

# 4<sup>th</sup> INTERNATIONAL TRADE AND TECHNICAL CONFERENCE AND EXPOSITION ON TILAPIA (TILAPIA 2015)

---

## Industry and Market Status of Tilapia in Malaysia



Dr. Mazuki Bin Hashim



# Presentation Outline

- 1. Status of Fisheries Sub-sector's Development in Malaysia**
- 2. Contribution of Aquaculture in Food Fish Production**
- 3. Tilapia Aquaculture: History**
- 4. Development of Tilapia Aquaculture**
- 5. Tilapia Market Chain**
- 6. Advances in Tilapia Industry**
- 7. Tilapia: National Key Economic Area**
- 8. Conclusion**

## Status of Fisheries Sub-sector's Development in Malaysia

- ❑ Food fish production in 2013 was 1.78 million tones (RM10.6 billion)
- ❑ Contribution to National GDP 1.3%, 12.5% Agriculture GDP
- ❑ 134,000 employment (105,000 fishermen + 29,000 fish farmers)
- ❑ RM5.9 billion Fish & Fish Product Trade
- ❑ 377 million pcs. (RM629 million) ornamental fish

### Supply and Demand of Food Fish

YEAR	2013	2015	2020
SUPPLY (million tons)	1.74	2.07	2.36
DEMAND (million tons)	1.51	1.75	1.92
Per capita consumption (kg)	53.1	56.8	61.1
SSL (%)	125	102	110

# Fisheries Industry Overview

Coastal : 1,155,000 m.t

Deep Sea : 329,000 m.t

Aquaculture : 308,000 m.t

Ornamental fish : 377 million pcs

Fish Fry : 9.5 billion pcs

**1,787,000 m.t**

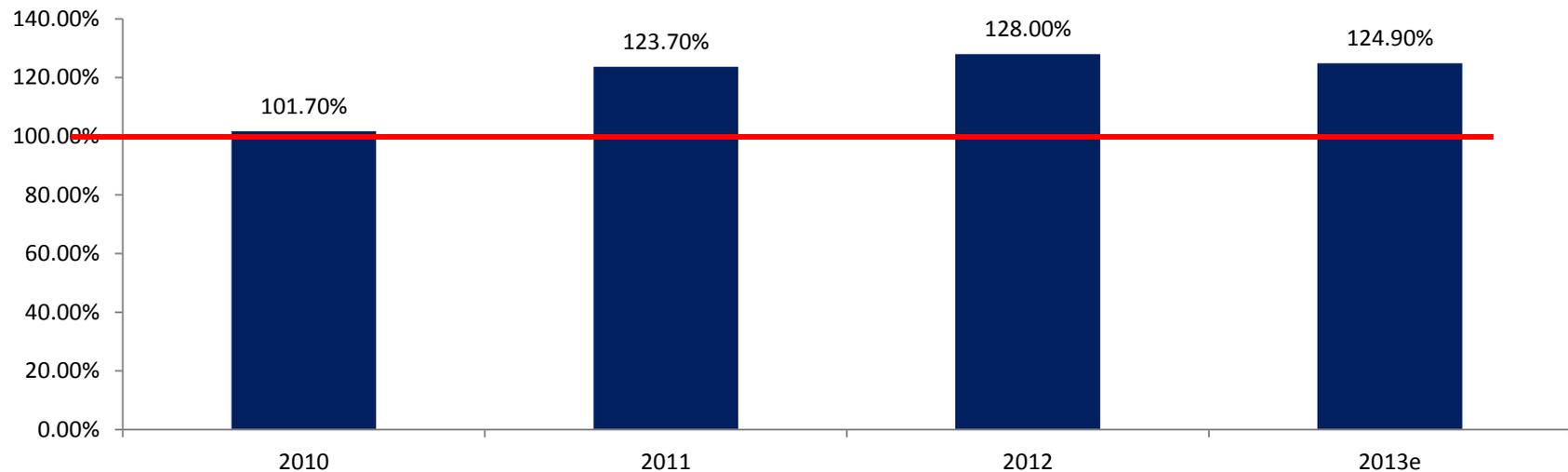
Annual Growth Rate (AGR)

