

# **Community-Based Flood Early Warning System**

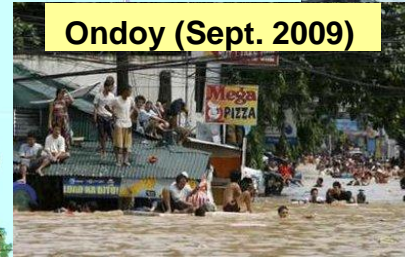
**(trends, opportunities and challenges)**

H. T. Hernando, PRFFWC, PAGASA

# Philippines: average of about 30 flood events per year!!



T. Marce - SW (Aug. 2004)



Ondoy (Sept. 2009)



Habagat (Aug. 2012)



T. Pedring (Sept. 2011)



T. Frank (June 2008)



Ormoc Flood 1991



T.S. Sendong (Dec. 2011)



Typhoon Pablo (Dec. 2012)





**5 river basins with telemetered FFWS in the country.**

**For other smaller basin / watershed areas: CBFWS is the best and preferred alternative. CBFWS, LFWS, LFEWS, etc...**

# The Community-Based Flood Early Warning System (CBFEWS)



- 1. Risk knowledge**
- 2. Monitoring & Warning**
- 3. Info Dissemination & Communication**
- 4. Response capability**

## Some factors influencing a community's decision for a CBFEWS

- Frequency of flooding
- Community's interest and awareness
- Flood loss potential (H-Damage curve)
- Warning time vs. benefits
- Cost of putting-up the system



# The CBFEWS: Factors affecting the type of system - Manual or Automatic

- Desired accuracy
- Lead time
- Reliability of the system
- **Cost** (maintenance / sustainability)

