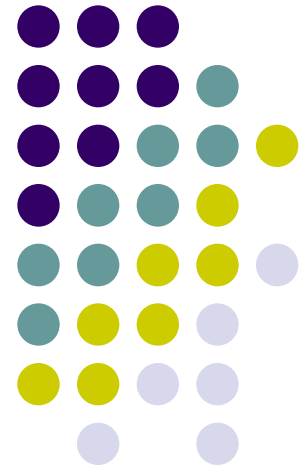
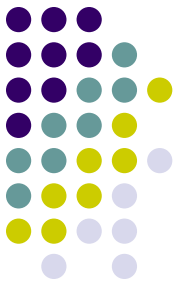


# Status & Potential of China Fisheries and Aquaculture

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Chinese Academy of Fishery Sciences

Jun 13, 2013  
Honolulu, Hawaii, USA



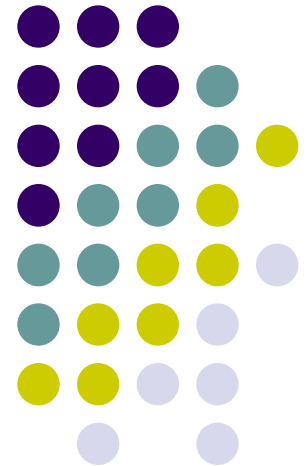
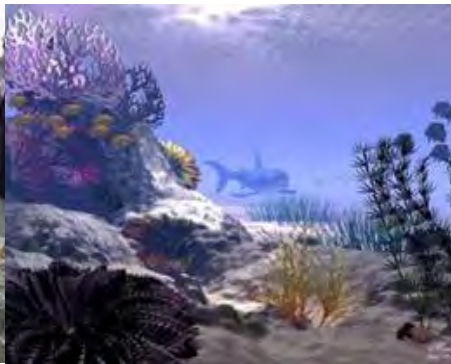


# Outline

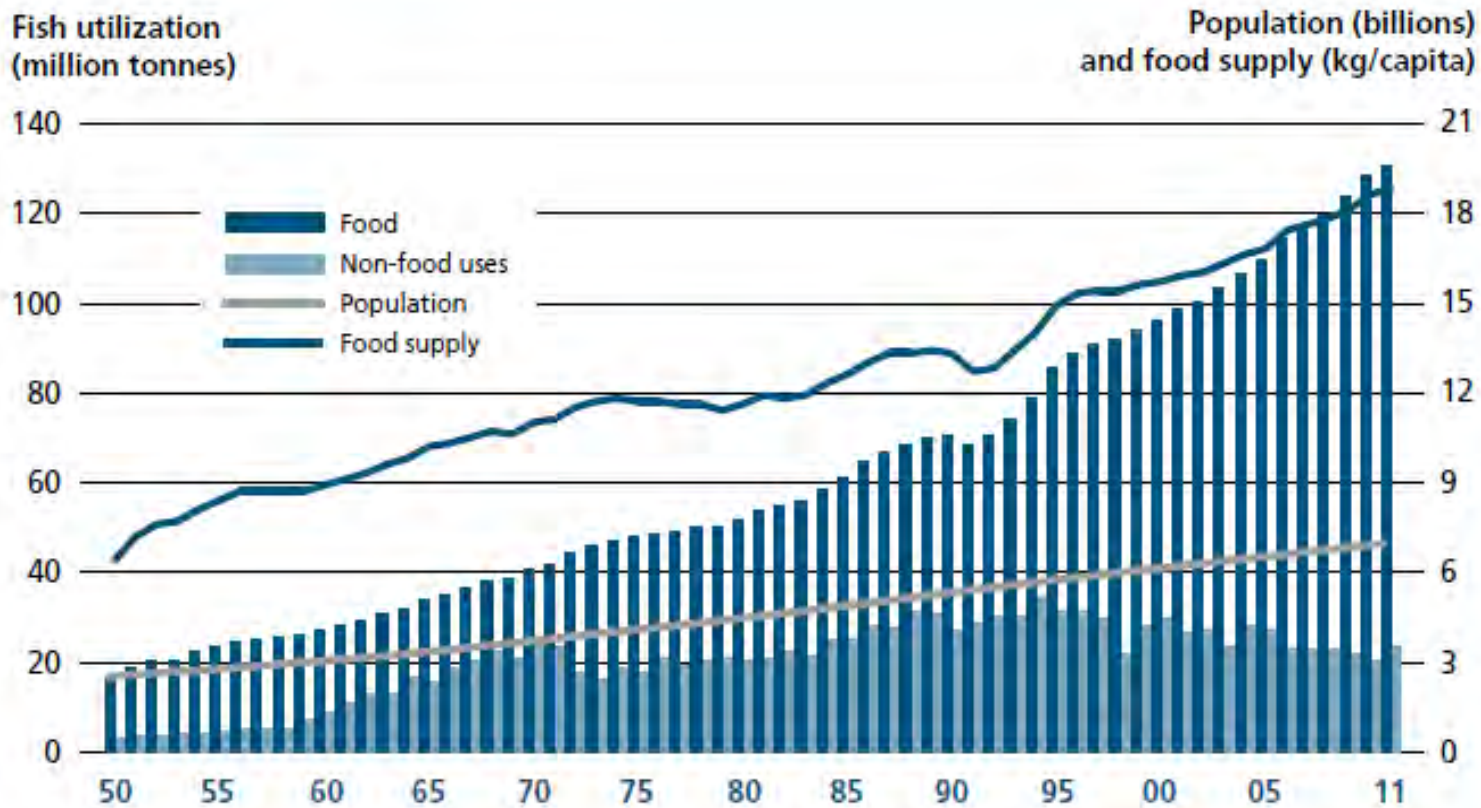
- **Status**
- **Potential**
- **Challeges**
- **Strategies**
- **Summery**



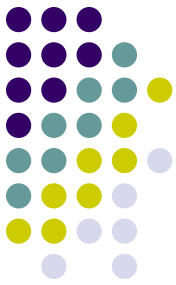
# Status



## World fish utilization and supply



- Fisheries and aquaculture make crucial contributions to the world's wellbeing and prosperity
- In the last five decades, world fish food supply has outpaced global population growth
- Today fish constitutes an important source of nutritious food and animal protein for much of the world's population
- In addition, the sector provides livelihoods and income, both directly and indirectly, for a significant share of the world's population.



