The 1st Vietnam-Japan International Workshop for Sustainable Ocean Development and Disaster-Environmental Risk Management

January 13, 2015

Blue carbon and Coastal Ecosystem-based Disaster-Environmental Risk Management

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Contents

Fascination of Coastal Area of Vietnam

- As long as 3,400km of coastal line
- Abundant tourism attractions and fishery resources

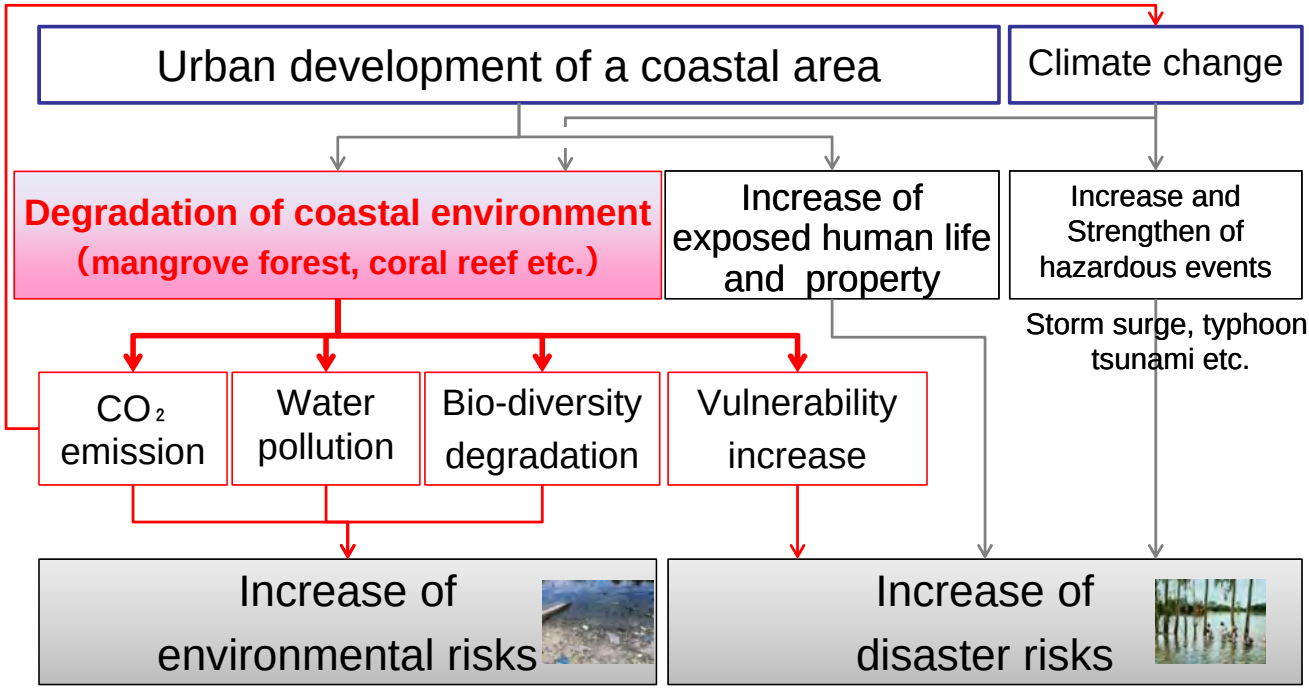





Source: allabout WEB Site

Challenges of Coastal Area of Vietnam

Degradation of coastal environments makes increasing of Disaster-Environmental Risks

