

Fish biodiversity in the Lower Mekong Basin

– Implications for Food and Nutrition Security

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Objective

Status and trends of fish species abundance and diversity in LMB and their implications for food security.



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Fishes of the Mekong River Basin



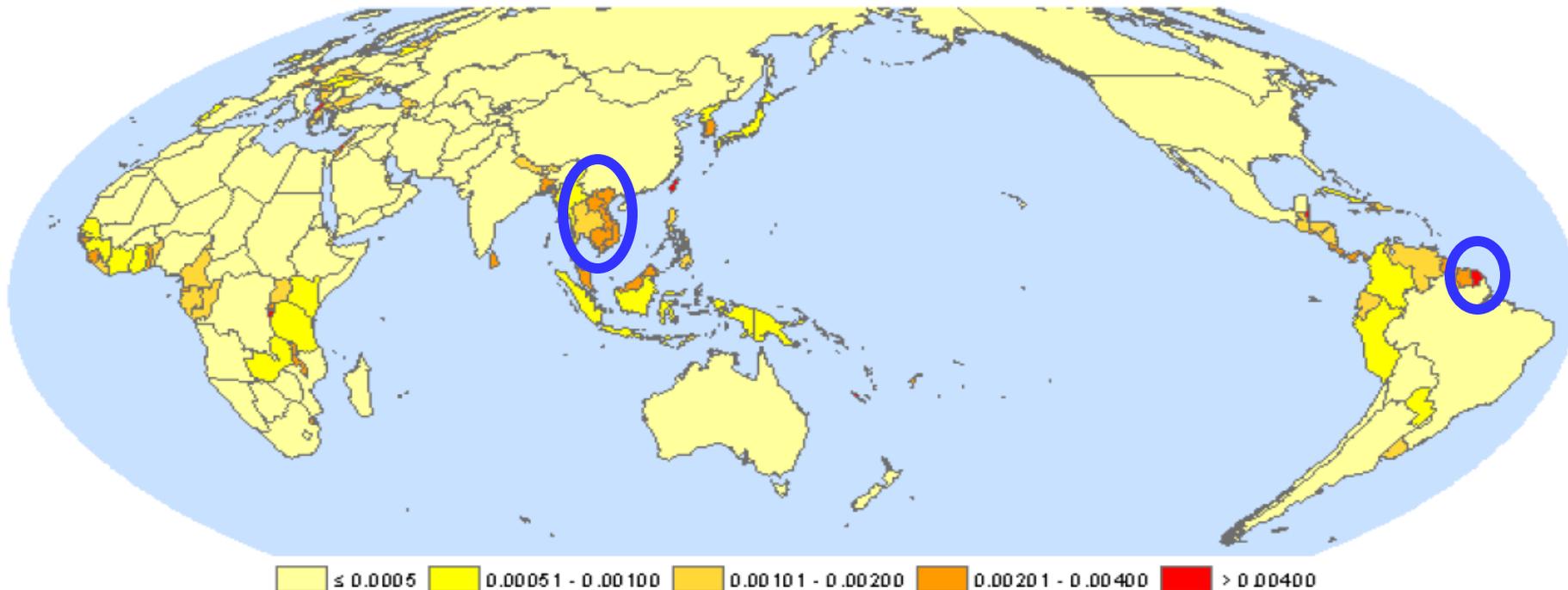


Fishes of the Mekong River Basin

Mekong basin countries > highest freshwater fish species diversity per square kilometer.

Only French Guyana and Suriname > similar fish species diversity.

Number of Freshwater Species / Square KM





Fishes of the Mekong River Basin (con't)

- Mekong River has world's highest fish diversity after the Amazon.
- **850** freshwater fish species recorded from the River Basin
- About **1,100 fish species** including coastal or marine visitors.
- A significant proportion of endemic fish species, approx. **20%**

Amazon
1217

Fish species richness of the top ten rivers in the world

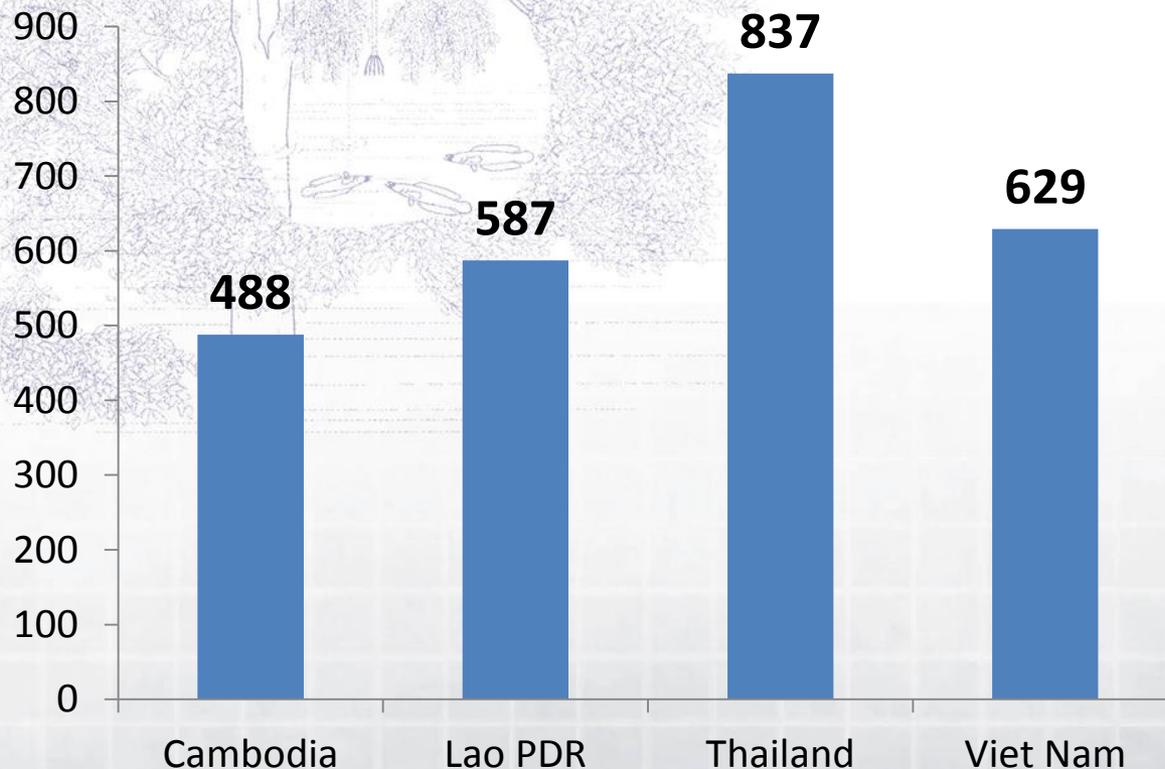




Fishes of the Mekong River Basin (con't)

