TSUNAMI COUNTERMEASURES:
An Action Plan for Indonesia

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ICHARM / PWRI– Tsukuba, Japan, July 9, 2008

Major countermeasures improvement post 2004 Indian Ocean Tsunami

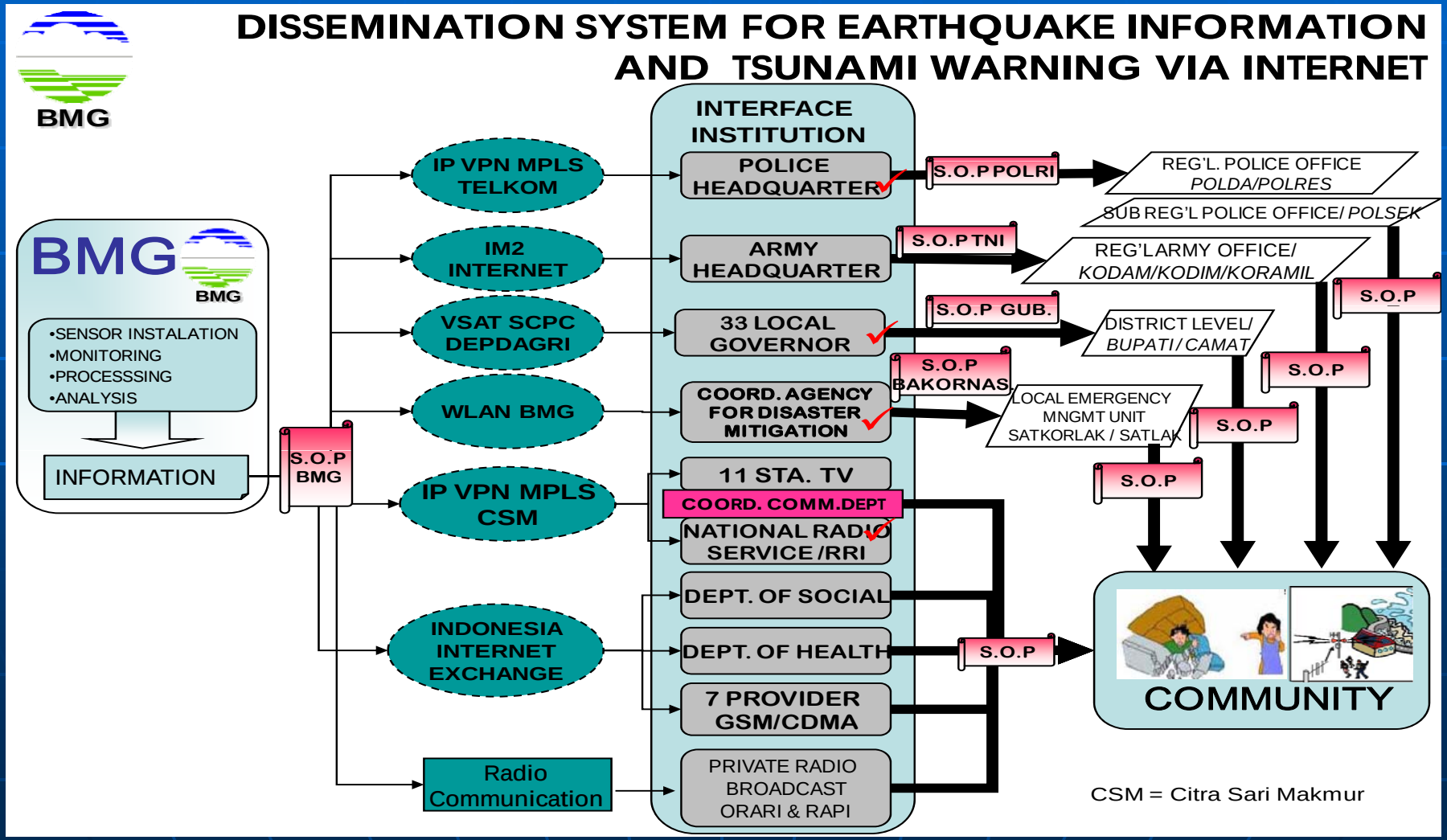
- Installing DART Buoy for early warning system
- Established Disaster Management National Board
- Local Disaster Management Board
- Allocated budget for disaster management : to anticipate an expanding budget requirement. example, by February 2007 had expended 3 billion $ (130% budget in year).
- Collaboration among institutions, ex. Meteorological and Geophysical Agency with University conducting tsunami simulation (still insufficient, <10 min)

- Inserting knowledge of disaster information in sermons at mosques, churches and other religious service places
- Problem in human relief distribution, using cluster approach (Pakistan (2005) and Yogyakarta (2006)
- self-help, mutual support and public assistance, according to the type of disaster
  - Earthquake (without tsunami), less killed comparing to injured (self-help and mutual support dominantly), Kobe Earthquake self help 70%, mutual support 20% and public ass. 10%
  - Government encourages society not to depend on public assistance.

