

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



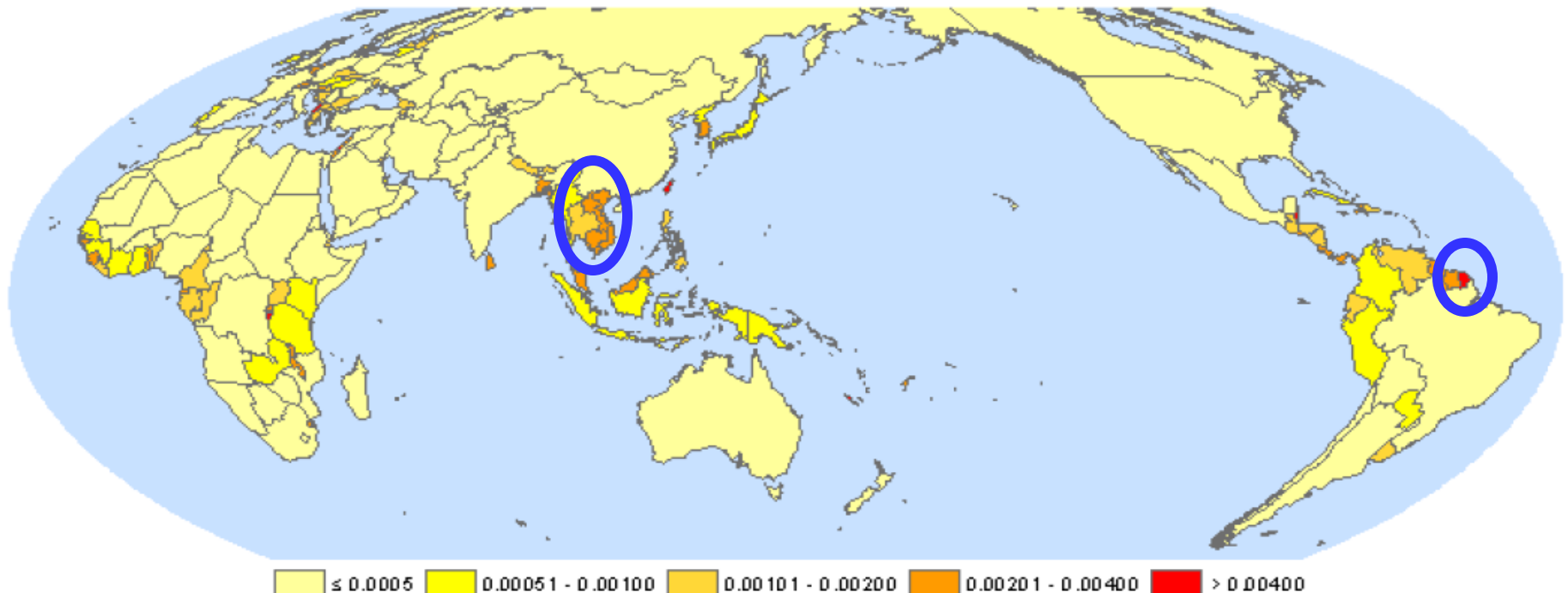


Fishes of the Mekong River Basin

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

Mekong
850

Zaire
624

Orinoco
549

Paraná
438

Rio
Negro
330

Chao
Phraya
318

Niger
261

Paraguay
257

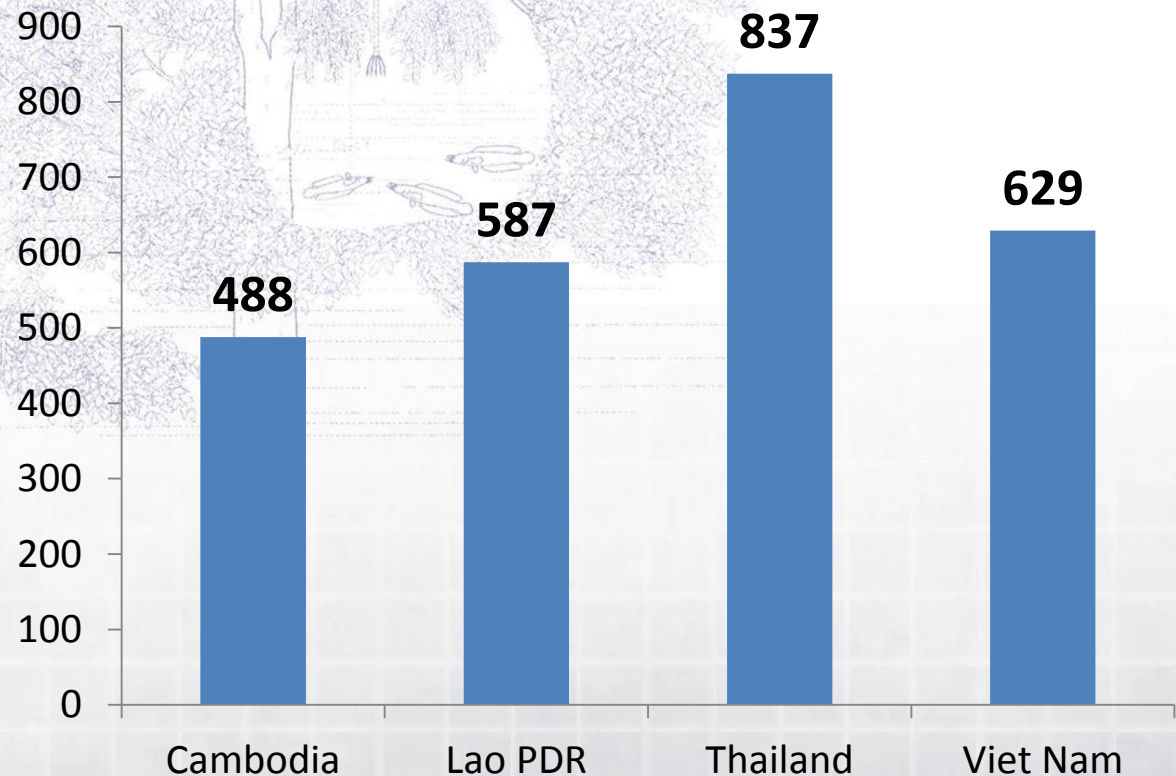
Uruguay
228



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)



Malawi
438

Tanganyika
316

Tonle Sap
296

Victoria
226

Chad/Chari
172

Biwa
69

Baikal
64

Taal
63

Turkana
60

Rukwa
59

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.