Average AGR (2002 – 2013) 4.0%

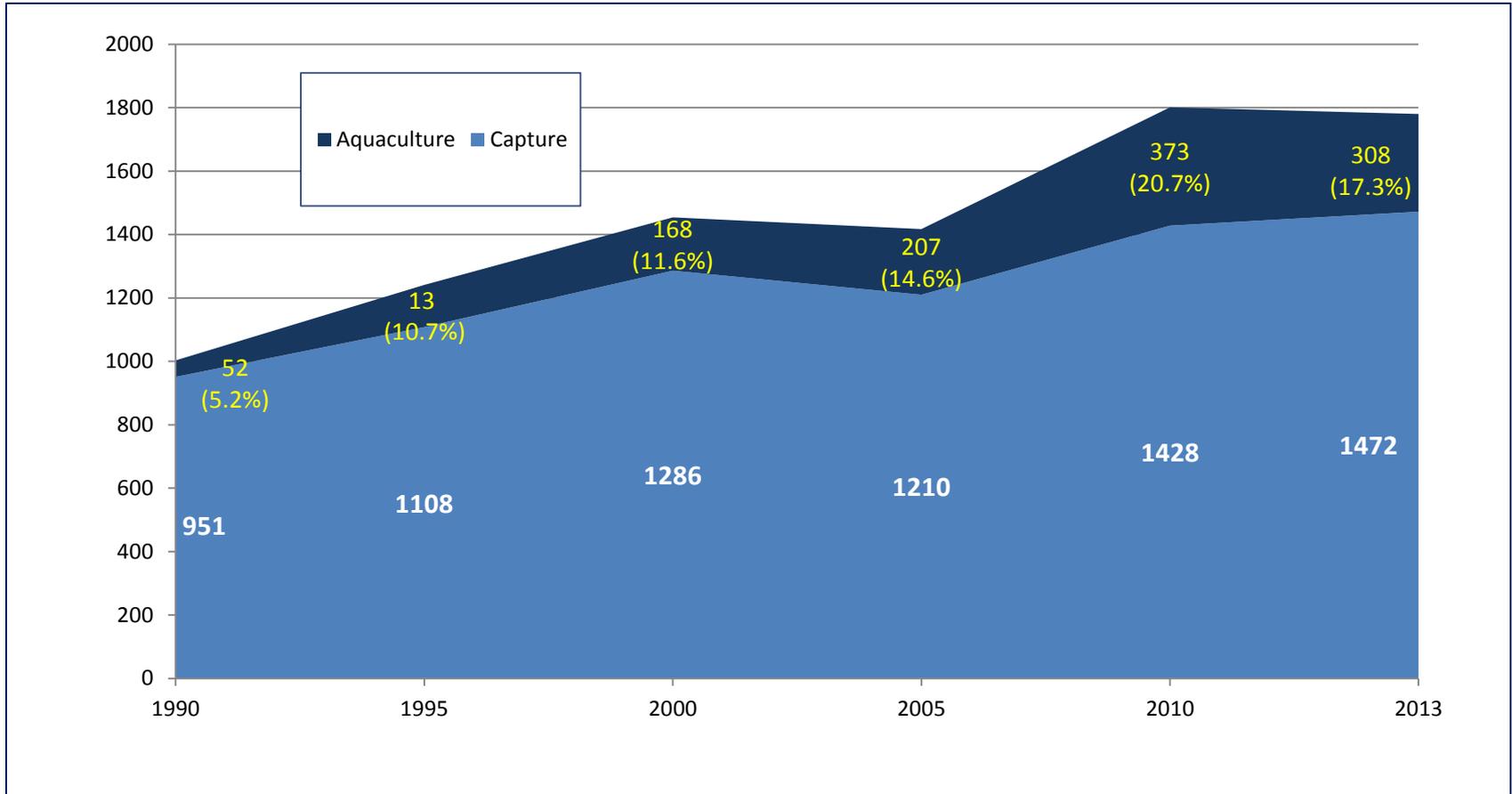
Capture Fisheries : 3.6%

Aquaculture: 6.6%

Self Sufficiency Level (SSL) on Food Fish (%)

