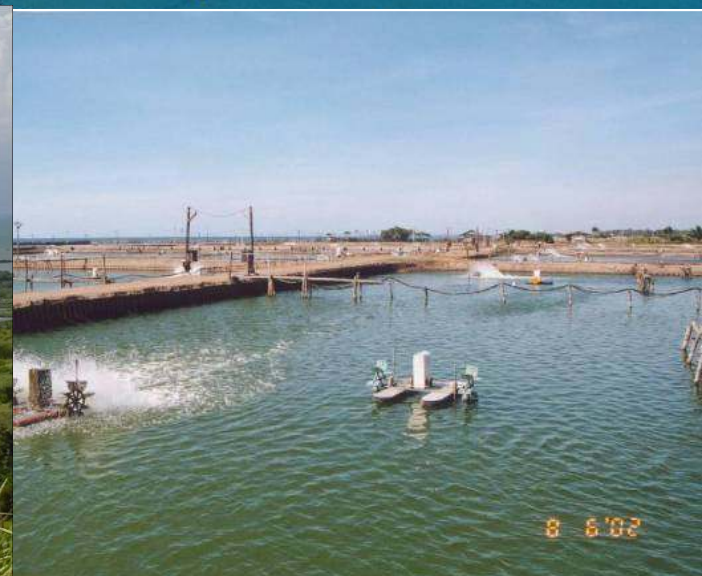




POTENSI DAN PENGEMBANGAN BUDIDAYA DI WILAYAH PESISIR



● Present



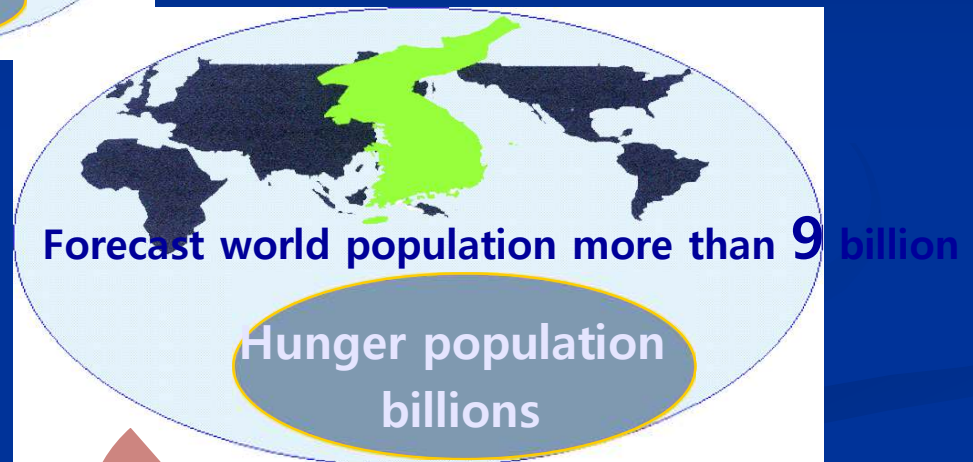
● Mid 21st century

Food

Production

Agriculture food prod. is limited

‘Capture Fisheries is limited’
- FAO -



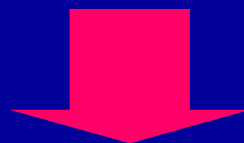
Food crisis is imminent

Aquaculture may be the only alternative way



Food Crisis in 21st century & Aquaculture

Fisheries capture, agriculture and animal husbandry production are limited to supply enough **food protein source** (L. Brown, 1995)



Aquaculture production is important (**Blue revolution**)

- **Aquaculture is one of the top ten** (A. Toffler, 1980) among the **most important industries in the 21st century**



POTENSI BUDIDAYA DI INDONESIA

Garis Pantai 81.000 km

Potensi budiaya 7 231 039 ha :

3 775 539 ha of budidaya laut (52.21 %), 1 225 000 ha budidaya air payau (16.94 %), 2 230 500 ha air tawar (30.85 %).

Pemanfaatan:

Budidaya laut 0.03 %

Budidaya Air Payau 39.25 %

Budidaya Air tawar 11.22 %



In 2003, Budiaya Air Payau :
Buidaya udang (40 %),
Bandeng (30 %)
Polyculture udang ddan bandeng (30 %)

Teknologi :
75 % traditional (extensive)
15 % semi-intensive
10 % intensive

Produksi meningkat 5 % per th
Producers : Sulawesi Selatan (19 %), Jawa Timur (17 %),
Jawa Barat (14 %), Jawa Tengah (13 %) dan Lampung
(8 %).

