필리핀 기마라스 연안재해 예방 및 역량강화 사업
(Proposed Guimaras Disaster Risk Reduction and Management Framework)
The Exposition 2012 Yeosu RO Korea
- Theme “The Living Ocean and Coast: Diversity of Resources and Sustainable Activities”
- Financial support to the Guimaras Project

KOICA
- Administrative support

KMI
- Joint research with Guimaras Team
- Support for Increasing Public Awareness

Guimaras Provincial Government
- ICM programme implementation
- Conducting survey
Adverse Impacts of Hazards and Climate Change

- Sea level rise
- Strengthened and frequent typhoons
  - Water/drought or flooding
- Health concern/water and vector-borne diseases
  - Changes in ecosystem
  - Pollution / oil spill

Requiring a Disaster Risk Reduction and Management
Research Objective and Methods

**Objective**
- The project is aimed to draft a proposed Guimaras Disaster Risk Reduction and Management (DRRM) Framework for Guimaras Province which will be subsequently developed into a Guimaras DRRM Plan, to be approved by the Governor and adopted by legislative body of Guimaras

**Methods**
- Science-based research and desk-top review on Guimaras disaster risk
- Province-wide survey on awareness on disaster risk
- In accordance with the Philippines National law, i.e. RA 10121 (2010)
- Findings on existing Guimaras Disaster Management Plan
Work Flow

1. ROK, Australia, UK, Philippines
2. Case studies on disaster risk reduction and management
3. Identification of disaster types in Guimaras
4. Guimaras DRRM capacity & situational analysis
5. Framework for Guimaras DRRM
   - Major components of DRRM
   - Strategies for each disaster type
   - Timeline and resources
6. Priority projects
7. Experts' consultation
8. Literature review GIS analysis Site visit
9. Survey and interview with residents and officials
Legal and Institutional Arrangement of Guimaras
**Guimaras Disaster Legislations**

**Act & Order**

- The Philippine Disaster Risk Reduction and Management Act (Republic Act No. 10121, 2010)
- Implementing Rules and Regulations of Republic Act No. 10121 (2010)
- **AN ORDER CREATING THE GUIMARAS TASK FORCE EMERGENCY RESPONSE (ER)**
  (TASK FORCE ER, Executive Order 35, 2009)
  - Public Storm Signal I or higher
  - Prohibition and Disallowance of the operation of vessels
  - **Step 1.** Creation of Task Force ER, **Step 2.** Composition TF ER (in Iloilo City), **Step 3.** Working of Committees (information, relief etc.), **Step 4.** Composition of Secretariat
∗ Mitigation: Risk Assessments & Vulnerability Analysis, Construction of Seawall, Dikes and other Mitigation Measures to Disaster Prone-Areas, Purchase & Distribution of Emergency/Medical Kit etc.

∗ Preparedness: Purchase of Disaster Rescue Equipment, Installation of Early Warning System, Trainings & Educational Tours etc.

∗ Response: Damage Assessment & Needs Analysis (DANA), Search & Rescue Operations, Relief & Evacuation

∗ Rehabilitation/Reconstruction: Assistance / livelihood to Disaster Victims, Repair / Rehabilitation of Damaged Infrastructures
Survey Results
Survey Overview

 Objectives
   To identify level of awareness on disaster among the Guimaras residents
   To come up with relevant disaster management strategies

 Survey
   March 2011
   5 municipalities in the Guimaras Province (residents and officials)
   Total sample: 325 people
Disaster Risk Reduction Management (DRRM) Issues

Residents

- Lack of localized preparedness and response system, 42, 13%
- Lack of awareness on disaster preparedness and response, 81, 25%
- Too much reliance on national government, 19, 6%
- Lack of experts and technologies, 41, 13%
- Lack of financial resources, 139, 43%

