

Inventory and Monitoring of Aquaculture Environment

Requests of Aquaculture

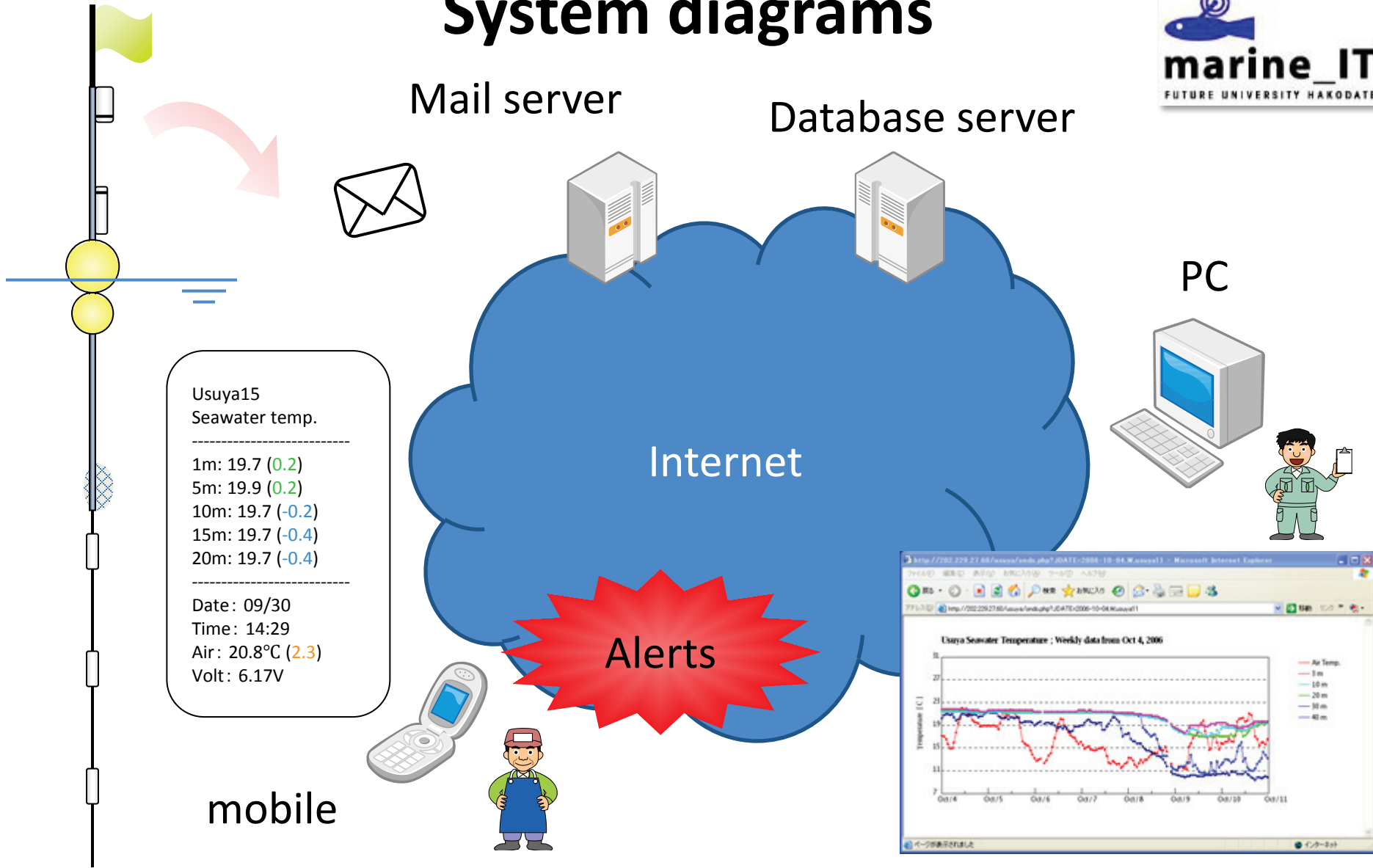
- Water quality (temp, sal, DO, Nutrien) observation.
- Real time observation.
- Multi layer observation.
- Cheap as much as possible.
- Small as much as possible.