## World fisheries and aquaculture production and utilization

	2006	2007	2008	2009	2010	2011
<i>(Million tonnes)</i>						
<b>PRODUCTION</b>						
<b>Capture</b>						
Inland	9.8	10.0	10.2	10.4	11.2	11.5
Marine	80.2	80.4	79.5	79.2	77.4	78.9
<b>Total capture</b>	<b>90.0</b>	<b>90.3</b>	<b>89.7</b>	<b>89.6</b>	<b>88.6</b>	<b>90.4</b>
<b>Aquaculture</b>						
Inland	31.3	33.4	36.0	38.1	41.7	44.3
Marine	16.0	16.6	16.9	17.6	18.1	19.3
<b>Total aquaculture</b>	<b>47.3</b>	<b>49.9</b>	<b>52.9</b>	<b>55.7</b>	<b>59.9</b>	<b>63.6</b>
<b>TOTAL WORLD FISHERIES</b>	<b>137.3</b>	<b>140.2</b>	<b>142.6</b>	<b>145.3</b>	<b>148.5</b>	<b>154.0</b>
<b>UTILIZATION</b>						
Human consumption	114.3	117.3	119.7	123.6	128.3	130.8
Non-food uses	23.0	23.0	22.9	21.8	20.2	23.2
Population ( <i>billions</i> )	6.6	6.7	6.7	6.8	6.9	7.0
Per capita food fish supply ( <i>kg</i> )	17.4	17.6	17.8	18.1	18.6	18.8

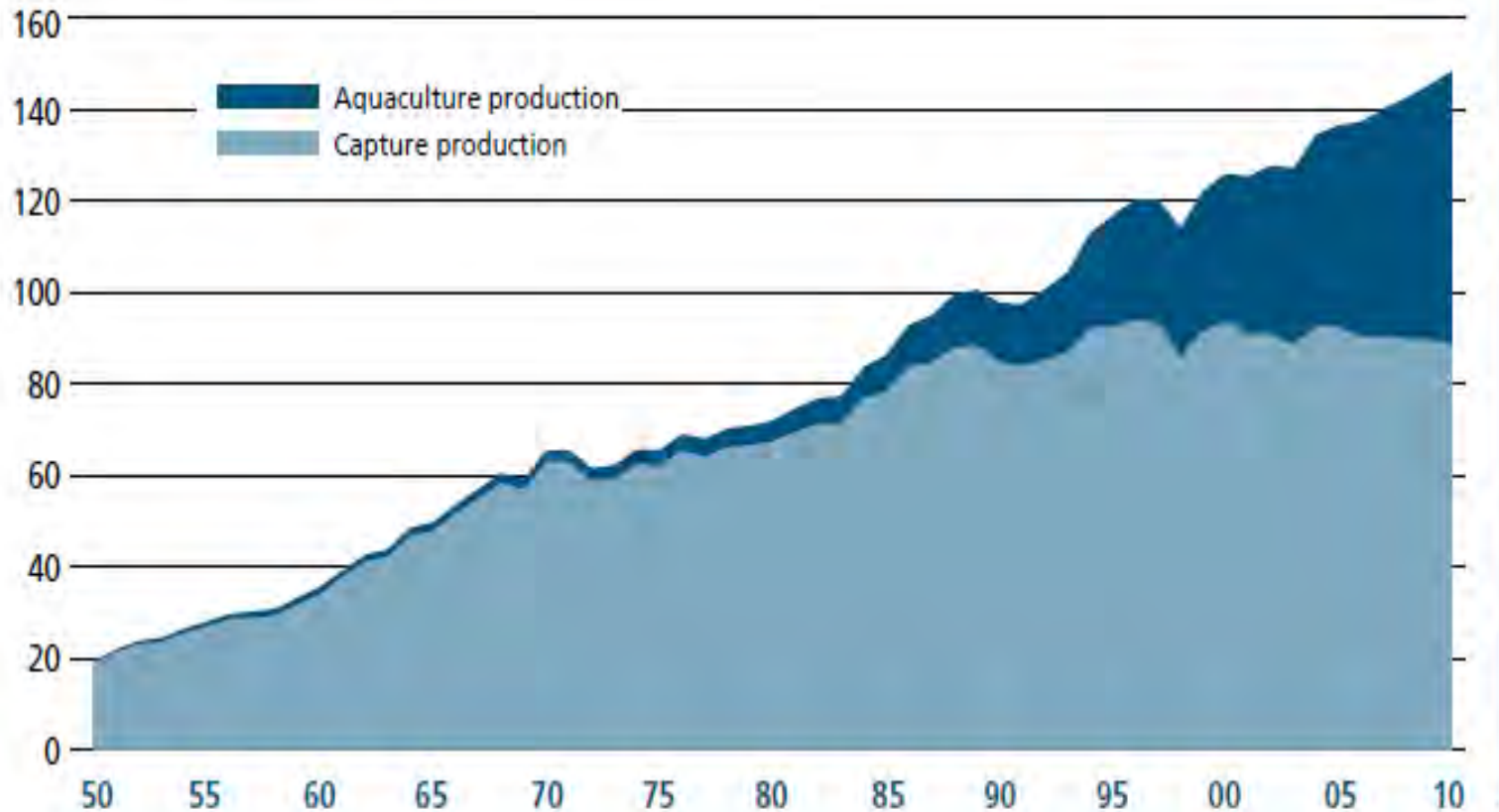
Notes: Excluding aquatic plants. Totals may not match due to rounding. Data for 2011 are provisional estimates.