Officials

- Lack of localized preparedness and response system, 12, 21%
- Lack of financial resources, 27, 44%
- NA, 1, 2%
- Too much reliance on national government, 4, 6%
- Lack of experts and technologies, 5, 8%
There are enough equipment and resources for recovery from disasters
Disaster response equipment is regularly checked and maintained.
We have conducted education on disaster damage reduction
We have purchased buildings or facilities which are located in disaster prone areas.
There is enough manpower to oversee the implementation of laws and regulations
We are coping with laws and regulations for reducing damages from natural disasters
Identification of Vulnerability in Guimaras
Most Hazards in Guimaras

- The top most hazards of Guimaras
  - Flood/Storm surge
  - Typhoon
  - Landslide
  - Fire
  - Erosion/Land Settlement
  - Pollution (Oil Spill) Air, Water and Land

Source: Guimaras Disaster Management Plan

- Damages last 20 years

No. of Families Affected

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of Families</th>
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<tbody>
<tr>
<td>1990 (Fire)</td>
<td>703</td>
</tr>
<tr>
<td>1994 (Typhoon)</td>
<td>103</td>
</tr>
<tr>
<td>1995 (Fire)</td>
<td>74</td>
</tr>
<tr>
<td>1995 (Typhoon)</td>
<td>1,009</td>
</tr>
<tr>
<td>1996 (Typhoon)</td>
<td>976</td>
</tr>
<tr>
<td>1998 (Fire)</td>
<td>30</td>
</tr>
<tr>
<td>1999 (Fire)</td>
<td>16</td>
</tr>
<tr>
<td>2005 (Brought)</td>
<td>31</td>
</tr>
<tr>
<td>2006 (Oil Spill)</td>
<td>378</td>
</tr>
<tr>
<td>2008 (Typhoon)</td>
<td>913</td>
</tr>
</tbody>
</table>

10,000
Disaster Prone Areas (Actual Site Visit)

Coastal village is vulnerable to sea level rise

Destruction of ecosystem by oil spill accident

Serious coastal erosion in tourism site

Landslide prone area

*Photos: KMI Project Team*
Multi-disaster prone Barangays

Disaster Type: Flood, Storm Surge, Landslide, Tsunami
The topography of Guimaras varies from level to steeply sloping, with land elevation ranging from 0 to nearly 300 meters above sea level.
Low-lying Coastal Areas

- Sea Level Rise/Tsunami (1, 2, 3, 5 meters)
Population

Population (2007)

- 266 – 878
- 879 – 1414
- 1415 – 2069
- 2070 – 3341
- 3342 – 6257

Population Density (people per has)

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 10
- 15
- 31

Building Footprint

0 2 4 Kilometers
A: High population density, high buildings density, and disaster-prone area (Jordan, Buenavista)

B: High buildings density, disaster-prone area, low-lying coastal area (Nueva Valencia)

C: Low-lying area, low population (buildings) density, tsunami Inundation Expectation Area in Coast, Island (Nueva Valencia, Sibunag)

D: High building density, low-lying coastal area (San Lorenzo)

E: Expected inundation area (Buenavista)
Proposed Disaster Risk Reduction and Management Framework
“Guimaras is a disaster-prepared and resilient province with a progressive economy which is anchored in the principles of sustainable development.”
Guiding Principles

- National DRRM Framework
  - RA (Republic Act) 10121 (2010)
  - Hyogo Framework

- Sustainable Development
  - WSSD
  - Consideration for future generation

- Integrated Coastal Management
  - Holistic and integrated approach to projects and programme management
  - Guimaras ICM Programme
  - PEMSEA SDCA (Sustainable Development Framework for Coastal Area)
Guimaras DRRM Framework

A disaster-prepared and resilient province with a progressive economy in the principles of sustainable development

6 Strategies

GOVERNANCE  CAPACITY DEVELOPMENT  AWARENESS  INFRA STRUCTURE  EQUIPMENT  PROACTIVE PREVENTIVE MEASURES
Governance

- **Policy/Ordinance/Regulation**
  - designation of the Natural Hazard Prone Areas (NHPA)
  - enacting ordinances and policy reform
  - strengthening enforcement