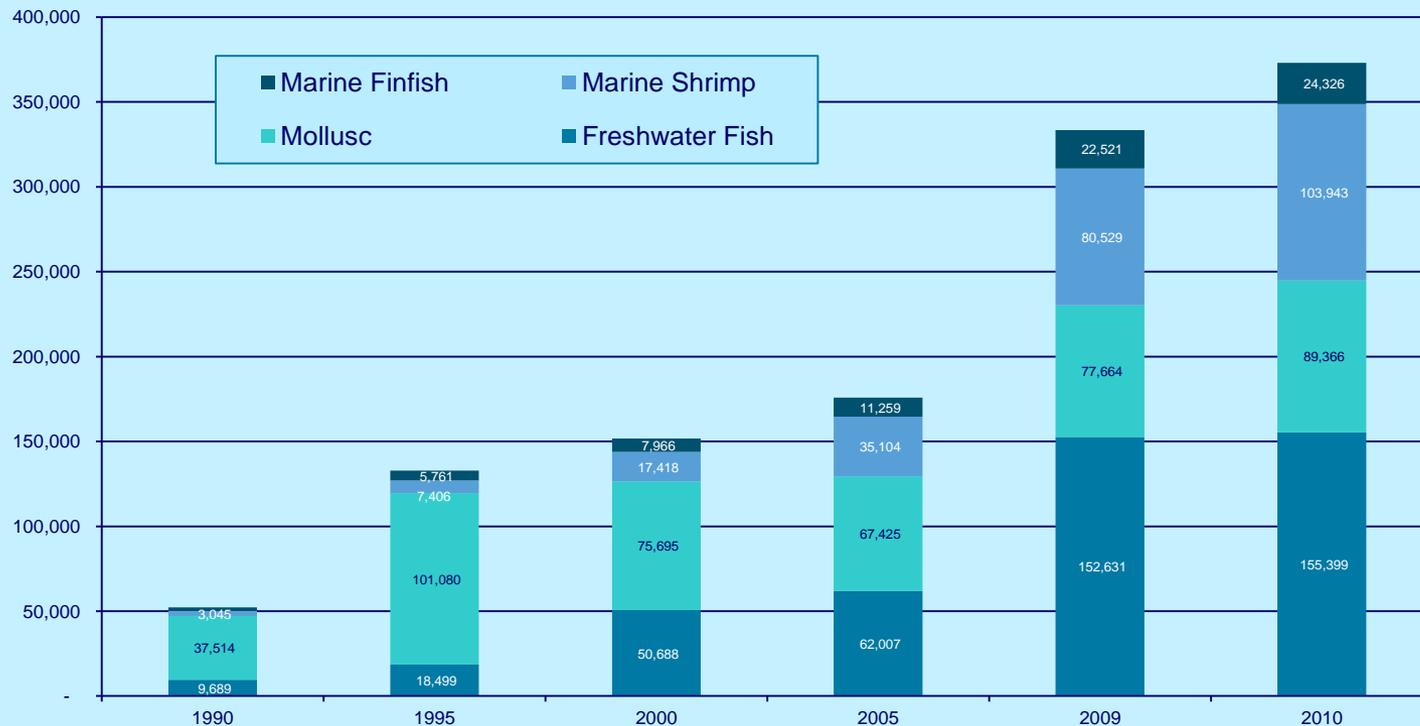


# Contribution of Aquaculture to Malaysian Food-fish Production ('000 Tons)



- Aquaculture Production in 2013 totalled 308,000 tonnes (RM2.6 billion)
- Under the 10<sup>th</sup> Malaysia Plan, aquaculture identified as one of the thrust areas.
- Projected production in the year 2015 targeted at 585,000 tonnes.

# TREND OF AQUACULTURE PRODUCTION IN MALAYSIA 1990-2010 (M.T)



- Significant increased in production of freshwater fish and shrimp,
- Increase production responding to increase in demand for tilapia, catfish and shrimp in domestic and export market.

# Advantages in Aquaculture Development

---

## Strategic Location

Strategically located in the middle of Southeast Asia, Malaysia is an important producer, market and trading nation for fish and fishery products in the region.

## Good Climatic Condition

The good climatic condition and free from natural disaster, the country is very conducive to aquaculture and fishing industry.

## Blessed with abundant fisheries resources

Malaysia is blessed with abundant fisheries resources that can provide ample supply of raw materials to a wide range of seafood business. The country's fish production in 2012 was close to 2.0 million tones, comprising 1.47 million tones of wild catches and 637,517 tones of aquaculture products, including seaweed.

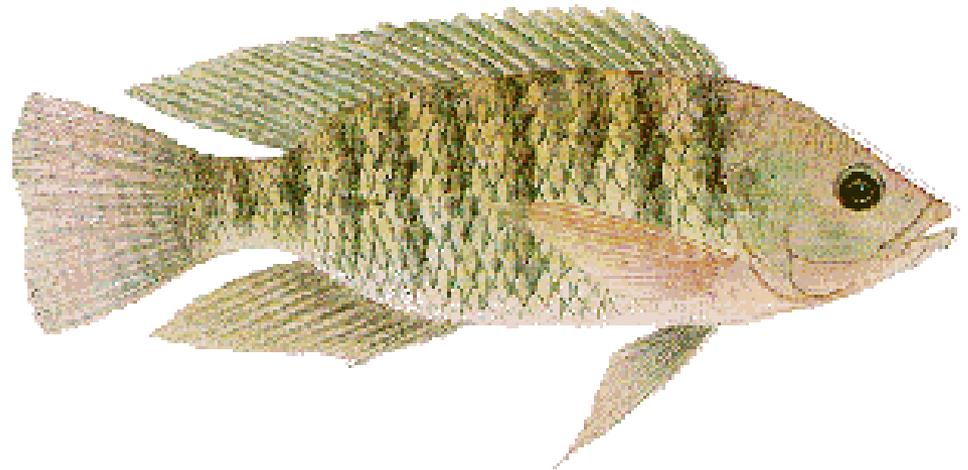
## Strong Government Backup

Strongly backed by government support, under the National Agro-food Policy (2011 - 2020) and National Economic Transformation Programme. Government has identified deep-sea fishing and aquaculture as part of the government's strategies to increase fish supply for the domestic market, improve the balance of trade and expand exports.



# Tilapia Aquaculture History

- 1952: introduced to fish farmers.
- Species: *Oreochromis mossambicus*
- Culture system: earthen pond & in ex-mining pool.



# Commercial Tilapia Aquaculture

- 1980's : Introduction of commercial culture
- Species: Hybrid Red Tilapia
- Culture system: earthen ponds, concrete tanks and floating cages



