.

Figure 8: Summation





Towards the closing of the workshop, the moderators requested volunteer participants to share "personal insights" (acquired new learning). Ms Luchie of the Task Force Kalikasan (NGO) said that she learned new techniques in facilitating and moderating, especially on "how to keep the participants awake" even without the "ice-breakers". Ms Alma of COPE (NGO) added that aside from the techniques of participatory planning, she learned the techniques of "pumping" the participation of each participant notwithstanding the mix of workshop participants. Ms Adeng of Barangay Ilog in Infanta said that she learned new techniques in facilitating, which does not allow "boring and dull moments" to take place. Specifically, Ms Adeng learned how to formulate "problem statements" and convert "problem statements" into "objectives statements". Barangay Captain Eddie of Magsaysay in Infanta added that he learned many planning techniques and plans to replicate the workshop process in the barangay level particularly in conducting situational analyses. Mr Rex of Infanta municipal government said that he learned new techniques in planning that maybe used in facilitating planning for the Agos river rehabilitation.

The PCM workshop was closed with "closing speeches" by Mr Kadota, Vice-Mayor of Infanta, the Mayor of Gen Nakar and the Mayor of Infanta.

Mr Kadota said that the results of the workshop will be presented to the national agencies in Manila while the Vice-Mayor of Infanta hoped that the workshop results would translated into a project proposal to be submitted to JICA. The mayor of Gen Nakar echoed the same hopes, saying that JICA hopefully considers "directly assisting" the municipalities of Infanta and Gen Nakar. The mayor of Infanta was happy of the results of the workshop but expressed frustrations over past proposals submitted by the Infanta municipal government to JICA, which did not even generate a "reject" response from JICA. She said that there were too many Japanese already that the municipal government of Infanta received as study missions, survey teams, or visitors and no project cooperation has so far been established. She hoped that the PCM workshop results would be able to "knock" the "hearts" of the Japanese government so that a project cooperation between JICA and the municipal governments of Infanta and Gen Nakar would be started soon.

Mr Jun, a resident of Infanta, said that the workshop has brought together the Mayors and other municipal officials of both Infanta and Gen Nakar. Taking advantage of the occasion, Mr Jun suggested that the both municipal governments create a joint Technical Working Group (TWG) to "utilize" the workshop results in formulating a joint project proposal to be submitted to JICA. The mayors of Infanta and Gen Nakar agreed to the proposal and created the TWG and identified the TWG composite members to undertake the "next steps".

Workshop Program
Fiesta Infanta, Infanta, Quezon

Time	Activity	Methodology	Moderator
Day 1: March 5, 2008			
0830H – 0900H	Registration		
0900H-1000H	Opening program		
	Invocation		
	Singing of Philippine National Anthem		
	Introduction of participants		
	Welcome remarks		Mayor Ruzol-Infanta
	Message		Vice Mayor Velasco-Infanta
	Message		Mayor-Infanta
	Message		Mr Kadota, A&S Eng'g Co.
1000H – 1015H	Overview of the workshop Questions & Answers (Q&A)	Presentation and interactive discussion	Engr Rey Gerona, JICA In-house Consultant
1015H-1100H	Overview of the PCM (analyses & planning components), Q&A	Presentation and interactive discussion	Engr Nick Baoy, JICA In-house Consultant
1100H-1130H	Overview of Infanta's Community-based Disaster Management Program	Presentation and interactive discussion	Mr Ron Crisostomo, Planning Officer-Infanta
1130H-1330H	Introduction to Stakeholders' Analysis	Presentation and interactive discussion	Engr Rey Gerona
1330H-1500H	Workshop: Stakeholders Analysis	Workshop, brainstorming, reporting	Rey & Nick
1500H-1530H	Introduction to Problem Analysis	Presentation and interactive discussion	Engr Nick Baoy
1530H-1700H	Problem Analysis Workshop	Workshop, brainstorming,	Nick & Rey
1700H-1715H	Synthesis of Day 1		Rey
Day 2: March 6, 2008			
0830H-0930H	Recapitulation and discussion on the initial results of the problem analysis		Rey
0930H-1100H	Continuation of Problem Analysis workshop	Workshop, brainstorming	Nick & Rey
1100H-1200H	Formation and Refinement of Problem Tree, presentation of outputs	Workshop, interactive discussion, reporting	Nick & Rey
1300H-1330H	Introduction to the 3rd workshop: Objectives Analysis	Presentation, interactive discussion	Nick
1330H-1530H	Objectives Analysis Workshop	Workshop, brainstorming	Nick & Rey
1530H-1600H	Presentation and refinement of workshop output: Objective Tree	Reporting, interactive discussion	Nick & Rey
1600H-1630H	Synthesis of Workshop Outputs	Presentation	Rey
1630H-1645H	Sharing of insights		Volunteer participants
1645H-1700H	Closing program ● Remarks ● Remarks ● Remarks ● Remarks		 Mayor Ruzol-Gen Nakar Vice-Mayor Velasco-Infanta Mr Kadota Mayor America-Infanta
Snacks were served to participants in the morning and afternoon sessions. Lunch meals were served between 1200H to 1300H			

