

‘Principles for Promoting Resilient Economies’

Pacific Economic Cooperation Council
September 11, 2015
Sofitel Philippine Plaza, Manila



Background

A. Location and Topography

- Gateway to Region X (Northern Mindanao).
- Total land area is 488.86 km² . (56,966.6228 has.)
- Located between the coastline of Macajalar Bay to the North and the plateaus and mountains of Bukidnon and Lanao del Norte to the South.
- Seven (7) rivers and creeks flow from the south and drain to Macajalar Bay.
- Lowland – flood plain caused by accretion of sediments – is relatively flat with not more than 10 meters above the mean sea level.



Background

B. Population

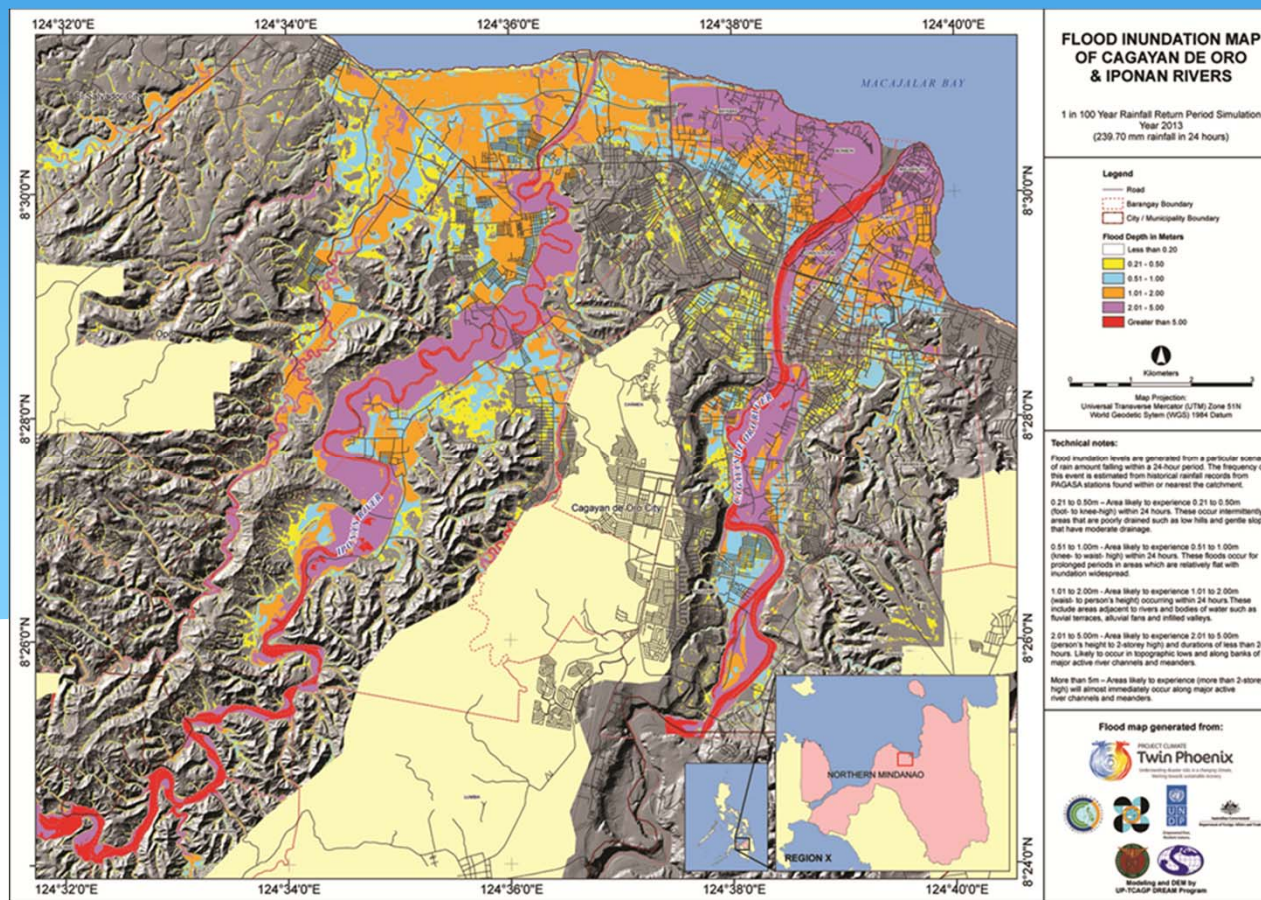
- **Population – 634,873 (as of 2012)**
 - **Sex ratio: 98 men per 100 women**
 - **Mean Age: 23**
 - **Over 60 yo: 3.9%**
- **Population Density – 1,298.68 per 1 km² .**
- **80 barangays grouped into 2 Districts (RA 9371).**