13%



ត្រីមណ្ឌលីង *Clarias batrachus*



ត្រីមណ្ឌលីង *Clarias macrocephalus*



ត្រីវង់ *Channa striata*



ត្រីអ្នក *Channa micropeltes*



ត្រីក្រញូ *Anabas testudineus*



ត្រីក្រន្ទប់ *Pristolepis fasciata*



ត្រីក្រន្ទប់ *Trichogaster pectoralis*



ត្រីក្រន្ទប់ *Trichogaster trichopterus*



ត្រីខ្លា *Mastacembelus favius*



ត្រីអ្នក *Macrognathus siamensis*



ត្រីអ្នក *Monopterus albus*



ត្រីក្រន្ទប់ *Trichopsis vittata*



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*



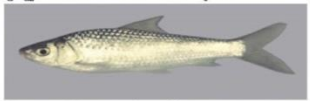
ត្រីប្រាំង *Boesemania microlepis*



ត្រីអ្នក *Cyclocheilichthys enoplos*



ត្រី ច្រូ *Cirrhinus microlepis*



ត្រីស្រីស្រី *Henicorhynchus siamensis*



ត្រីស្រីស្រី *Paralaubuca typus*

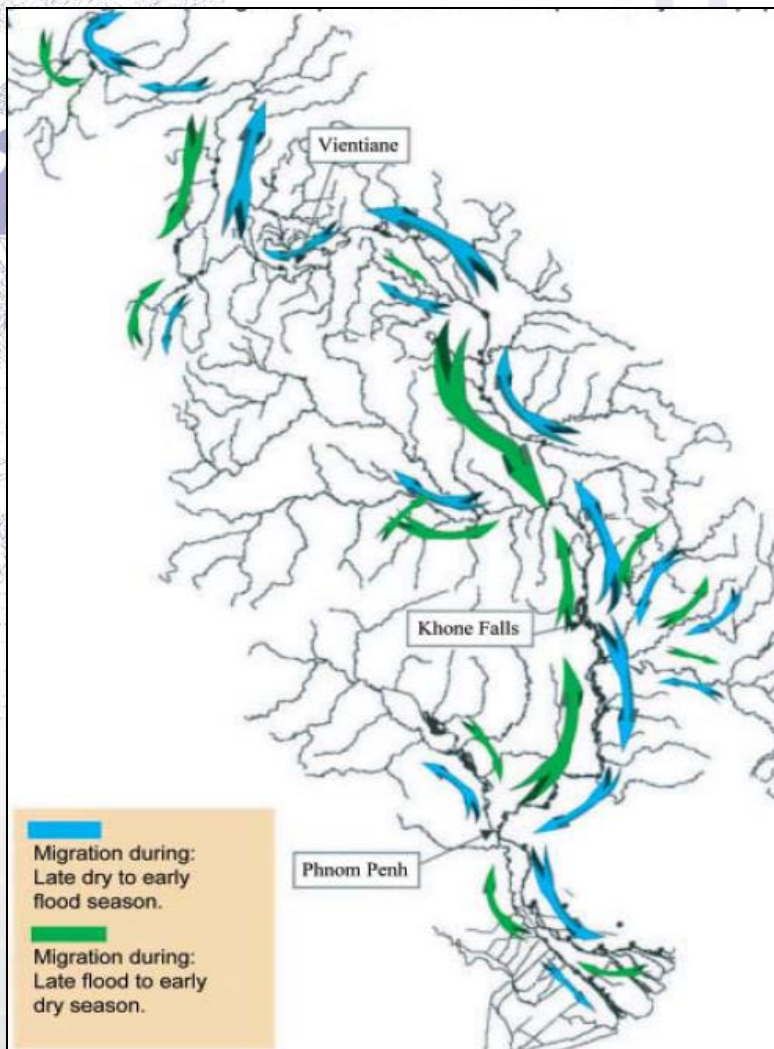


ត្រីស្រីស្រី *Puntius falcifer*



ត្រីក្របីក្របី *Morulus chrysophekadion*

37%





Fishes of the Mekong River Basin (con't)

3. Grey fish or short distance migrants.

50%



ត្រីដូងត្រក់ *Barbonymus gonionotus*



ត្រីខ្លាង *Hampala dispar*



ត្រីក្រំ *Osteochilus melanopleurus*



ត្រីព្នោះដូត *Mystus mysticetus*



ត្រីតាណា *Ompok bimaculatu*



ត្រីកំហ្លួង *Kryptopterus cryptopterus*



ត្រីកេត *Micronema micronema*



ត្រីឆណ្ឋ *Wallago attu*



ត្រីតាឆល *Hemibagrus filamentus*



ត្រីក្រោង *Chitala ornata*



ត្រីស្លាត *Notopterus notopterus*



ត្រីដំរី *Oxyeleotris marmorata*



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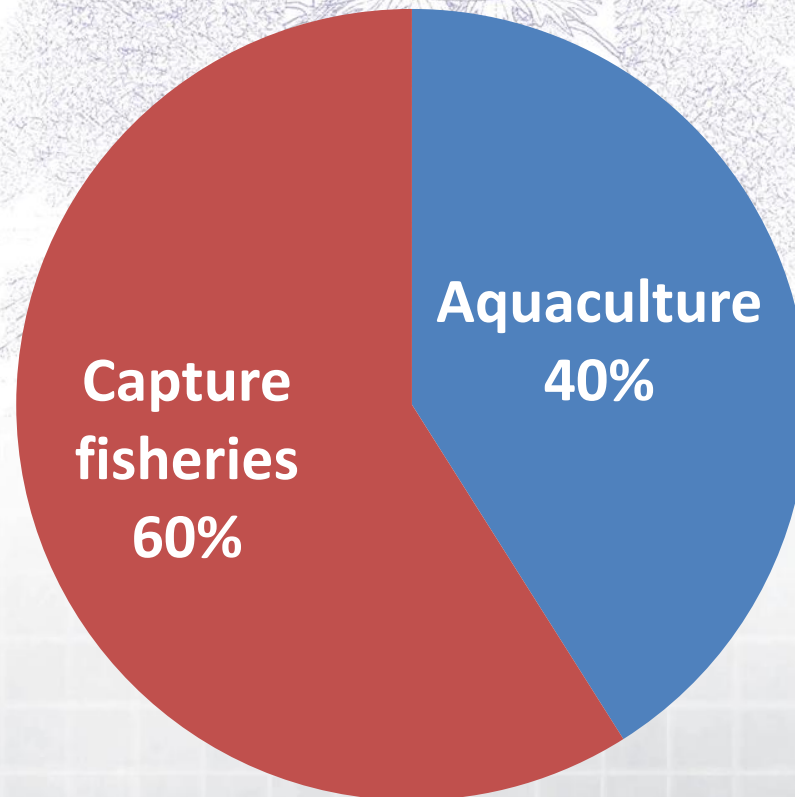