- Fisheries sector supplied the world with about 154 million tones of fish in 2011 of which
  - about 130 million tones was utilized as food for people
  - World per capita food fish supply increased from an average of 9.9 kg in the 1960s to 18.8 kg in 2011

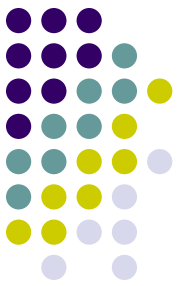


## World capture fisheries and aquaculture production

Million tonnes

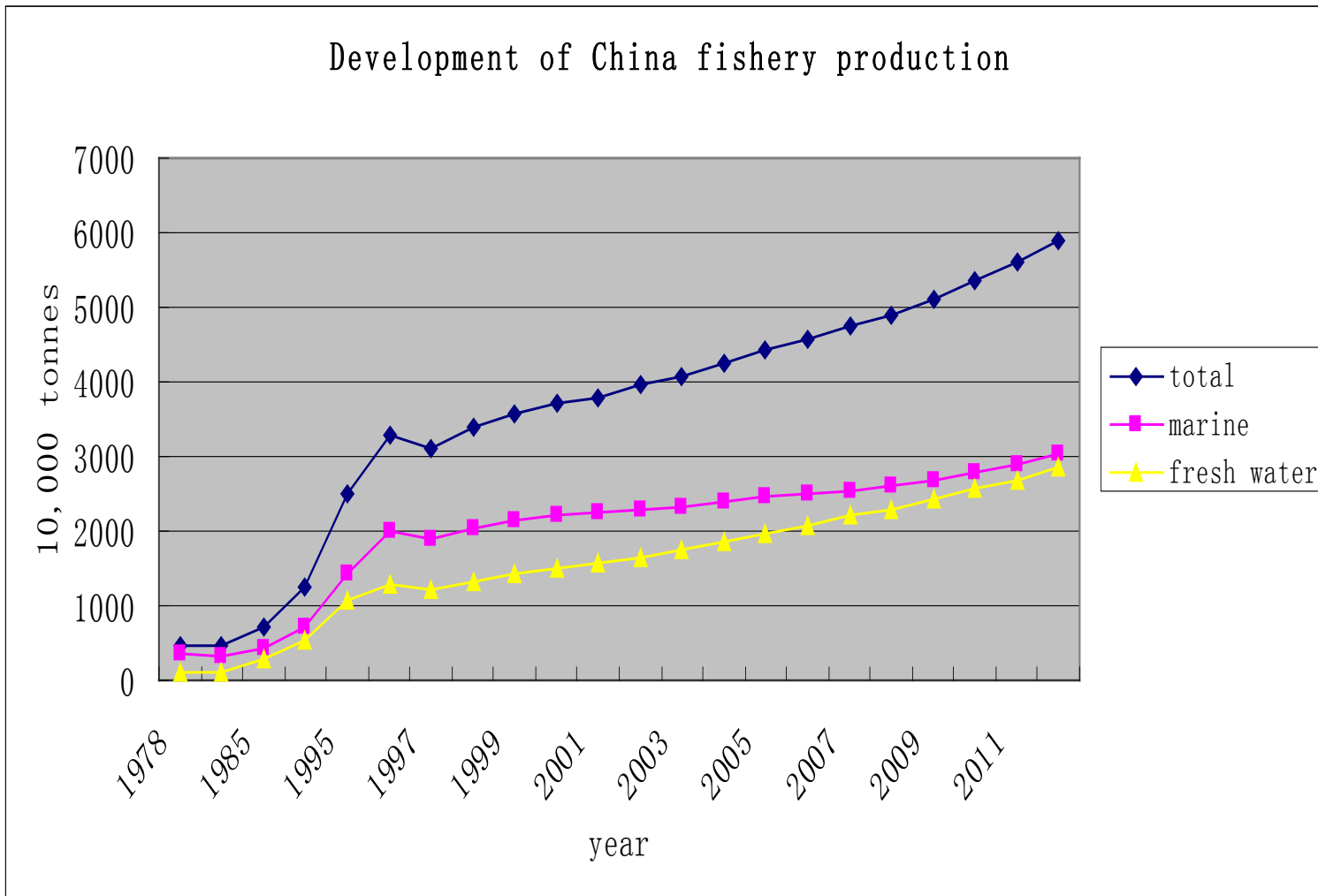


- While capture fisheries production remains stable, aquaculture production keeps on expanding.
- Aquaculture is set to remain one of the fastest-growing animal food-producing sectors.