# Tilapia: Contribution to Freshwater Aquaculture Production (2013)

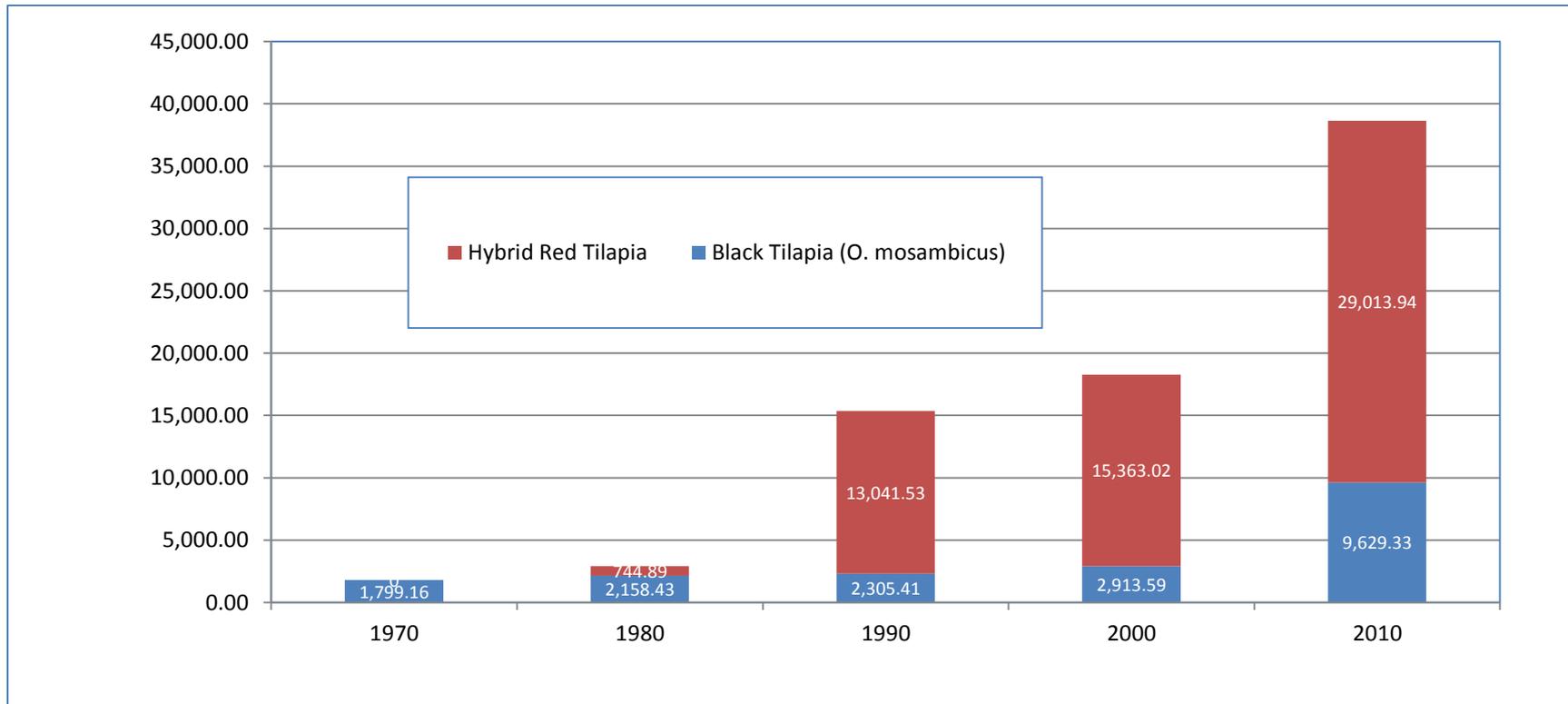
ITEMS	Production (MT)	Value (RM Mill.)
Freshwater Fish	132,892	1,225
Tilapia	44,099	329
Percentage	33%	27 %

# Tilapia: Production (2008 - 2013)

Year	Production (MT)	Value (RM)
<b>2008</b>	34,822.50	200,195,380
<b>2009</b>	35,588.34	208,167,590
<b>2010</b>	38,886.68	250,985,940
<b>2011</b>	43,068.74	304,162,910
<b>2012</b>	52,295.30	379,785,380
<b>2013</b>	44,099.24	329,060,250

Growth 2008 – 2013: 6.4% in quantity and 13.3% in value

# Tilapia: Species Composition (1970 - 2013)



- Significant growth in Hybrid Red Tilapia production since 1980's
- Good market acceptance domestically
- Availability of quality fry and commercial feed

# Tilapia: Development of Culture System

Land based system: Ex-mining pond, earthen ponds, tank system



# Tilapia: Development of Culture System

Floating Net Cages: wooden, galvanized, HDPE frame



# Tilapia: Development of Culture System

Polar Circle HDPE cage (20m Ø),  
Production capacity 50 m.t/cage/cycle



An aerial photograph of a floating fish farm in a large body of water. The farm consists of several rectangular modules made of dark wooden poles and blue mesh netting. In the background, there are several small, green-roofed huts on the water. The surrounding landscape is lush and green, with forested hills under a cloudy sky.

**Existing 5 Module (20 cages/ module)**

**- 2 Modules (Trapia)**

**- 3 Modules (DoF)**

# Mechanized operation: Using fish pump for fish harvesting



# Mechanized operation: Using fish feeding machine



# Tilapia: Hatchery

- Government hatchery: 13
- Private hatchery: 30 (78.8 mill fries per/year).