Volume and Value of the Mekong Fisheries



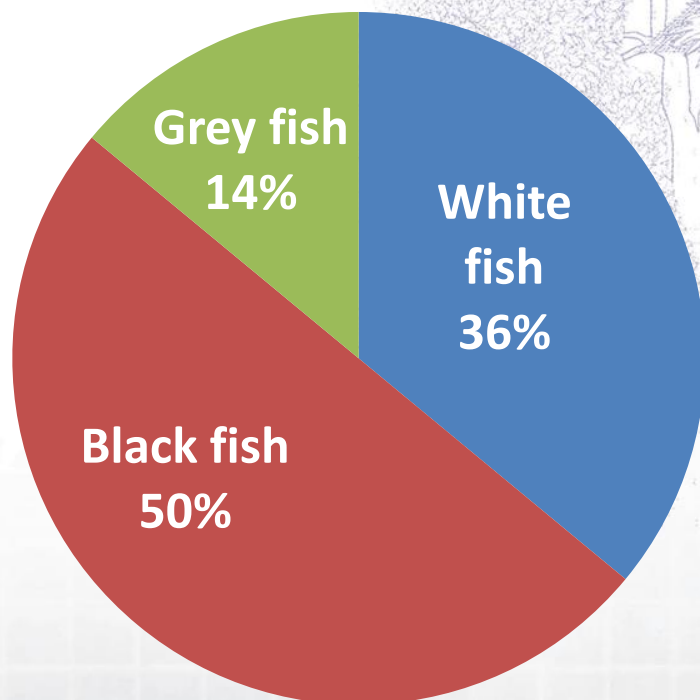
Size of LMB fisheries

**The Annual LMB fish production is approximately
≈ 4.0 million tonnes**

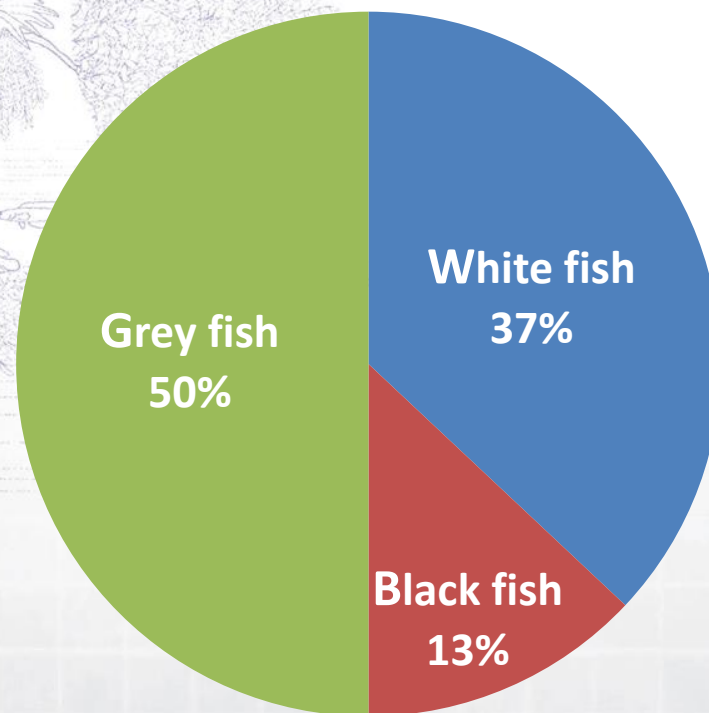


Species richness and catch by migration guilds

Fish production - weight

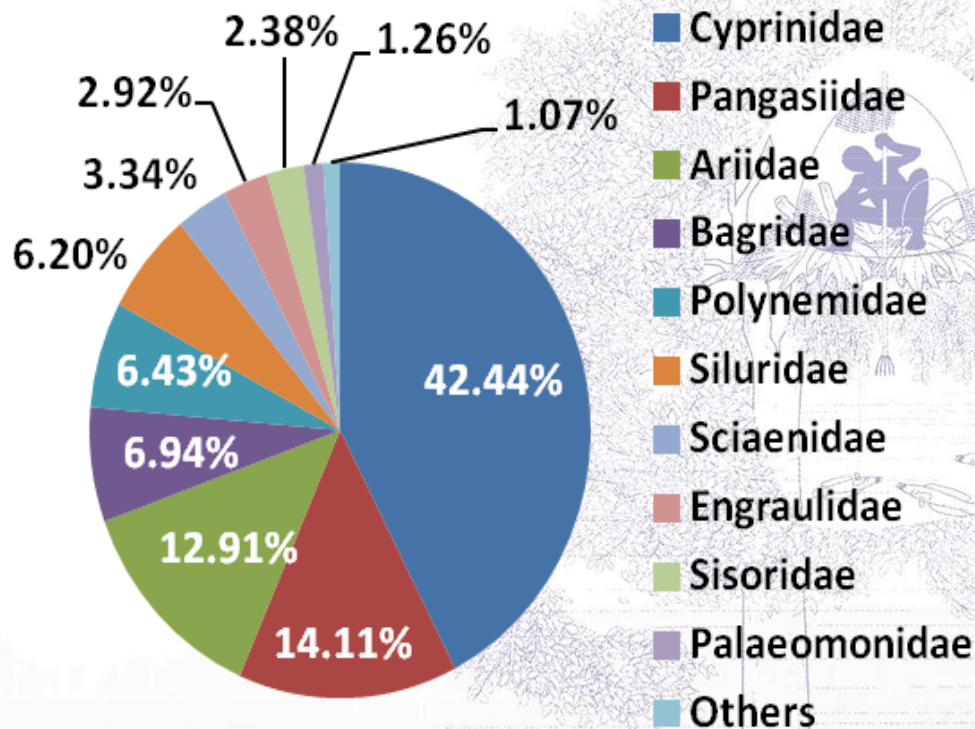


Fish diversity - number



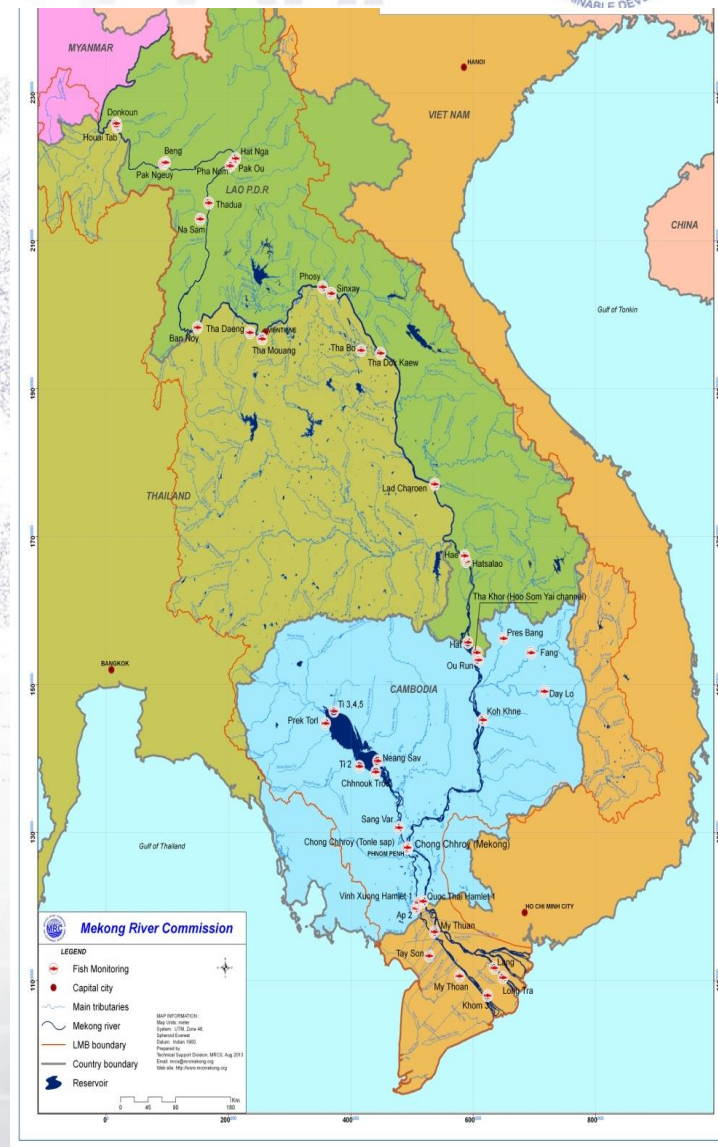


Catch by weight (2004-12)- 38 monitoring sites in 4 MCs