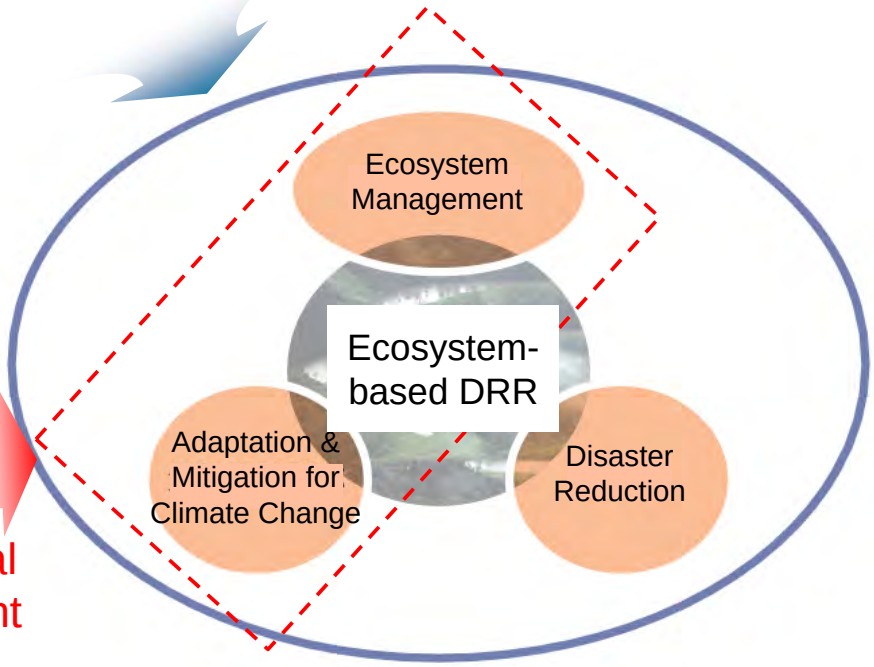


Source: World Bank Web Site

Coastal Ecosystem-based Disaster-Environmental Risk Management

● ECO-DRR （Ecosystem-based Disaster Risk Reduction）

⇨ for Disaster Risk Management



● Blue Carbon

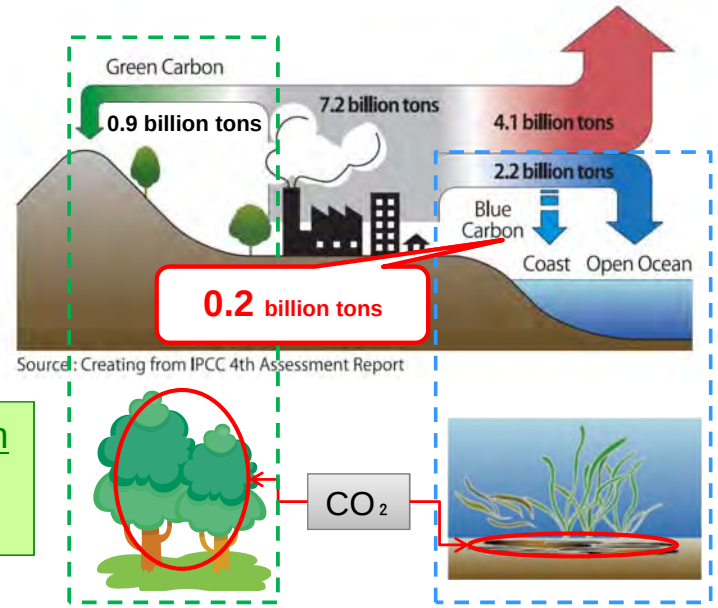
CO_2 adsorption by marine life

⇨ for Environmental Risk Management

Source： IUCN (Guideline of Environment for Disaster Risk Reduction ,2014）

What is “Blue Carbon” ?

- ”A carbon captured by ocean and coastal ecosystems”
  (mangrove forests, eelgrass forests, salt marsh)
- It’s expected as a new method of global warming countermeasures in Japan, which has long coastlines.



Green Carbon
fixed in plant body

Blue Carbon
fixed in the ocean floor sediment

* The number shown in above : Quantity of carbon par year

Recent international trend of Blue Carbon

Expectations

UNEP developed the report “Blue Carbon” in 2009

⇒Visibility of Blue Carbon has increased

⇒The SBSTA proposed,

“Blue Carbon” to be discussed in islands countries.

⇒**Blue carbon is expected as new carbon sink**

Challenges

More Scientific knowledge of CO_2-fixed amount is needed.

⇒Non-approved method in the Kyoto Protocol

⇒**Action to increase CO_2-fixed amount by Blue Carbon hasn’t promoted**

※SBSTA : Subsidiary Bodies for Scientific, Technical and Technological Advice

Yokohama city（Japan）

World’s first

To promote global warming countermeasures in coastal area,

Yokohama City started “Yokohama Blue Carbon Project” in 2011.

- Quantitative evaluation and economic-value generation

  ⇒ Promoting action to increase CO_2-fixed amount by Blue Carbon

- Utilizing the latest knowledge of coast-ecology management

  ⇒ Developing Yokohama City-original Scheme

Outline of Yokohama City (1)

- International port city
  Opening of Yokohama port in 1859
- Population: approx. 3.7 million
  Largest city in Japan
- GDP: approx. 12.8 trillion JPY
  (approx. 110 billion USD)

Source: Yokohama City Web Site

Outline of Yokohama City (2)