- **Finance**
  - utilization of “Calamity Fund”
  - Establishing new “calamity response fund” from development projects
  - mobilizing funding from funding agencies/international agencies

- **Coordination**
  - National/municipal

- **Institutional Arrangements**
  - Mainstreaming of PDRRMO(Province Disaster Reduction Risk Management Office)

- **Monitoring & Evaluation**
  - Continual improvement
Education/Training

- Training on emergency management (disaster response)
  - responders/rescuers/relief/medics
  - PDRRMC, MDRRMC and DRRMC and staff
- Evacuation procedures
- Data management system

Technical cooperation

- Exchange programme for experts
- Joint implementation of DRRM projects
- Harmonization of plans
Awareness

- **Publications**
  - Flyers and Posters
  - Manuals

- **Meetings/Seminars/Workshops**
  - Regular PDRRMC Meetings
  - Emergency Meetings
  - Public Hearings

- **Campaigns**
  - Drills and Exercises
  - Awareness Month/Day Celebration

- **Media Relations**
  - Press release, TV/Radio announcement

- **Strengthening P-LINKKK**
  - Modernizing equipment etc.
Infrastructure

- **Hard structures**
  - drainage/sewage system
  - seawalls and dikes/breakwater
  - slope protection for landslides – rip-rap, gabion, check dams,
  - installation of water system with standard fire hydrants
  - signage’s for roads and hazard-prone areas
  - solar-powered street lightings
  - improvement/rehabilitation of roads

- **Evacuation center**
  - designation/identification/construction of center
  - construction of evacuation roads
Equipment

- **Vehicle**
  - Ambulances
  - Vehicles for DANA (Damage Assessment and Needs Analysis)
  - Trucks for evacuation and hauling
  - Loaders
  - Boom truck

- **Emergency Kits**
  - disaster rescue (rubber boats, harness equipment, night vision apparatus etc.)
  - safety gears
Proactive and Preventive Measures

- **Pre-disaster phase**
  - Risk assessment and vulnerability analysis
  - Monitoring of hazard-prone areas
  - Strengthening of Response Teams at the Barangay Level
  - Early warning system

- **During disaster phase**
  - Damage assessment and needs analysis (DANA)
  - Search and rescue operations
  - Relief and evacuation

- **Post-disaster phase**
  - Water, Sanitation and Hygiene (WASH), Psychosocial, Nutrition and Health
  - Repair/rehabilitation of Infrastructure
8 Recommendations
Follow up Actions

- **Mainstreaming PDRRMO into Provincial organization**
  - Fully functioning PDRRMC
  - Implementing PDRRM Plan

- **Preparing PDRRM Plan and its implementation Plan**
  - Approval from the Governor and Legislative Body
  - Immediate implementation

- **Securing Funding for PDRRM Plan implementation**
  - Calamity Fund
  - International donor organizations
Follow up Project - background

- Response for Priority area A
  - High population density
  - High building density
  - Flood-prone area

- Capacity development
  - Survey results
  - Case studies

- Preventive action
  - Importance of communication
  - Enhancing equipment
Feasibility study on building drainage system in flood-prone areas
  - Estimating drainage costs and time for drainage system in the priority flood area (for example, Jordan, Buenavista)

Training on emergency operation for DRRM staff
  - Equipment operation
  - Oil spill contingency plan drill and exercise

Establishing Early Warning System in Guin Networking province-wide multi-functioning disaster warning system
  - Establishing data center
Acknowledgement

- Hon. Governor Felipe H. Nava
  - Political will and leadership

- ICM and PDRMMO Staff
  - Ownership and support
  - Expertise

- Yeosu EXPO Organizing Committee, KOICA
  - Funding support
  - Administrative Support
Thank You For Your Attention~