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# TERMS OF REFERENCE

## The Introduction of three IMTA demonstrations in China

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# 1. Background and Justification

- IMTA is successfully demonstrated in Sungo Bay, China.
- The aquaculture developed fast.
- Lack of good management in aquaculture area.
- The successful demonstration of IMTA in Sungo Bay is not enough.
- New situation need innovation.

# Three demonstration sites

1. “seaweed + bivalves + sea cucumber” model at Dongchu Island
2. “seaweed + shellfish + sea cucumber + sea urchin” model at Zhangzi Island
3. “indoor and outdoor pond IMTA” model at Haiyang

# 1. “seaweed + bivalves + sea cucumber” model

## Description

- Area: 20 ha<sup>2</sup>
- Species: kelp (*Laminaria Japonica*), Pacific oyster (*Crassostrea gigas*), scallop (*Chlamys farreri*) and sea cucumber (*Apostichopus japonicus*)



The location

# Activities

- (1) According to the capacity of the demonstration site, a new seaweed and bivalves aquaculture model will be established.
- (2) New facilities will be involved in the IMTA model, eg, enhancement reef for sea cucumber, plastic connection for seaweed and new floating.
- (3) The development of new aquaculture space.
- (4) The methodology of sea cucumber stock underneath the long-line aquaculture.
- (5) A standardization of seaweed and shellfish long-line culture will be established.

## 2. “seaweed+shellfish+sea cucumber+sea urchin” model

### Description



- Area: 40 ha<sup>2</sup>
- Species: kelp (*Laminaria Japonica*), *Sargassum horneri*, scallop (*Patinopecten yessoensis*), sea snail (*Neptunea cumingii*), sea urchin (*Strongylocentrotus nudus*), abalone (*Haliotis discus hannai*) and sea cucumber (*Apostichopus japonicus*).

# Activities

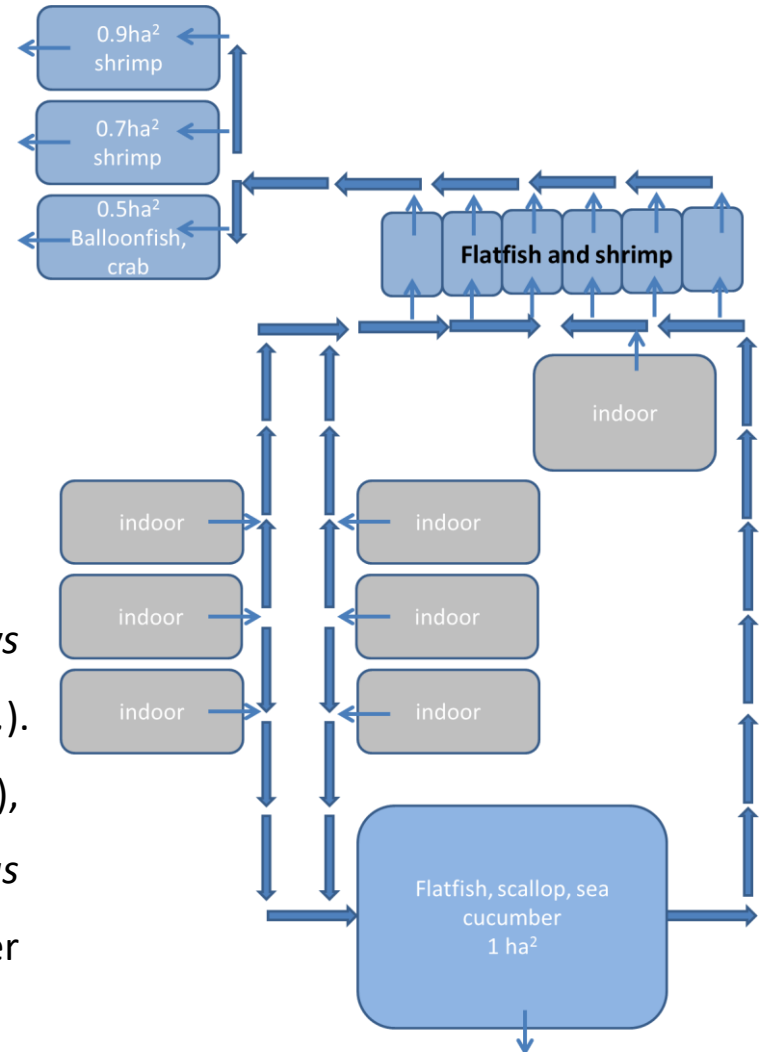
- (1) The assessment of the biomass of economic species (eg. sea cucumber, scallop, sea urchin, sea snail) underneath the long-line aquaculture area.
- (2) The assessment of the amount of seaweed cultured at the demonstration site. The improvement of seaweed usage as the feed of other species.
- (3) Find an effective methodology to benefit different species according to the season, feed, population, etc.

# 3. “indoor and outdoor pond IMTA” model

## Description



Indoor: flatfish (*Scophthalmus maximus*, *Paralichthys olivaceus*, *Cynoglossus semilaevis*, *Solea senegalensis* etc.).  
Outdoor: Japanese flounder (*Paralichthys olivaceus*), shrimp (*Fenneropenaeus chinensis*, *Marsupenaeus japonicas*, *Penaeus vannamei*), sea cucumber (*Apostichopus japonicus*), scallop (*Argopecten irradians*).





# Activities

- (1) The assessment of the amount of organic and inorganic matter released from the indoor fish culture.
- (2) The selection of aquaculture species in the outdoor ponds.
- (3) The proportion of different species in the outdoor ponds.
- (4) The bioelements budget of the whole IMTA system.
- (5) The outputs of the IMTA system.

# Expected Outputs

The subcontractor is expected to deliver the following results:

- Establish the demonstrations of three IMTA models;
- Reduce the organic matter and nutrients release: 5% ;
- Improve the economic benefits: 10% ;
- Submission of demonstration reports in accordance with the project M&E framework.

# Timing and Reporting

- **Timing: 2017.10.30-2019.06.30**
- **Reporting**
- By March 1, 2018, indicators, methodologies and frequency agreed and submit the baseline reports of the demonstration sites;
- By June 30,2018, submit the first quarterly report to PMO;
- By Dec 31, 2018, based on the demonstration results, submit a draft on IMTA system establishment. As well as the methodology of effectiveness on these implementations;
- By June 1, 2019, provide final demonstration reports on the status of implementation of the demonstration projects.

Thanks for your attentions