- **Thailand and Viet Nam** are among **top 10 countries** in the world having the largest number of freshwater fish species, followed by Lao PDR and Cambodia

Fish species diversity in the 4 MCs





Fishes of the Mekong River Basin (con't)



Fish species richness of the top ten lakes in the world





Fishes of the Mekong River Basin (con't)

1. Black fish or Floodplain resident fish.



ត្រីមណ្ឌលដំបូង *Clarias batrachus*



ត្រីមណ្ឌលធំ *Clarias macrocephalus*



ត្រីរិវ *Channa striata*



ត្រីអ្នក *Channa micropeltes*



ត្រីក្រាញ់ *Anabas testudineus*



ត្រីក្រុង *Pristolepis fasciata*



ត្រីក្រូង *Trichogaster pectoralis*



ត្រីក្រូងព្រួញ *Trichogaster trichopterus*



ត្រីខ្លូង *Mastacembelus faves*



ត្រីអូល *Macrornathus siamensis*



ត្រីអង្កា *Monopterus albus*



ត្រីត្រីម *Trichopsis vittata*

13%



Fishes of the Mekong River Basin (con't)

2. White fish or long distance transboundary migrants



ត្រីប្រាំង *Pangasianodon hypophthalmus*



ត្រីប្រាំង *Pangasius conchophilus*



ត្រីប្រាំង *Pangasius larnaudii*



ត្រីប្រាំង *Pangasius bocourti*



ត្រីក្របីក្របី *Botia modesta*



ត្រីប្រាំង *Boesemania microlepis*



ត្រីដង្កា *Cyclocheilichthys enoplos*



ត្រី ឆ្កែ *Cirrhinus microlepis*



ត្រីដង្កា *Henicorhynchus siamensis*



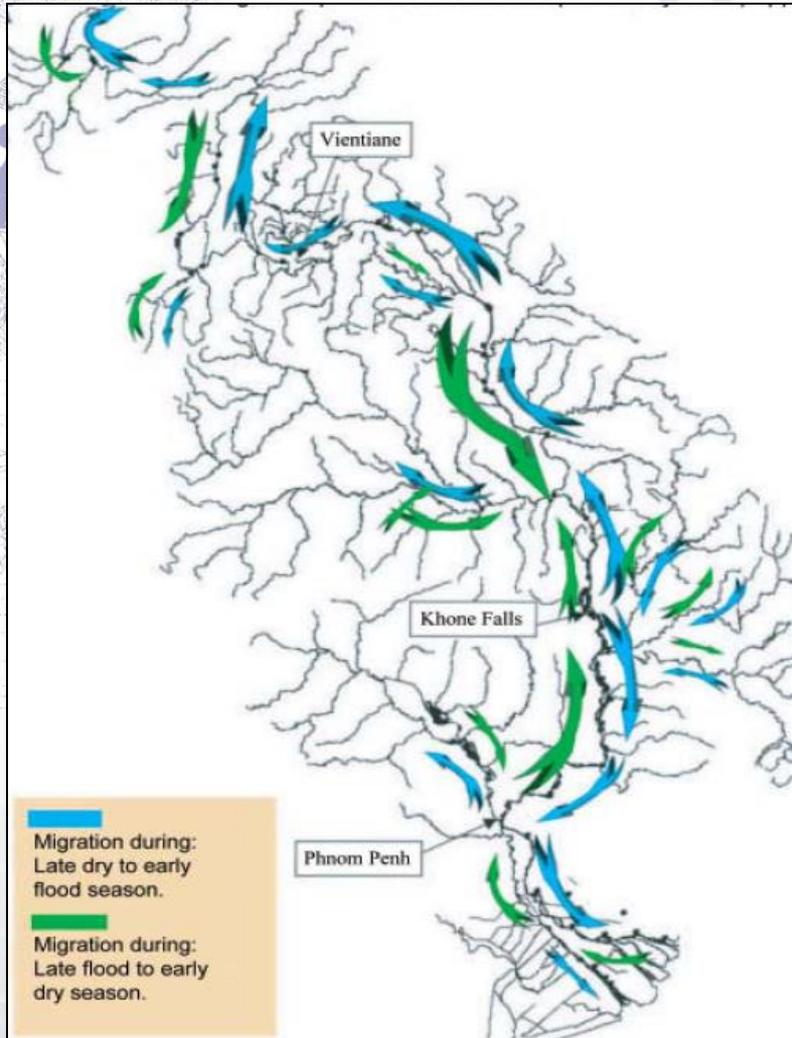
ត្រីស្លឹកស្លឹក *Paralauca typus*



ត្រីប្រាំង *Puntius falcifer*



ត្រីប្រាំង *Morulus chrysophekadon*



37%



Fishes of the Mekong River Basin (con't)

3. Grey fish or short distance migrants.

50%



ត្រីដំរី *Barbonymus gonionotus*



ត្រីខ្មាំង *Hampala dispar*



ត្រីត្រី *Osteochilus melanopleurus*



ត្រីព្យុះដួត *Mystus mysticetus*



ត្រីពរោធិ *Ompok bimaculatu*



ត្រីកំណ្រវខ្លាញ់ *Kryptopterus cryptopterus*



ត្រីកេត *Micronema micronema*



ត្រីឆណ្ឋ *Wallago attu*



ត្រីឆណ្ឋ *Hemibagrus filamentus*



ត្រីក្រាម *Chitala ornata*



ត្រីស្មាត *Notopterus notopterus*



ត្រីដំរី *Oxyeleotris marmorata*



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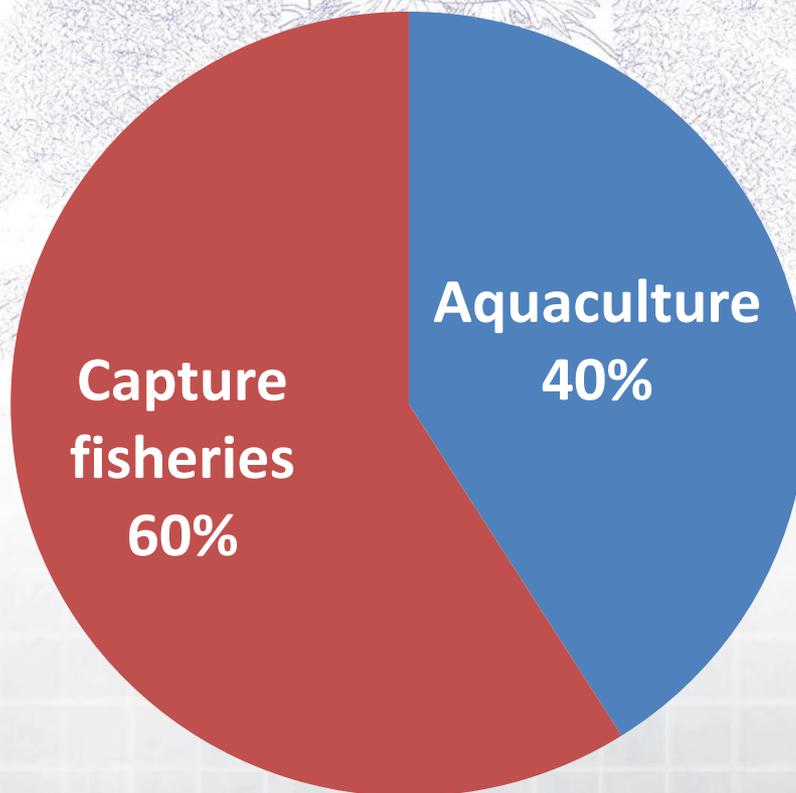