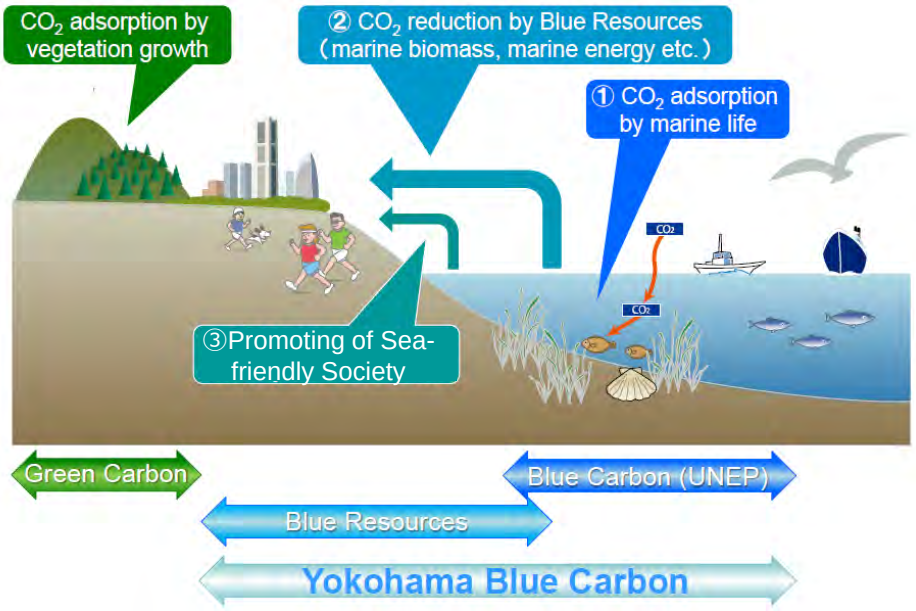
- Land use：
  Large urbanized area &
  Small developing area (sea, river, mountain, etc.)

Framework of Yokohama Blue Carbon Project

Yokohama Blue Carbon Project (YBCP)

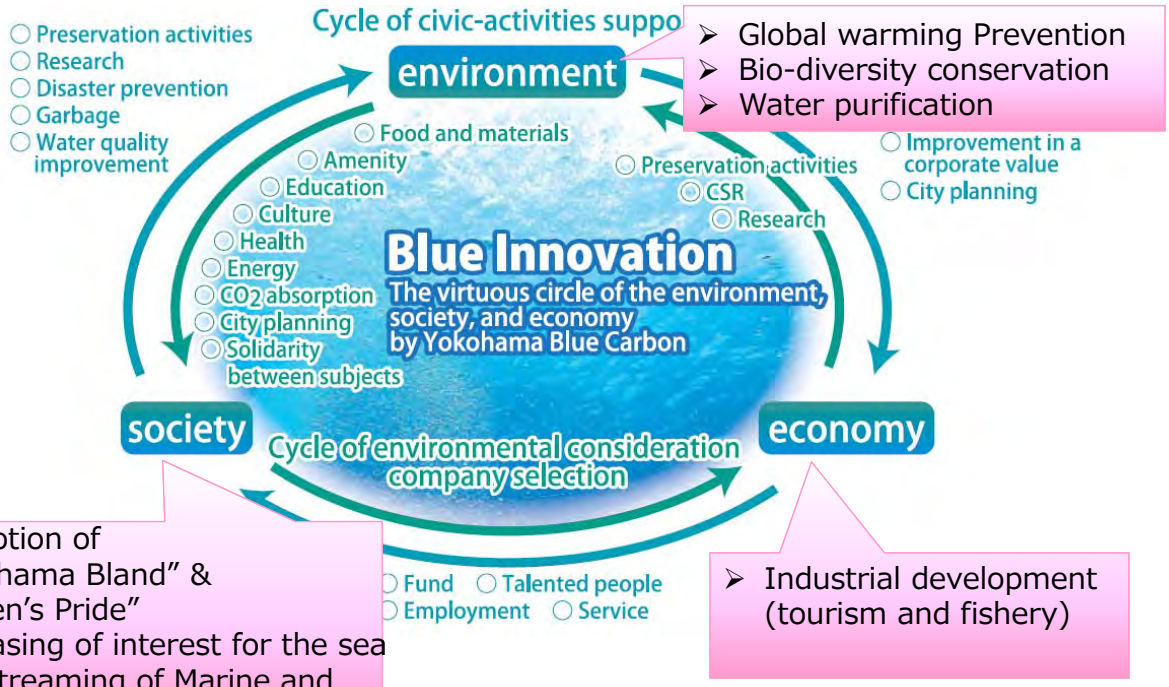
= Blue Carbon + Blue Resources

+ Promoting of Sea-friendly Society



Objectives of YBCP

To promote the **virtuous cycle of environment, society and economy** through the improvement of coastal environment