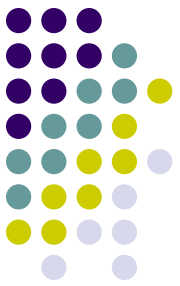




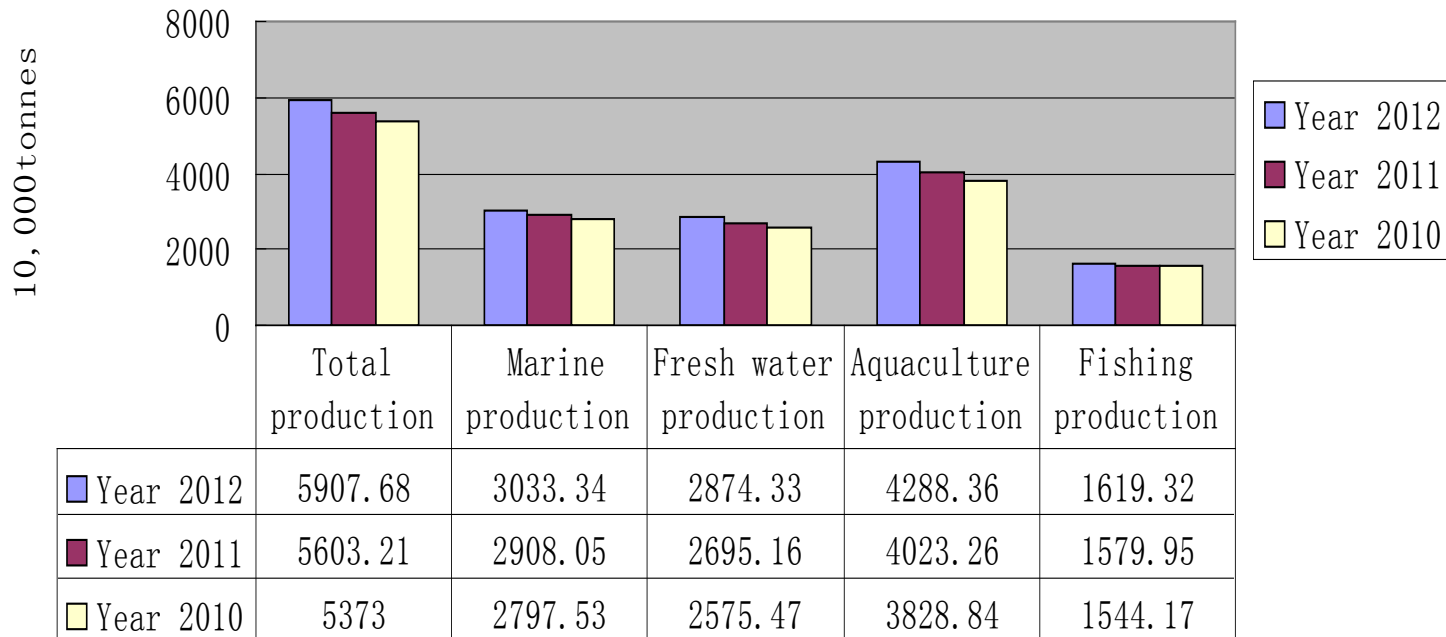
## Development of China fishery production



- Since 1980's when China starting economic reform and opening up, China has made a great progress of its fisheries industry.
- China has been the world largest fishery producer for 16 years since 1996.



## China fishery production 2010-2012



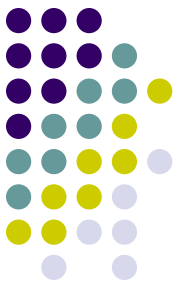
- In 2012, its total aquatic output reached 59 million tonne, slightly higher than that in 2011 and 2010, of which:
  - 30 million tonnes came from marine waters
  - 29 million tonnes came from fresh waters, or
  - 16 million tonnes came from capture fisheries
  - 43 million tonne came from aquaculture
  - Per capita fish consumption was 43.63 kg



## Top ten aquaculture producer in the world in 2010

World	Tonnes	Percentage
China	36 734 215	61.35
India	4 648 851	7.76
Viet Nam	2 671 800	4.46
Indonesia	2 304 828	3.85
Bangladesh	1 308 515	2.19
Thailand	1 286 122	2.15
Norway	1 008 010	1.68
Egypt	919 585	1.54
Myanmar	850 697	1.42
Philippines	744 695	1.24
Other	7 395 281	12.35
<b>Total</b>	<b>59 872 600</b>	<b>100</b>

- With capture fisheries at or nearing their capacities, aquaculture will have to shoulder an increasing burden in the effort to feed the world's population.



## Top ten exporters and importers of fish and fishery products

	2000	2010	APR
	<i>(US\$ millions)</i>		<i>(Percentage)</i>
<b>EXPORTERS</b>			
China	3 603	13 268	13.9
Norway	3 533	8 817	9.6
Thailand	4 367	7 128	5.0
Viet Nam	1 481	5 109	13.2
United States of America	3 055	4 661	4.3
Denmark	2 756	4 147	4.2
Canada	2 818	3 843	3.1
Netherlands	1 344	3 558	10.2
Spain	1 597	3 396	7.8
Chile	1 794	3 394	6.6
<b>TOP TEN SUBTOTAL</b>	<b>26 349</b>	<b>57 321</b>	<b>8.1</b>
<b>REST OF WORLD TOTAL</b>	<b>29 401</b>	<b>51 242</b>	<b>5.7</b>
<b>WORLD TOTAL</b>	<b>55 750</b>	<b>108 562</b>	<b>6.9</b>
<b>IMPORTERS</b>			
United States of America	10 451	15 496	4.0
Japan	15 513	14 973	-0.4
Spain	3 352	6 637	7.1
China	1 796	6 162	13.1
France	2 984	5 983	7.2
Italy	2 535	5 449	8.0
Germany	2 262	5 037	8.3
United Kingdom	2 184	3 702	5.4
Sweden	709	3 316	16.7
Republic of Korea	1 385	3 193	8.7
<b>TOP TEN SUBTOTAL</b>	<b>26 349</b>	<b>69 949</b>	<b>10.3</b>
<b>REST OF WORLD TOTAL</b>	<b>33 740</b>	<b>41 837</b>	<b>2.2</b>
<b>WORLD TOTAL</b>	<b>60 089</b>	<b>111 786</b>	<b>6.4</b>