Volume and Value of the Mekong Fisheries



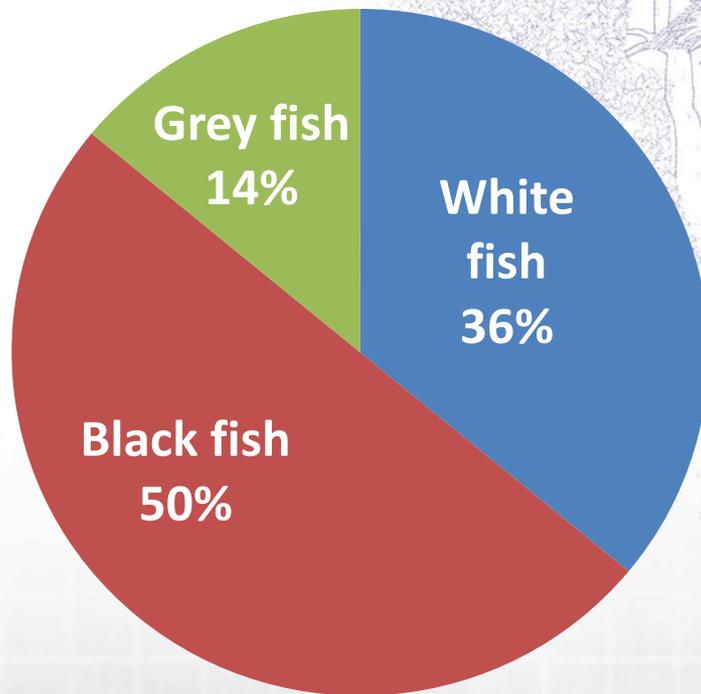
Size of LMB fisheries

The Annual LMB fish production is approximately
≈ 4.0 million tonnes

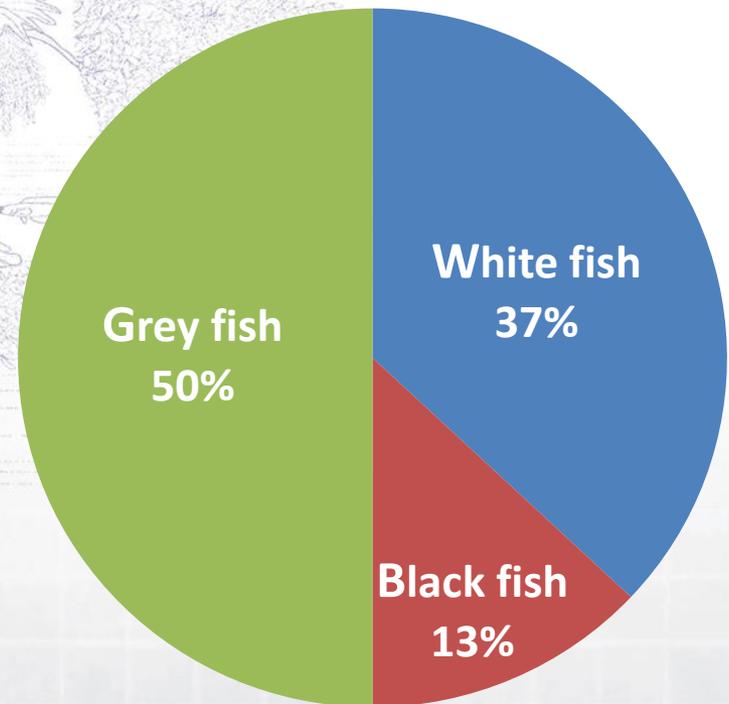


Species richness and catch by migration guilds

Fish production - weight



Fish diversity - number





Comparison with other regions

LMB fish
production

=

2% of **World** fisheries production

43% of **Africa** fisheries production

19% of **America** fisheries production

4% of **Asia** fisheries production

12% of **SE Asia** fisheries production

24% of **Europe** fisheries production

- LMB fish production represents about **20%** of the world inland fish production.
- This **inland capture fish production** is higher than anywhere else in the world.



Economic Value of the LMB fisheries

- Total first-sale value: **US\$7.0 billion** per year.
- Most fish catches are consumed directly by households, as part of rural subsistence economy, which does not appear in national accounts.
- Inland fisheries make significant contributions to the monetized economies of all four riparian countries.
- Fisheries accounts for nearly **12%** of Cambodia's GDP, and fisheries value in Lao PDR is equivalent to **7%** of the country's GDP.





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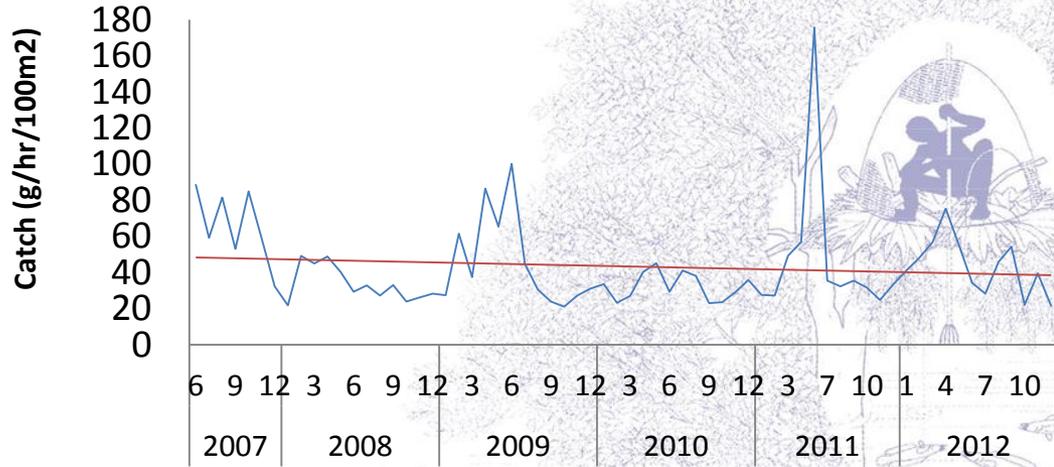