Legislation:

- Prior to the 2004 Indian Ocean Tsunami, Countermeasure efforts in Indonesia were responsive and reactive in nature: Focus only on post-disaster rehabilitation and reconstruction
- Disaster Management Act No. 24, 2007: RESPONSIBILITIES AND POWER, Article 5, 'Government and regional government are responsible for organization of disaster management.
- article 9. National government delegate authority to provincial government and district/municipality to stipulate disaster management policies in its territory that are aligned with regional development policies
- Presidential regulation, No. 8, 2008. article 2, national disaster management agency stipulates disaster management efforts which include disaster prevention, emergency response, and rehabilitation and reconstruction process
- Governmental Regulation, No. 21, article 21, 2008, in time of a disaster, emergency response effort is controlled by chief of National Disaster Management Agency (NDMA)

Organization:



c. Structural Measures

• The protection of coastal areas from tsunami in Indonesia → still not a high priority due to high costs of construction.

• Minimal Structural measures such as seawalls or breakwater exist in some areas mainly for minimizing abrasion purposes

• Coastal forest has been developed in some areas such as the west coast of Province of Nanggroe Aceh Darussalam (NAD) and west coast of Province of West Sumatera

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• Coastal forest is more feasible to be implemented in Indonesia because of low cost and it generates community participation

D. Non-structural Measure

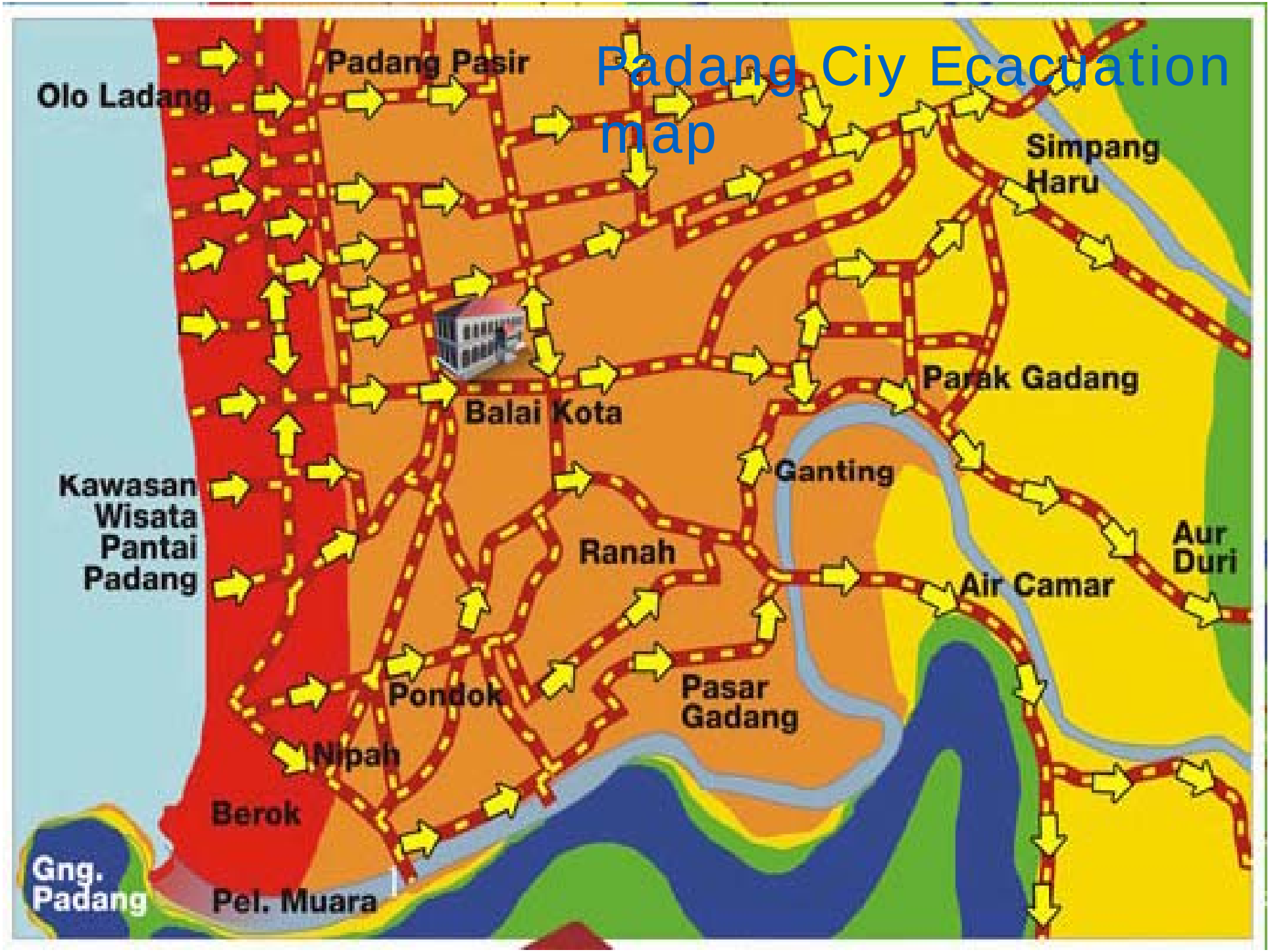
- Tsunami disaster Mitigation Plan

  National Action Plan 2006-2009 of Disaster Risk Reduction gives general guidance on disaster risk reduction implementation