List of Participants

	Name	Organization	Position
1	Mr Mario Suavedrez	Task Force Kalikasan-Nakar (NGO)	President
2	Ms Lucia Gama	Task Force Kalikasan-Nakar (NGO)	Secretary
3	Mr Wilson Rutaquio	Nakar Municipal Government	Municipal Information Officer
4	Mr Jorge Miras	PAGASA	
5	Mr Demosthenes Raynera	Social Action Center (SAC)-NGO	Deputy Coordinator
6	Ms Alma Avellano	COPE (NGO)	Consultant
7	Mr Mario Ordinado	Brgy Magsaysay, Infanta	Kika3 Watch Point-Watchman
8	Ms Susan America	Infanta Municipal Government	Municipal Planning & Devt Coordinator
9	Mr Jun Gucilatar	ILTC (NGO)	Chairman
10	Ms Choleta Calzado	Infanta Municipal Government	MSWDO (ANSWA)
11	Ms Maricar Penamora	Infanta Municipal Government	MSWDO (DCW)
12	Mr Ron Crisostomo	Infanta Municipal Government	Planning Officer-MPDO
13	Ms Gina Avellano	ICDAI (NGO)	Admin Officer
14	Mr Harold Cuesta	Philippine National Police (PNP)	Chief-Police Officer
15	Ms Armida Marquez	Infanta Municipal Government	Information Officer-MDCC
16	Ms Myrna Turgo	Brgy Ilog, Infanta	Brgy Captain
17	Mr Takashi Kadota	JICA Study Mission	
18	Ms Dolores Romantico	Nakar Municipal Government	MSWDO (SWO)
19	Ms Adela Cuerdo	Brgy Ilog	Secretary
20	Mr Abelardo Jose	Infanta Municipal Government	Municipal Health Officer
21	Mr Roberto Buendicho	Brgy Ilog, Infanta	Resident
22	Ms Myrna Ungriano	Brgy Magsaysay, Infanta	Kagawad
23	Ms Jovita Pacadar	Brgy Magsaysay, Infanta	Kagawad
24	Mr Eduardo Aumentado	Brgy Magsaysay, Infanta	Brgy Captain
25	Mr Ramil Vargas	Nakar	Brgy Captain
26	Mr Arnulfo Tena	Nakar Municipal Government	Municipal Planning & Devt Coordinator
27	Ms Christine Feliciano	Nakar Municipal Government	Admin Asst-MPDO
28	Mr Reagan Penaojas	ICDAI (NGO)	CBO
29	Ms Ma. Jesusa Bugayong	Infanta Municipal Government	MBI-Mun Eng'g Office
30	Mr Giel Escareses	DILG-Bureau of Fire Protection	FSI
31	Mr Alfredo Moises	Brgy Pamplona, Gen Nakar	Brgy Captain
32	Ms Filipina Grace America	Infanta Municipal Government	Mayor
33	Mr Rhoel Ram Velasco	Infanta Municipal Government	Vice-Mayor
34	Mr Rex Gamara	Infanta Municipal Government	SB Member
35	Mr Pio Astejada	Nakar Municipal Government	Municipal Administrator
36	Mr Leovegildo Ruzol	Nakar Municipal Government	Mayor
37	Mr Arnel Adornado	Nakar Municipal Government	Municipal Engineer
38	Mr Arnel Sanchez	Nakar Municipal Government	SB
39	Ms Melanie Glorioso-Virrey	Infanta Municipal Government	MSWDO-SWO
40	Ms Alexia Marquez	Brgy Poblacio, Gen Nakar	Brgy Captain
41	Mr Hernando Marquez	Department of Health-Region IV-A	Medical Doctor
42	Mr Fabian Villareal	Brgy----, Gen Nakar	Brgy Captain
43	Mr Renato Escama	Nakar Municipal Government	Councilor
44	Mr Michael Cuento	Nakar Municipal Government	Councilor
45	Mr Marlon Rellev Jr	Nakar Municipal Government	
46	Mr Leo Magno	Nakar Municipal Government	
47	Mr Norberto Astejada	Nakar Municipal Government	
48	Mr Freddie Claustro	Nakar Municipal Government	Legislative Consultant
49	Engr Nick Baoy	JICA	PCM Moderator
50	Engr Rey Gerona	JICA	PCM Moderator
51	Mr Ronaldo Tena	Nakar Municipal Government	
52	Mr Ronaldo Veyra	DILG-Bureau of Fire Protection	Fire Marshall
53	Mr Venancio Moises	PNP	