- Sekitar 24 juta hektar perairan laut dangkal Indonesia cocok untuk budidaya ikan kerapu, kakap, baronang, kerang mutiara, teripang, rumput laut, dan biota laut lainnya dengan potensi produksi 47 juta ton per tahun.
- Total nilai ekonomi produk perikanan dan produk bioteknologi perairan Indonesia diperkirakan mencapai 82 miliar dollar AS per tahun.

(Sumber: Kompas 2008)

spesies yang dikembangkan

BUDIDAYA AIR TAWAR

Kolam, danau/waduk
(jaring apung), sungai
(karamba)

JENIS IKAN DAN NON- IKAN

1. MAS
2. NILA
3. GURAME
4. PATIN
5. LELE
6. BAUNG
7. TAWES
8. NILEM
9. SIDAT
10. GABUS
11. BAWAL
12. SEPAT
13. IKAN HIAS
14. KODOK/KATAK
15. UDANG GALAH
16. KURA-KURA

BUDIDAYA AIR PAYAU (B.D. PANTAI)

Tambak (darat), jaring
apung dan jaring tancap
(perairan pantai)

JENIS IKAN DAN NON- IKAN

TAMBAK

1. UDANG
2. BANDENG
3. KERAPU
4. KAKAP
5. TERIPANG
6. RUMPUT LAUT
7. NILA
8. PENYU

PERAIRAN PANTAI

1. KERAPU
2. KAKAP
3. BARONANG
4. KERANG HIJAU
5. KERANG DARA
6. TERIPANG
7. CUMI-CUMI
8. RUMPUT LAUT
9. NILA
10. BANDENG