Top ten families contribute 91% to fisher catch

Carps and catfishes, contributed 85% to fisher catch – Mostly long distance transboundary migrants.



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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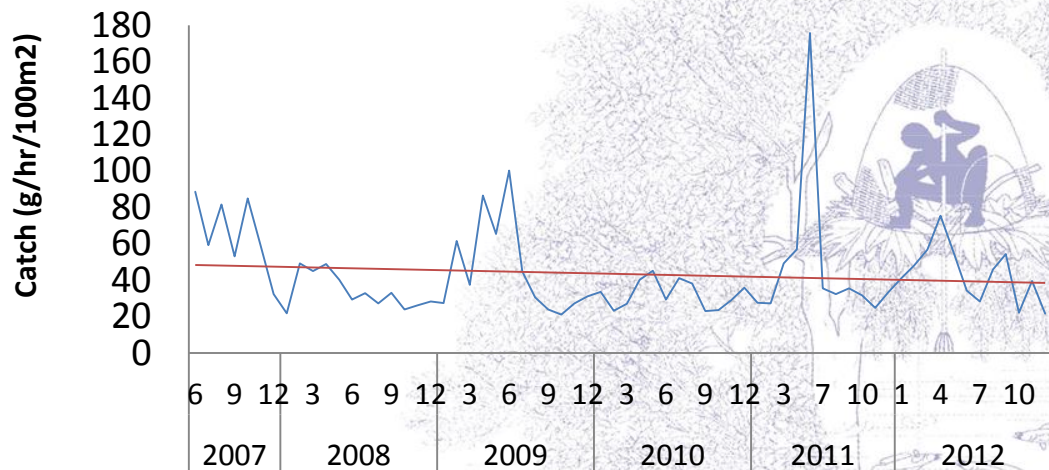


Trends of fisheries in LMB - Subsistence and commercial fisheries

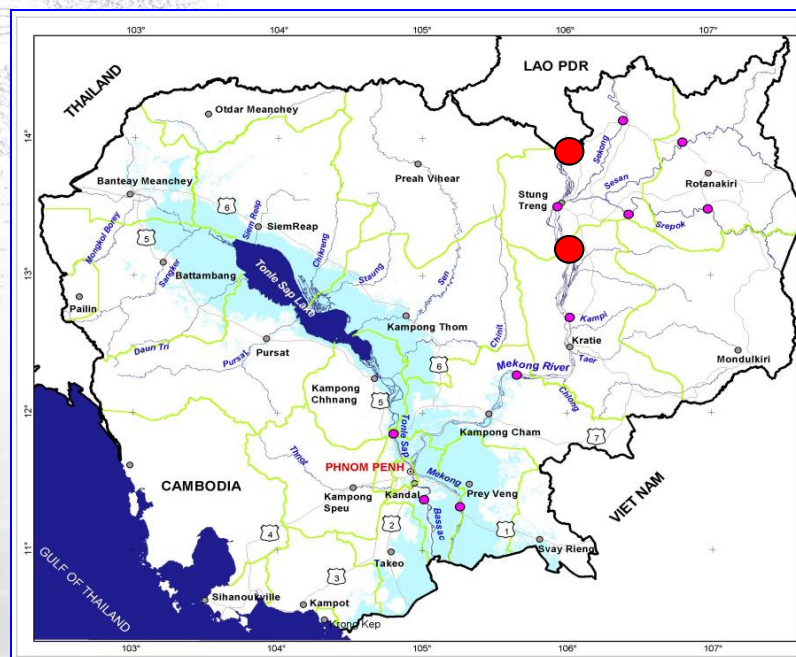
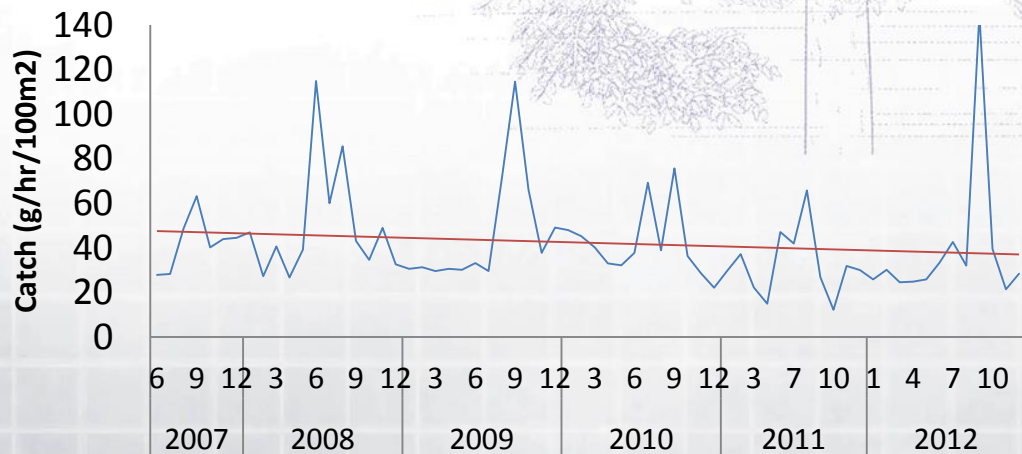