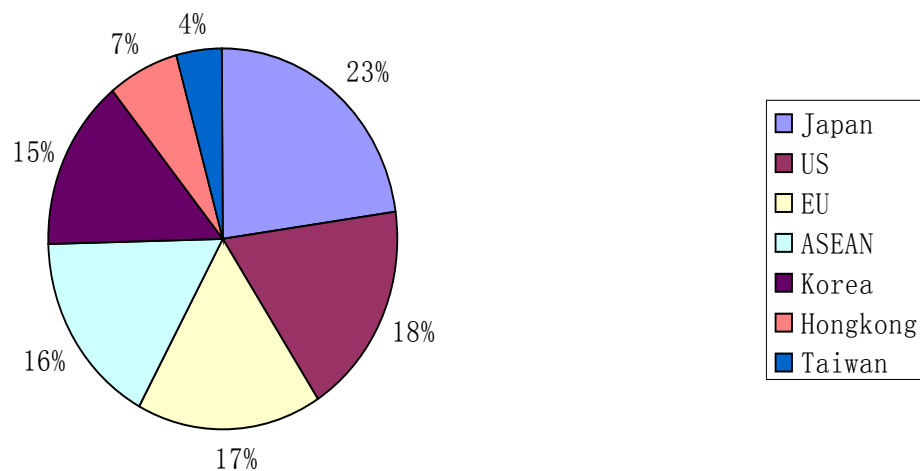
Note: APR refers to the average annual percentage growth rate for 2000–2010.

- This table shows the top ten exporters and importers of fish and fishery products in 2000 and 2010.
- Since 2002, China has been the leading fish exporter, contributing almost 12 percent of 2010 world fish exports.
- China has also significantly increased its fishery imports, partly a result of outsourcing, as Chinese processors import raw material from other countries.
- Imports are also being fuelled by robust domestic demand for species not available from local sources, in particular marine species, as a consequence of economic growth and rising disposable incomes.
- This increase in imports also reflects the lowered import duties following China's accession to the WTO in late 2001.





China fish export by countries or regions

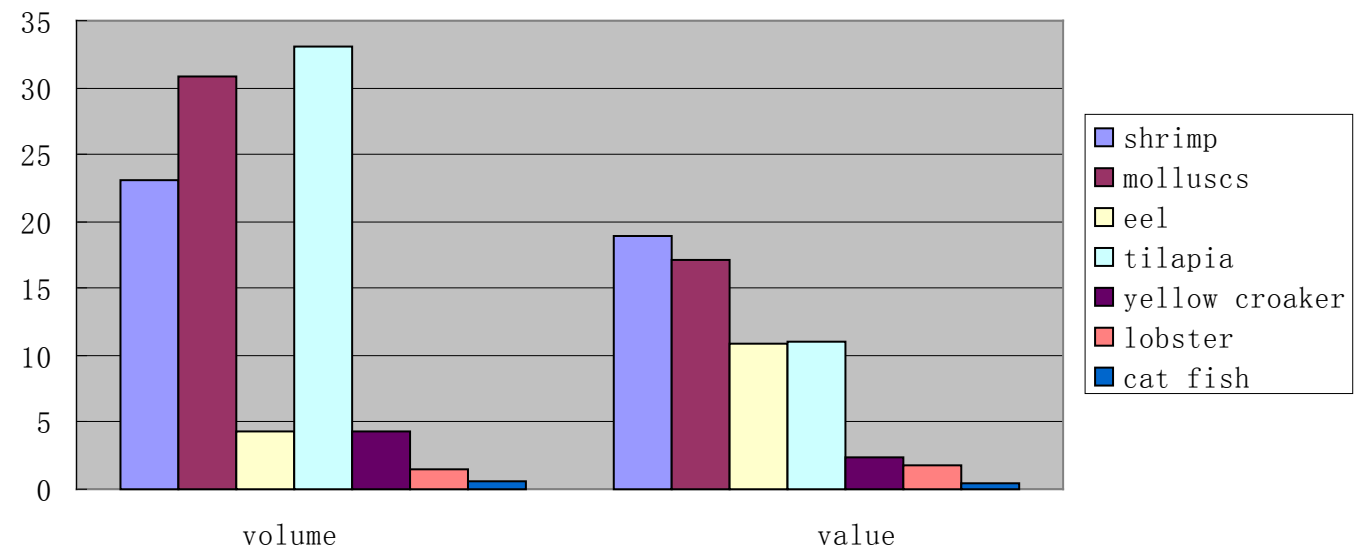


Where did China export its fish?

Countries or regions	Volume (10,000 tonnes)	Value (billion USD)
Japan	67.93	4.216
US	53.84	2.947
EU	51.25	2.21
ASEAN	49.29	2.126
Korea	44.39	1.483
Hongkong	20.15	2.059
Taiwan	12.1	1.074



China fish exports by product in 2012

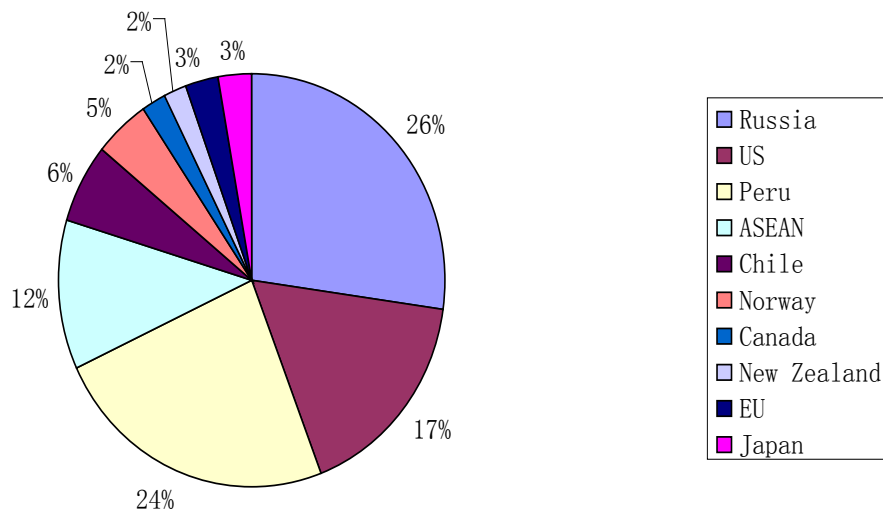


What did China export?