BUDIDAYA ILAUT

Jaring apung, kurung
tenggelam

APT

ASR

JENIS IKAN DAN NON- IKAN

1. BANDENG SUPER
2. TUNA
3. SALMON
4. KERANG MUTIARA
5. KERANG KIMA

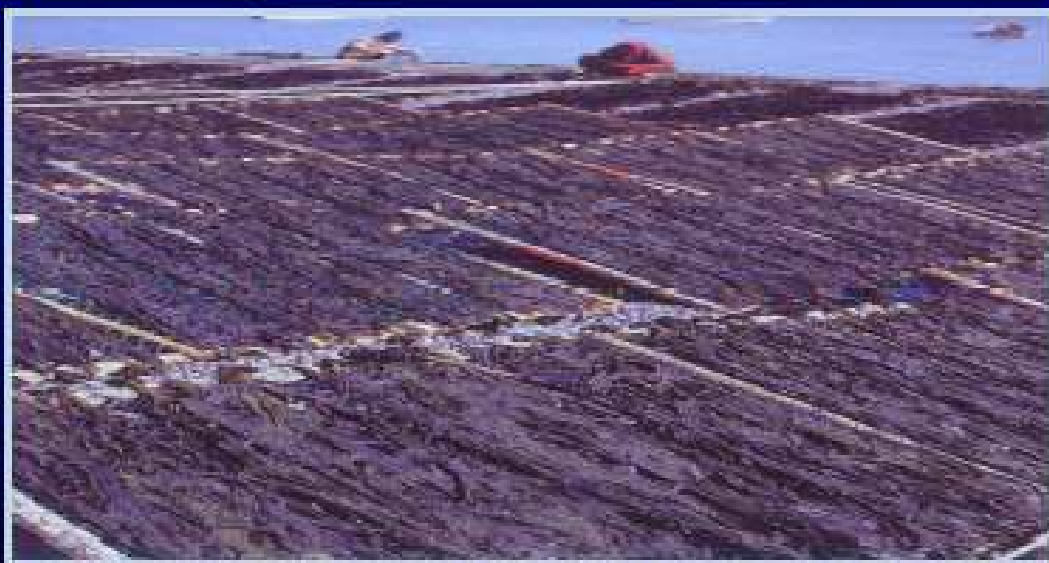
Spesies :
Kerapu,
kakap, cobia,
udang



**Sea mustard harvested from raft ropes
(right)**



**Fixed and semi-floating culture systems
are used for laver production (above)**



**Dried sea mustard (above) is one of the most
important processed seaweed products**





Abalone, *Halotis discus hannai*



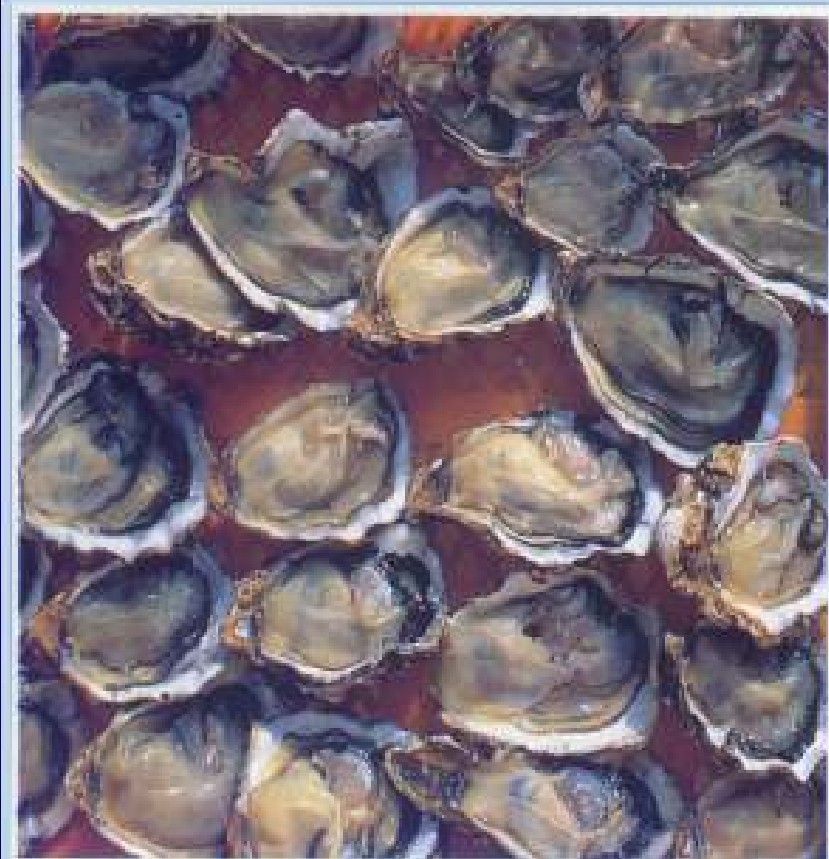
Senatorial scallop, *Gloriopallium pallium*



Scallop (Giant ezo scallop), *Patinopecten yessoensis*, are cultured in the region along the eastern coastal area



Workers Harvest and grade oysters from net bags suspended from rafts



Pacific oyster, *Crassostrea gigas*



- Holding ~30 tonnes grouper
- Fed trash fish
- 1.5m tidal range
- Tidal currents $< 10 \text{ cm sec}^{-1}$



Spesies :
Udang,
bandeng, nila



Intensive Prawn Culture

Tiger prawn (Windu)

Udang Vannamei

Production Parameters	Range	Common	Range	Common
Pond size (ha)	0.25 – 1.0	0.3 – 0.5	0.25 – 1.0	0.3 – 0.5
Farm size (ha)	0.6 - 26	5 - 15	0.6 - 26	5 - 15
Stocking density (pcs/m ²)	25 - 50	30 - 40	100 - 300	200 - 250
Survival (%)	45 - 90	50 - 70	60 - 95	75 - 85
Harvest size (g)	15 - 40	20 - 25	12 - 20	15 - 20
Culture period (days)	95 - 150	120 - 135	90 - 140	110 - 125
Growth rate (g/day)	0.15 – 0.30	0.17 – 0.25	0.10 – 0.20	0.14 – 0.17
Yield (MT/ha/crop)	1.7 – 9.5	2.5 – 5.0	7.2 – 55	14 - 22
FCR	1.2 – 2.7	1.7 – 2.0	1.2 – 2.2	1.5 – 1.8
No of crops/year	1 - 2	2	2 – 2.5	2

EXPORT vs IMPORT

export

Year	Volume (Ton)	Value (US\$ 1.000)
2005	857.922	1.913.305
2006	926.478	2.103.470
2007	857.783	2.300.000

But.... , Indonesia still importing :