- Evacuation Map
  - Some coastal cities, like Banda Aceh, Padang, Denpasar, Banten, → Disaster Hazard Maps have been developed

- Information Dissemination
  - Indonesian government has established central disaster warning office at Jakarta, ten regional offices cover the Indonesian archipelago.
- Public Awareness
  - Training
  - Drill
  - Exhibition

Padang Ciy Ecacuation map



e. Restoration

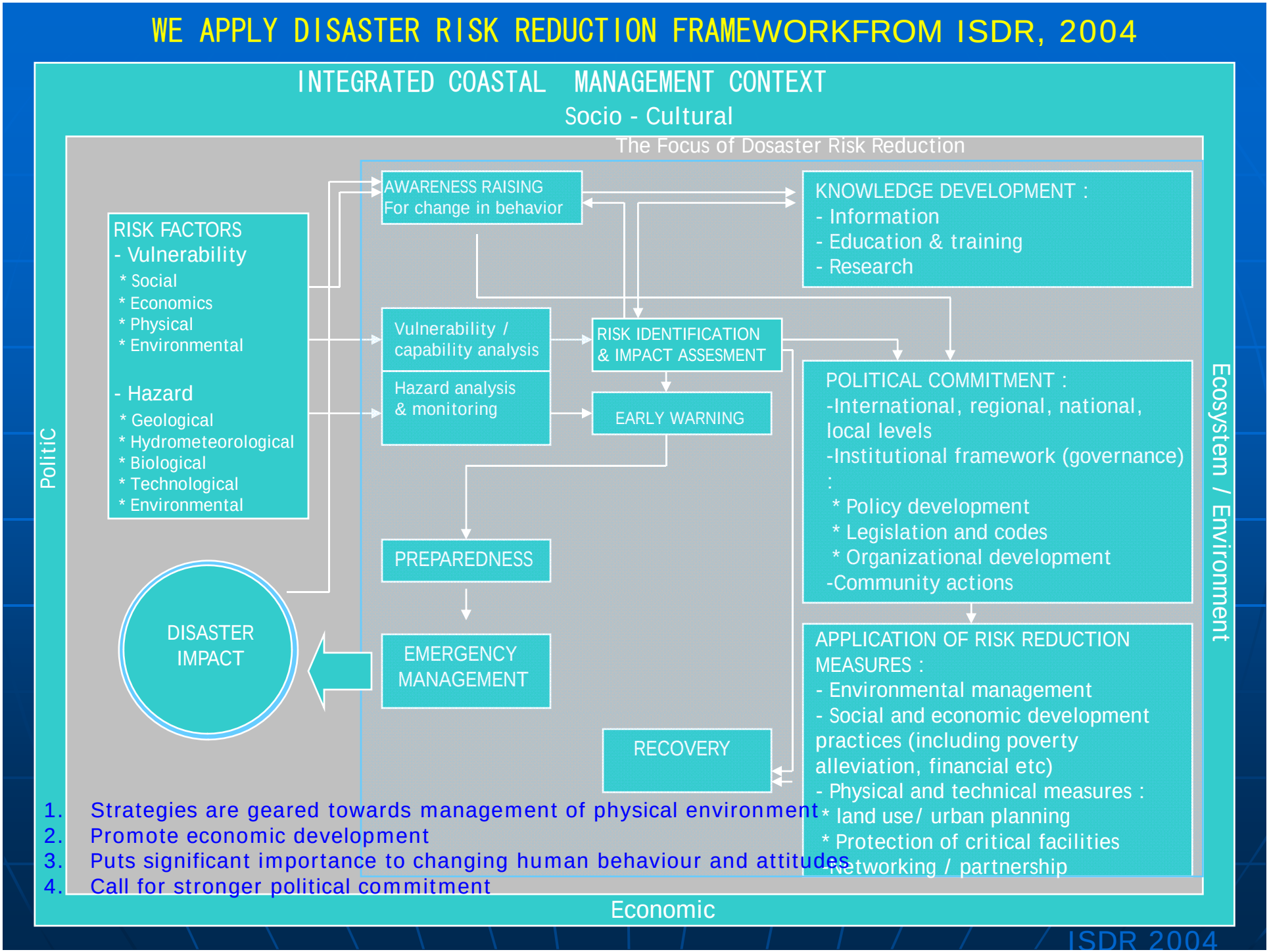
Based on tsunami disaster experience in Aceh 2004, if disaster impact is massive, government will establish a special agency for the rehabilitation and recovery such as the Agency for Rehabilitation and Reconstruction in Aceh. This agency has authority to execute all programs laid out by the central government, local government and donor institutions.