# simple manual rain gauge set-up





PRFFWC - PAGASA  
DPWH - PMO / JICA  
OCD 3 / PDRN  
PDCC/MDCC/BDCC



**simple flood marker & water level gauge set-up**



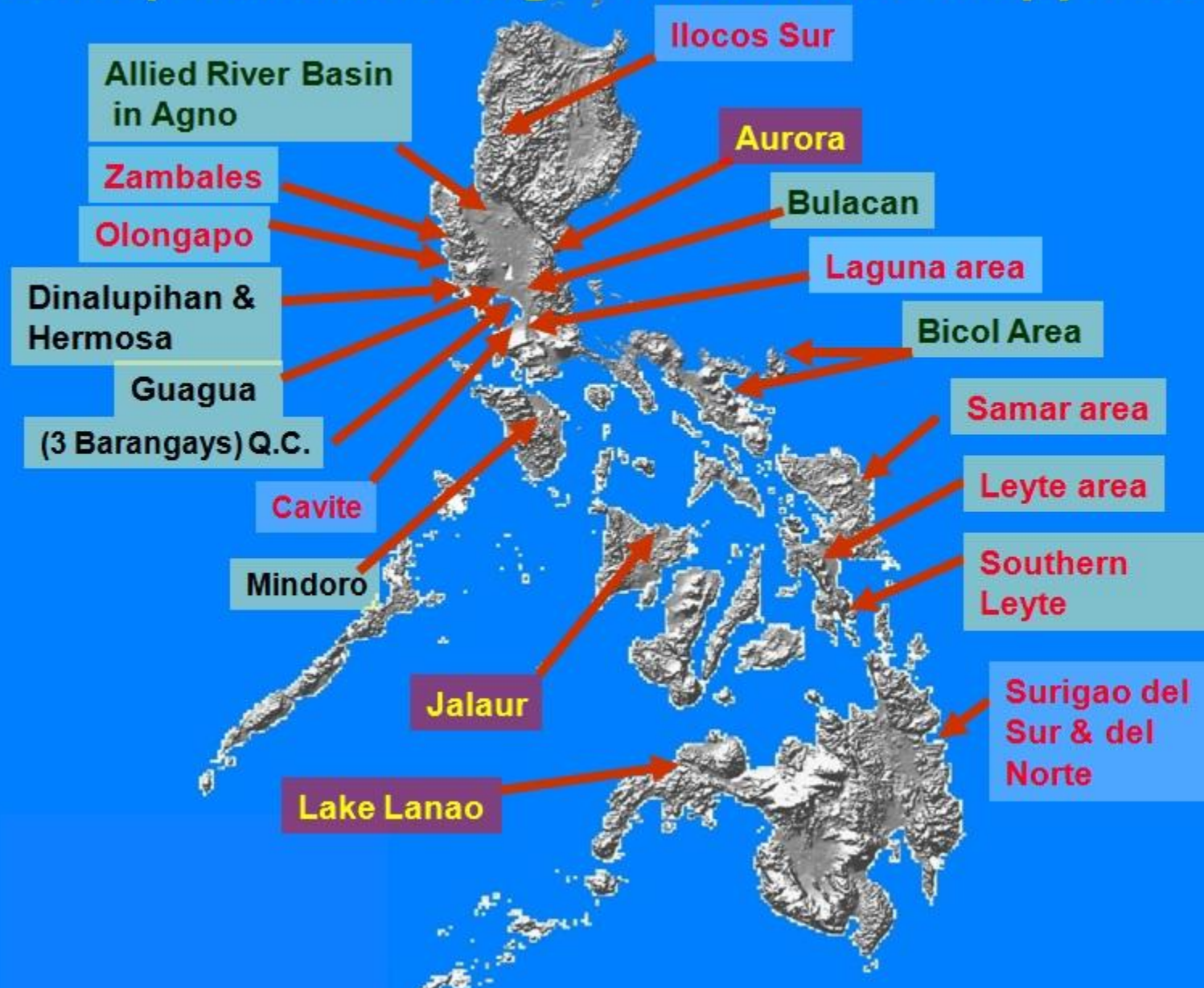


# automatic rain gauge & water level gauge set-up





# (some) CBFWS Programs in the Philippines





## ... not all CBFEWS programs succeeded !!



- Maintenance issues
- observation issues
- LGU support issues
- etc.

**Sustaining a CBFWS is a rather difficult task to undertake especially if the community does not experience a regularity of floods or have long flood event intervals.**

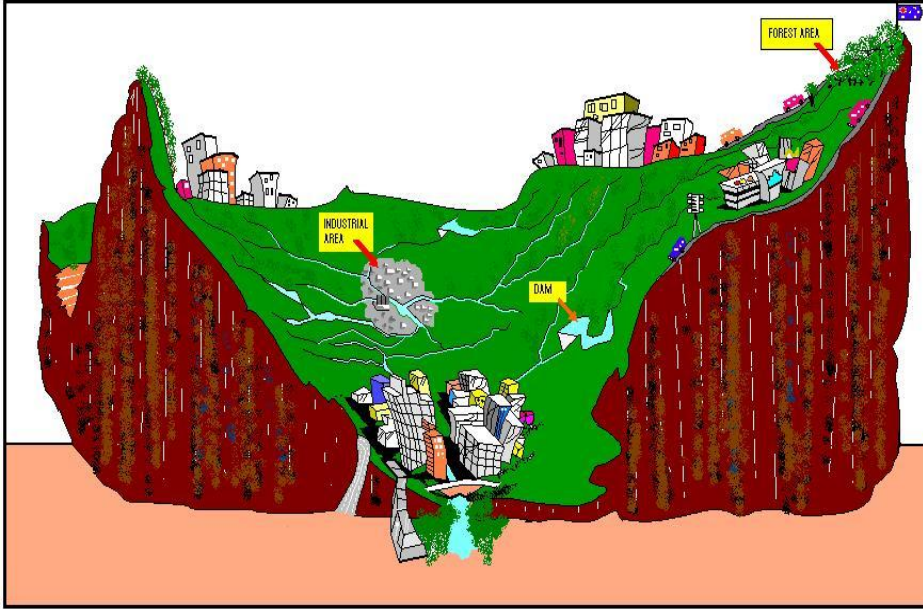






**CBFEWS – “an IRONIC system”**

## ... some issues for a successful CBFEWS



- watershed approach
- community participation
- community counterpart
- sense of ownership