Marine fish Cage Aquaculture Gondol, Bali

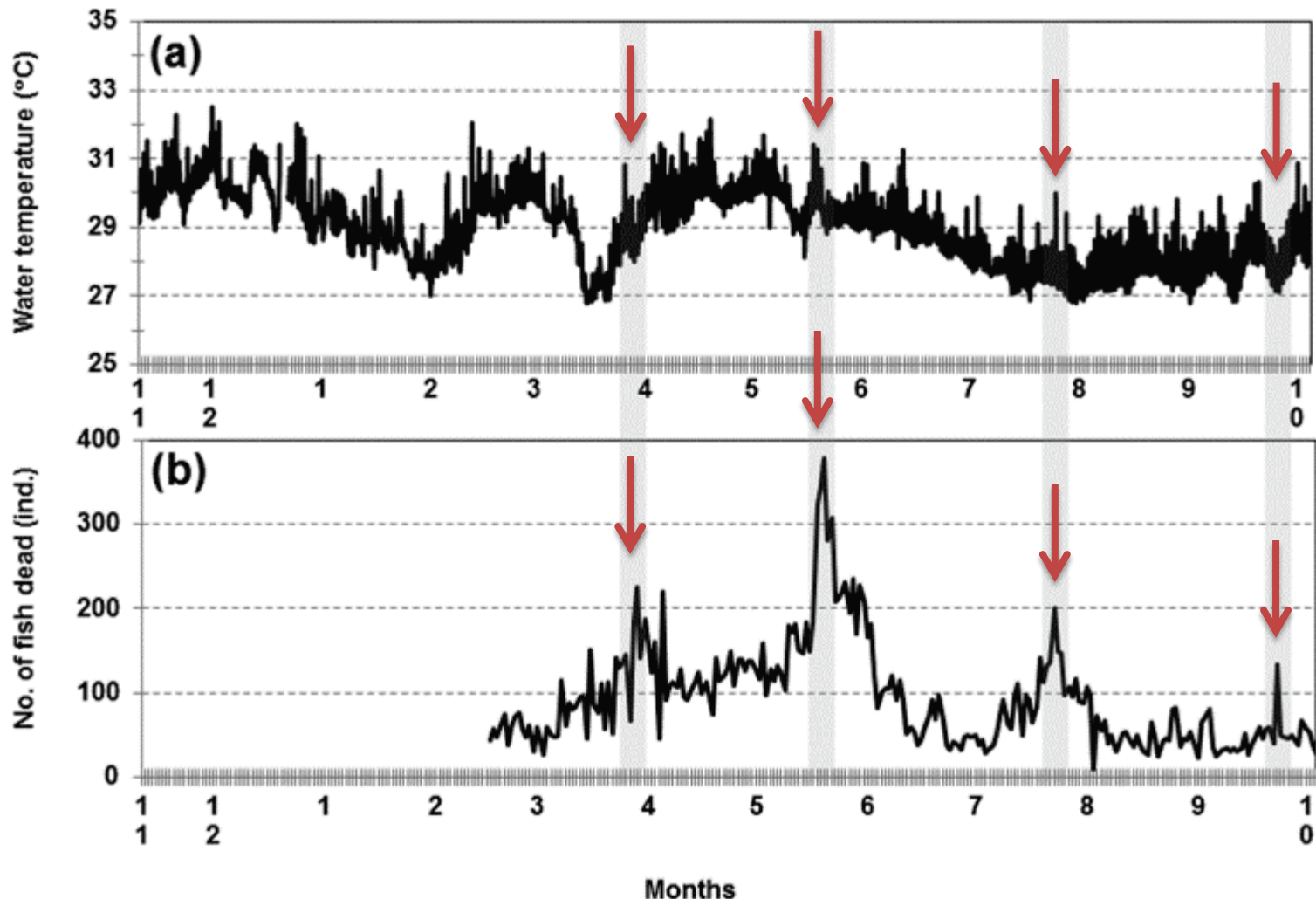


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System diagrams

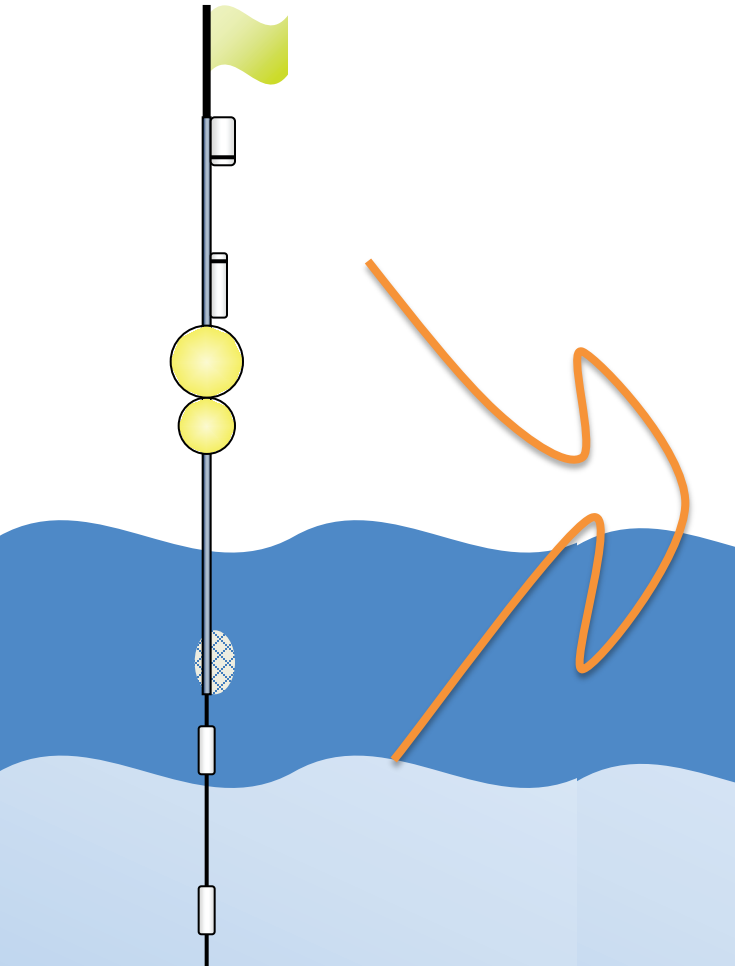


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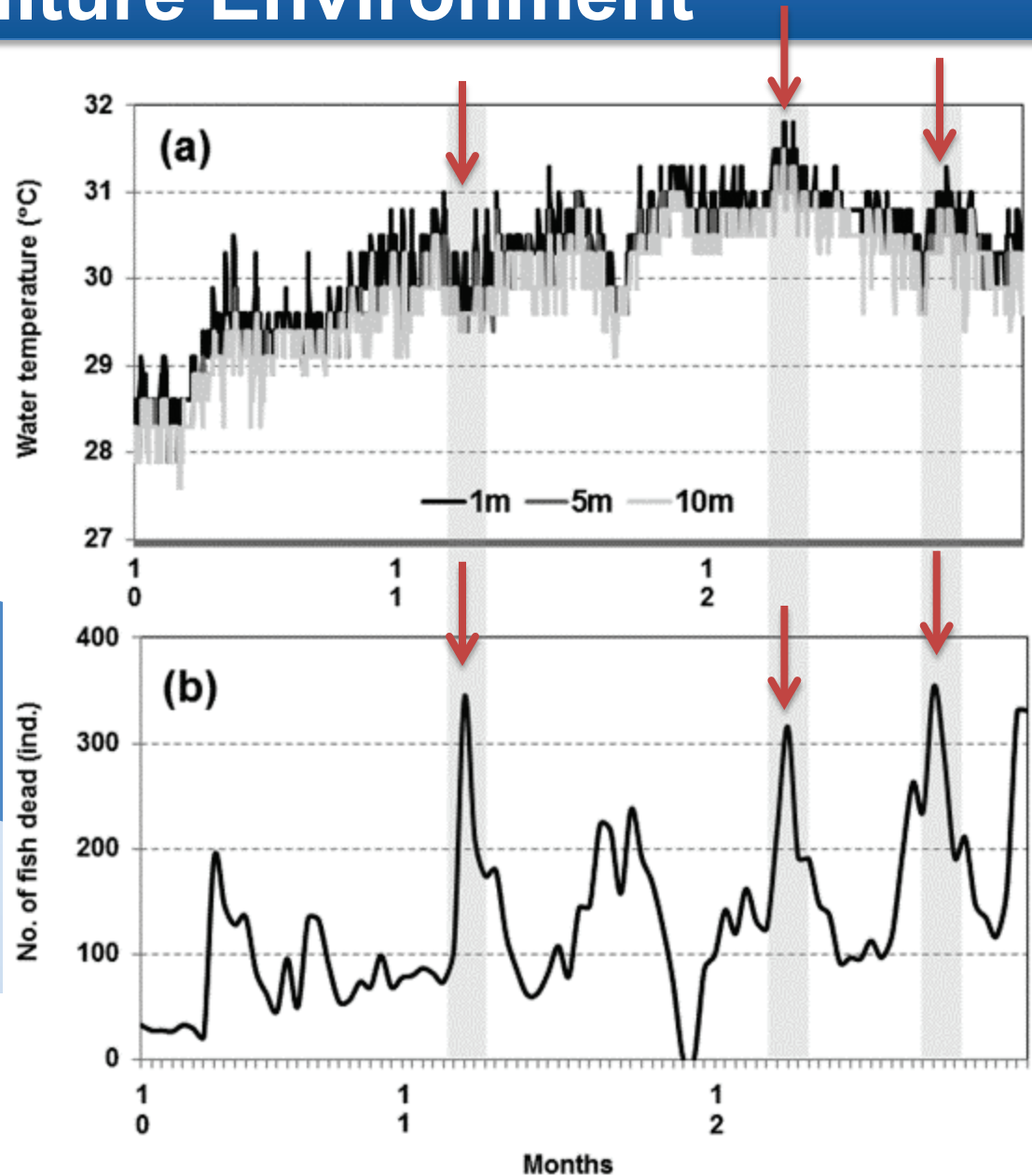