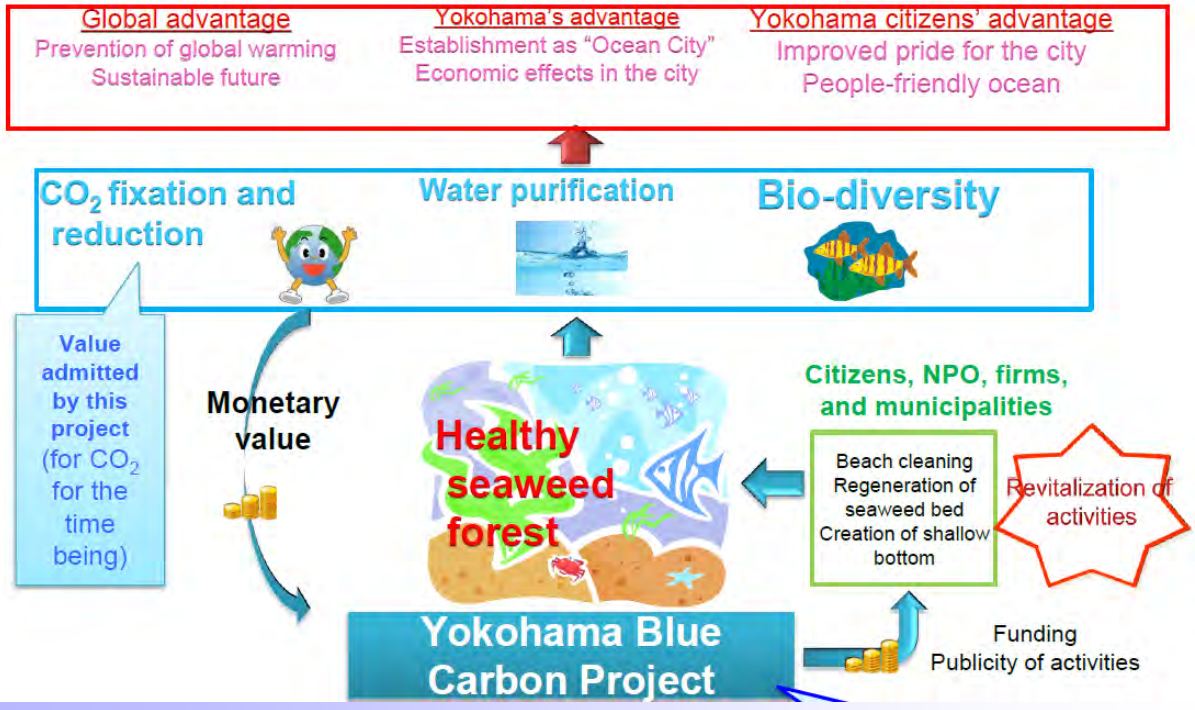
- Global warming Prevention
- Bio-diversity conservation
- Water purification

- Promotion of "Yokohama Bland" & "Citizen's Pride"
- Increasing of interest for the sea
- Mainstreaming of Marine and coastal Env. improvement

- Industrial development (tourism and fishery)