Pangasius (Vietnam)



eels



Shrimps; except Vanamei



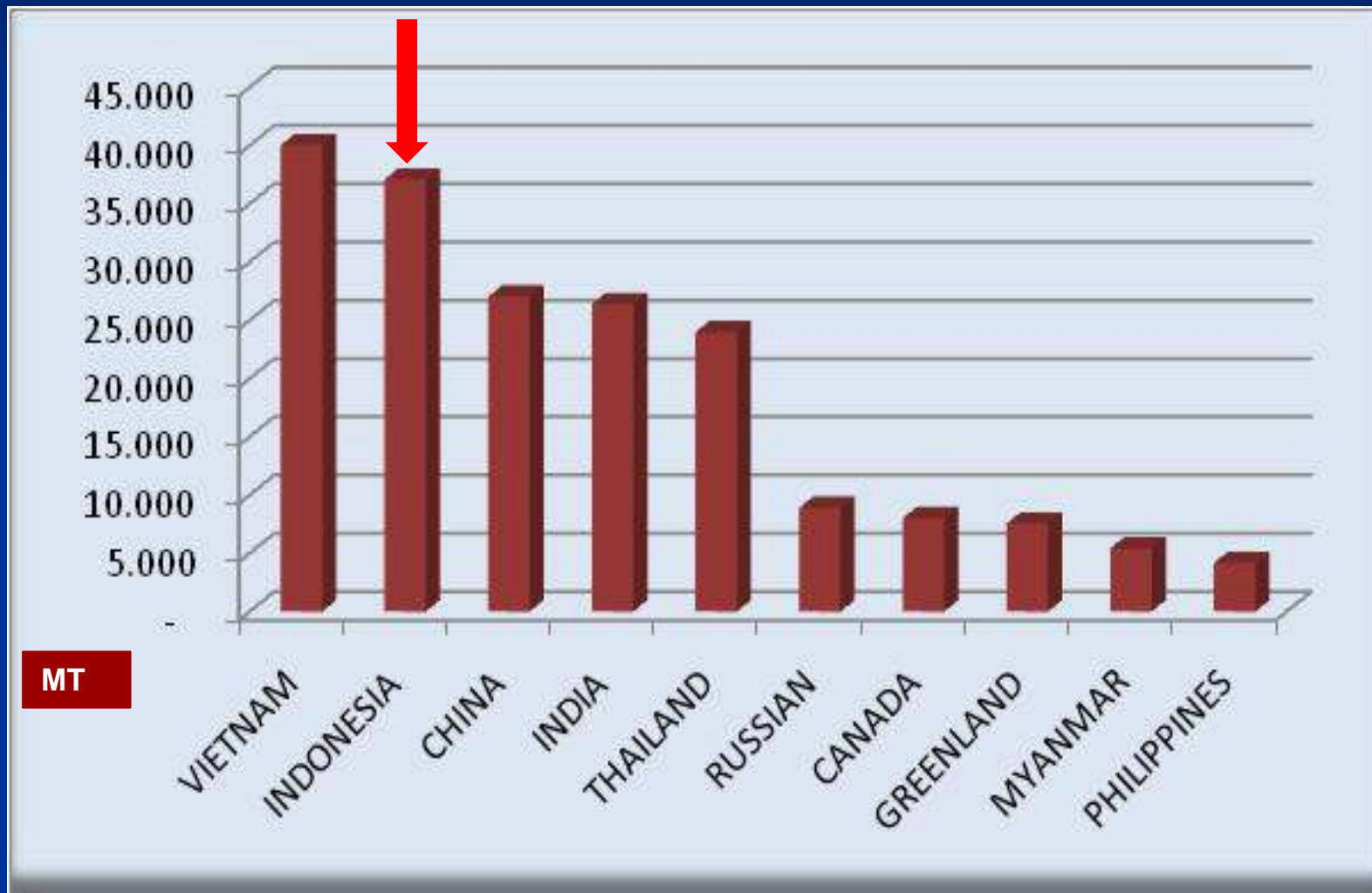
Indonesia's Position as Exporting country to the United States