Relationship between water temperature and no. of fish dead

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Relationship between
water temperature and
no. of fish dead

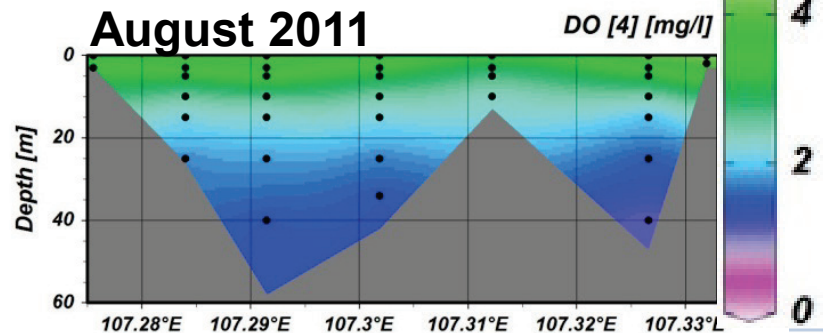
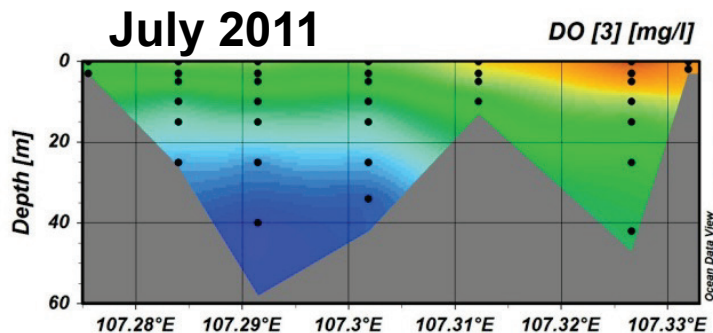
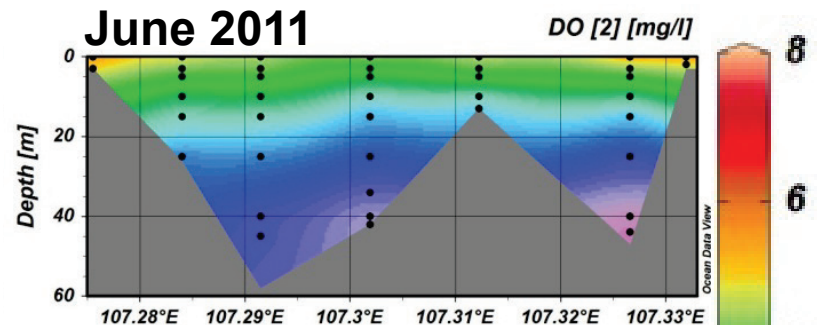
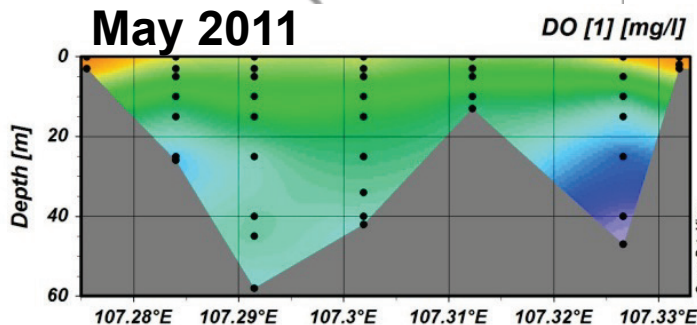