Scheme of YBCP

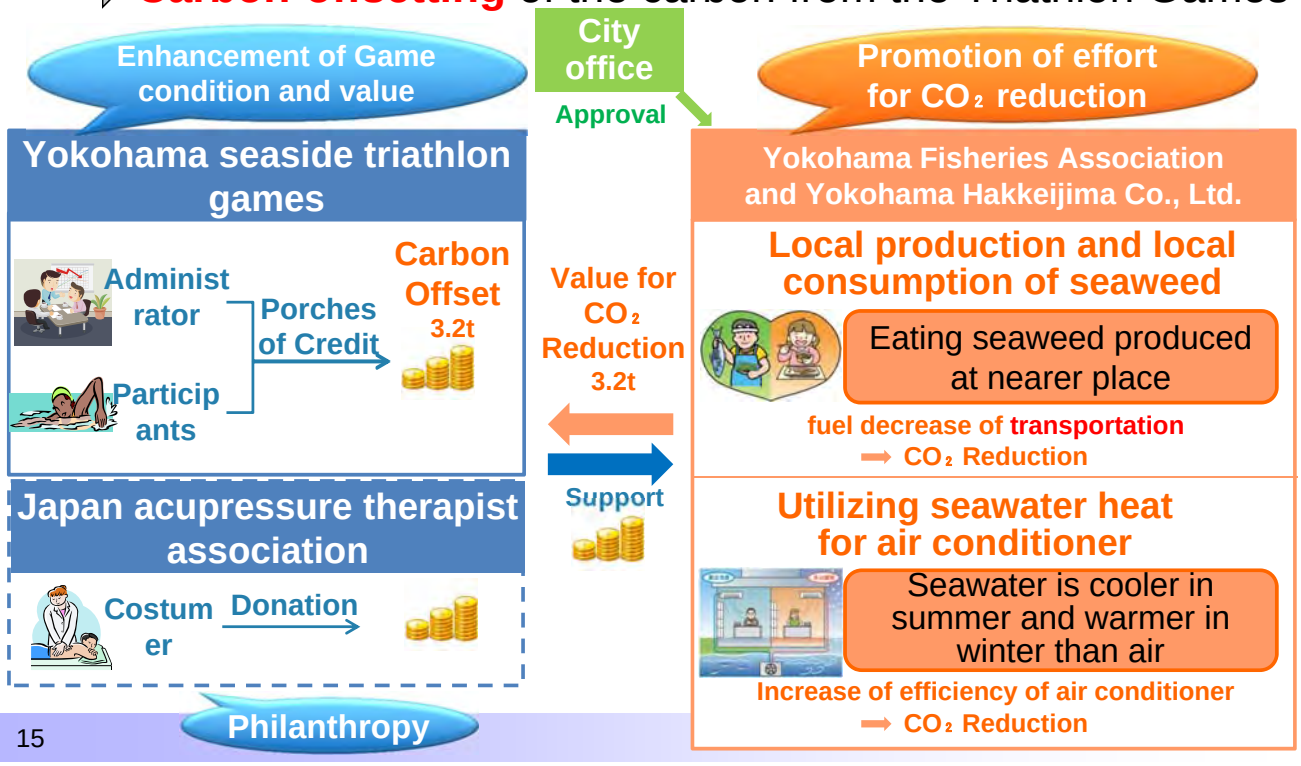
Activating the project through **a quantitative evaluation and economic valuation of ecosystem services**.



Social Experiment (Evaluation and valuing of CO_2 reduction)

Yokohama City's approvals for CO_2 reduction

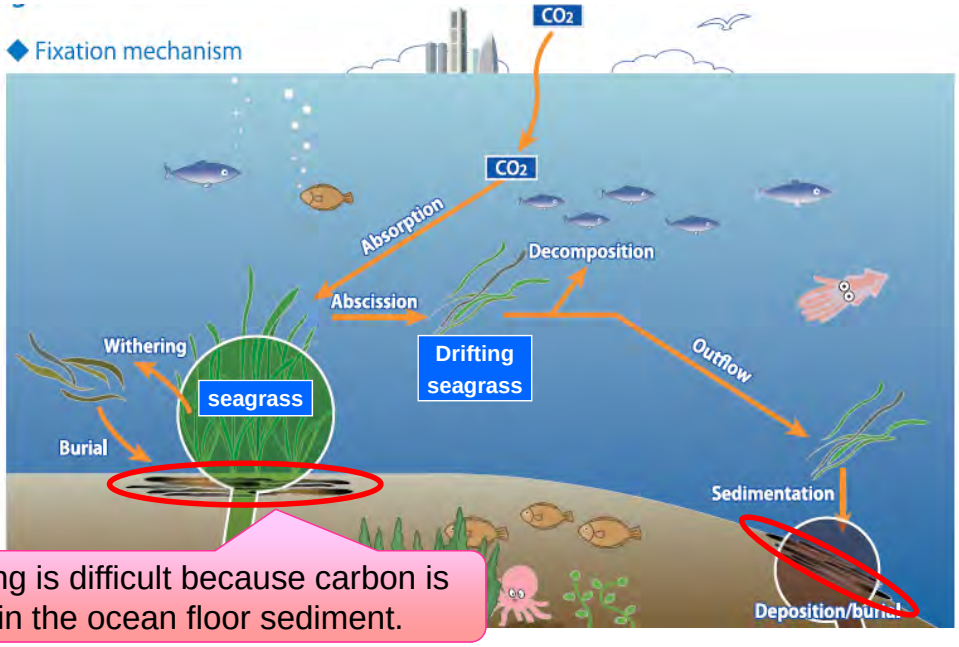
⇨ **Carbon-offsetting** of the carbon from the Triathlon Games



Calculation methodology of CO_2 fixation (1)

Policy

- **Accuracy and usability**
- Monitoring activities of Blue Carbon should be easily implemented



Monitoring is difficult because carbon is fixed in the ocean floor sediment.