In 2007

Source: Urner Barry 2007

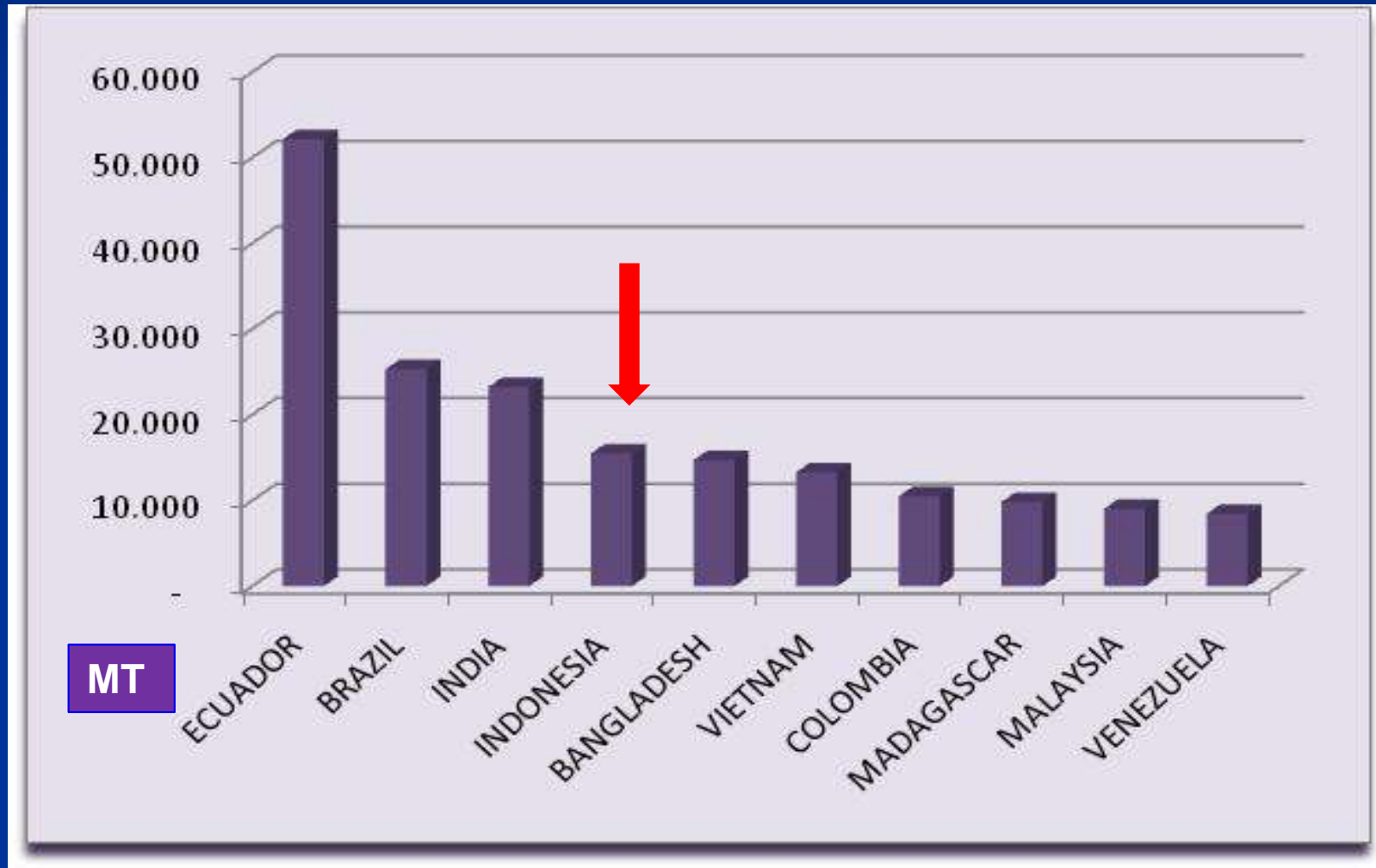
Indonesia's Position as Exporting country to Japan



In 2007

Source: Ryuken

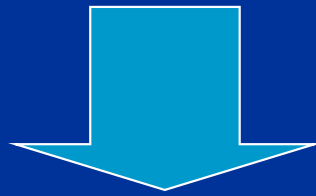
Indonesia's Position as Exporting country to EU