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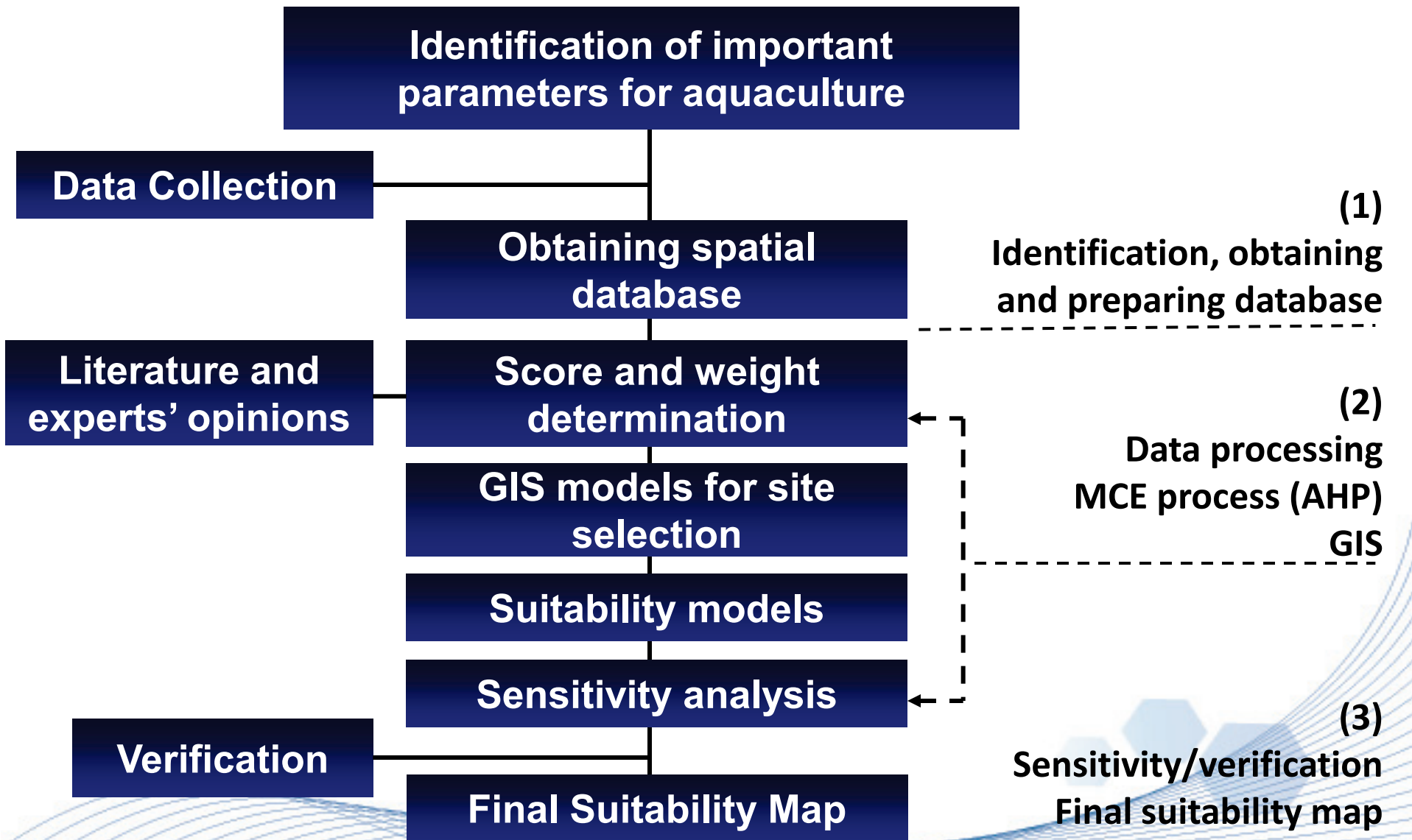
Freshwater fish Cage Aquaculture Cirata Reservoir, West Java