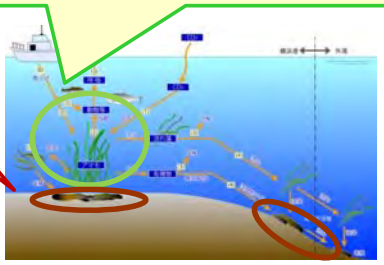
Mechanism of Carbon Fixing

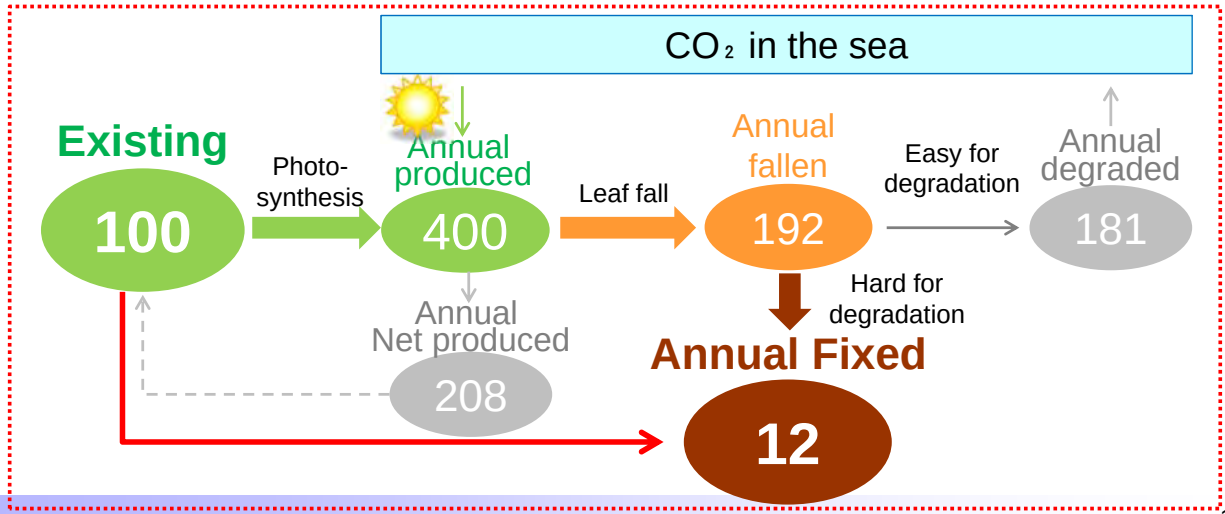
Calculation methodology of CO_2 fixation (2)

Carbon fixation(t/y) = Carbon existing in organisms (t) × **0.12**(/y)

Difficult for monitoring (deep sea)

Easy for monitoring (shallow sea)





Conclusion of YBCP

Achievements

- Conducted the social experiment in collaboration with Civil Organizations.
- Figured out the challenges through the trial scheme of CO_2 reduction activities in the sea **by private funds**.
- **Interests improvement** of private sectors for the YBCP and the sea
- **Increasing of inquiry-visit** from the central government and municipalities

Challenges

- Expansion of “number of implementation body“ and "quantity“ for credit creation and utilization
- Expansion of citizen’s participation
- Inter-city cooperation

Possibility of Blue Carbon in Vietnam

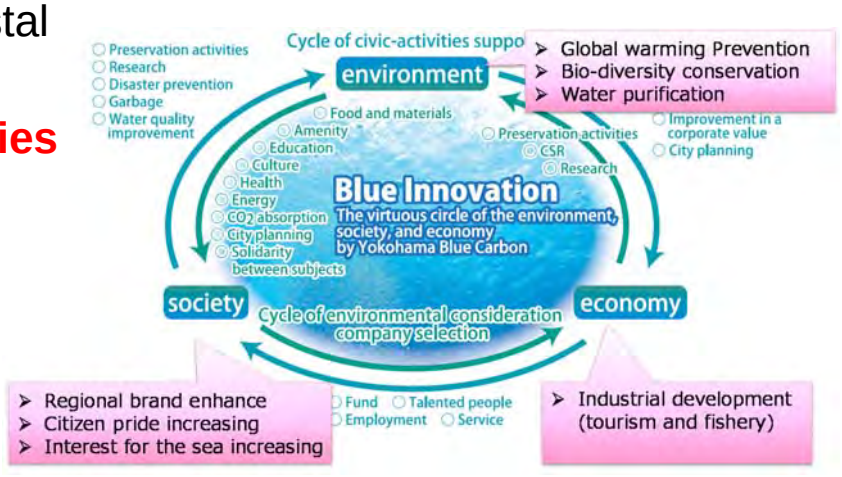
Potential of Blue Carbon in Vietnam

Vietnam has long coastal line & abundant coastal ecosystem

⇒Large potential of blue carbon in Vietnam

Expected Effect by Blue Carbon Project

- Conservation of coastal environment
- **Tourism and Fisheries development**
- **Regional brand enhancement**