Trends of fisheries in LMB - Subsistence and commercial fisheries

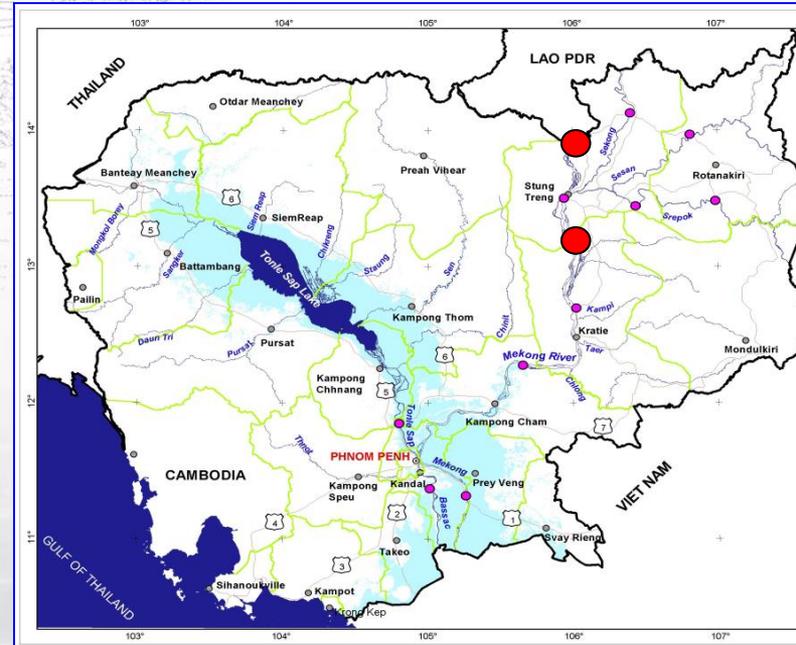
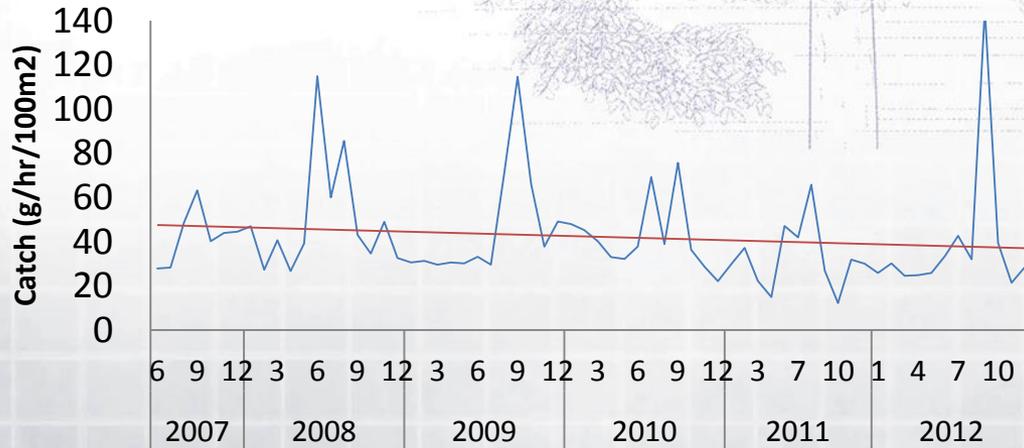


Subsistence fisher catch rate – stationary gillnet

Cambodia Mekong River – Stung Treng



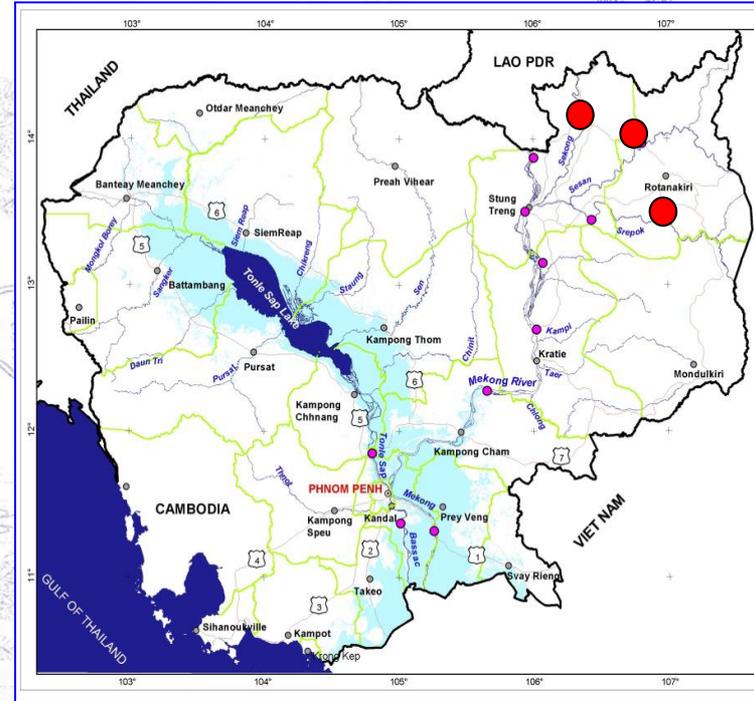
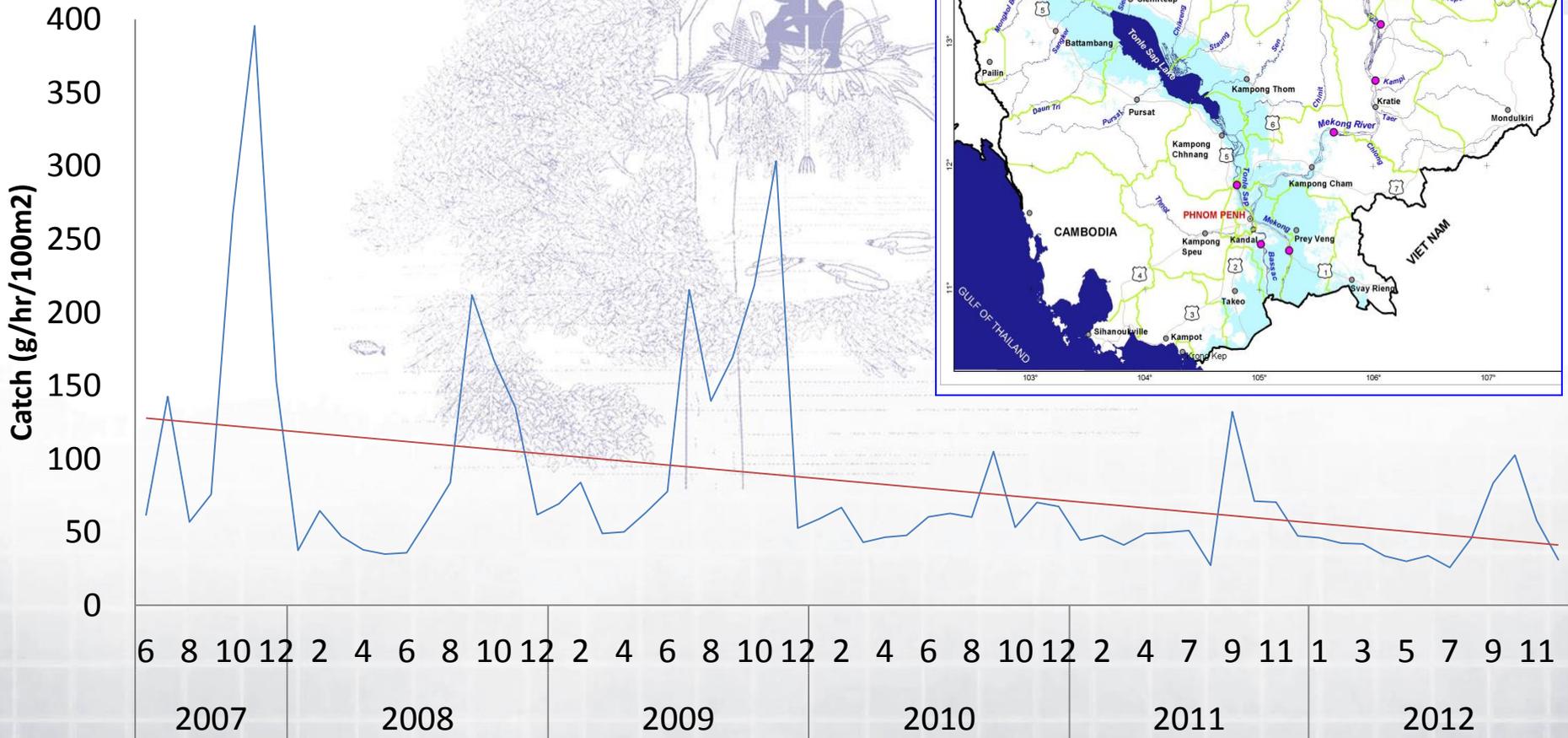
Cambodia Mekong River - Kratie