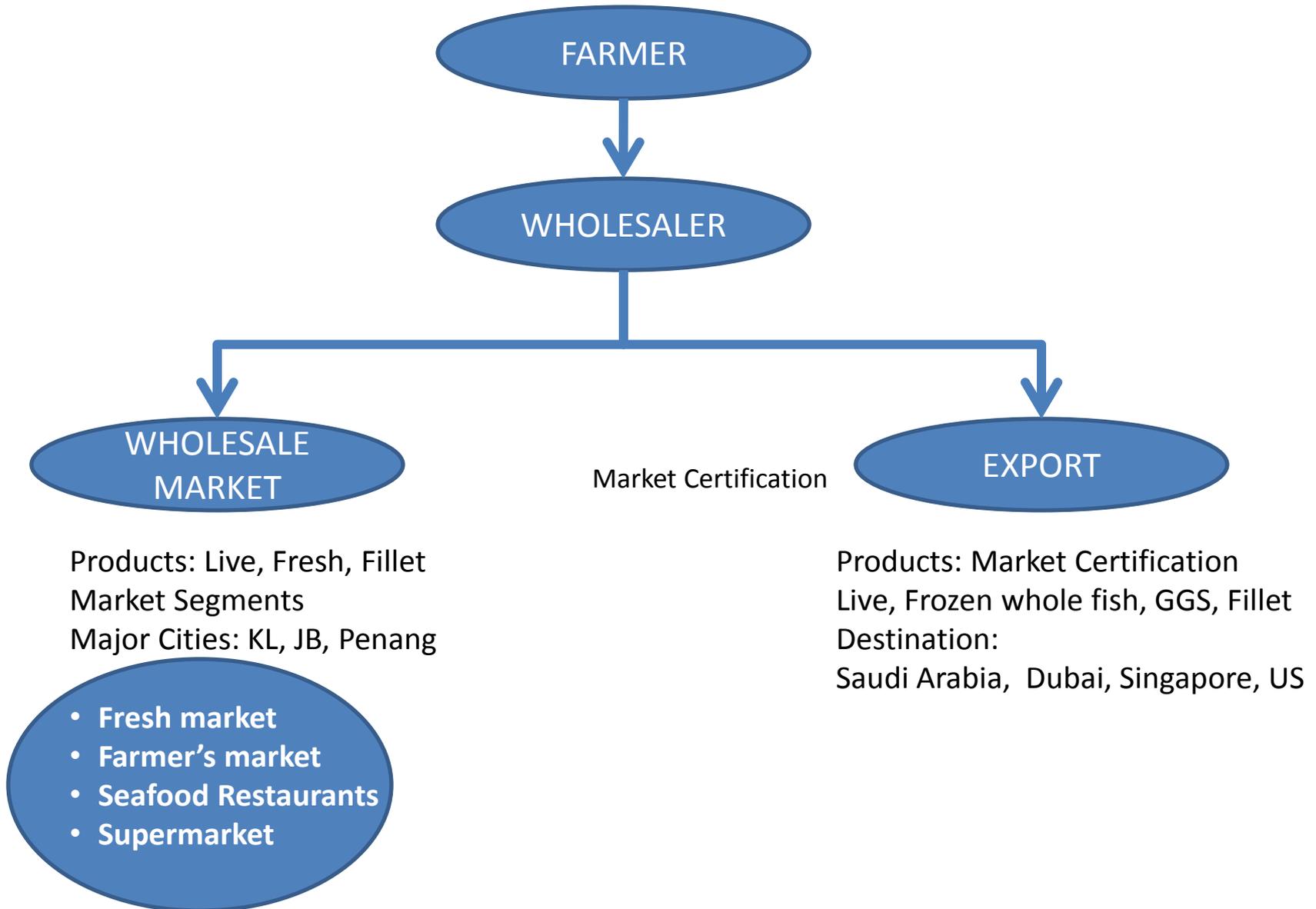
# Import of Tilapia Fry

No	Exporting Countries	Year	Total (pieces)	Value (RM)
1	Filipina,Thailand, China, Vietnam	2010	12,684,084	328,909.98
2	Vietnam,Thailand	2011	1,014,280	83,550.66
3	Thailand, Indonesia	2012	911,355	84,173.22
4	Vietnam	2013	303,000	17,271.00
5	Taiwan	2014	50,000	1,611.30
<b>GRAND TOTAL</b>			<b>14,962,719</b>	<b>515,516.16</b>



Source : KLIA Biosecurity

# TILAPIA MARKET CHAIN



# Tilapia Products



# Advances in Tilapia Industry

## Impact of Genetic Advances to Aquaculture Development

- *Oreochromis niloticus*
  - *GIFT Tilapia*
  - *20 million fry/hatchery/year*
  - *DNA traceability programme*



# Advances in Tilapia Industry

## Impact of Genetic Advances to Aquaculture Development

- *Oreochromis niloticus*
  - Significant increase in production (50 m.t/cage/cycle)
  - 40,000 m.t/farm/year
  - Value added products & export market



# Advances in Tilapia Industry

- New Vaccine to Control Tilapia Fish Disease - **StrepToVax**
  - a feed-based vaccine for controlling infection of Streptococcus sp. bacteria in Tilapia.
  - This vaccine reduced dependency of farmers on antibiotic usage against bacterial infection in Tilapia.
- Production of all male Tilapia using YY male.
- DNA Marker-assisted Selection program at FRI Glami Lemi to produce fast growing red tilapia.