Products	Volume(10,000 tonnes)	Value (billion USD)
shrimp	23.12	18.87
molluscs	30.89	17.14
eel	4.26	10.86
tilapia	33.03	11.09
yellow croaker	4.35	2.32
lobster	1.5	1.72
cat fish	0.66	0.51



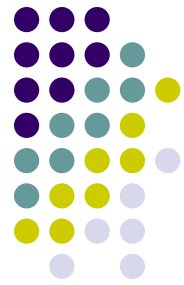
China fish imports by market share in 2012



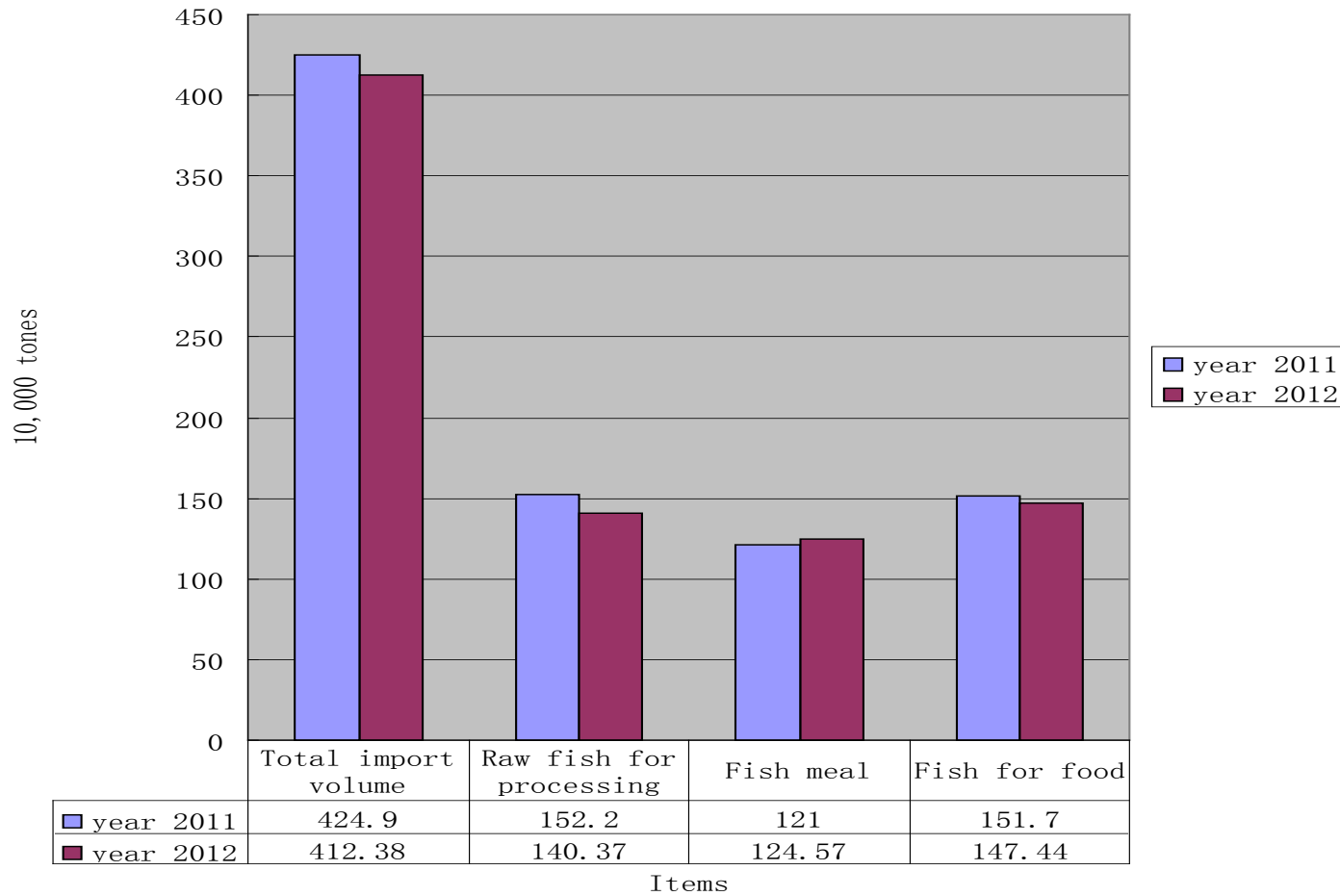
Where did China import fish from the world?

countries	volume (10,000tonnes)	Value (billion USD)
Russia	95.9	1.43
US	60.67	1.38
Peru	84.79	1.17
ASEAN	41.18	0.74
Chile	21.12	0.52
Norway	16.82	0.41
Canada	6.72	0.35
New Zealand	7.39	0.28
EU	9.55	0.23
Japan	9.87	0.19