Subsistence fisher catch rate – stationary gillnet

Cambodia Mekong River – Stung Treng



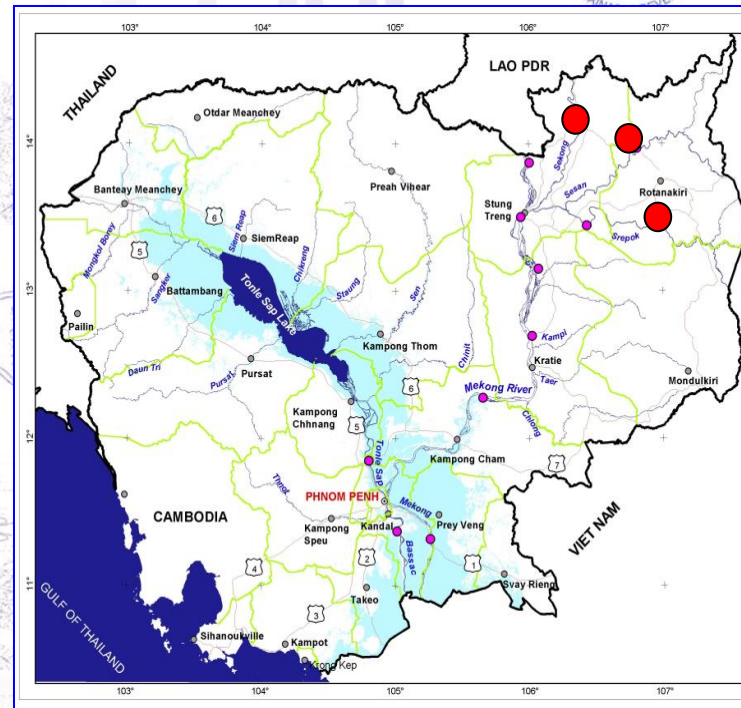
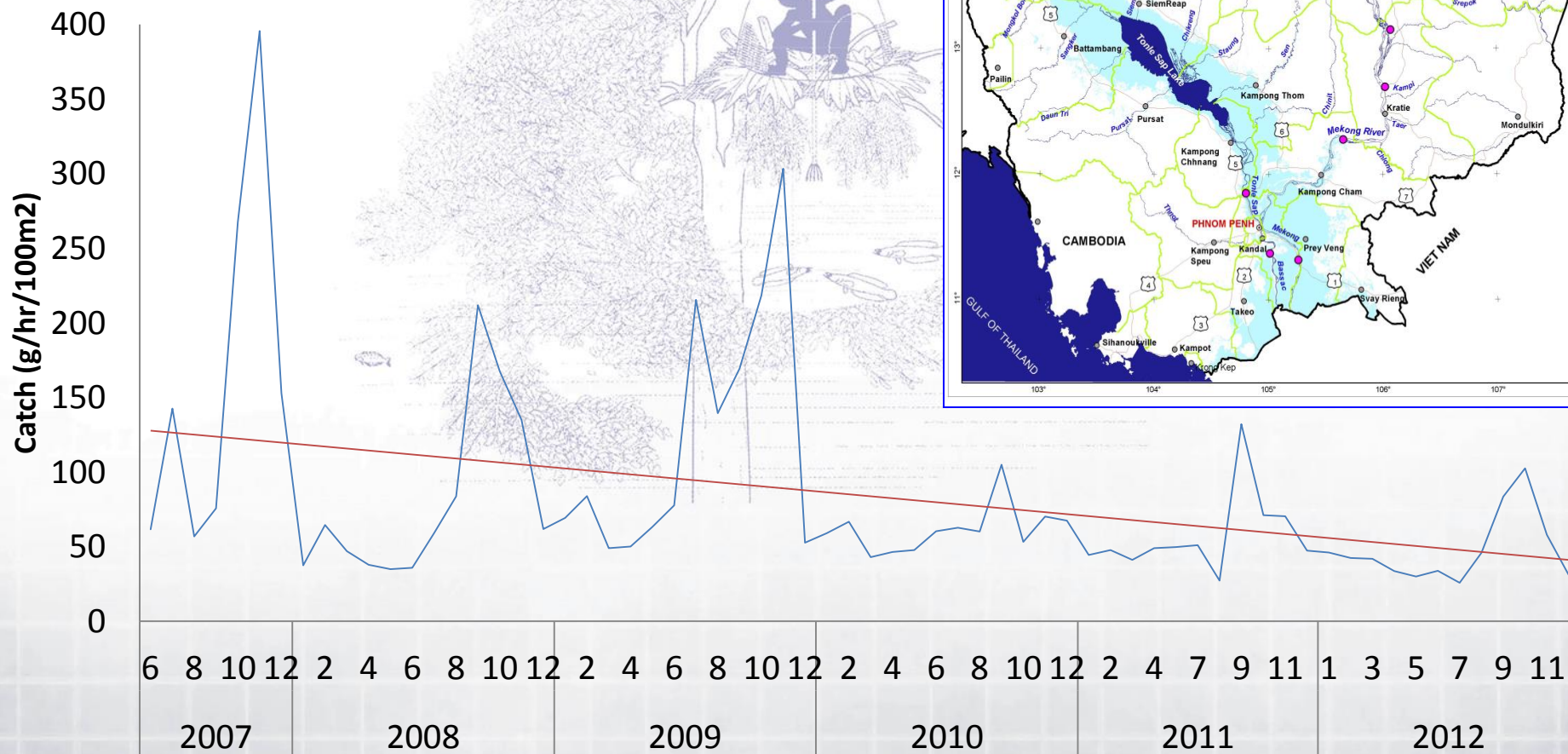
Cambodia Mekong River - Kratie