Lesson 1 **Wide-Range Assistance, and Protracted Flood Control**

Approach

Selection and Concentration

	Good Practices
▪ To Prioritize Flood Control and Volcano Landslide occurring repeatedly around the country	• Budget policy to flood control in Japan
▪ To Efficiently / Rapidly Product the Effect - "**Point Defence**" for urban center not "conventional Continuous Dyke Constructions" - "**Zone Defence**" through an integration of measures in a river basin	• Traditional construction methods in Japan – "Waju-Tei" (circle levee, ring levee), "Shingen-Zutsumi" • Comprehensive Flood Control in Japan • Riverbank Protection Works in Laos
▪ To cope with with worsening disaster-prone areas caused by global climate changes. - Flexible Planning at Coastal Low-Lying Land	

Good Practices

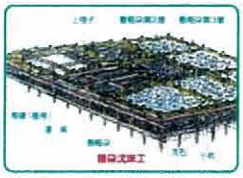
Traditional Construction Methods for **"Point Defence" and "Zone Defence"**

Mehode for **"Point Defence"**

"Waju-Tei" (Circle Levee), Japan

(出典名)

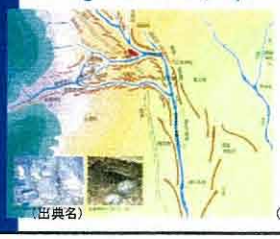
A Traditional Construction Measure "SodaChinSho"for Riverbank Protection adopted at Mekong, Laos



施工前(2002年2月)

Methodes for **"Zone Defer**

"Shingen-Zutsumi", Japan



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"Zone-Defence" Suibou-rin" (Flood-M Forest)

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竣工直後(2003年5月)

Lesson 2

Limited Direct Contribution to Poverty Reduction

Approach

To Place Poverty Reduction at an Internal Aim of Disaster Risk Reduction

Example:
- To Improve Living Environment at Resettlement Communities
- To Support Livelihood Regeneration at Resettlement Communities

Good Practices

To Improve Living Environment at Resettlement Communities

"Motomachi" Housing Redevelopment Project
of Temporary Housing at Low-Lying Land along Ota-River, Japan

Around 1975

Temporary settlemtnes formed after the World War II.

At present

(arc-hiroshima)

Waterfront Improvement Project at Colombo, Sri Lanka (Yen-Loan and JOCV)

Oridinal Community

Relocated Community

(JBIC)

Lesson 3

Limited Support to Community-Based Disaster Management

Previous Assistance have focused on:
- **Flood control projects, Monitoring equipment for flood forecasting/ warning**
- **Capacity Building of governmental agency, technical staffs, etc.**

Approach

To Strengthen Community-Based Resilience to Disaster

Example: To support:
- Community-Based Disaster Management Organizations
- Capacity Building for Community Disaster Management
- Small-Scale Physical Works to Mitigate Community-level Disaster Risk

Good Practices

Strengthening of Community-Based Resilience to Disaster

"Suibou-Dan"
(Registered Volunteer Group for Flood Mitigation, River Management) in Japan

Head of City / Municipality

Combination of
- **Large-scale Structural Measures** (by Yen-Loan)
- **Community-based Small-scale Physical Works** (by Technical Cooperation Project)

at Merapi Volcano, Indonesia

Sabo-Dam to protect pyroclastic flow

Indonesia Sabo Technical Center

Workshop at a community

Lesson 4

Approach

Limited Involvement of Communities and LGUs

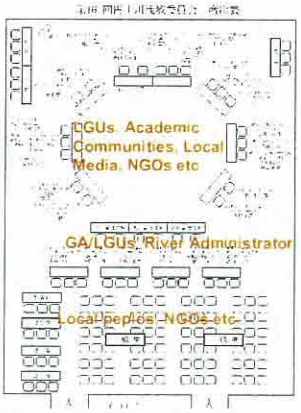
Previous Focus on:
- **Project implementation bodies (DPWH etc.)**

Involvement of Communities and LGUs

▪ To Reach Broad Consensus at the 1st stage of Planning - River-basin Flood Control Master Plan, etc.	*Good Practices* • Watershed Management Committee, in Japan • Relocation site development in Iloilo Project (Yen-loan)
▪ To Build Cooperative Framework of Project-Implementation	• Improvement in the organization, institution, budget system, in Japan • Iloilo Project (Yen-loan)
▪ To Provide Framework of Commitment/ Collaboration of Communities and LGUs for Better Maintenance and Operation of Project Facilities	• Lock Keeper system of flood gate, in Japan • Ormoc (Grant assistance)