# What did China import?



China fish imports by product 2011-2012



# Potential

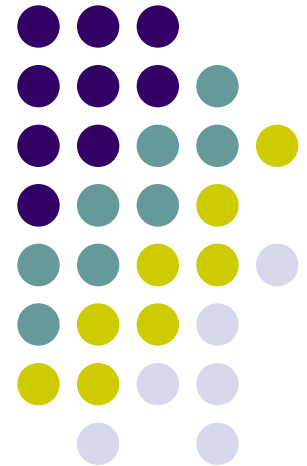
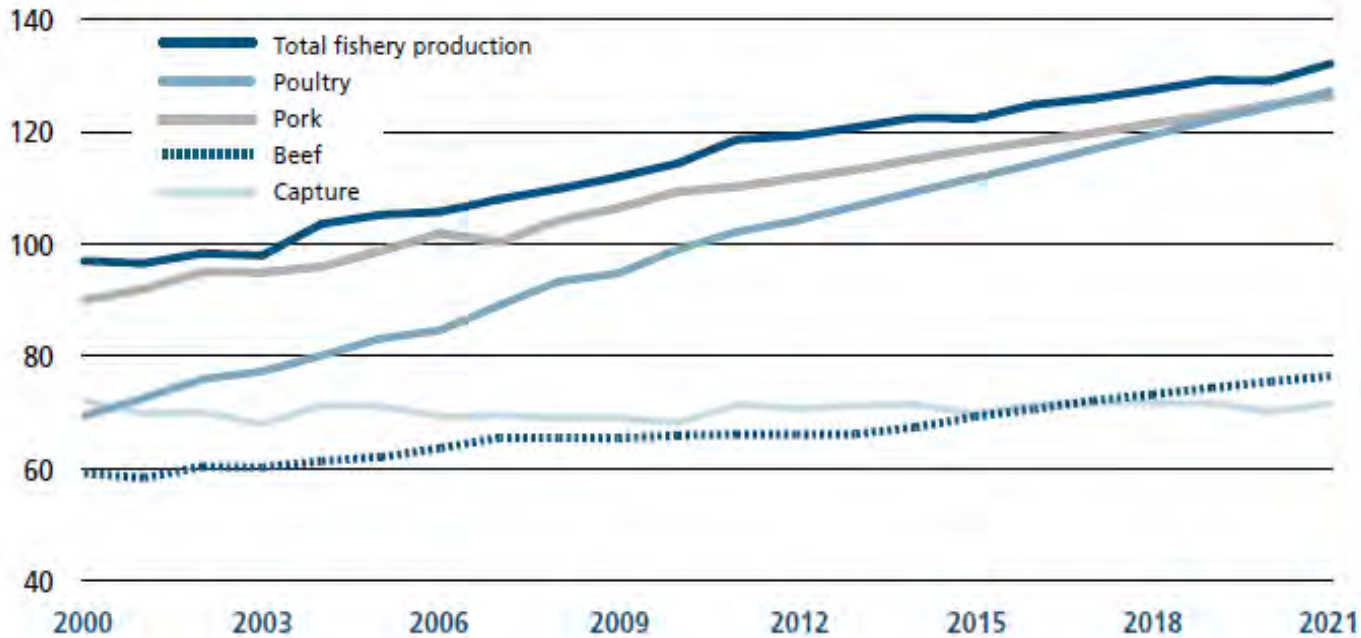


Figure 44

## Meat and fishery production, dressed weight or eviscerated basis

Million tonnes



Notes: Total fishery production = capture + aquaculture. Beef and pork on a dressed-weight basis; poultry and fish on an eviscerated basis.

Sources: OECD and FAO Secretariats.

- Stimulated by higher demand for fish, world fisheries and aquaculture production is projected to reach about 172 million tones in 2021, a growth of 15 percent above the average level for 2009–11.
- The increase should be mainly driven by aquaculture,
- Aquaculture will remain one of the fastest growing animal food-producing sectors and will exceed that of beef, pork or poultry Meat and fishery production.