- Total area: 6,200 ha
- Max. Depth: 80 m

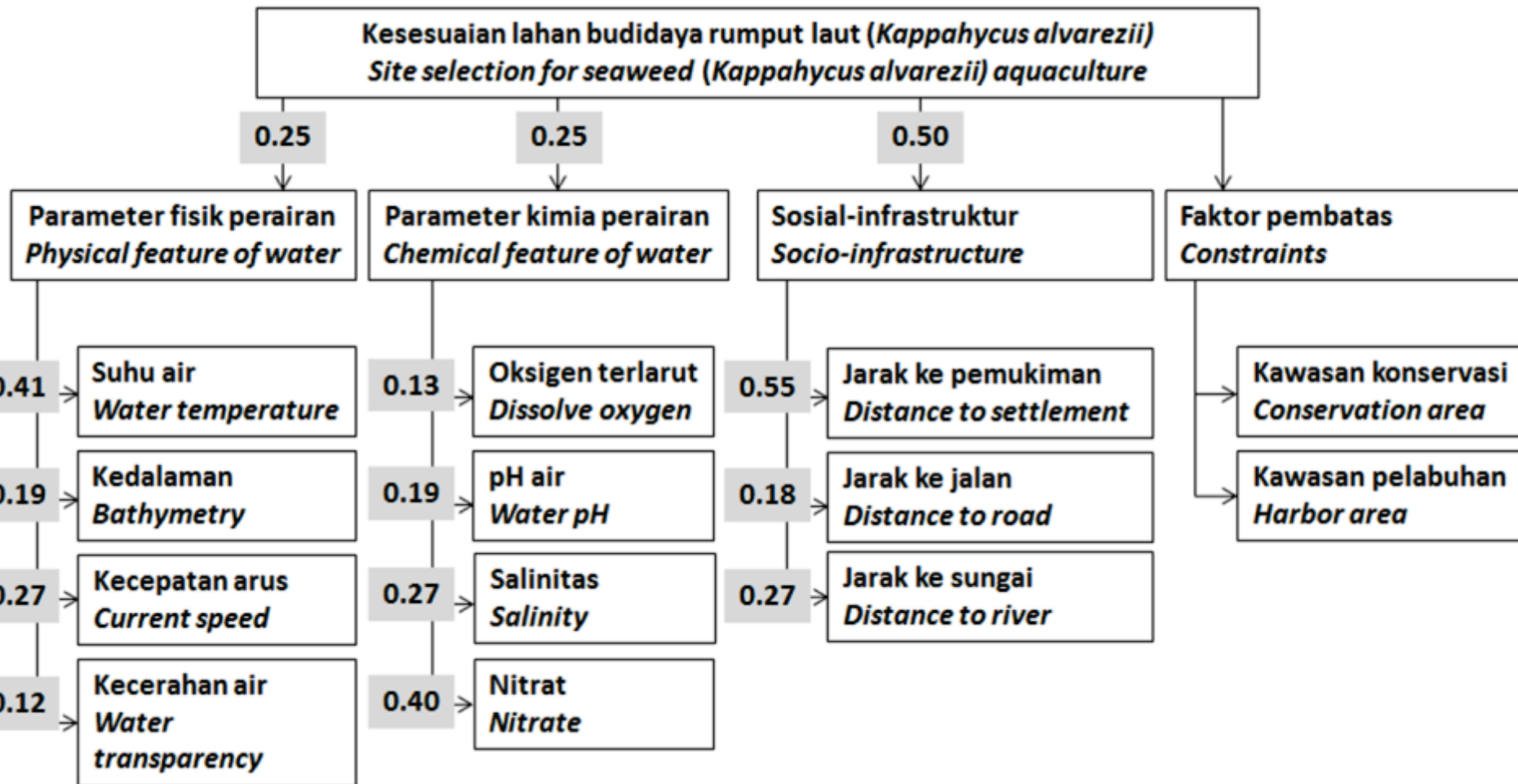
Parameter	2005	2006	2007	2008	2009	2010
Production	80,405	113,231	141,861	145,302	133,492	154,875
Number of cages	4,474	1,821	2,388	2,512	2,541	3,142