# Advances in Tilapia Industry

## Environment-friendly Modular Culture System



**MODULAR  
CLEAN  
SAVES WATER  
HEALTHY FISH**

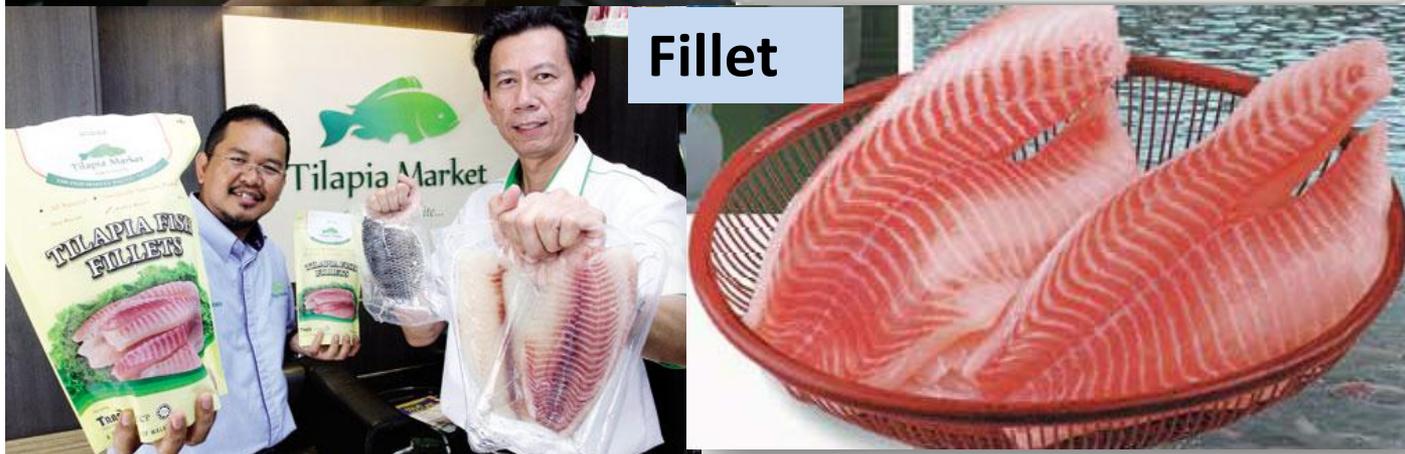


**Business plan  
“Humane culture”**



# Advances in Tilapia Industry

## Value added products of Tilapia



# Tilapia: National Key Economic Area (NKEA)

## **EPP 4 : Integrated Cage Farming**

Large Scale Cage Farming Integrated with Hatcheries, Processing Plants and Utilizing Modern Farming Methods e.g. HDPE Polar Circle Cages (20 m diameter) for Tilapia Culture

# Integrated Cage Farming

Integrated modern approach for large scale fish cage farming will be implemented in new aquaculture industrial zone (ZIA) areas and championed by strong anchor companies



## Focus will be on three species that have strong global demand

Broodstock centres will be developed to create high quality fry and reduce import dependency on high value fin fish



Grouper

Seabass

Tilapia

## Target

Specific breeding goals e.g. growth rate, low feed conversion ratio (FCR) and disease resistance

## Locations

- ▶ Rompin — Sea bass and Grouper
- ▶ Tasik Kenyir — Tilapia
- ▶ Kuching — Seabass and Grouper

# Integrated cage farming approach has been identified as a primary method to boost production of the targeted species

## Key advantages of cage farming

### Fast approval of sites

- Easier to get state authority's approval to utilise sites
- Vast potential areas available such as in lakes/reservoirs and estuaries (public water bodies)

### Lower capital cost

- Lower capital cost for both the government (basic infra e.g. jetty, roads) and the private sector (cages cheaper than RAS and ponds)
- Low energy cost because no pumping is required

### Higher productivity

- Produce higher yield per area e.g. TRAPIA Malaysia Sdn. Bhd. produce 100 MT/yr of Tilapia using polar circle HDPE vs. max 4 MT/ha/yr of fish using earthen ponds
- Fish has no off flavor taste due to running water

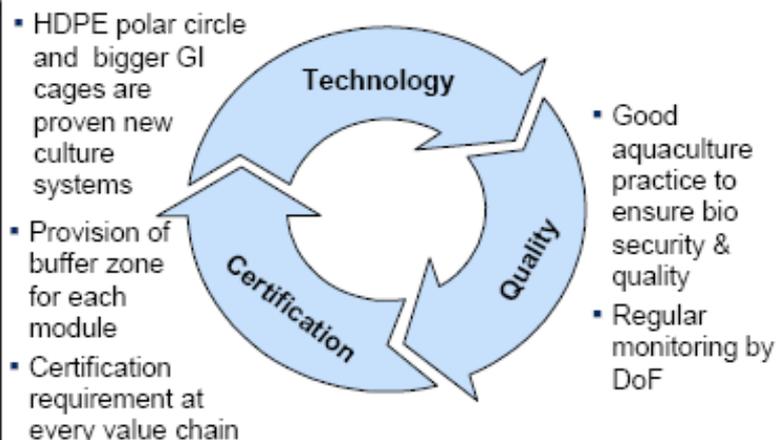
## Mechanisms to improve productivity and quality

### 1 Integrated approach

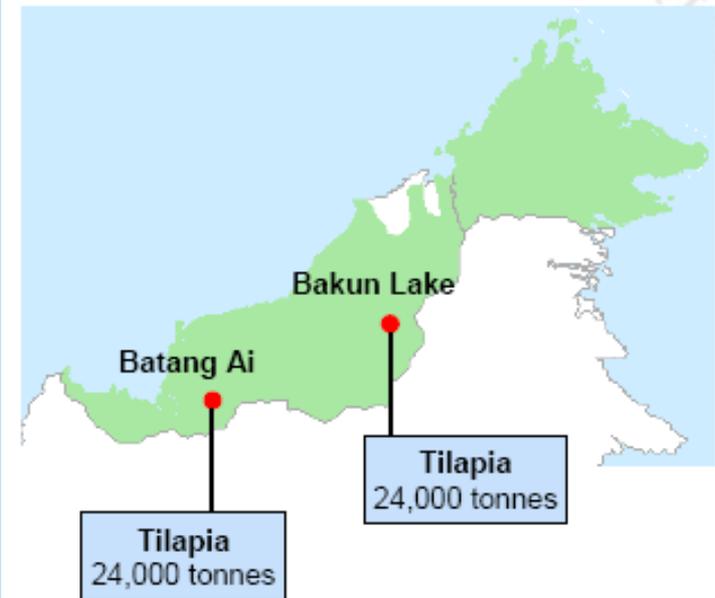


- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>▪ Ensure SMEs use good quality seeds sourced from anchor company</li> <li>▪ Reliable supply of seeds</li> </ul> | <ul style="list-style-type: none"> <li>▪ SMEs have to adhere to SOPs to ensure better growth and survival</li> <li>▪ Standardised technology</li> </ul> | <ul style="list-style-type: none"> <li>▪ Processing sites are located near the vicinity to lower cost</li> <li>▪ Sufficient volume to export value-added products</li> </ul> |
|--|---|--|