In 2007

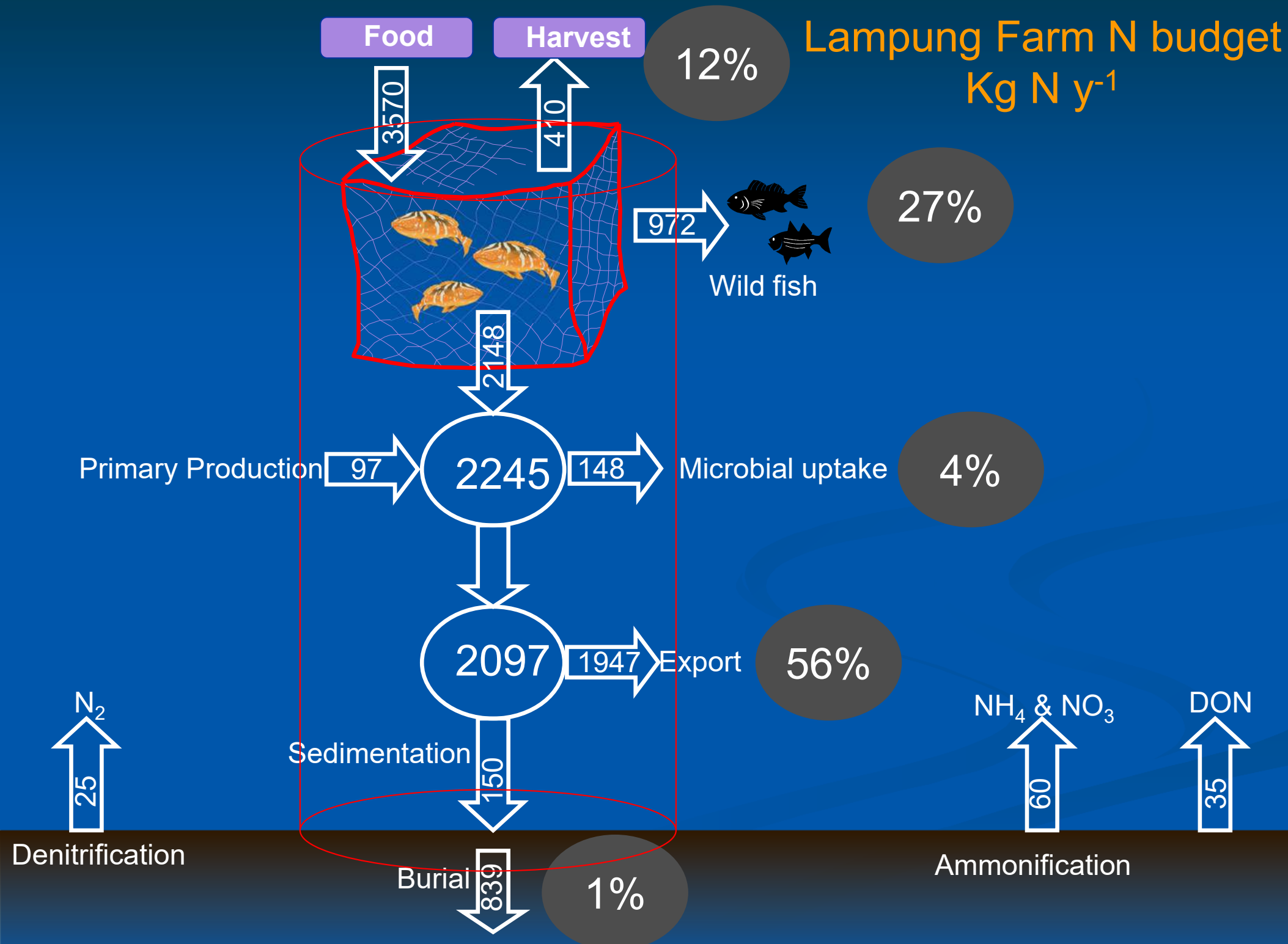
DAMPAK NEGATIF BUDIDAYA

- Konversi hutan mangrove untuk tambak
- Pencemaran lingkungan oleh limbah budidaya



penurunan daya dukung lingkungan

Lampung Farm N budget Kg N y⁻¹





Aerial view of a floating village, likely in Hong Kong, showing numerous small houses built on wooden rafts in the water. The houses are densely packed, and the surrounding area is filled with fishing boats and equipment, illustrating a form of development that may be considered overdeveloped.

Avoiding overdevelopment

Photo: Sena de Silva



China

Tantangan akuakultur Ke depan





sustainable aquaculture

R Terhage - 2005

NO! Sustainable aquaculture



Sustainable aquaculture ?