Background

C. Most Prominent Hazard Threatening Cagayan de Oro City.

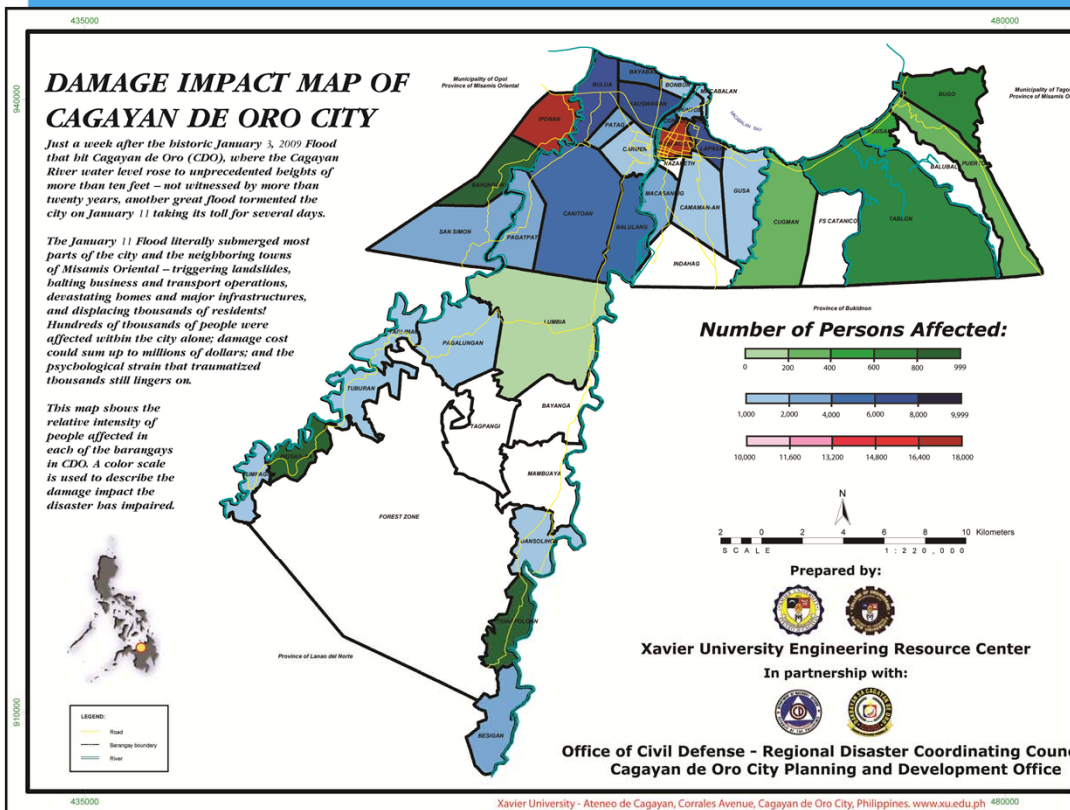
1. Typhoons and Rain-induced Floods.





Wake-up Calls Unheeded

- January 3 and 11, 2009 – flood hit parts of the city – part of Brgy. Carmen.



Flood Damage Map of Carmen





Wake-up Calls Unheeded

- November 25, 2009, another flood hit the city – Cala-cala, Brgy. Macasandig.





TS “Sendong” Ravages CdO

- Date: 16 December 2011
- Affected:
 - Families – 38,125 (228,728 persons)
 - Deaths – 657 (552 – identified)
 - Injured – 199
 - Missing – 396
- Displacement of people
- Loss of economic activities
- Damage to properties –
PhP 2,074,316,473.00





TS “Sendong” Ravages CdO

A. What happened?

- **High rainfall intensity (475mm in 24hrs., or 19.79mm/hr.)**
- **Water level – 7-8 mtr-rise from normal high of 4 mtrs.**
- **Characteristic of the watershed:**
 - **increased soil erosion and runoff, due to:**
 - **expansion of agricultural activities upstream;**
 - **unregulated expanding urbanization.**
 - **increased siltation**



TS “Sendong” Ravages CdO

B. Why so many casualties?

- Time when incident occurred – 10:00 PM.
- High risk exposure.
 - Brgy. Macasandig (Cala-cala)
 - Brgy. Balulang (Villa Angela Subd; Golden City Village; Isla Puntod)
 - Brgys. 10, 13, 15 and 17 (Isla de Oro)
 - Brgy Consolacion (Isla Bugnaw, Baksan, & Delta)
- Lack of PREPAREDNESS – “did not learn from previous flooding events (2009)”
 - Passive attitude
 - No/lack of proper adaptive actions
 - Unharnessed capability



Post “Sendong”: What has to be Done?