### 2 Application of best practices



## Several Industrial Aquaculture Zone (ZIA) areas have been identified for large scale and integrated cage farming of the targeted species



# AQUACULTURE PRODUCTION TARGET BY YEAR 2020 (M.T)

YEAR	FRESHWATER FISH	MOLLUSC	MARINE FISH	MARINE SHRIMP	TOTAL
2014	190,000	110,000	53,000	100,000	453,000
2015	234,084	129,435	74,261	148,121	585,901
2016	293,615	155,038	93,985	187,462	730,100
2017	368,084	185,605	118,885	237,126	909,700
2018	461,252	222,108	150,318	299,823	1,133,501
2019	577,734	265,668	189,975	378,922	1,412,299
2020	725,119	318,422	240,587	479,872	1,764,000



# DEVELOPMENT STRATEGIES (50:50)



**1** **IMPROVE PRODUCTIVITY OF EXISTING PROJECTS**  
705,000 m.t (40%)

- Extension Services (Attitude & Technology)
- R&D+C
- Strengthening the Production Value Chain (Input & Marketing)
- Function of PNK/PPK
- Good Aquaculture Practices
- Expansion of Export Market
- Source of Financing
- Human Resource Development
- Enforce Aquaculture Regulation

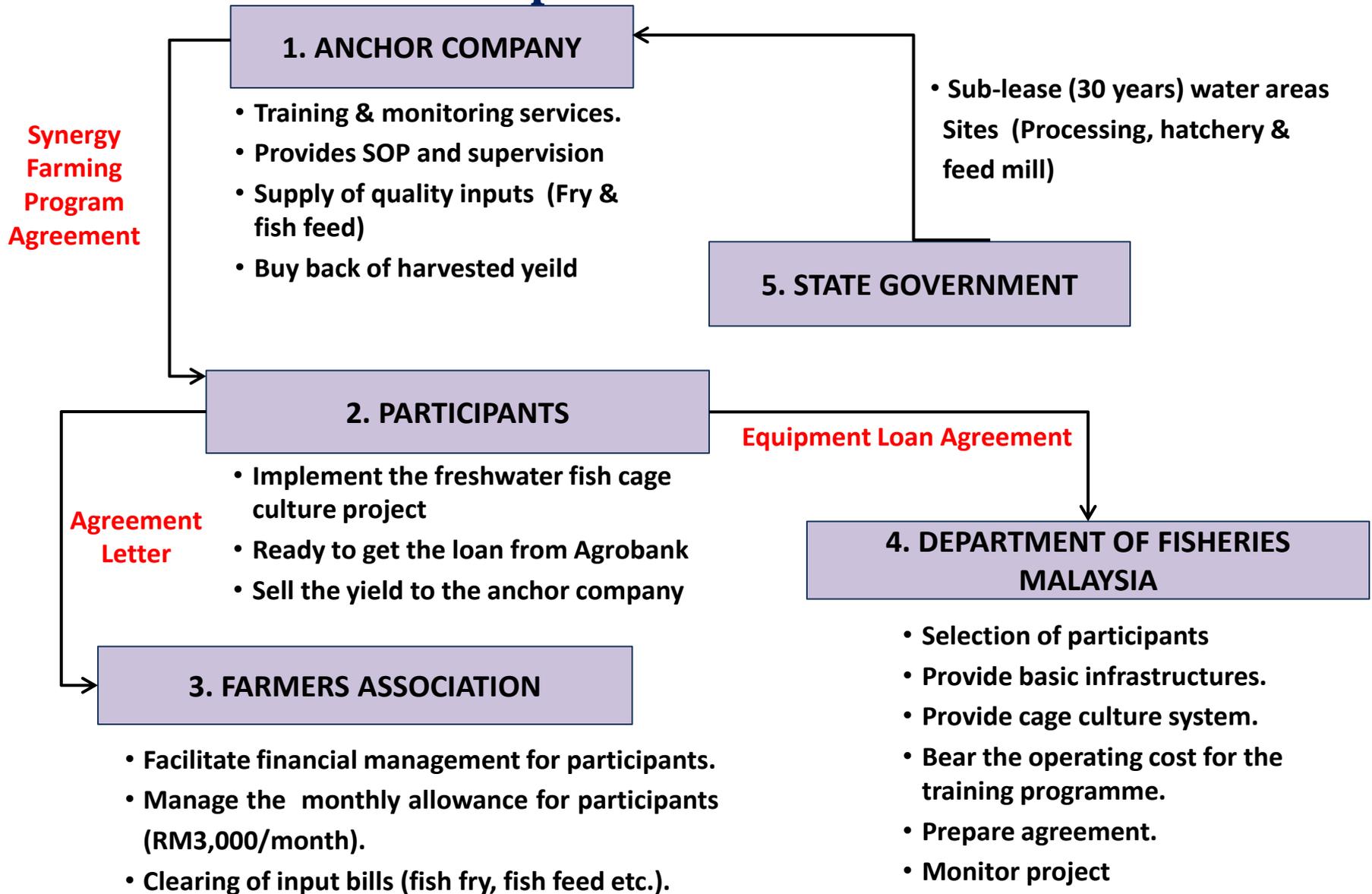
**2** **EPP NKEA**  
580,000 m.t (33%)

- Production from existing companies.
- Production from new companies.
- Incentives / New Companies
- Development of new area in Sabah & Sarawak