Subsistence fisher catch rate – stationary gillnet

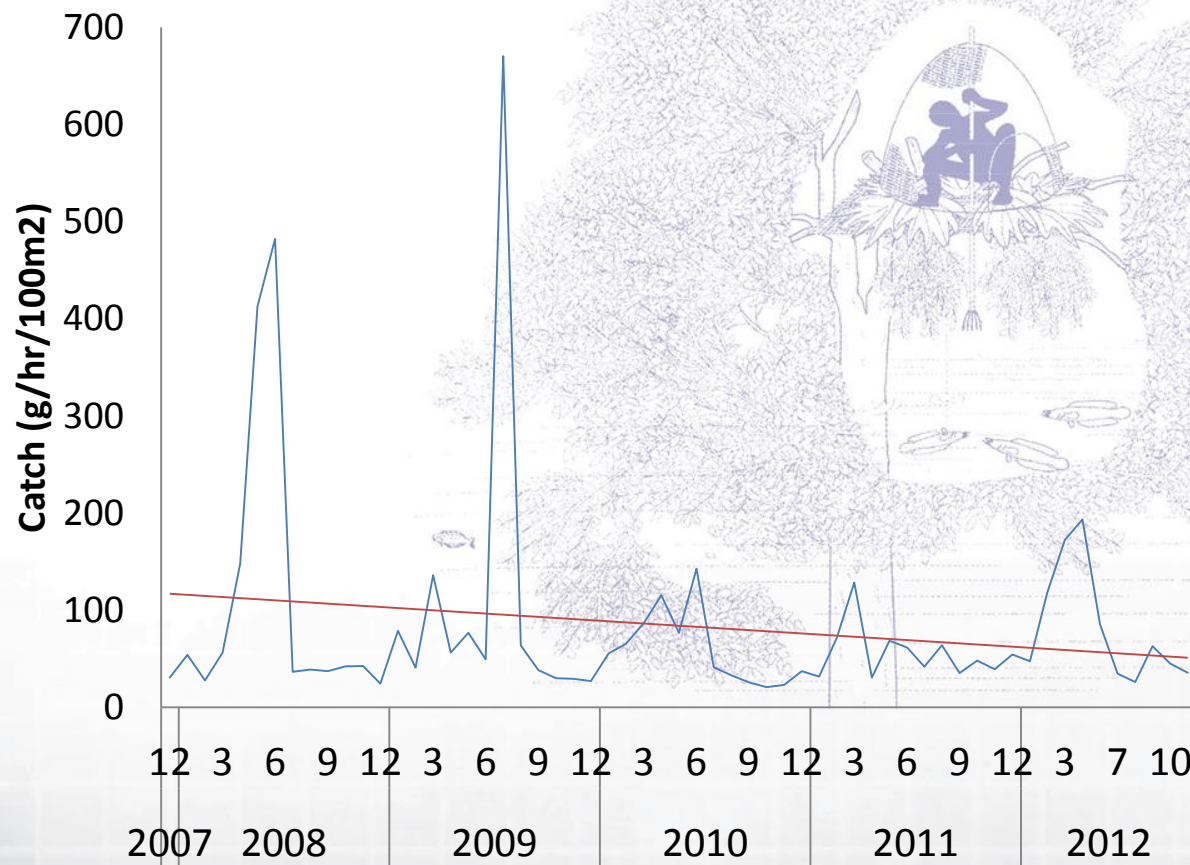
Cambodia Mekong Tributaries 3-S rivers





Subsistence fisher catch rate – stationary gillnet

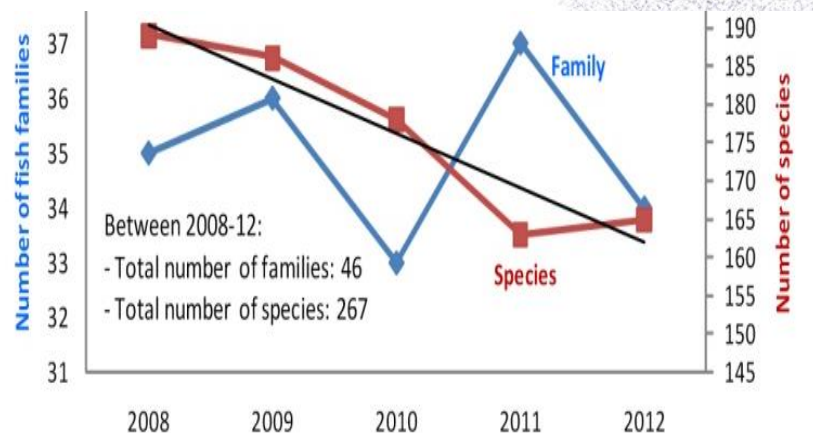
Lao PDR Mekong Mainstream



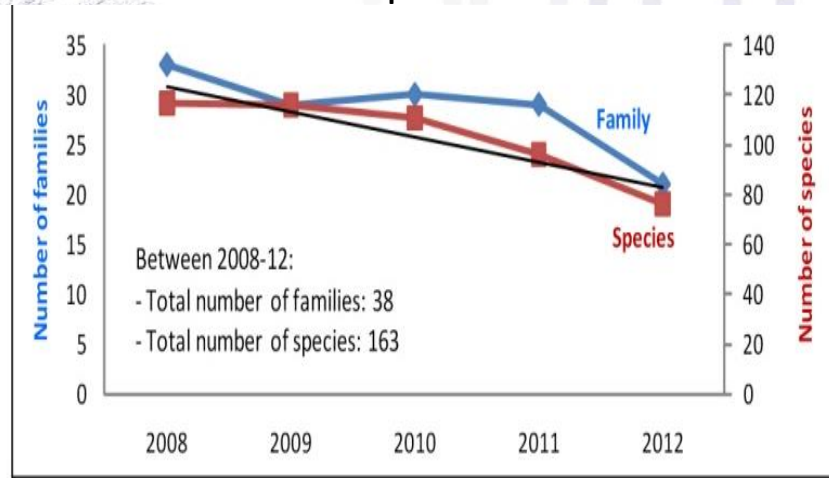


Trends of Number of Fish Species

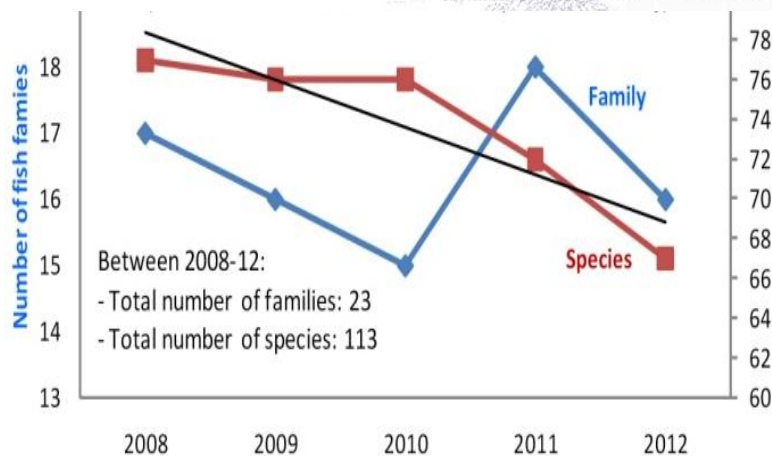
3-S Rivers