# Sustainability by continued strengthening of public awareness and information dissemination



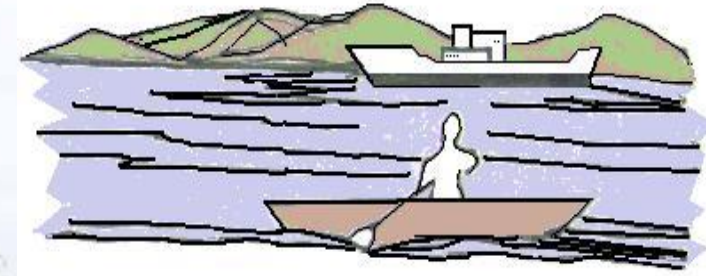


# Set of monitoring equipment = hydromet database

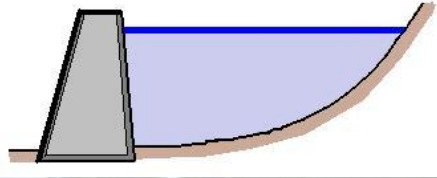




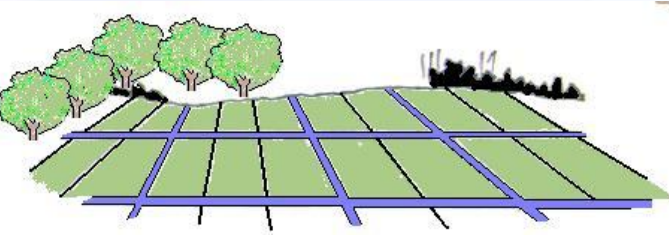
## Data can be used ..



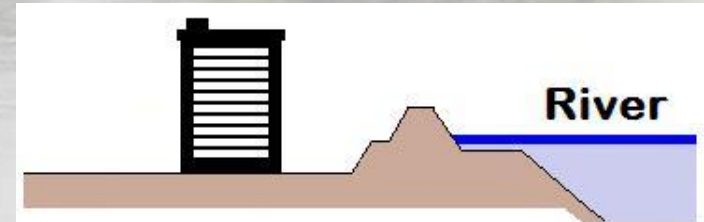
**Inland Navigation  
/ Transportation**