Subsistence fisher catch rate – stationary gillnet

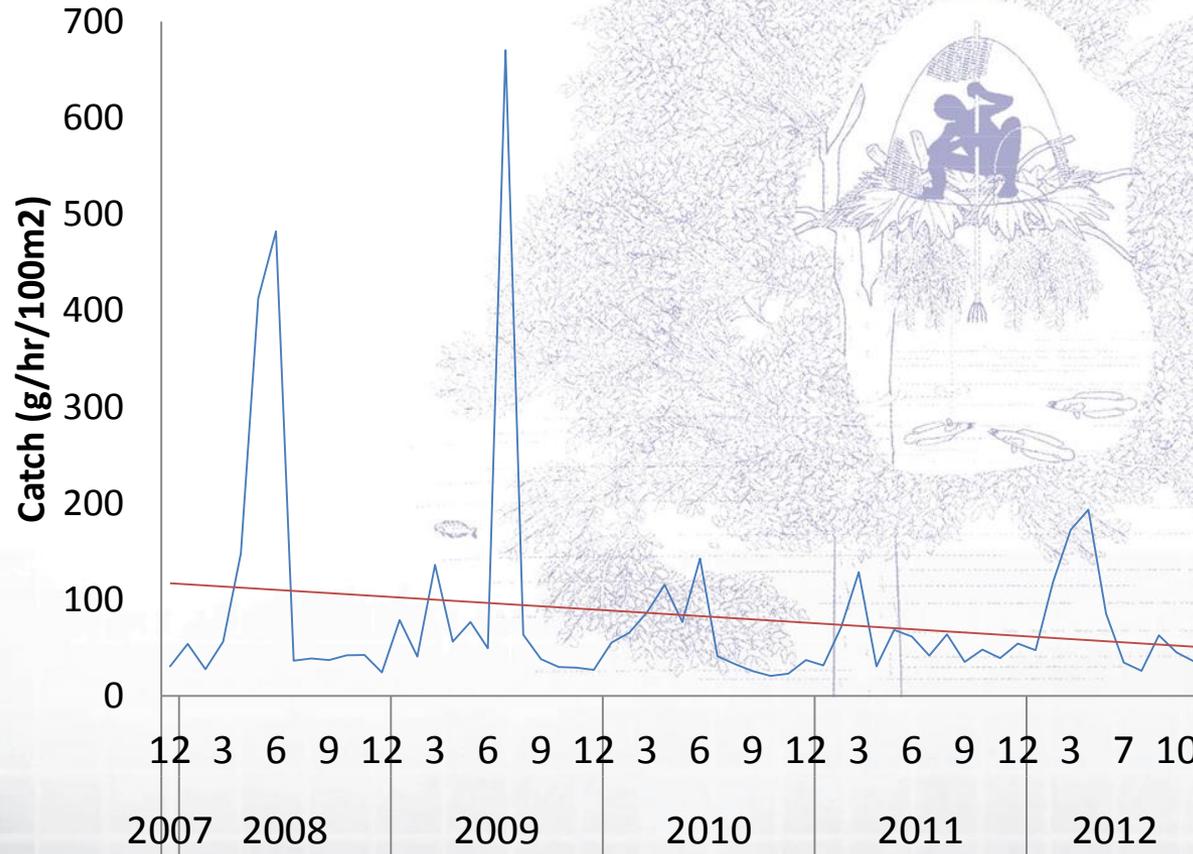
Cambodia Mekong Tributaries 3-S rivers





Subsistence fisher catch rate – stationary gillnet

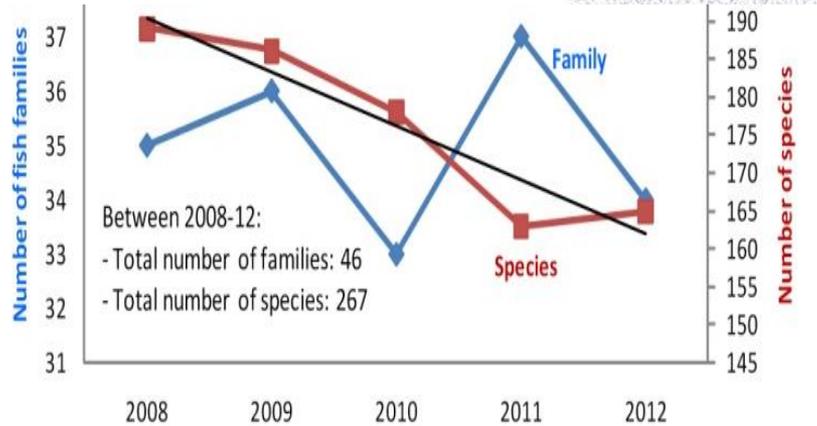
Lao PDR Mekong Mainstream