NAD - MCRMP REHABILITATION AND RECONSTRUCTION CONCEPT

The concept of NAD – MCRMP rehabilitation and reconstruction post tsunami disaster of marine affairs and fisheries sector, are :

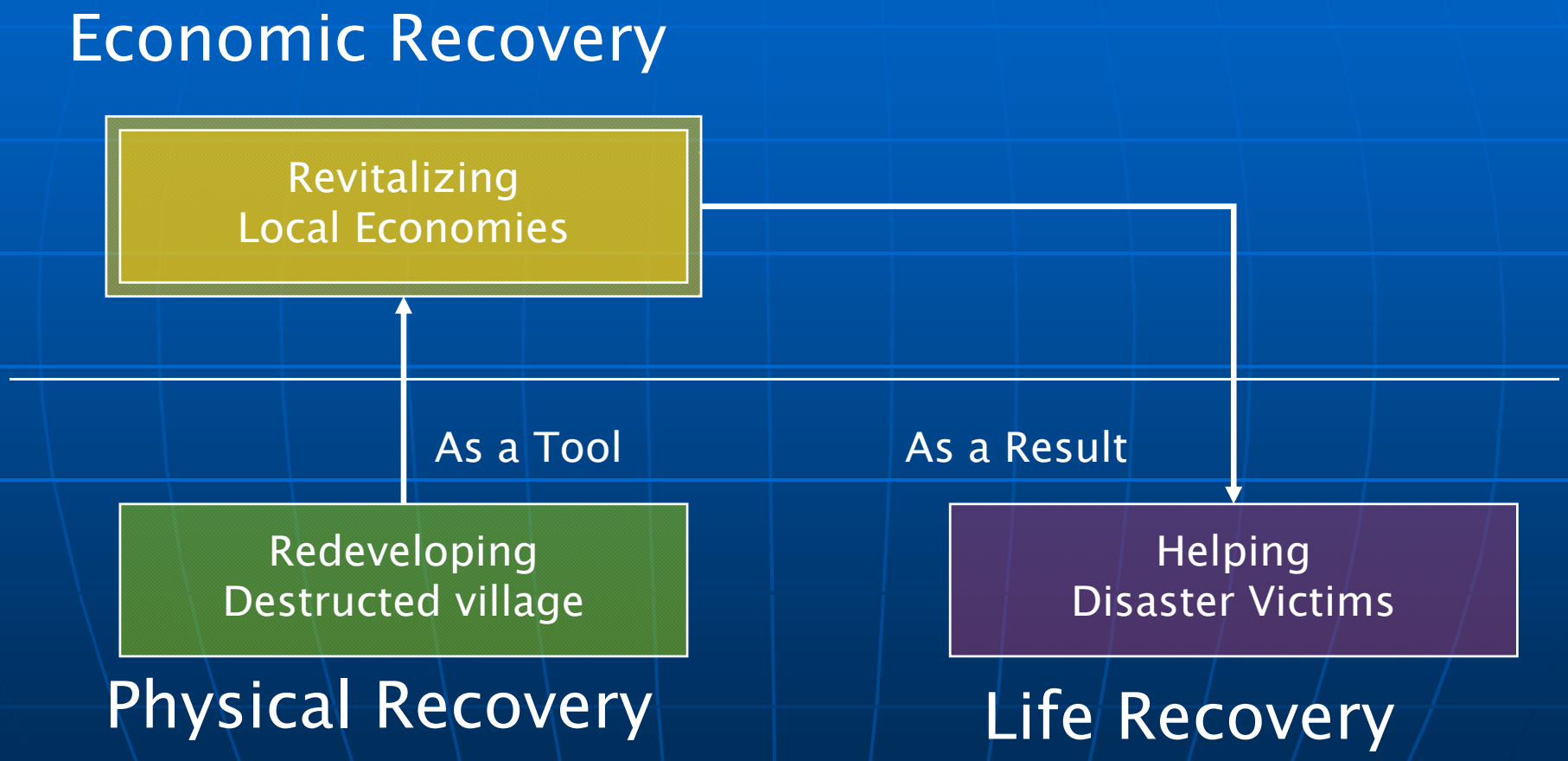
- Rehabilitation and reconstruction within disaster mitigation based
- Restructured Small scale catch fisheries
- Improvement of marine and fisheries resources management, including community based institution and technology management