Supporting Scheme for Vietnam

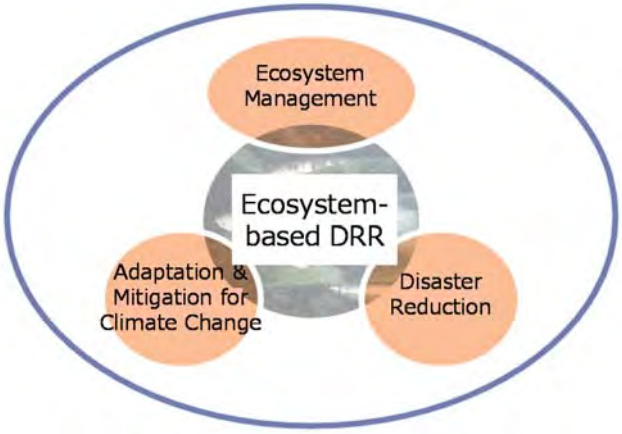
Joint Crediting Mechanism (JCM)

- Scheme to support CO_2 reduction and fixation in Vietnam by Japan
- Blue Carbon is not included in this scheme so far
- **In the future, it is possible that blue carbon is included in this scheme up to the discussion of IPCC**

Source：Ministry of the Environment, Japan　IPCC：Intergovernmental Panel on Climate Change

What is ECO-DRR ?

- **Disaster risk reduction (DRR) by not concrete structures but ecosystems**
  （Ecosystems are called “Green infrastructure”）
- We can receive benefit from multiple “Ecosystem Services”
  （Biodiversity, Adaptation & Mitigation for Climate Change etc.）
- Reducing a cost for development and maintenance



Source： IUCN (Guideline of Environment for Disaster Risk Reduction ,2014）

Types and DRR effects of ecosystem

Forests
Mitigation of landslides, falling rocks

Wetland
Mitigation of flood

Coastal area
Weakening of storm surge and Tsunami

Source：Ministry of the Environment, Japan

Potential of ECO-DRR in coastal area of Vietnam

Situation of Coastal ecosystems	Adaptation for Climate Change
・Mangrove forests, coral reef and sandy beach were abundant ・However, reduction & degradation of coastal ecosystems have made decreasing function of DRR	・2nd country most vulnerable to climate change※ ・Expectation of increasing of disaster risks by storm surge and tsunami, etc.

・Potential of ECO-DRR is high in Vietnam

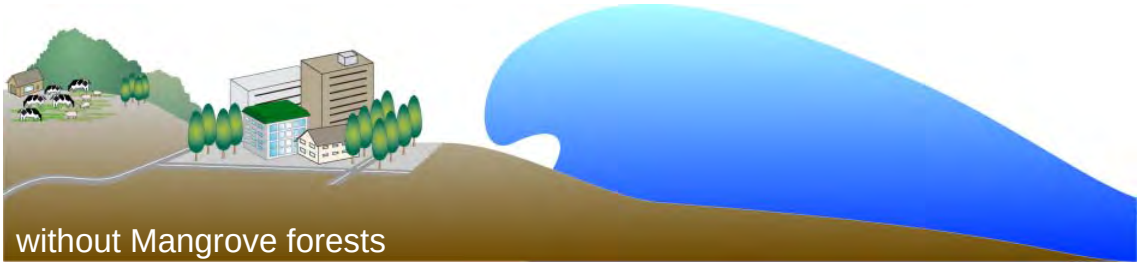
・We can adapt Climate Change by conservation of coastal ecosystems

It is effective to put ECO-DRR into existing ICM（Integrated Coastal Management) program