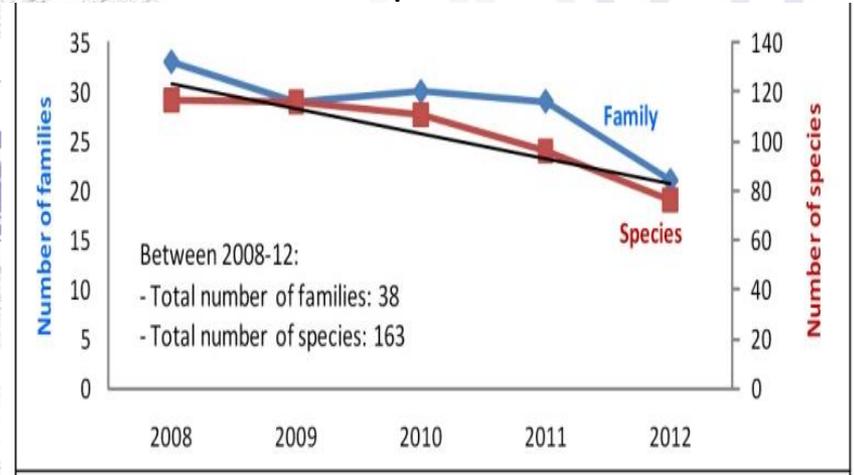


Trends of Number of Fish Species

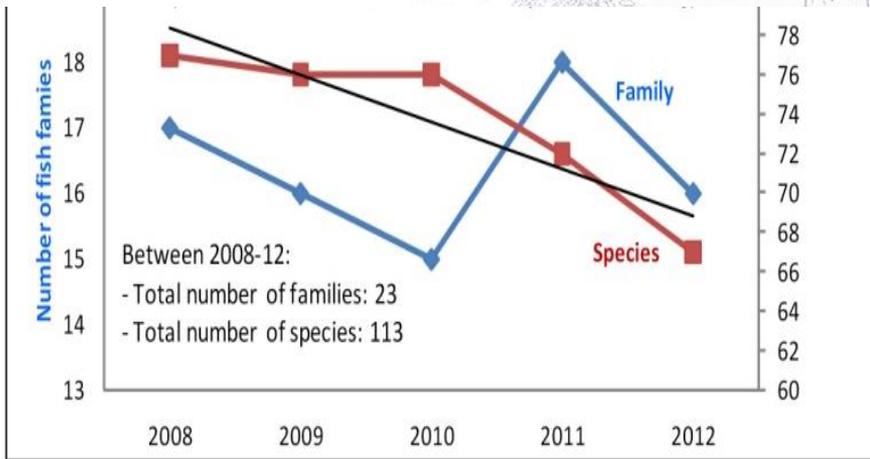
3-S Rivers



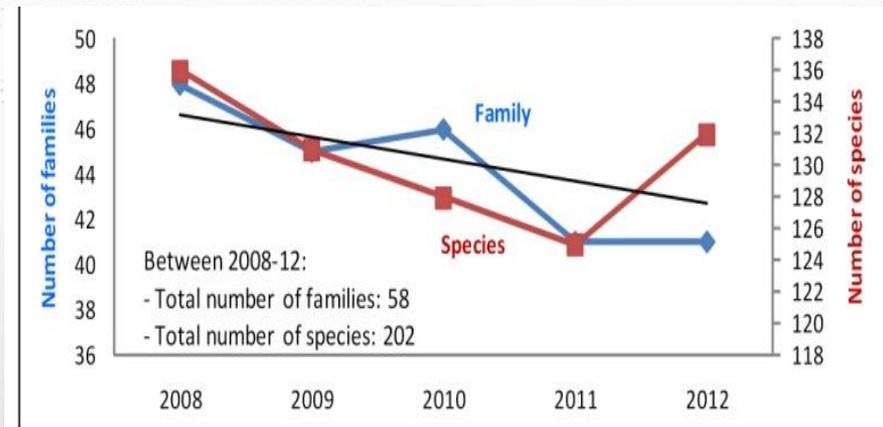
Tonle Sap River



Lao PDR Mekong Mainstream



Viet Nam Mekong Delta