WE APPLY DISASTER RISK REDUCTION FRAMEWORKFROM ISDR, 2004

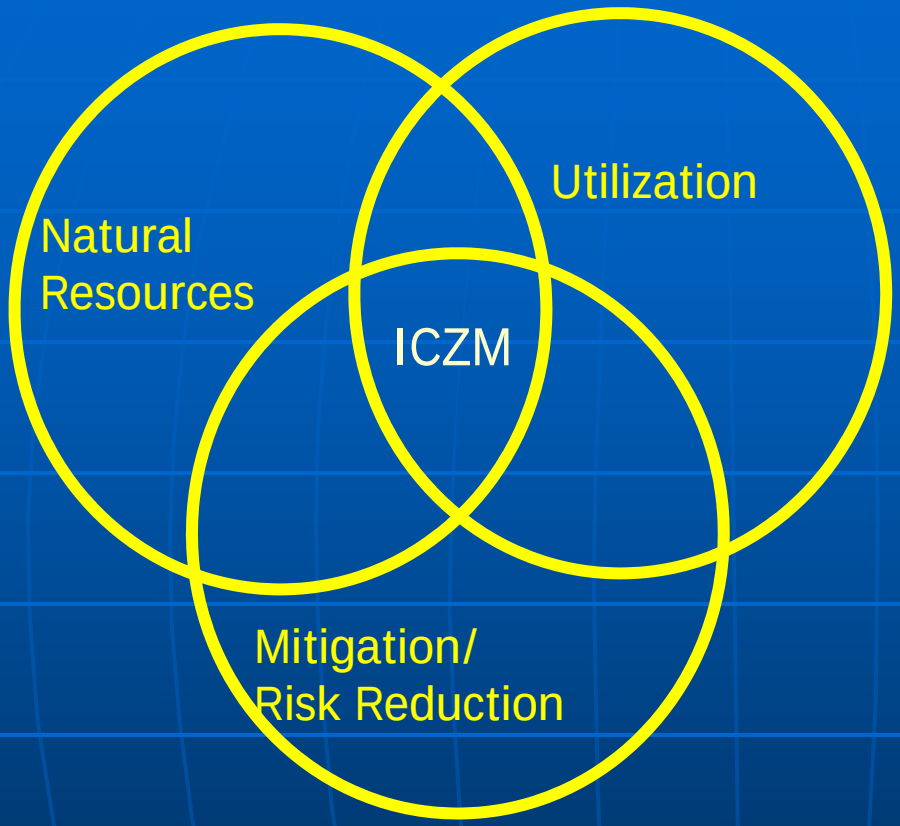


1. Strategies are geared towards management of physical environment
2. Promote economic development
3. Puts significant importance to changing human behaviour and attitudes
4. Call for stronger political commitment

Integrated Recovery Plan with Three related Goals



INTEGRATED COASTAL ZONE MANAGMENT



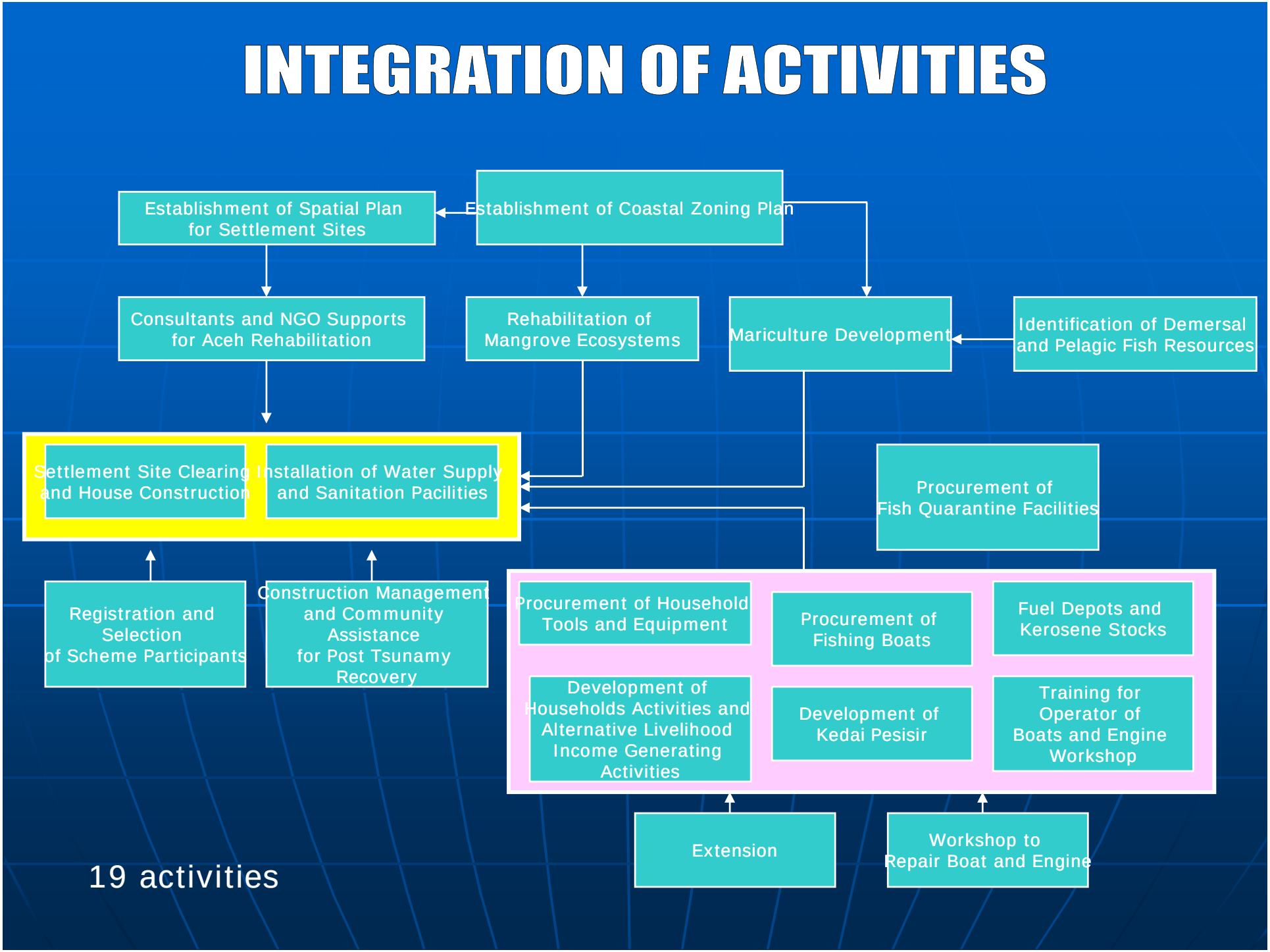
ICZM must address natural resources, utilization and disaster mitigation

ICZM program has built-in components to address risk reduction

ICZM process starts with the identification of issues, goals and objectives (strategic plan), establishment of zonation plan, formulation of management plan, and establishment of action plan

Integrated Coastal Zone Management (ICZM) is a process that unites government and the community, terrestrial and marine ecosystem, science and management, sectoral and public interests in preparing and implementing an integrated plan for the protection and development of coastal ecosystems and resources.