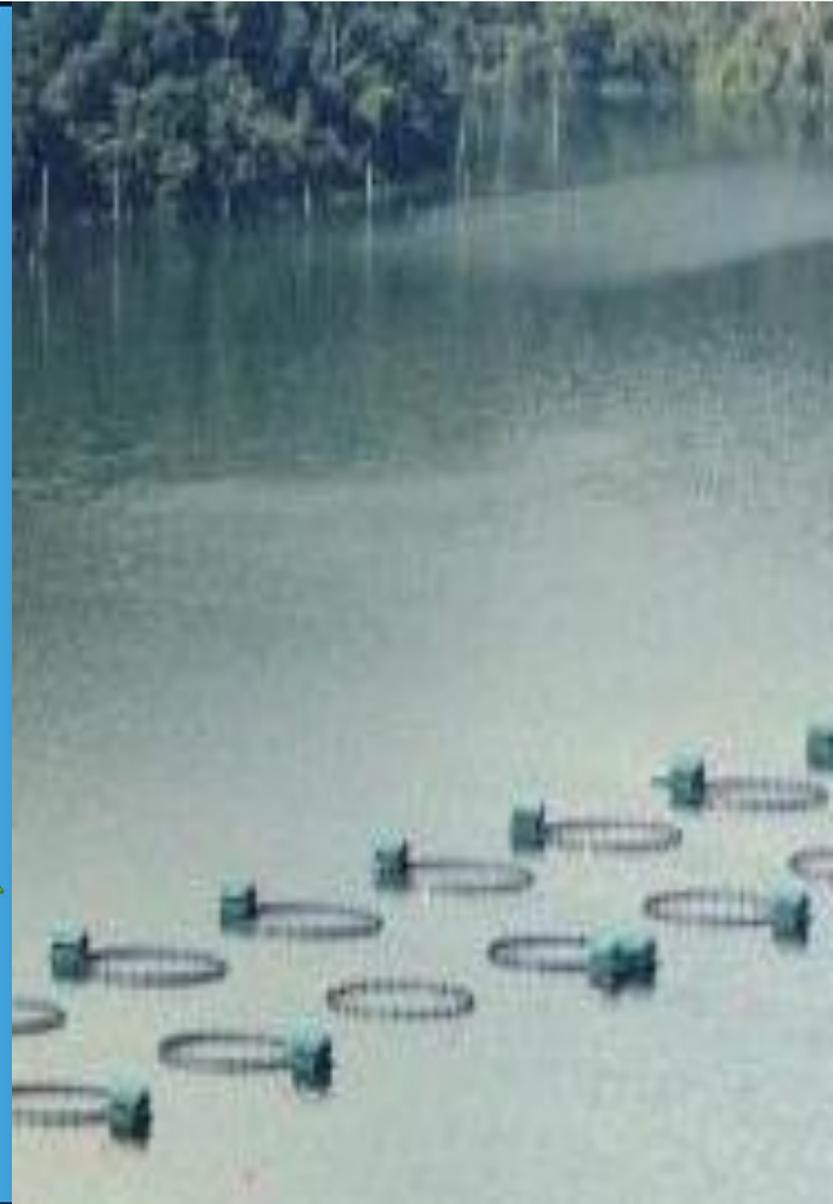
**3** **RESTRUCTURING PROJECTS** 480,000 m.t (27%)

- Private sector investment
- Synergy Farming
- Young Agropreneur
- Cluster Development

# Synergic farming Approach for AIZ Tasik Temengor: Implementation Model



# Location of Synergy Farming AIZ Temengor Lake, Perak



# SUMMARY OF SYNERGY FARMING AIZ TEMENGOR LAKE, PERAK

ITEM	DESCRIPTION
<b>Anchor Company</b>	Trapia Malaysia Sdn Bhd
<b>Area</b>	100 ha (NKEA – EPP 4)
<b>Species</b>	GIFT Tilapia (Genomar Supreme Traceable Tilapia)
<b>Culture System</b>	Polar Circle HDPE cage (20m Ø), Production capacity 50 m.t/cage/cycle @ 6 months
<b>Current status</b>	Existing 3 Module (20 cages/ module) <ul style="list-style-type: none"> <li>- 2 Module (Trapia)</li> <li>- 1 Modul (DOF)</li> </ul> <div style="text-align: right; border: 1px solid black; padding: 2px; display: inline-block;"><b>5 modules</b></div> 2 new modules (90% completed)
<b>Commence</b>	2010
<b>Target</b>	10 modules (200 cages)
<b>Production</b>	15 mt/day raw fish for filleting
<b>Product</b>	Tilapia Fillet (US, Canada, EU)
<b>Job Opportunities</b>	200 participants

# Market Promotion for Tilapia Products



# Aquaculture Certification



MALAYSIA GOOD AGRICULTURAL PRACTICES

GOOD AQUACULTURE PRACTICES

- Environment, socio-economic aspects



# GLOBAL G.A.P Certification European Seafood Show (Brussels) 2010



# Conclusion

- Tilapia has the potential to be the primary species for domestic and export market due to its strong consumer demand.
- Good stocking material has been developed internationally e.g GIFT.
- Proven technology; breeding and grow-out technology.
- Strong demand from United States (premium fillet segment), increasing demand from EU and Middle East.
- Government will continue to provide business support services and facilitate private sector investment in Tilapia Aquaculture in Malaysia.



**TERIMA KASIH**  
*Thank You*



**4<sup>th</sup> INTERNATIONAL TRADE AND TECHNICAL  
CONFERENCE AND EXPOSITION ON TILAPIA (TILAPIA 2015)**