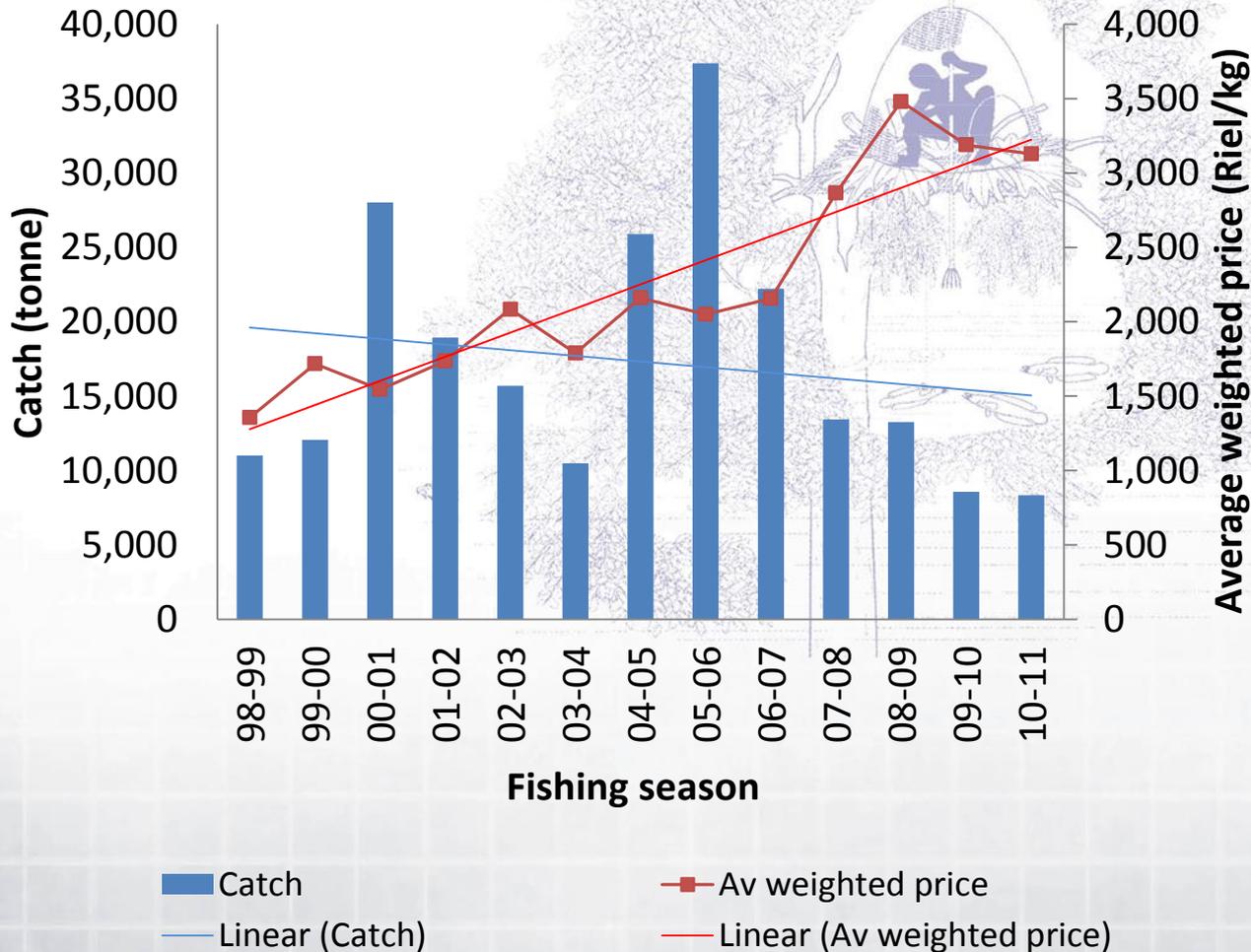


Trends of Fish Catch and Price

- Physical and Economic Accessibility -



Commercial *dai* fishery – Tonle Sap River, Cambodia





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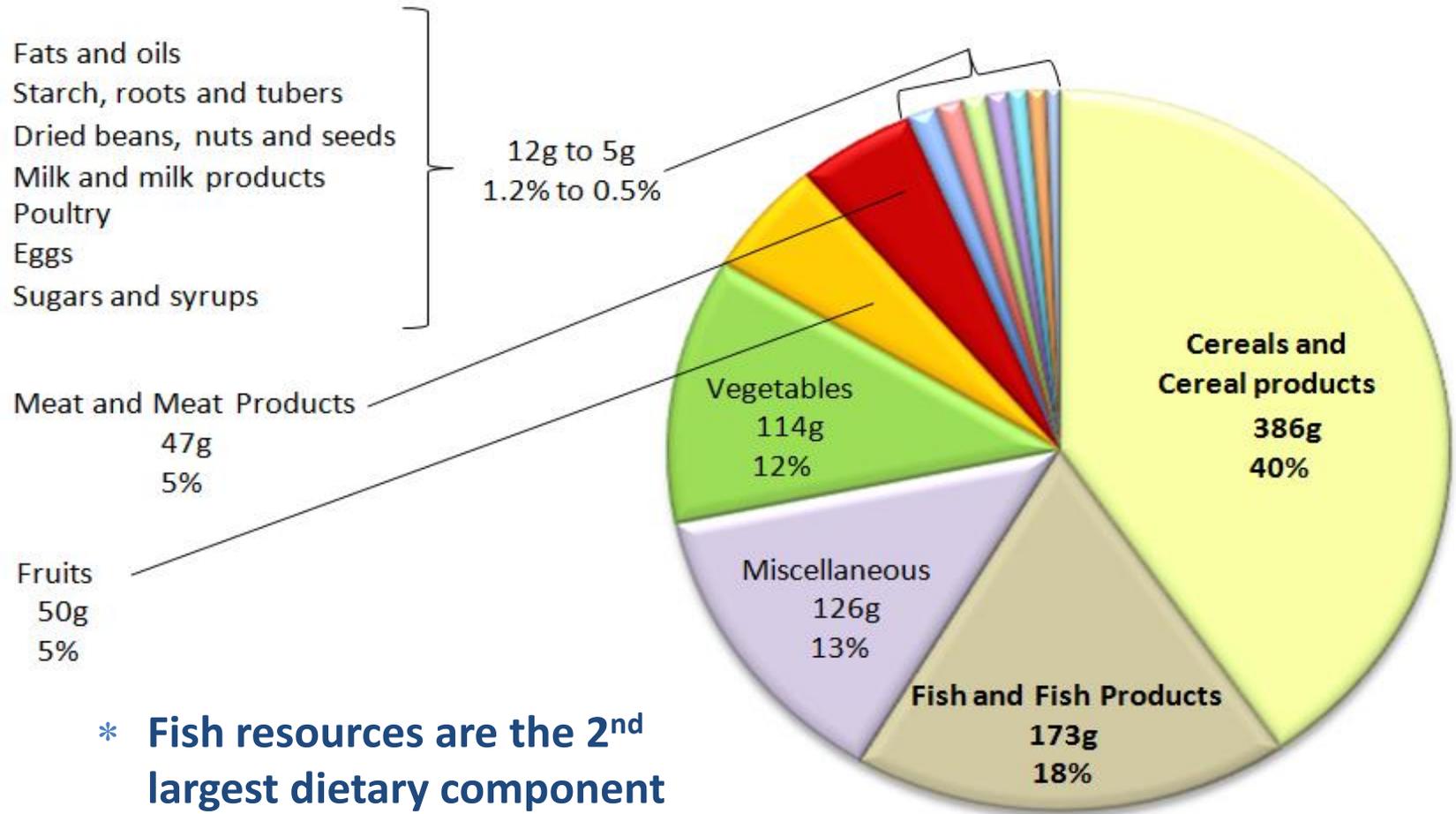