- A. Implement “No Build Zone” Policy.**
- B. Strengthen Early Warning System (EWS).**
- C. Establish Disaster Communication Dissemination System.**
- D. Pursue Community Empowerment.**
- E. Enhance Response Capability.**



Where are we now?

A. Implement “No Build Zone” Policy.

- 1. Relocate away from hazard (Retreat Strategy)**
 - Recovery and Rehabilitation for “Sendong” victims are still works in progress; transitory are being turned into permanent relocation sites.**
 - Creation of Housing and Resettlement Task Force to manage the rehabilitation and relocation projects, programs, and activities.**
- 2. Live with hazard (Defense Strategy)**
 - Flood Control Dike**



Where are we now?

B. Strengthen Early Warning System (EWS).

1. Access to Early Warning Stations' data (core of real-time prevention and mitigation).

Cooperating Agency	Water Level Sensors	Rain Gauges
ASTI-DOST	5	10
PAGASA-Twin Phoenix	4	4
PAGASA-NDMI	1	4
TOTAL	10	18



Where are we now?

B. Strengthen Early Warning System (EWS).

2. Access to Automatic Mini Weather Station data.



3. Establishment of 5 Flash Flood Alert System (FFAS) stations.



4. Evacuation Protocol for Hydrological-Meteorological (Hydro-Met) Hazard.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

PREPARATORY PHASE

Situation	Required Action(s)	Mode of Communication
PAGASA FFWS Center issues Weather Bulletin .	<ol style="list-style-type: none">1. CDRRMO relays Weather Bulletin to concerned BDRRMCs.2. Informs CDRRMC member-agencies.3. Alerts all response groups.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

PREPARATORY PHASE

Situation	Required Action(s)	Mode of Communication
PAGASA FFWS Center issues Flood Advisory .	<ol style="list-style-type: none">1. CDRRMO relays Weather Bulletin to concerned BDRRMCs.2. CDRRMO SUSPENDS all activities along/in the river.3. Monitors actions of BDRRMCs.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

FLOOD WARNING PHASE

Status: ALERT (YELLOW)	Required Action(s)	Mode of Communication
<ul style="list-style-type: none">PAGASA issues Flood Bulletin Nr. 1.Water level at:<ul style="list-style-type: none">Tumalaong – 110.69mBasak – 457.61mMambuaya – 108.58mTaguanao – 15.23m	<ol style="list-style-type: none">CDRRMO informs all BDRRMCs and response groups.CDRRMO raises Code YELLOW.CDRRMO declares “READY STATUS” for residents of concerned barangays.CDRRMO disseminates hazard information:<ul style="list-style-type: none">Barangays conduct “recorrida”.PNP and BFP assist in conduct of	<ul style="list-style-type: none">PAGASA to CDRRMO, by Fax.CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

FLOOD WARNING PHASE

Status: ALARM (ORANGE)	Required Action(s)	Mode of Communication
<ul style="list-style-type: none">• PAGASA issues Flood Bulletin Nr. 2.• Water level at:<ul style="list-style-type: none">◦ Tumalaong – 111.69m◦ Basak – 459.45m◦ Mambuaya – 109.63m◦ Taguanao – 17.92mreached the ALARM level.	<ol style="list-style-type: none">1. CDRRMO informs all BDRRMCs.2. CDRRMO raises Code YELLOW to Code ORANGE.3. CDRRMO declares “GET SET STATUS” for residents of concerned barangays.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

FLOOD WARNING PHASE

Status: ALARM (ORANGE)	Required Action(s)	Mode of Communication
<ul style="list-style-type: none">• PAGASA issues Flood Bulletin Nr. 2.• Water level at:<ul style="list-style-type: none">◦ Tumalaong – 111.14m◦ Basak – 459.45m◦ Mambuaya – 109.63m◦ Taguanao – 17.92m reached the ALARM level.	<p>4. CDRRMO/C orders “PRE-EMPTIVE” evacuation for vulnerable sectors:</p> <ul style="list-style-type: none">• Children;• Elderly;• Pregnant women;• Lactating women;• PWDs• The sick and the sickly.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