Good Practices — Involvement of Communities and LGUs

Participation of LGUs and Communities at Planning of Watershed Management, in Japan



A Riverbasin Management Committee, Maruyama-River, Japan

Commitment &Collaboration of Communities and LGUs for Maintenance and Operation at Omroc

Anticorrosive coating of Slit-dam

Mowing at a dry-riverbed

Lesson 5

Low-Quality Information Provided to Communities in a Time of Disaster

Approach

To Improve the Quality of Disaster Information

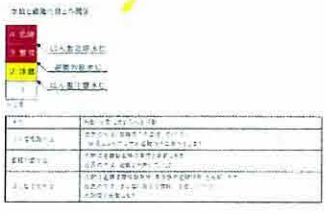
Keys for improving disaster information:
- Transmittable to communities in timing and in accuracy
- Easy-to-understand to peoples

To assist PAGASA and related organizations to improve:
- Meteorological forecasting, flood warning, communication network / system, easy-to-understand weather bulletin, etc.

Good Practices

Improvement of Quality of Disaster Information

Easy-to-Understand Flood-Monitoring at Community-/LGU-level, Japan



"Nation-Wide Water / River Information" (Comprehensive, Real-time and Easy-to-Understand Flood Information Service at Nation-wide, Japan)

（出典名）

Lesson 6

Insufficiency of Multi-Sector Coordination / Collaboration

Approach

Coordination with Other Sectors

	Good Practices
▪ Regional and Urban View Points - Balancing reservoirs, water-infiltration in urban area / built-up area - Land use and regulation for disaster risk mitigation - Urban development along rivers, - Urban drainage and garbage disposal system	• River Environment Improvement Project, Comprehensive River Management in Japan • Reforestation and planting in Aguno Project, Laoagu Project (Yen-loan)
▪ Watershed Management - Forestation / Reforestation, Land use and regulation - Coordination / collaboration with DENR and other GAs, LGUs, NGO and community	• Watershed Management Committee, water source forest, watershed funds in Japan
▪ Watershed and Waterfront Environment - Improvement of water quality, waterfront environment and town scape, etc.	• Urban garbage improvement in Iloilo Project (Yen-loan)

Good Practices — Coordination with Other Sectors

River Environment Improvement, Japan

Water-Front-Renewal, Hiroshima, Japan
- To protect against High Tide Water
- To create urban amenity and town-scape

Before After (MOLT)

Water-source-forest (Tokyo M.G.A.)

(Tokyo M.G.A.)

Multi-sector Coordination in Iloilo Flood Control Project (Yen-loan)
- Providing Training-course for Municipal staffs
- Reforestation Survey at river-upstream
- Community-education on Urban Garbage
- Review of Municipal's garbage disposal plan
- Resettlement
- Assistance for resettlement, etc.

Construction of Community Center and Provision of Community-seminar

Garbage Collection by Local Students (JBIC)

Good Practices

Strengthening of Community-Based Resilience to Disaster

"Suibou-Dan"
(Registered Volunteer Group for Flood Mitigation, River Management) in Japan

Head of City / Municipality

Small-scale Physical Works, Nepal
(Technical Cooperation Projct)

Another Practice:
Commbination of
- **Large-scale Structural Measures** (by Yen-Loan)
- **Community-based Small-scale Physical Works** (by Technical Cooperation Projct)

at Merapi Volcano, Indonesia

Disaster Management Cycle

sample

Key Elements of Disaster Risk Management

Pre-Disaster Phases				Post-Disaster Phases	
Risk Identification	Mitigation	Risk Transfer	Preparedness	Emergency Response	Rehabilitation and Reconstruction
Hazard Assessment	Physical/ Structural Mitigation Works	Insurance/ Reinsurance	Early warning systems Communica-tion systems	Humanitarian assistance / rescue	Rehabilitation/ reconstruction of damaged critical infrastructure
Vulnerability Assessment	Land use planning & building codes	Financial Market Instruments	Monitoring & forecasting	Damage assessment	Macro economic and budget management
Risk Assessment	Economic incentives	Privatization of public services with safety regulations	Shelter facilities Emergency planning	Clean-up, temporary repairs & restoration services	Rehabilitation of damaged sectors (exports, tourism, etc)
GIS mapping & scenario building	Education, training & awareness	Calamity funds	Contingency planning (utility companies / public services	Mobilization of recovery resources	Incorporation of disaster mitigation components in reconstruction

Source ITC Refresher Course on Geo-Information for Natural Disaster Reduction (2005)