Implications for food security





Mean daily per capita food intake by food groups- Cambodia

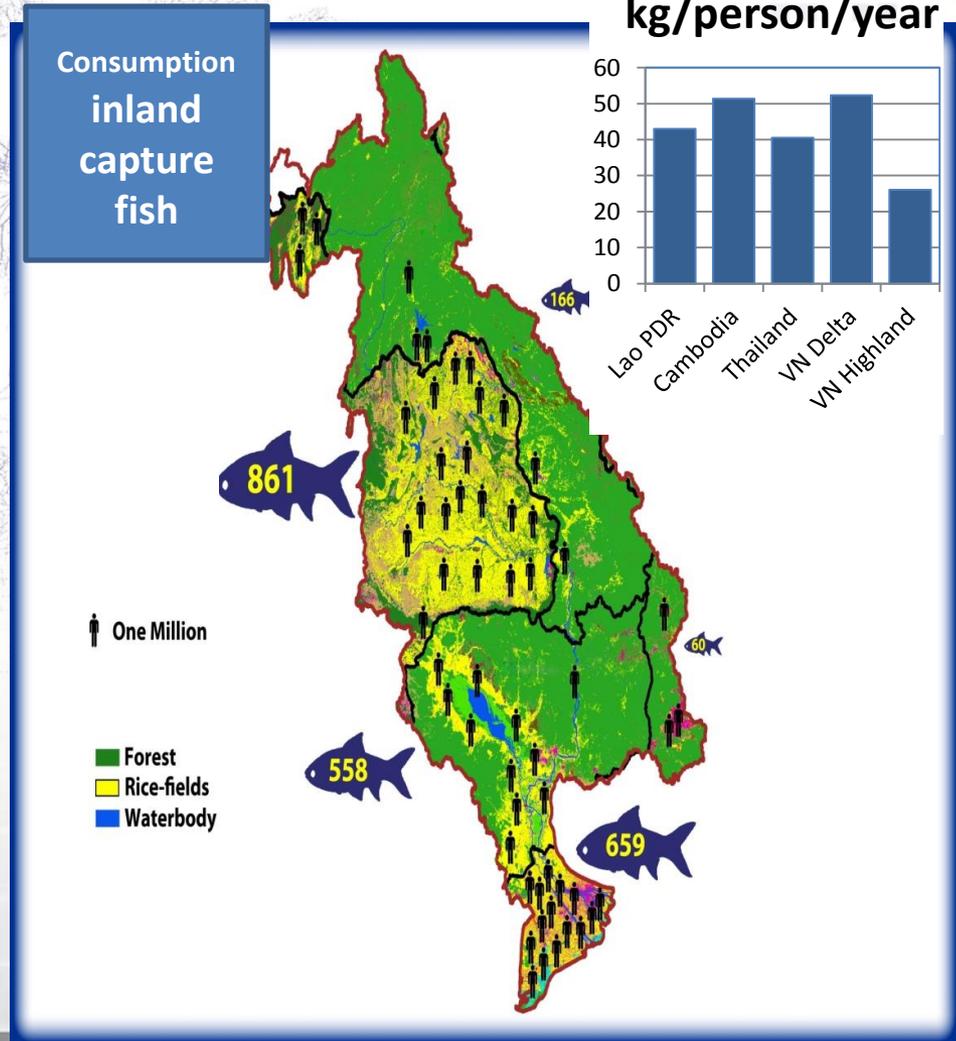


* Fish resources are the 2nd largest dietary component after rice (173 g/person/day)



Fish Consumption

- > 60 million people live in the LM watershed (100 million by 2025)
- Regional average of per capita fish consumption is about **46kg/person/year**
- Significantly higher than world rate of **24 kg/person/year**.



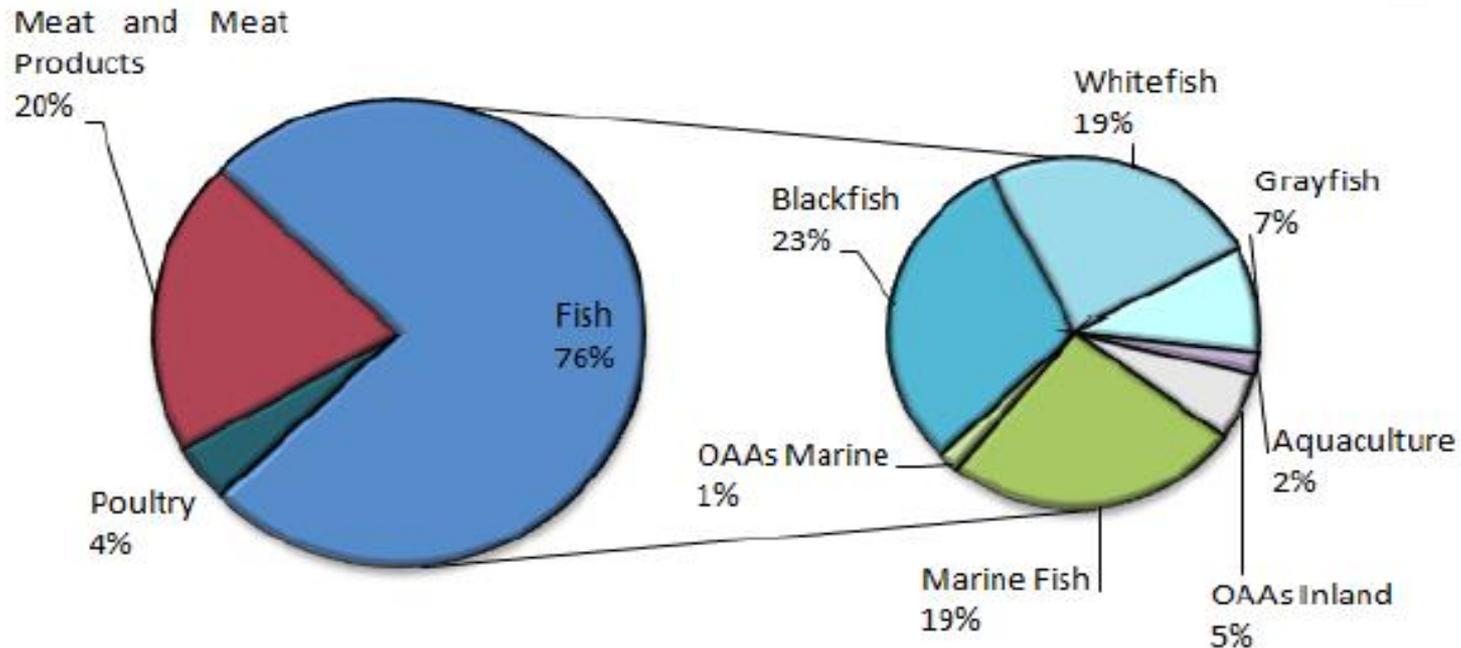


Contribution to nutrition

- In Average, **> 50%** of the total animal protein intake of the people in the Lower Mekong Basin come from fish,
- While the world protein intake from fish is **16%**.



Contribution to nutrition- Cambodia



Aquatic resources contribute:

- **76%** of total animal protein intake, i.e. **37%** of total protein intake; of which **75%** from freshwater fish
- **12%** of energy intake
- **37%** of iron intake



Conclusions

- Lower Mekong River basin fisheries is characterized by:
 1. high **fish abundance** and **species diversity**;
 2. contribution to regional **food** and **nutrition security**;
 3. **High employment rate**; and
 4. Contribution to **cash income** generation.



Trend: reduction of fish catch rate and biodiversity

Alteration of aquatic food webs

Limited genetic diversity = fewer opportunities for growth and innovation

Reduced nutrition diversity

Threats to sustainable food & nutrition security



Recommendations

Protection needed (3 Rs)

1. Reserves of key habitats
 - ✓ Migration routes
 - ✓ Refuge areas
 - ✓ Spawning grounds
 - ✓ Nursing grounds
2. Restoration of degraded habitats, where possible
3. Reconciliation of competing demands of water and land use



Enhanced data generation and sharing

Fast-paced development demands accelerated scientific data generation, sharing and analysis for decision-making for sustainable fisheries from a healthy and productive environment.

- Happy fish!!!



- Happy People!!!





Thank You!