Sustainable aquaculture ?





Manajemen akuakultur

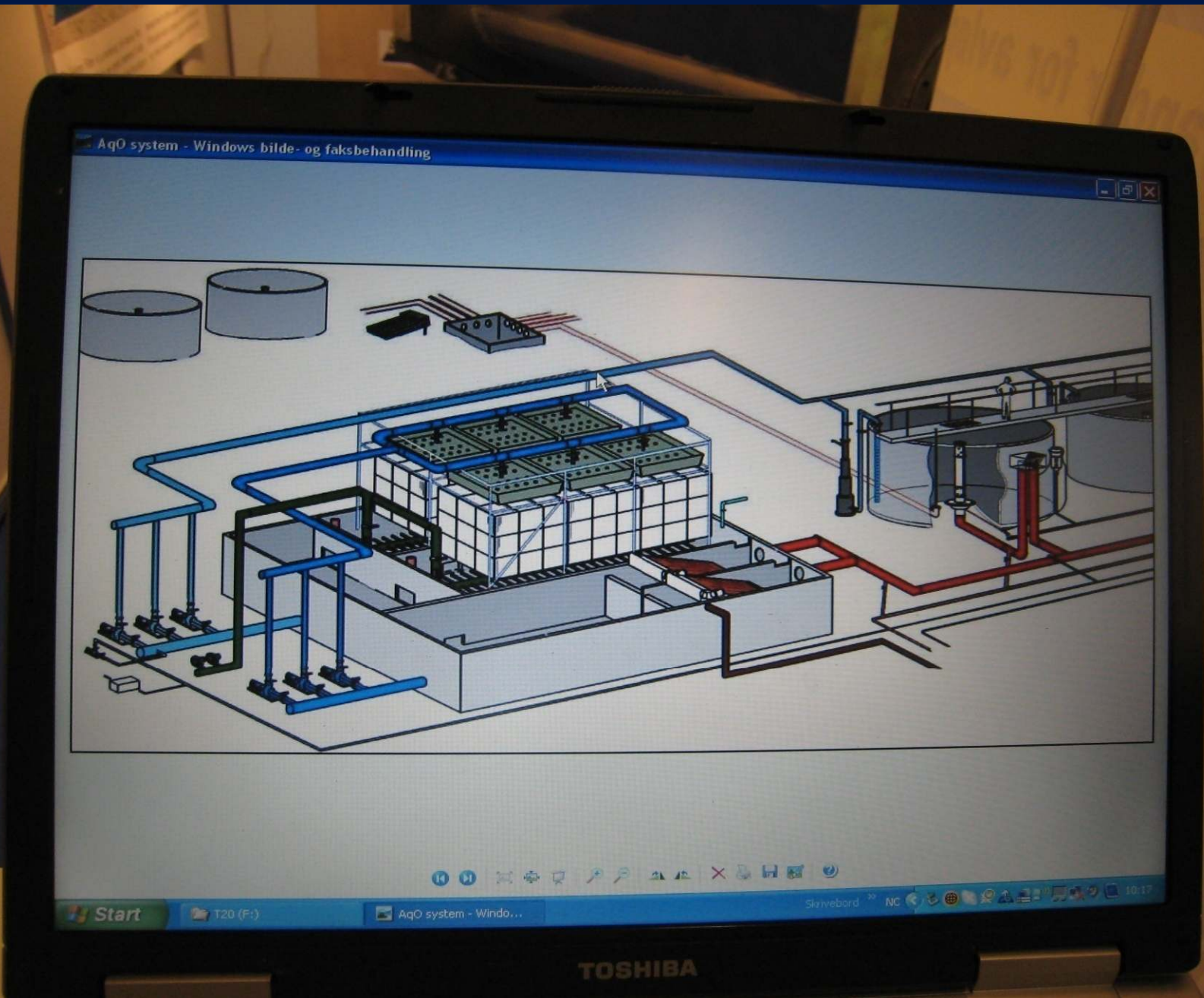
- Pemilihan lokasi yang tepat
(mencegah konflik)
- Ketahui kondisi lingkungan
(ecosystem processes)
- Tentukan indikator utama yang
berdampak pada
lingkungan
- Konsep daya dukung
lingkungan untuk
pengembangan



Air Payau

- Sistem polikultur
 - Tumpang Sari (minawana)
 - Organik akuakultur
 - Resirkulasi
- 
- The bottom right portion of the slide features several overlapping, wavy, horizontal lines in shades of blue, creating a decorative, water-like effect.