Modeling of Site Selection

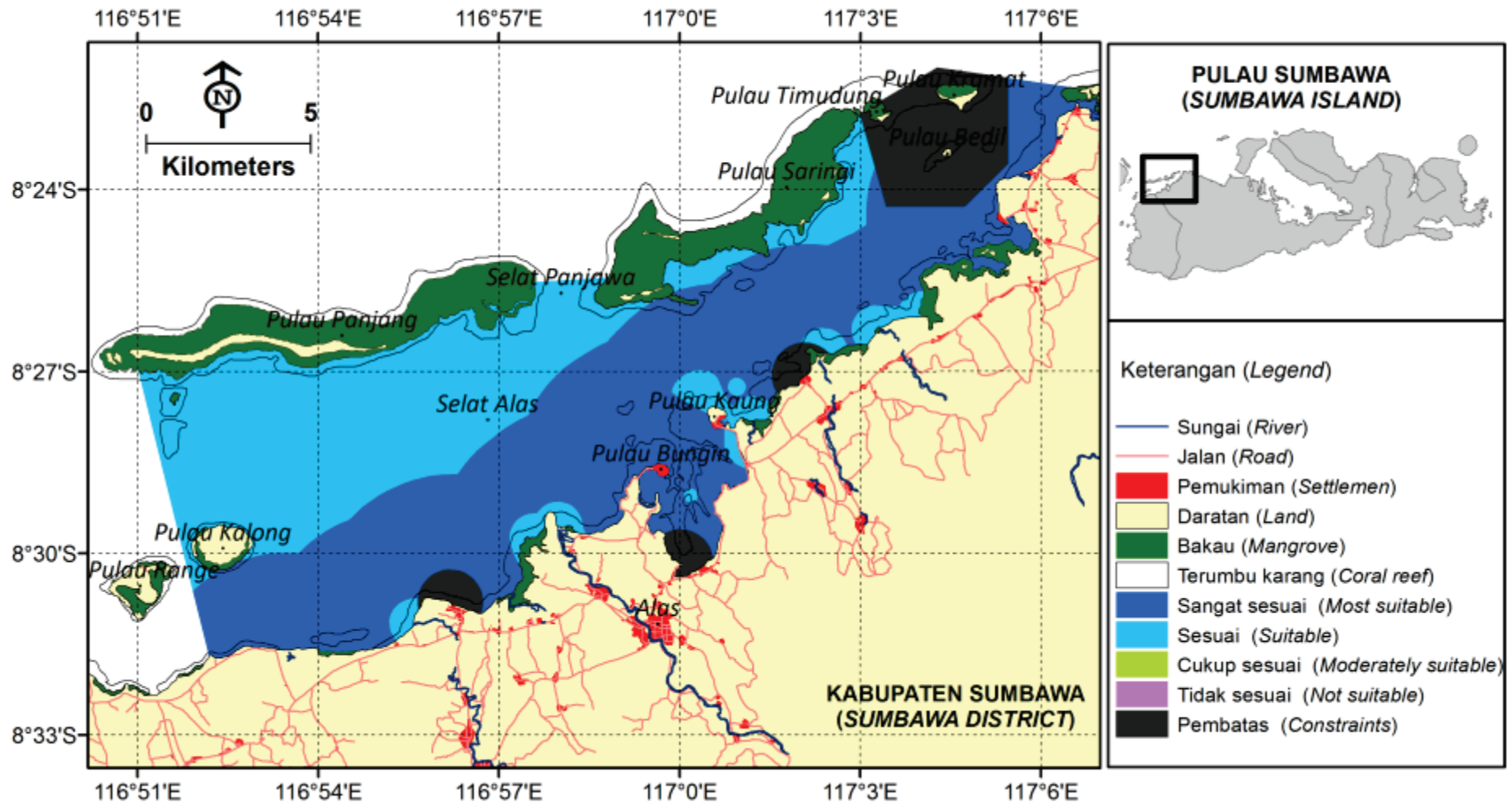


Modeling of Site Selection



**GIS based model for seaweed aquaculture site selection
in Sumbawa, West Nusa Tenggara, Indonesia**

Modeling of Site Selection



GIS based model for seaweed aquaculture site selection in Sumbawa, West Nusa Tenggara, Indonesia

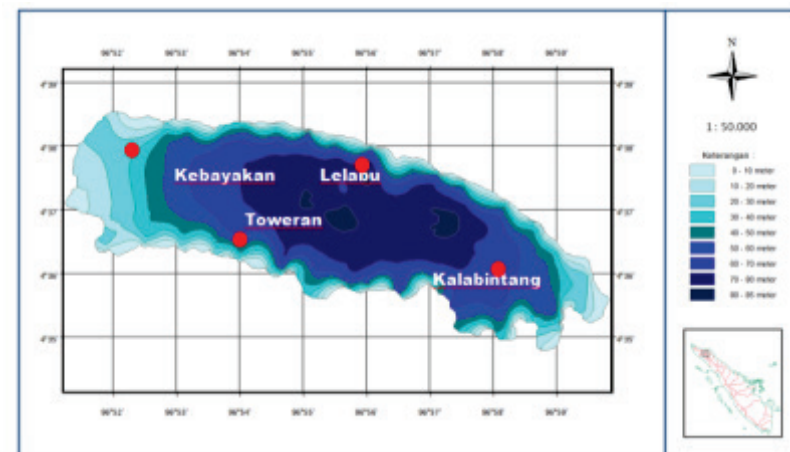
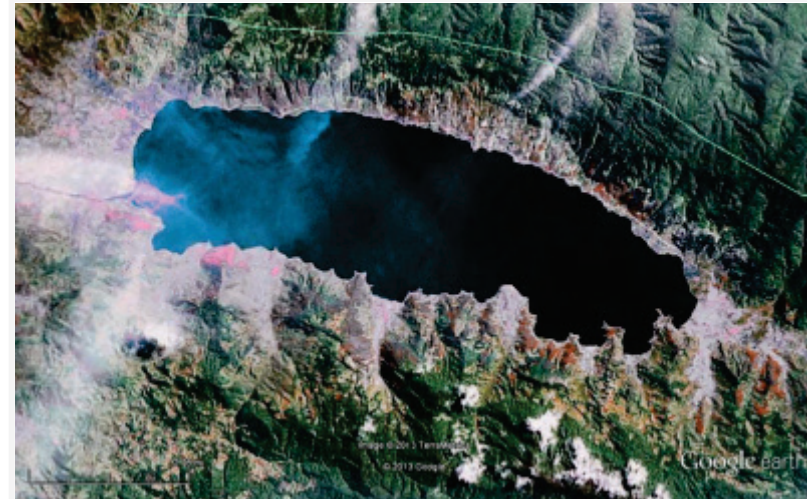
Modeling of Production Carrying Capacity