INTEGRATION OF ACTIVITIES



19 activities

Education and Succession of disaster experience

- Location of Activity; Banda Aceh, Padang City, Banten Province, Muemere City, Yogyakarta, Bengkulu City, Cilacap city


PATAH KAKI

Strengths of Tsunami Countermeasures in Japan:

- Gov't and community members work hand in hand in the efforts
- Legislation: constantly evolving since 1940 -> Disaster updates
- Well established and networked Disaster Mgt Organizations:
  JMA, Local DMA, Fire Dept., Voluntary Community Disaster Org.

- Top-notch tsunami structures: Embankment, breakwater, Ts Gates
- Highlight: Nishiki Tower -> First public evac. Building in Japan
- Non-structural measures: Tsunami warning system, Disaster Education -> Inamura No Hi, museum, drills, historical memorials, hazard maps, signboards, etc.
- Disaster information / warning system: state of the art of communication technology: Miyako City, Owase City
- Funding: Gov't and local communities: -> Ohmisaki community escape route
- Research: PARI, PWRI / ICHARM, Universities -> Innovation


避難場所
Safety Evacuation Area
大水崎自主防災組織

Weaknesses of Tsunami Countermeasures in Japan: STRENGTHS OUTWEIGH WEAKNESSES

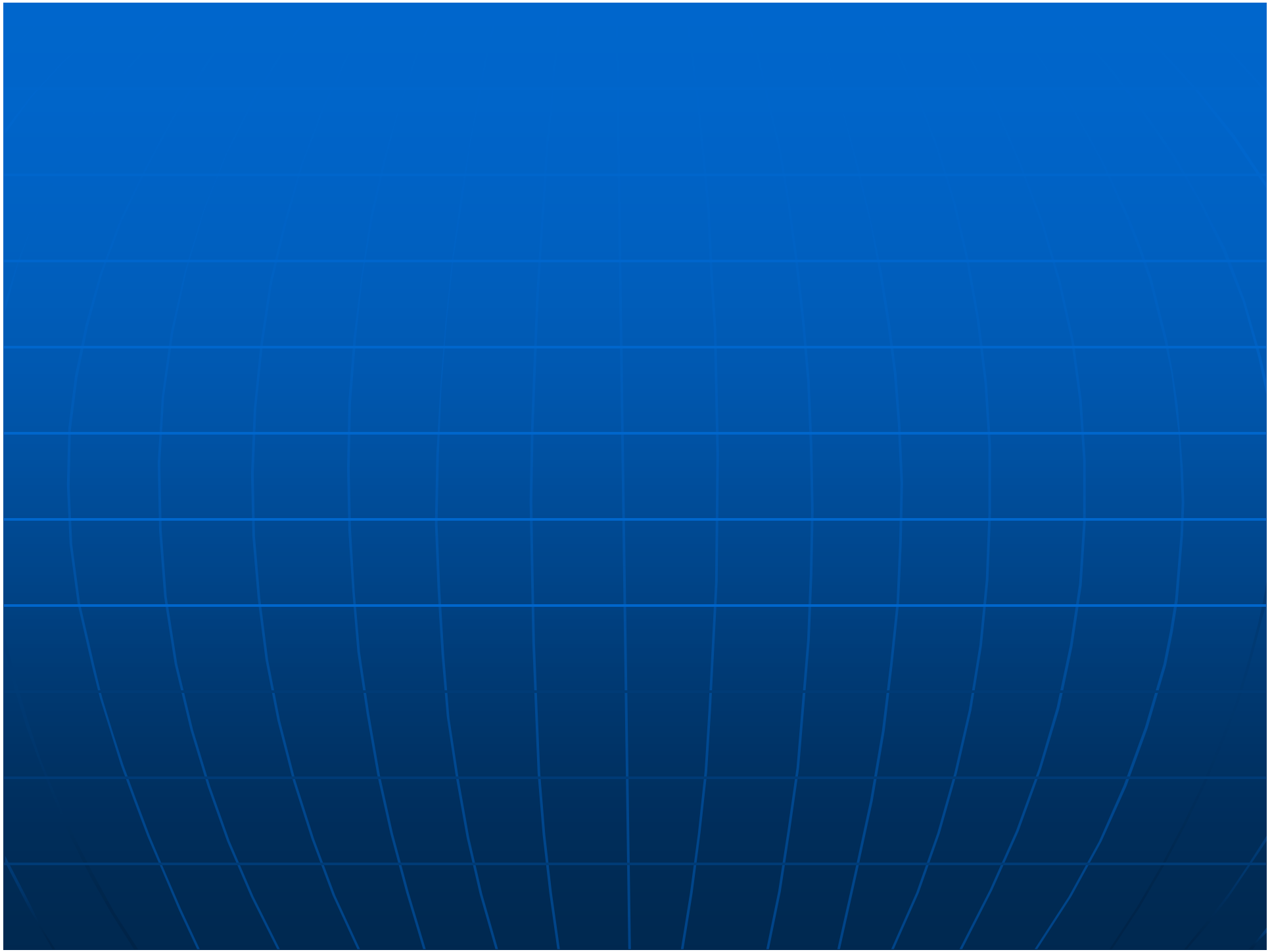
- Signboards: Not available on some evacuation routes, too small, or incorrectly positioned; Lack of standardization: design, size, color, and positioning
- Building Code Compliance: some older buildings have not been retrofitted to meet current standards
- Tsunami Structures: a few areas along the coast -> Kii Penn. Have not been equipped with sufficient embankments; Approach route too dangerous, Messy Powerlines -> Owase City
- Disaster warning: Some people rely heavily on JMA's warning to evacuate, a few others choose to ignore warnings and make their own judgment call