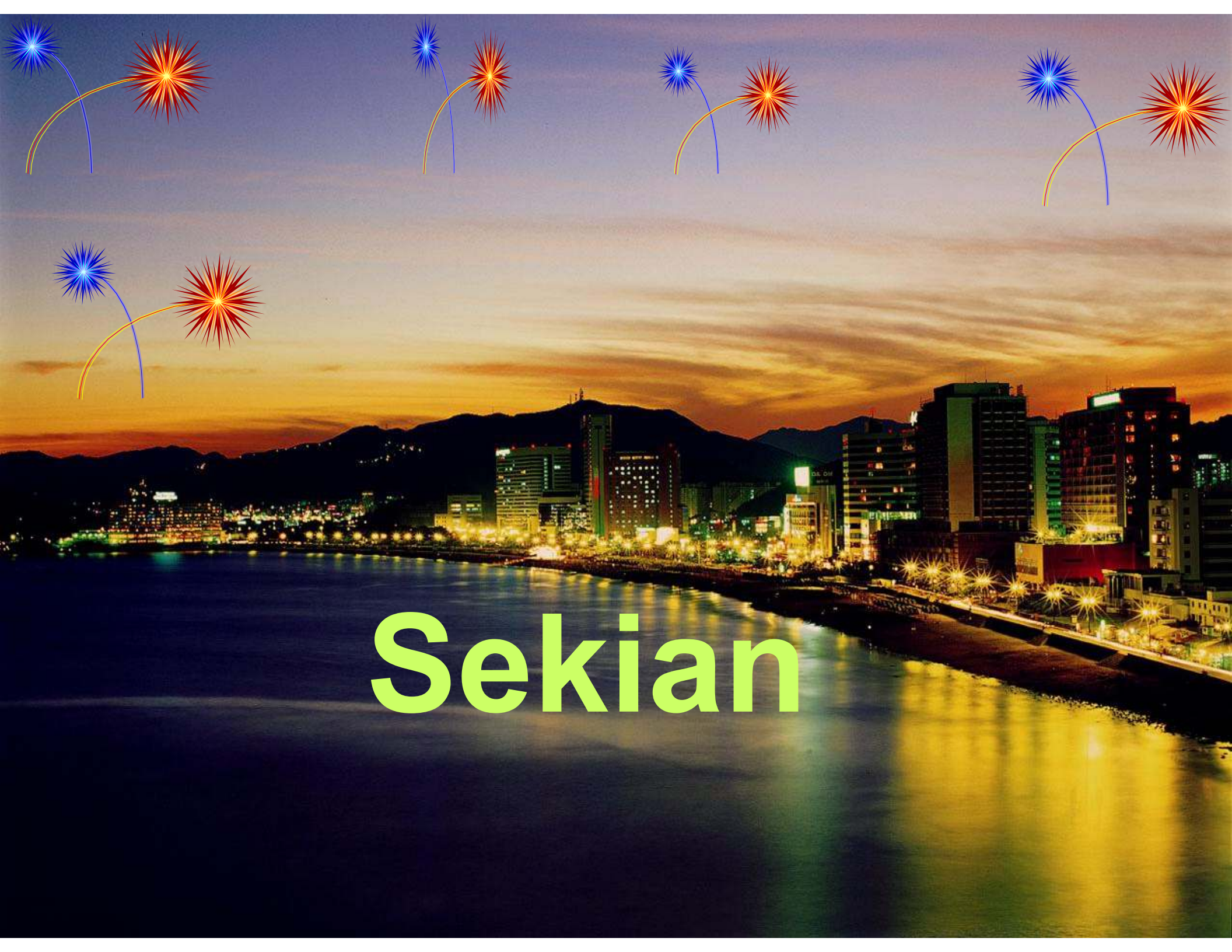
Recirculation Inland Aquaculture Systems



Global Promotion

Global Issues

- Inggris → UK Parliamentary report recommends: *“Eat more fish to improve mental and physical wellbeing”*
- AS → 2005 USFDA Dietary Guidelines: *“Consume more fish to live longer, healthier and more active lives”*
- Jepang → Fisheries Agency : *“Preserve Japan’s Fish-eating Culture”*



Sekian