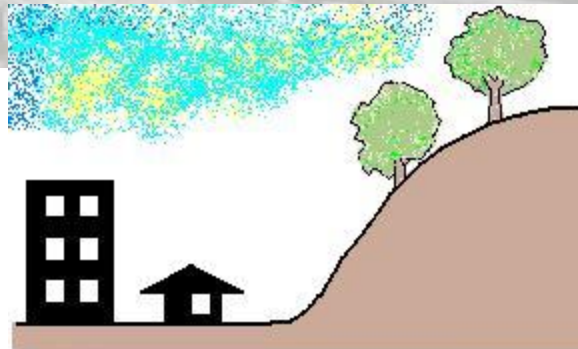
**Hydro Power**



**Agriculture / Irrigation**



**River Structures**



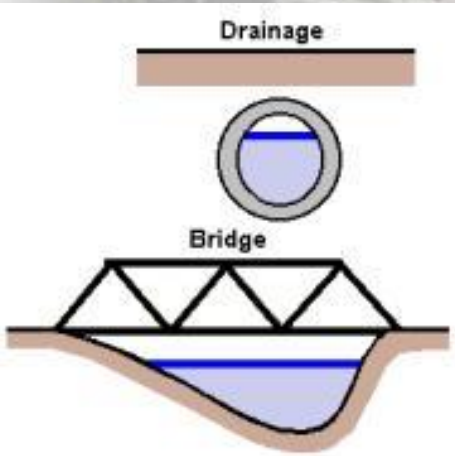
**Watershed Mgt.  
/ Planning**



**Flood disaster Mitigation**



**Water  
Supply**



**Infrastructures**

# Women & Children as active partners in CBFEWS

**The role of Women & Children in CBFEWS \*\***

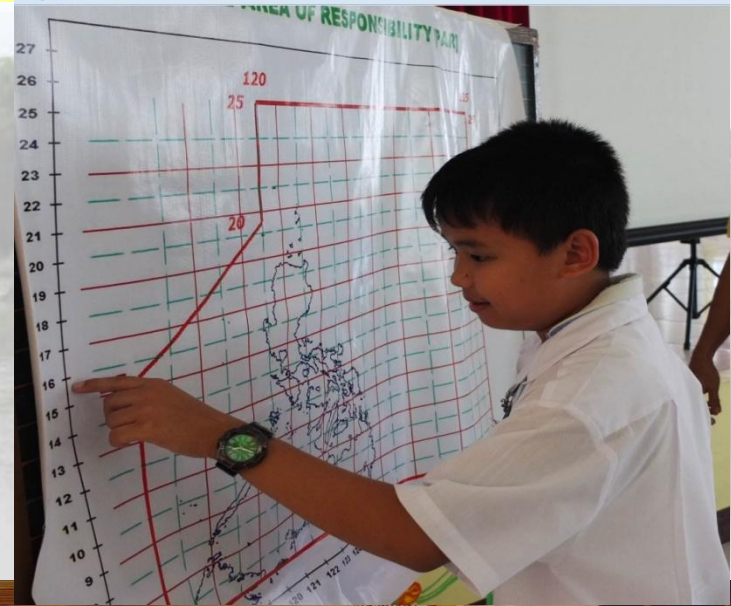




## ... in rainfall observations



# Capacity building: able to understand & track movement of Tropical Cyclones





## Active partners in Dissemination of info & warnings



Community warning bell



Provincial/municipal level  
info & warning system



## Simulation exercises & Drills

Women & Children are no longer helpless victims but now in the forefront of these activities.

Evacuation Drill in St. Bernard, Southern Leyte



Evacuation Drill in Palo, Leyte





# Women & Children as agents of Resilience in CBFEWS \*\*



## ... agents of Resilience in LFEWS

**Participatory risk mapping  
where women's voices are  
heard and their needs are  
addressed**





## ... agents of Resilience in LFEWS

**Convergence of scientific, technical and local knowledge in DRR measures as employed in CBFEWS**





## ... agents of Resilience in CBFEWS

- A** - Integration in local development planning
- B** - landslide detection thru rainfall data
- C** - management & decision-making in the DRR operations & activities





# Some Challenges, Priorities & Opportunities in DRR (CBFEWS) \*



# Challenges, Priorities & Opportunities...

**People / community must understand & accept their responsibility towards their own survival and not simply a matter for the government/s to find & provide solutions. All sectors in the community must work together ...**





# Challenges, Priorities & Opportunities...

- Existing grass-roots and community-based organizations (at community level), including women organizations, should be reinforced for them to take action and participate on DRR activities.



# Challenges, Priorities & Opportunities...

**No second-class citizens – need for gender and social inclusion especially in DRR initiatives**





# Challenges, Priorities & Opportunities...

**“Power of TEAMWORK and DISCIPLINE - increase a culture of helping each other during emergencies. Results in...**

- direct strengthening of social solidarity and neighbourliness.**
- an increase in social justice irrespective of class, gender, and other differences”**





# Thank you very much for your attention.



Acknowledgements on some slides:

\* R.T. Perez presentation on CBFWS

\*\* 2012 IDDR-ADDM presentation

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