止まれ

2.2 The most impressive activity for tsunami disaster in Japan

- Concluded, Japanese Gov't really gives attention to the safety of his citizens, Also: Culture of Safety
- Fudai Watergate, built in 1973-1984, size 15.5m of height and 205 m of length
  - Operation by remote control
  - EQ greater than 2 of intensity scale, all staff will be there being on alert.
  - the J-alert, installed 70 speaker, 5 seconds before secondary wave coming. Considering travel time of tsunami wave in Owase just only 5 – 10 minutes, therefore this J-Alert information would be very important.
- Tsunami dynamics simulations
- Methodology of teaching, instrument for teaching and teaching materials for the elementary school (Hiro Elementary School

- Willingness of the community in making hazard map, embankments and evacuation routes by their own fund (example: 500 yen per household in Taro
- Case of Owase City: Tsunami disaster, September 2004, although the earthquake occurred at midnight (11.57 pm), 80% residents evacuated safely
- Tsunami History: Inamura No Hi -> Hamaguchi Goryo



General Impression:

2.3. Differences between activities for tsunami disaster in Japan and those in Indonesia

Japan

Japan is very advanced in tsunami disaster mitigation including pre-and post-disaster measures, as well as recovery. Disaster information can be disseminated to citizen immediately, real time and on time by central and local authority.

Structural measures exist nearly in every tsunami-prone areas. Society awareness is very high; they actively participate in tsunami disaster management such as local hazard map production and evacuation map. Tsunami disaster issues are taught in elementary schools and are a part of the curriculum.

Indonesia

Based on tsunami disaster in Aceh 2004, Indonesia now still developed their mechanism for tsunami prevention and mitigation. Early warning system has been tried to develop under operation by Meteorological and Geophysical Agency (MGA). To protect coastal area, that has been already planted costal forest commonly using mangrove species. Tsunami awareness has been increased in local community. The government has tried to input tsunami program to curriculum school like elementary and junior high school.

Proposed activities

3.1. Problems of tsunami countermeasure in Indonesia

- Coordination

  We need to bridge the gap by one command center so we can define coordination mechanism among all stakeholders

- Lack of coastal protection

  Rehabilitation and conservation of coastal forest is a program we must adopt → need people's participation

- Tsunami Warning and Monitoring

  we need training in operational aspects of tsunami warning systems to support and establish real-time regional and local seismic data acquisition, display and analysis

- Tsunami Response and Emergency Preparedness

  Assistance to develop tsunami response plans, exercises and drills to test preparedness, warnings dissemination mechanisms from national to local levels.