Laut Tawar Lake ACC based on phosphorous (P)

Parameter	Nilai
P in pelet	0.71%
kg P in 1 ton pelet	7.1
FCR	1.47
P food	10.42
P inside fish dry weight	44.00%
Water contaminant in fish	80.71%
P in fish wet weight (kg/ton ikan)	0.08492
P into the water (kg/ton fish production)	10.34
Lake ACC (ton/yr)	63333

ACC approach based on Dillon and Rigler (1974)

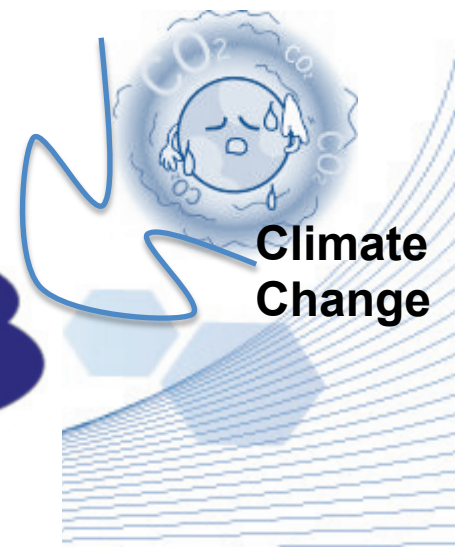
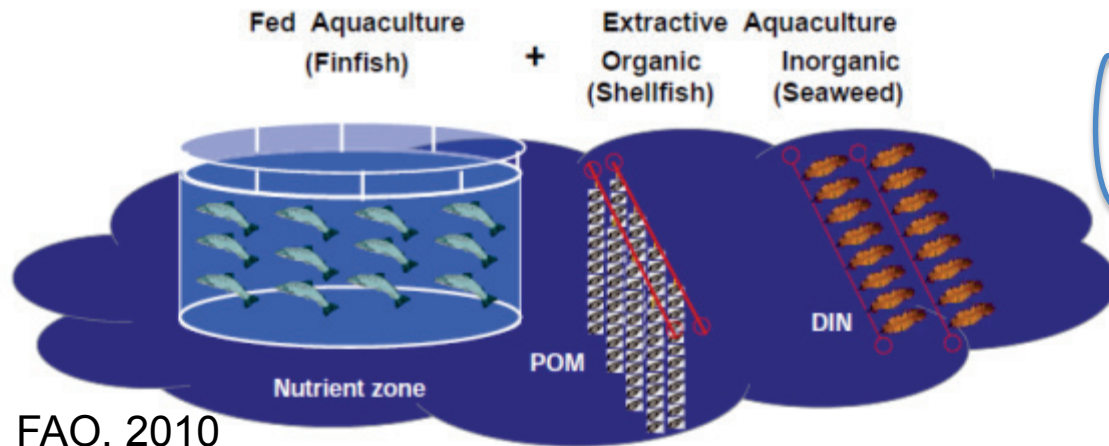
Total surface area of the lake: 5742 ha



Integrated Aquaculture - IMTA

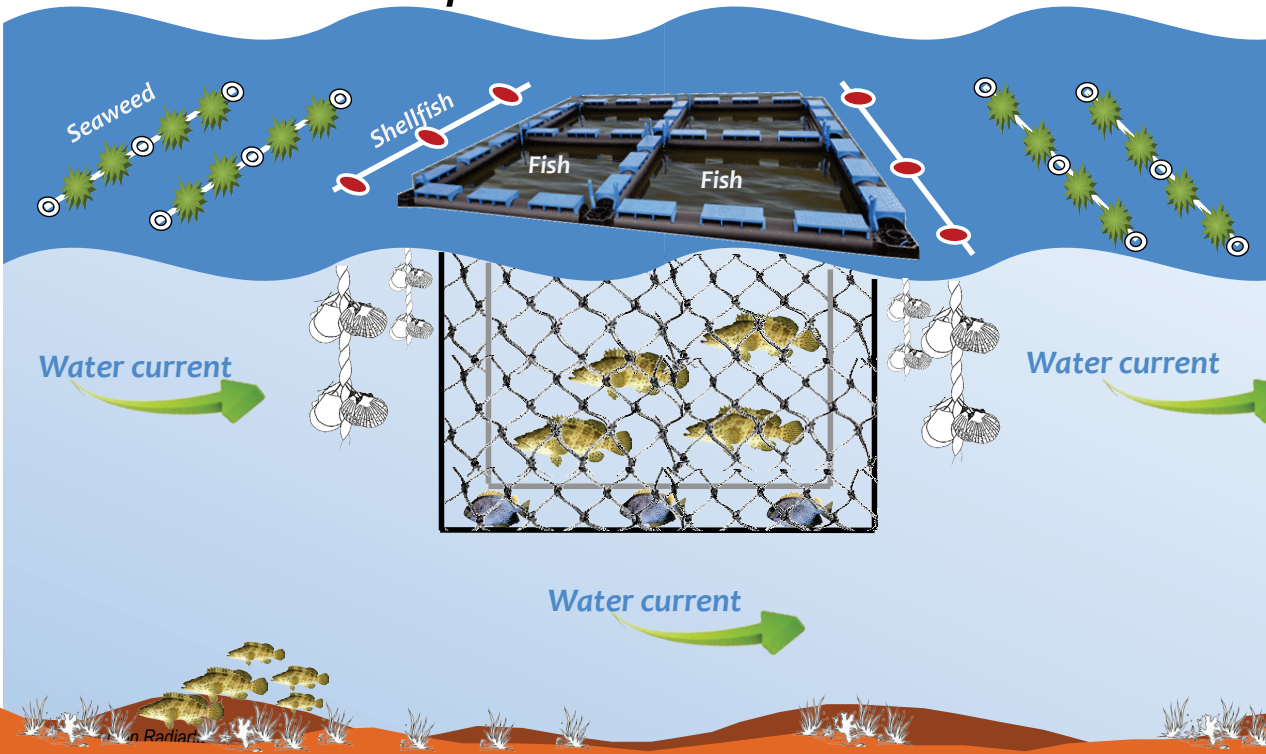
The concept of BLUE ECONOMY:

1. **Integrated:** Economic-environmental, central-local
2. **Region/claster-based:** Potential Economic Zone
3. **Zero Waste:** Without waste/pollution-free
4. **Creative and Innovative Investment**
5. **Sustainable:** Maintaining a balance between utilization of natural resources and environment, and also between the production and consumption

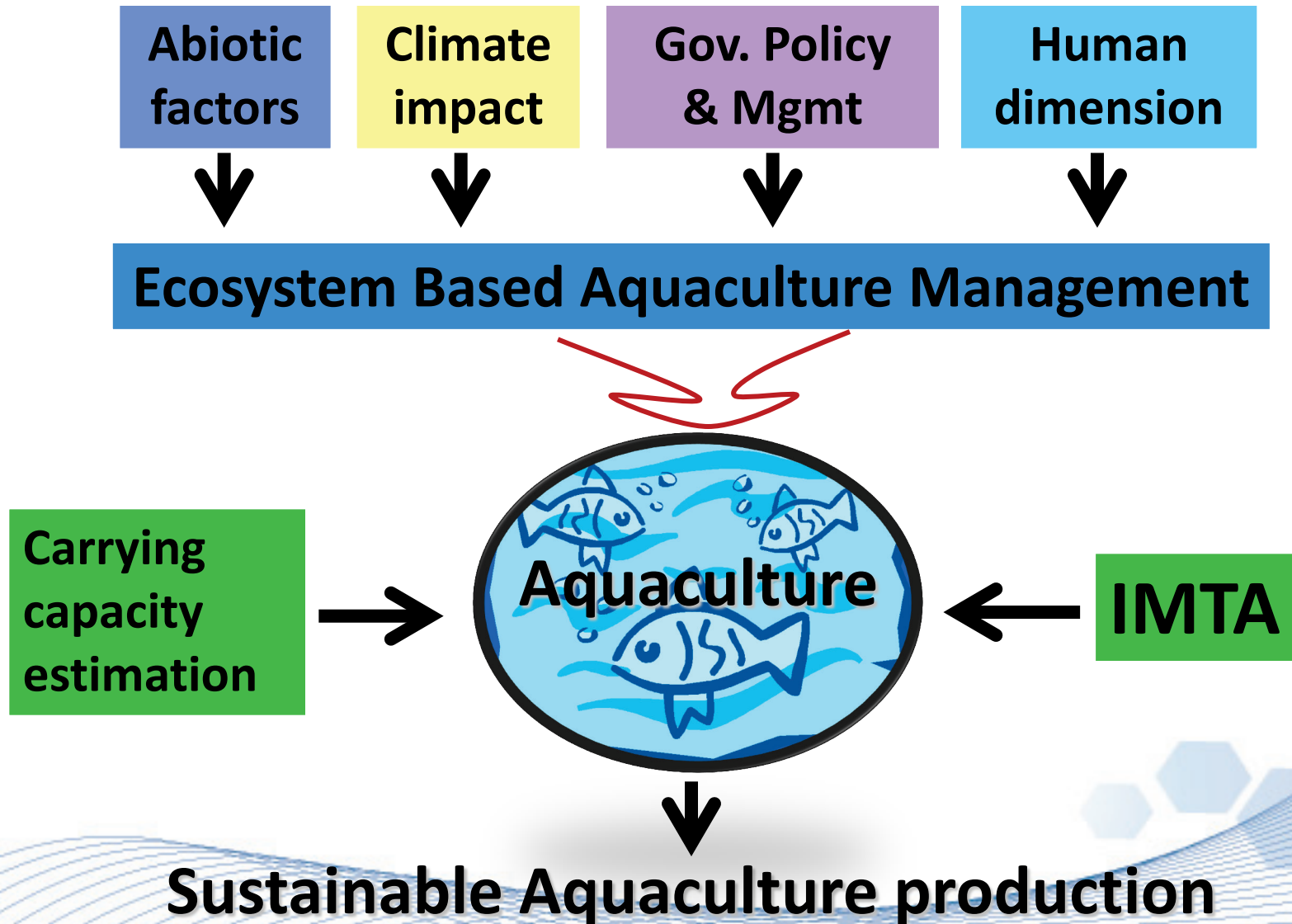


Integrated Aquaculture - IMTA

- **Marine fishes:** Grouper (*Epinephelus fuscoguttatus*); Rabbitfish (*Siganus guttatus*)
- **Shellfish:** Pearl (*Pinctada* spp.)
- **Seaweed:** *Kappaphycus alvarezii* and *Eucheuma spinosum*



FUTURE PERSPECTIVE





**Workshop on Modeling of Common Water Bodies
Bangkok, 11-12 June 2013**



THANK YOU

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