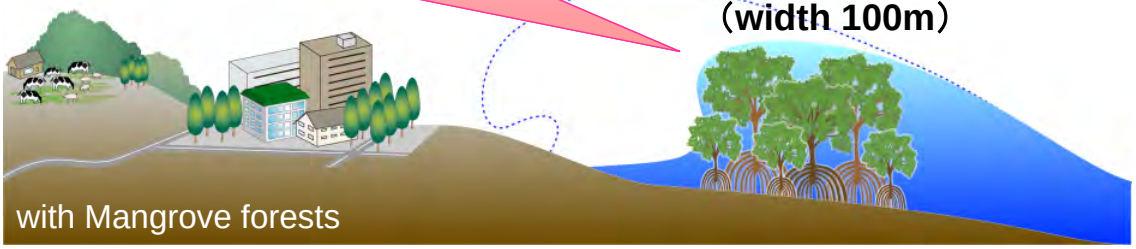
※Source: Standard and poor's, 2013 (2nd of 116 countries)

Example of DRR by mangrove forests



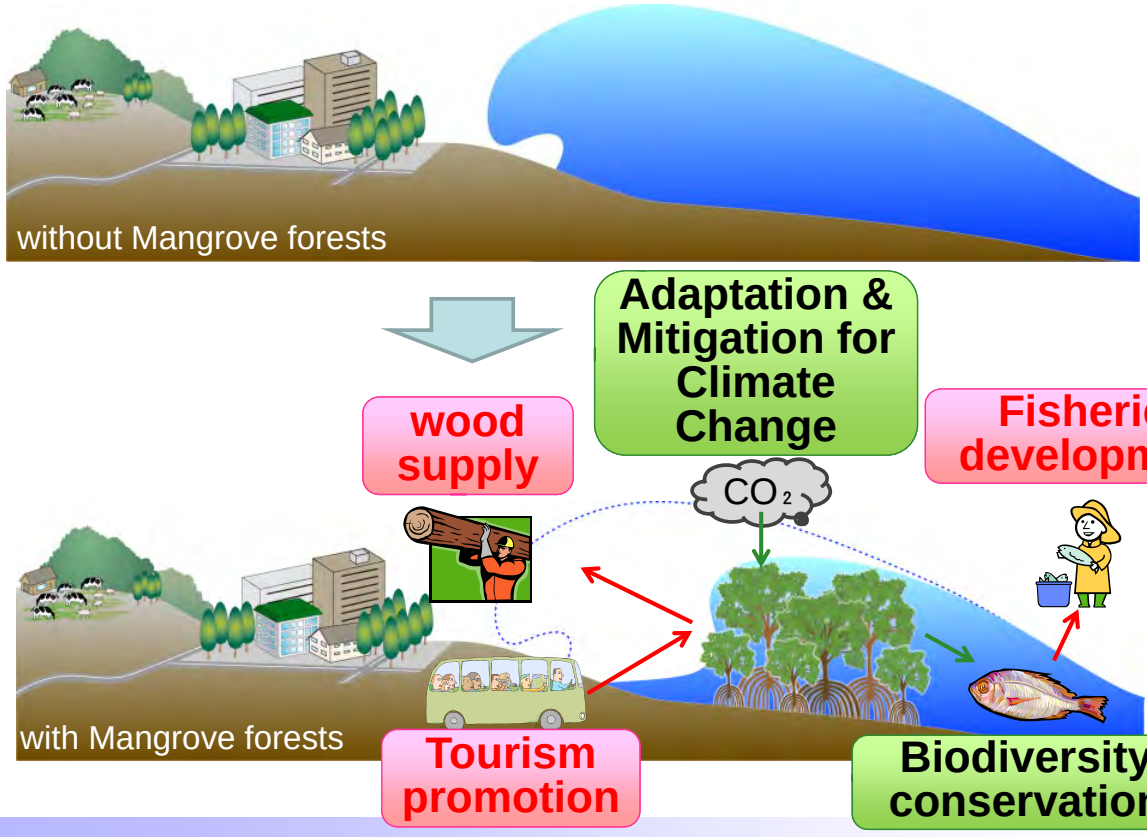
Mitigating 40% of water pressure, and protecting a coastal area

Mangrove forests
（width 100m）



※：Ryukyu University（Result by simulation: tree species：black mangrove (Bruguiera gymnorrhiza), breast high diameter：39cm, density：700 piece/ha）

Other “Ecosystem Service” by mangrove forests



Recent trend of ECO-DRR

International

2005	2008	2014
UNISDR Recommendation of implementation in HFA	PEDRR Establishing international partnership	IUCN Developing guidelines

Domestic

2005-2006	2013	2014
Indonesia & Sri Lanka National DRR plan	EU & USA Biodiversity initiative	Japan National Resilience plan

Developing a quantitative evaluation methods ⇒ Planning to support the Asian Pacific Ocean region

HFA : Hyogo Framework for Action, PEDRR : the Partnership for Environment and Disaster Risk Reduction,
IUCN : International Union for Conservation of Nature