FLOOD WARNING PHASE

Status: CRITICAL (RED)	Required Action(s)	Mode of Communication
<ul style="list-style-type: none">PAGASA issues Flood Bulletin Nr. 3.Water level at:<ul style="list-style-type: none">Tumalaong – 111.58mBasak – 460.93mMambuaya – 110.73mTaguanao – 20.47mreached the CRITICAL level.	<ol style="list-style-type: none">CDRRMO informs all BDRRMCs.CDRRMO raises Code ORANGE to Code RED.CDRRMO declares “GO STATUS” for residents of concerned barangays.CDRRMO/C orders “FORCED” evacuation.	<ul style="list-style-type: none">PAGASA to CDRRMO, by Fax.CDRRMO to BDRRMCs, by two-way radio; SMS; other media available, including sounding of siren.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

FLOOD WARNING PHASE

Status: CRITICAL (RED)	Required Action(s)	Mode of Communication
<ul style="list-style-type: none">• PAGASA issues Flood Bulletin Nr. 3.• Water level at:<ul style="list-style-type: none">◦ Tumalaong – 111.58m◦ Basak – 460.93m◦ Mambuaya – 110.73m◦ Taguanao – 20.47mreached the CRITICAL level.	<ul style="list-style-type: none">5. CDRRMO continues to disseminate hazard information.6. CDRRMO/C orders PNP and BFP to effect “FORCED” evacuation.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available, including sounding of siren.



EVACUATION PROTOCOL FOR HYDRO-MET HAZARD

(For Cagayan River Basin)

POST-DISASTER PHASE

Situation	Required Action(s)	Mode of Communication
<p>PAGASA issues FINAL Flood Bulletin.</p> <ul style="list-style-type: none">• Termination of Flood Warning.• Water level in all stations is below ALERT level.• Flooding has receded.	<ol style="list-style-type: none">1. CDRRMO informs all BDRRMCs.2. CDRRMO downgrades all Codes.3. CDRRMO/C orders all “PRE-EMPTIVE” and “FORCED” evacuees to return to respective residence.	<ul style="list-style-type: none">• PAGASA to CDRRMO, by Fax.• CDRRMO to BDRRMCs, by two-way radio; SMS; other media available.

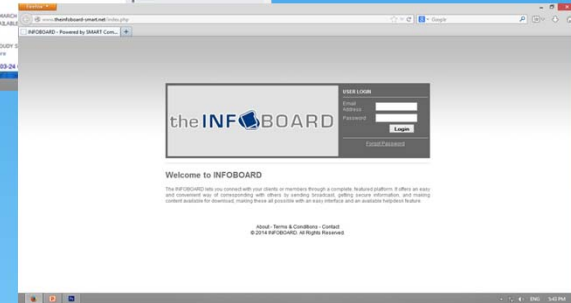


Where are we now?

C. Establish Disaster Communication Dissemination System.

Use of:

1. Facebook
2. INFOboard
3. "Recorrida"
4. Media – Radio, TV, print





Where are we now?

D. Pursue Community Empowerment.

- 1. Close alliance with concerned national agencies and other NGOs/CSOs.**
 - World Food Programme**
 - Balay Mindanaw**
 - Xavier University**
 - Mindanao University of Science and Technology**



Where are we now?

D. Pursue Community Empowerment.

- 2. Reconstitute the BDRRMC and establish a Barangay Disaster Operation Center.**
- 3. Develop communication capability.**
- 4. Conduct specialized skills training, with emphasis on Water Safety.**
- 5. Come up with BDRRM plan and, based on the plan, conduct of drills and exercises regularly.**
- 6. Encourage residents to have a ready “grab kit”.**



Where are we now?

E. Enhance Response Capability.

- 1. 5-year CDRRM Plan.**
- 2. Executive Order No. 026-13, “Reorganizing the City Disaster Risk Reduction and Management Council”.**
- 3. Full administrative and operational support of the City Disaster Risk Reduction and Management Office.**
- 4. Enhanced response capacity of Oro Rescue.**
- 5. Pre-designated Evacuation Centers (EC) and designation of EC management personnel.**
- 6. Standard Operating Procedures for rescue and relief operations.**