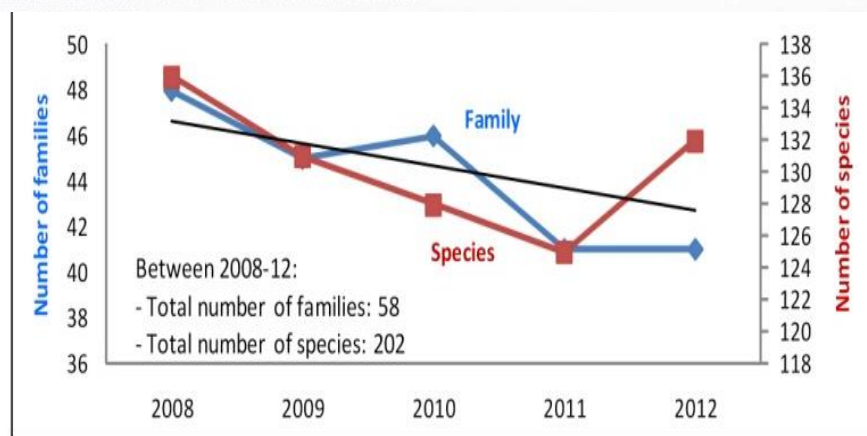
Tonle Sap River



Lao PDR Mekong Mainstream



Viet Nam Mekong Delta

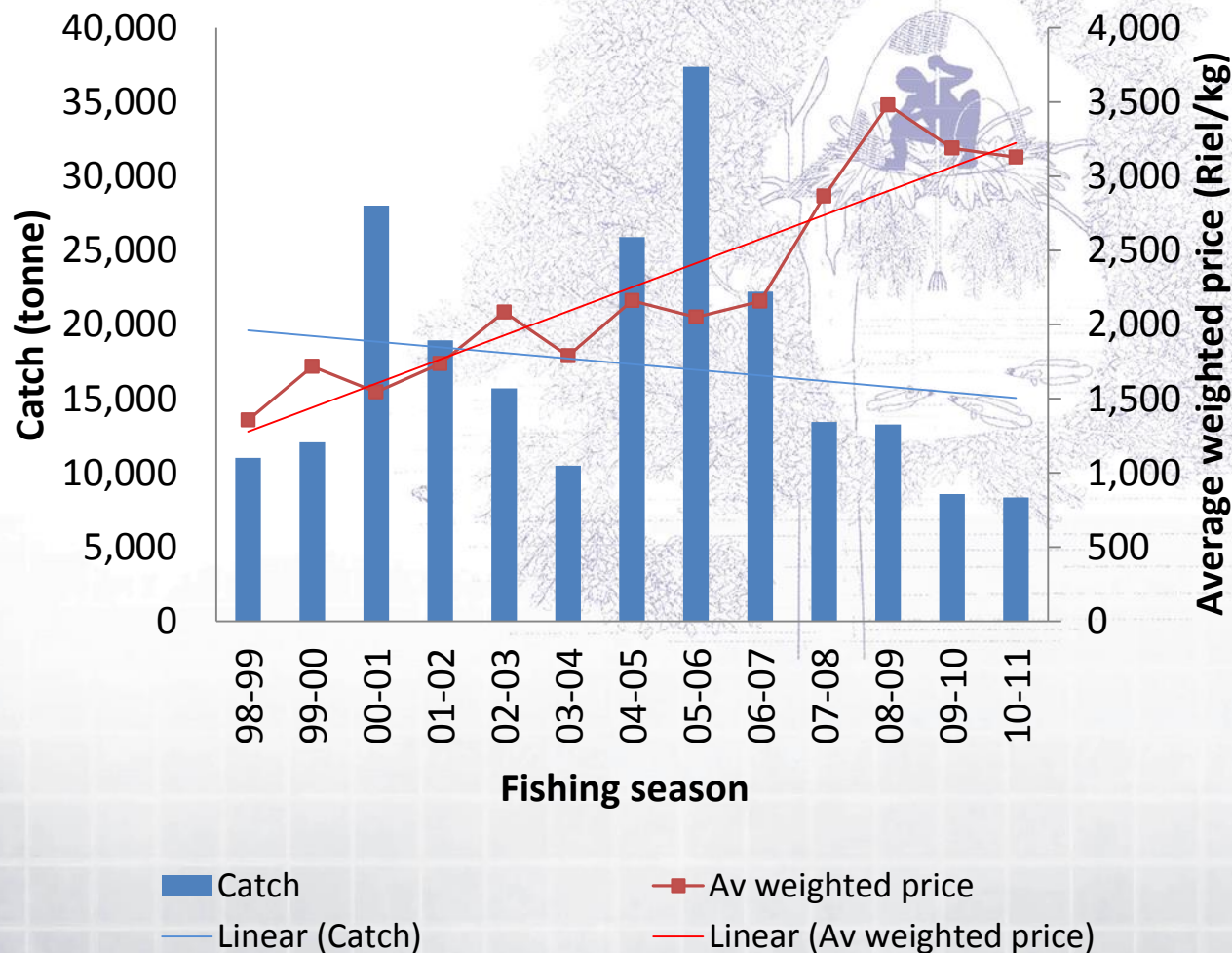




Trends of Fish Catch and Price

- Physical and Economic Accessibility -

Commercial *dai* fishery – Tonle Sap River, Cambodia





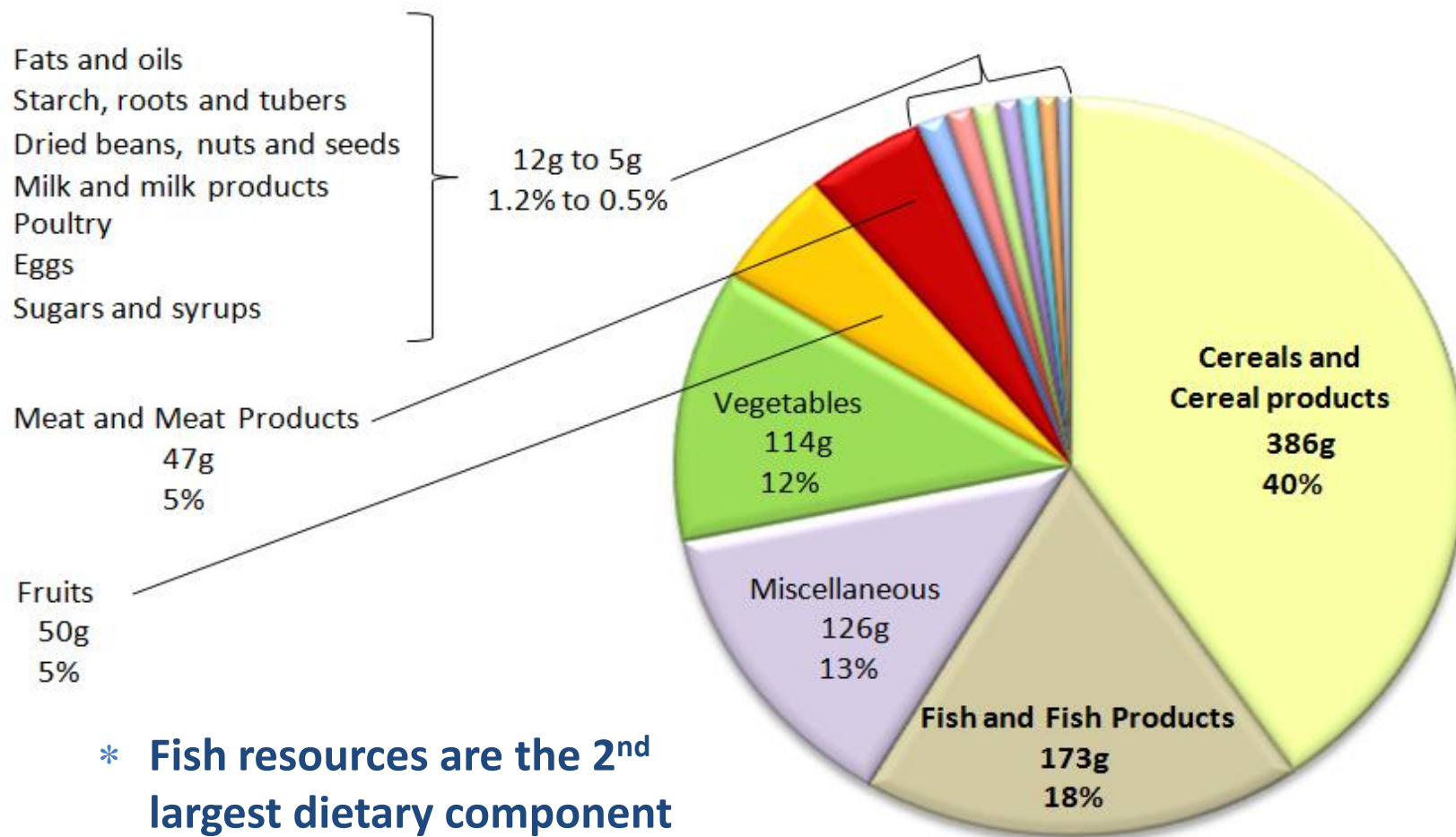
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Implications for food security