- Tsunami Hazard and Risk map

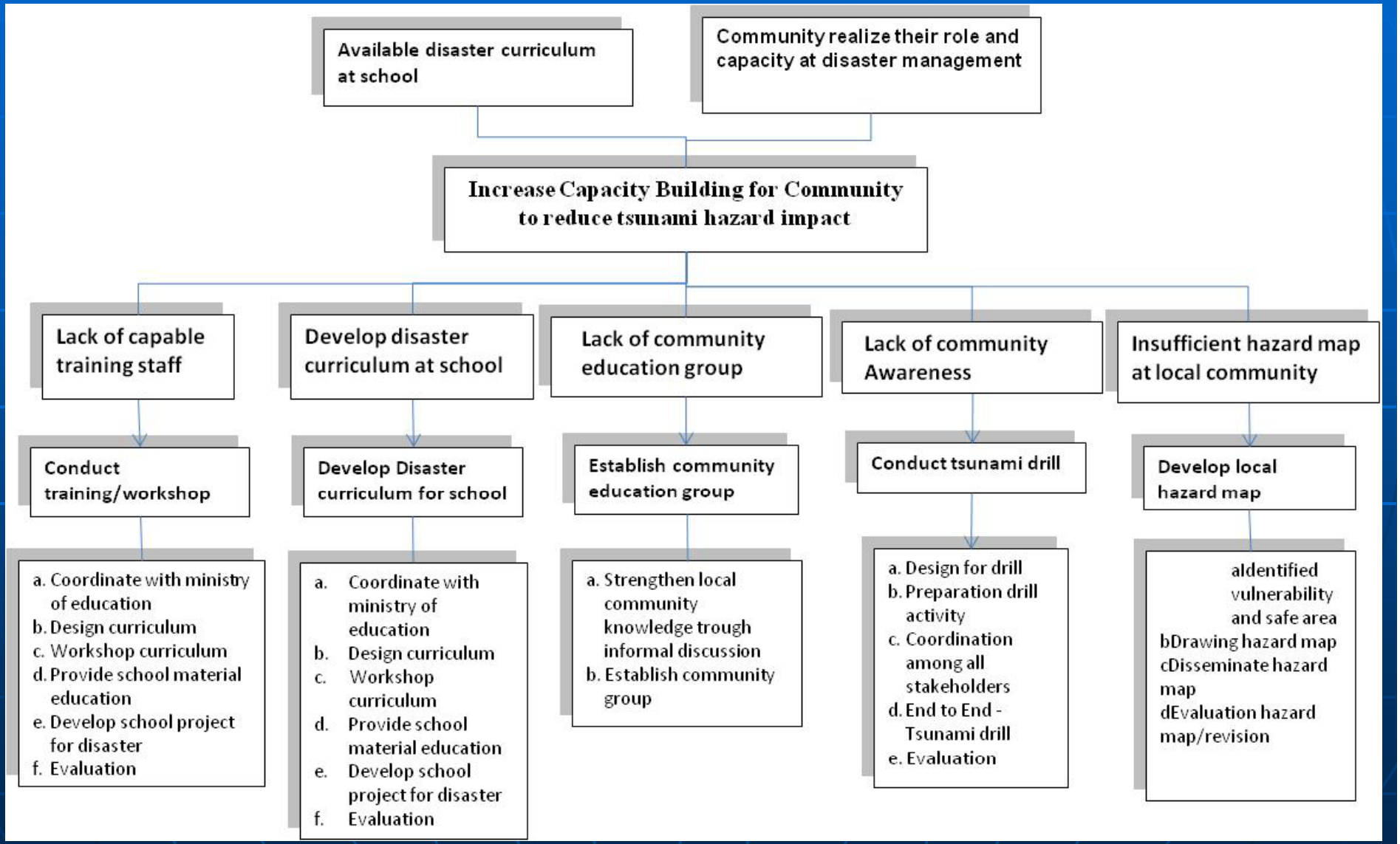
  some provinces and districts have developed training and software for numerical modeling to develop inundation maps and evaluate tsunami hazards and vulnerability

- Public Education and Community Preparedness
  - School can be one media to disseminate disaster information in community

- Evacuation structures

  still at the consultation stage discussing the utilization of existing buildings as possible emergency buildings in case of tsunami

Action Plan


Available disaster curriculum at school
Community realize their role and capacity at disaster management
Increase Capacity Building for Community to reduce tsunami hazard impact
Lack of capable training staff
Develop disaster curriculum at school
Lack of community education group
Lack of community Awareness
Insufficient hazard map at local community
Conduct training/workshop
Develop Disaster curriculum for school
Establish community education group
Conduct tsunami drill
Develop local hazard map
a. Coordinate with ministry of education
b. Design curriculum
c. Workshop curriculum
d. Provide school material education
e. Develop school project for disaster
f. Evaluation
a. Coordinate with ministry of education
b. Design curriculum
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e. Develop school project for disaster
f. Evaluation
a. Strengthen local community knowledge trough informal discussion
b. Establish community group
a. Design for drill
b. Preparation drill activity
c. Coordination among all stakeholders
d. End to End - Tsunami drill
e. Evaluation
aIdentified vulnerability and safe area
bDrawing hazard map
cDisseminate hazard map
dEvaluation hazard map/revision

Activities	In charge		July	Aug.	Sep.	Oct	Nov	Dec	Jan	Feb	Mar.	Apr.	May	June
1. Training/workshop	Indonesian Institute of science	• Local government • Ministry of education • UNESCO												
a. Training for local people														
b. Training for motivator disaster preparedness														
c. Training for teacher														
d. School education support														
e. Drill at school level														
f. Evaluation														
2. Establish community education group	Indonesian Institute of science	• Local government • Indonesian Red Cross												
a. Strengthen local community knowledge trough informal discussion														
b. Establish community group														
3. Conduct end-to-end tsunami drill	Ministry of research and technology	• Indonesian Institute of sciences • Metrological & Geophysics Agency • Local government • Ministry of education etc												
a. Design for drill														
b. Preparation drill activity														
c. Coordination among all stakeholders														
d. Tsunami drill														
e. Evaluation														

Activities	In charge		July	Aug.	Sep.	Oct	Nov	Dec	Jan	Feb	Mar.	Apr.	May	June
4. Develop Disaster curriculum for school	Indonesian Institute of Sciences/LIPI (Lembaga Ilmu Pengetahuan Indonesia)	• Ministry of Education • Local government												
a. Coordinate with ministry of education														
b. Design curriculum														
c. Curriculum Workshop														
d. Provide school material education														
e. Develop school project for disaster														
Evaluation														

Thank you

Arigato gozaimasu!