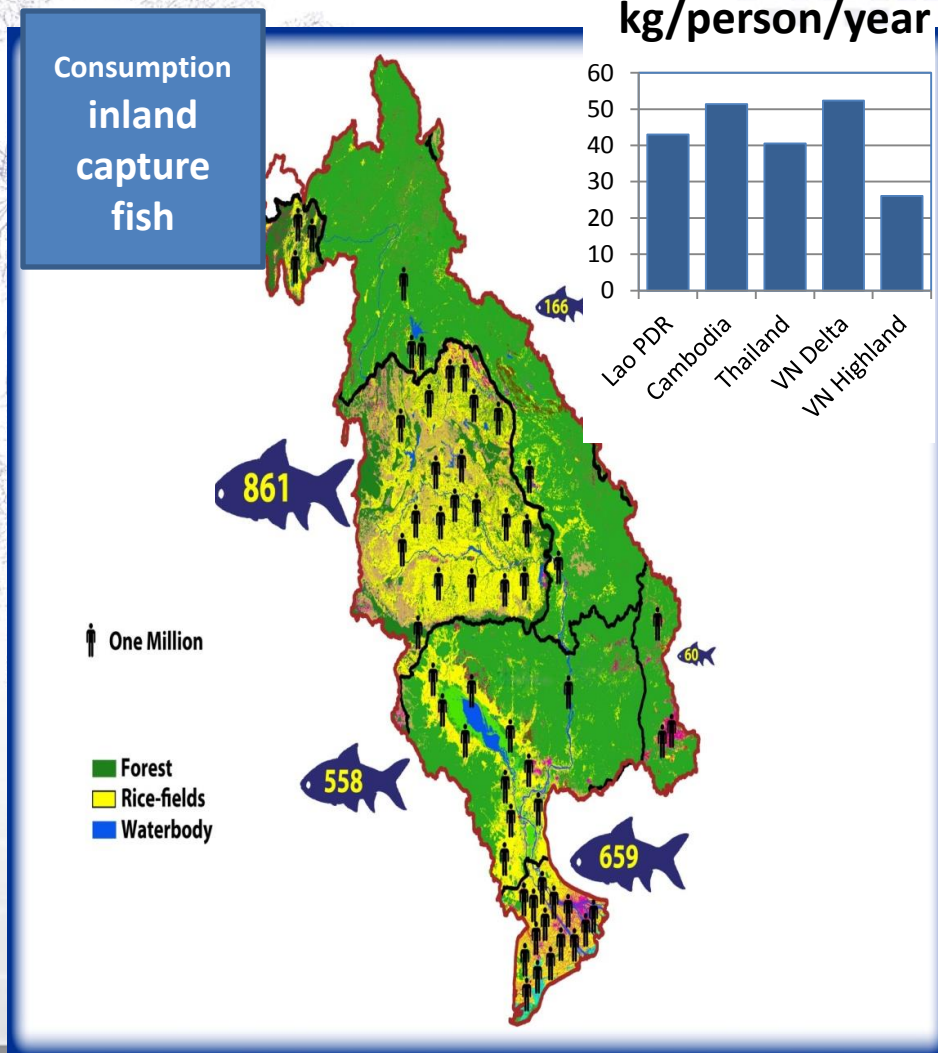
Mean daily per capita food intake by food groups- Cambodia



* 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**.

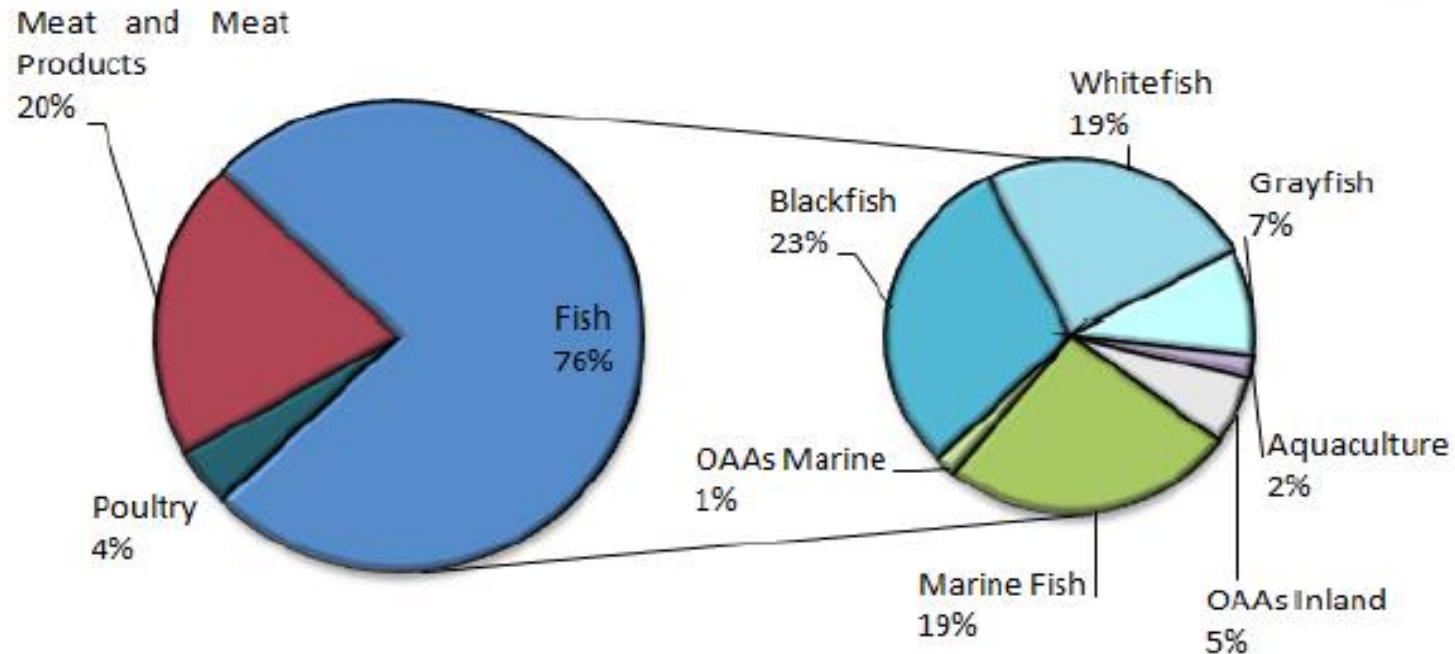


Contribution to nutrition

- 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!!!





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Thank You!