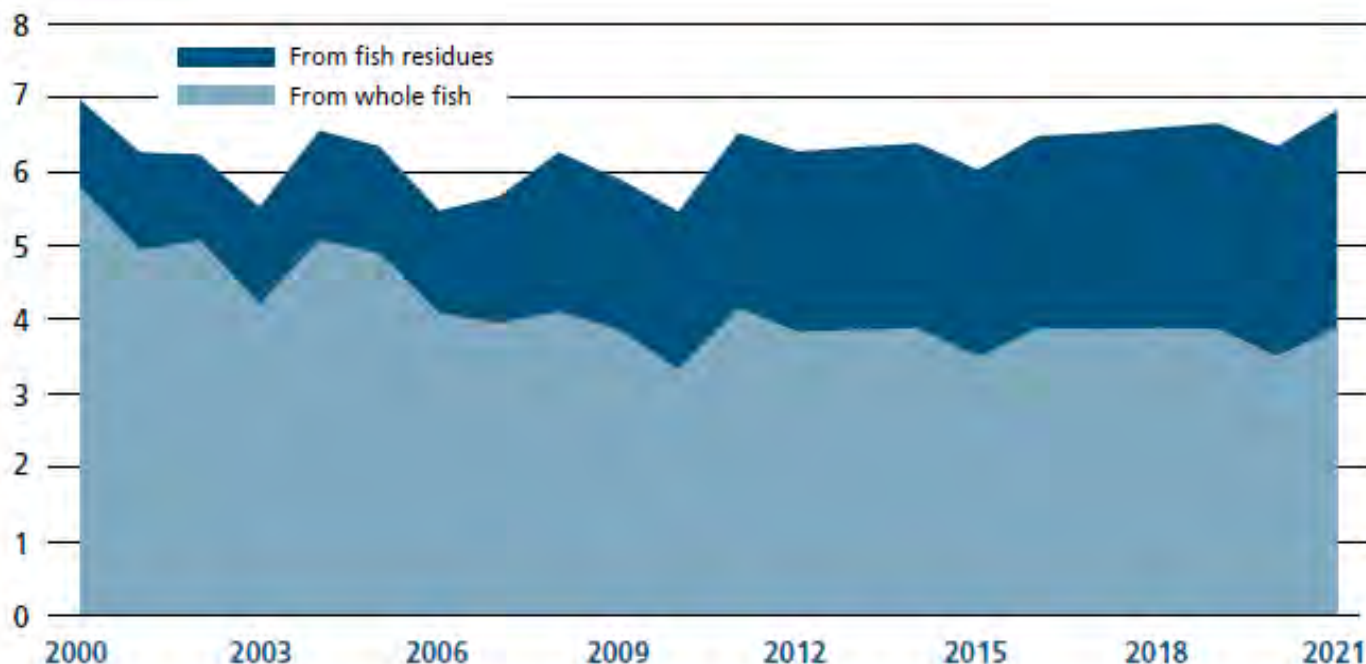




Figure 45

## Fishmeal production in product weight

Million tonnes



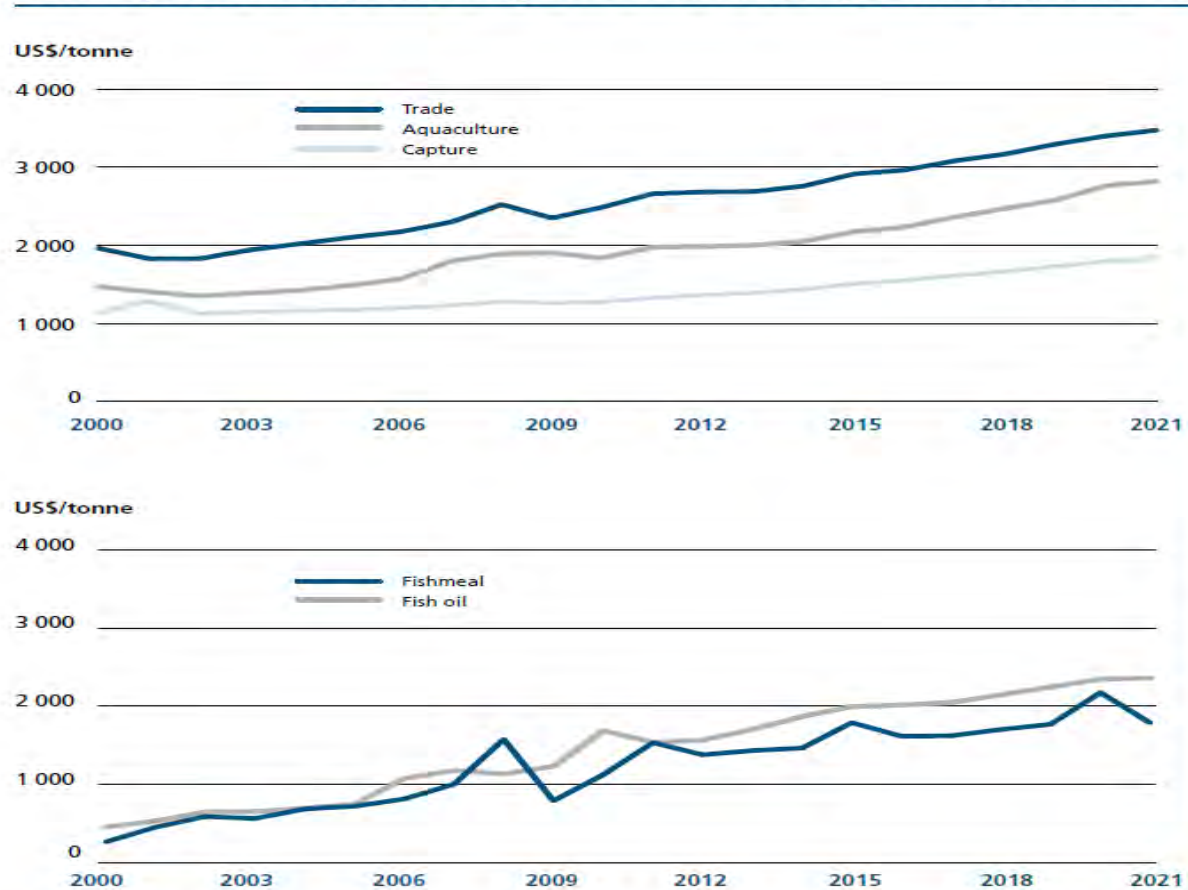
Sources: OECD and FAO Secretariats.

- In 2021, fishmeal production should be 15 percent higher compared with the 2009–2011 average, but almost 87 percent of the increase will derive from improved use of fish waste, cuttings and trimmings.
- Growing income and urbanization will entail an increasing consumption of fish in fillets or prepared and preserved forms, thus creating more residual production to be used in fishmeal manufacturing.
- Fishmeal produced from fish waste should represent 43 percent of world fishmeal production in 2021.



Figure 46

General growth in fish prices for high feed costs and strong demand, nominal terms



Sources: OECD and FAO Secretariats.

- The fish sector is expected to enter into a decade of higher prices, but also higher production costs
- The main drivers will be
  - positive trend in demand
  - income and population growth
  - increasing meat prices
  - a generally weak US dollar
  - rising costs for some of the most important input factors such as energy, including crude oil and feed.

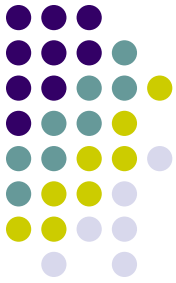
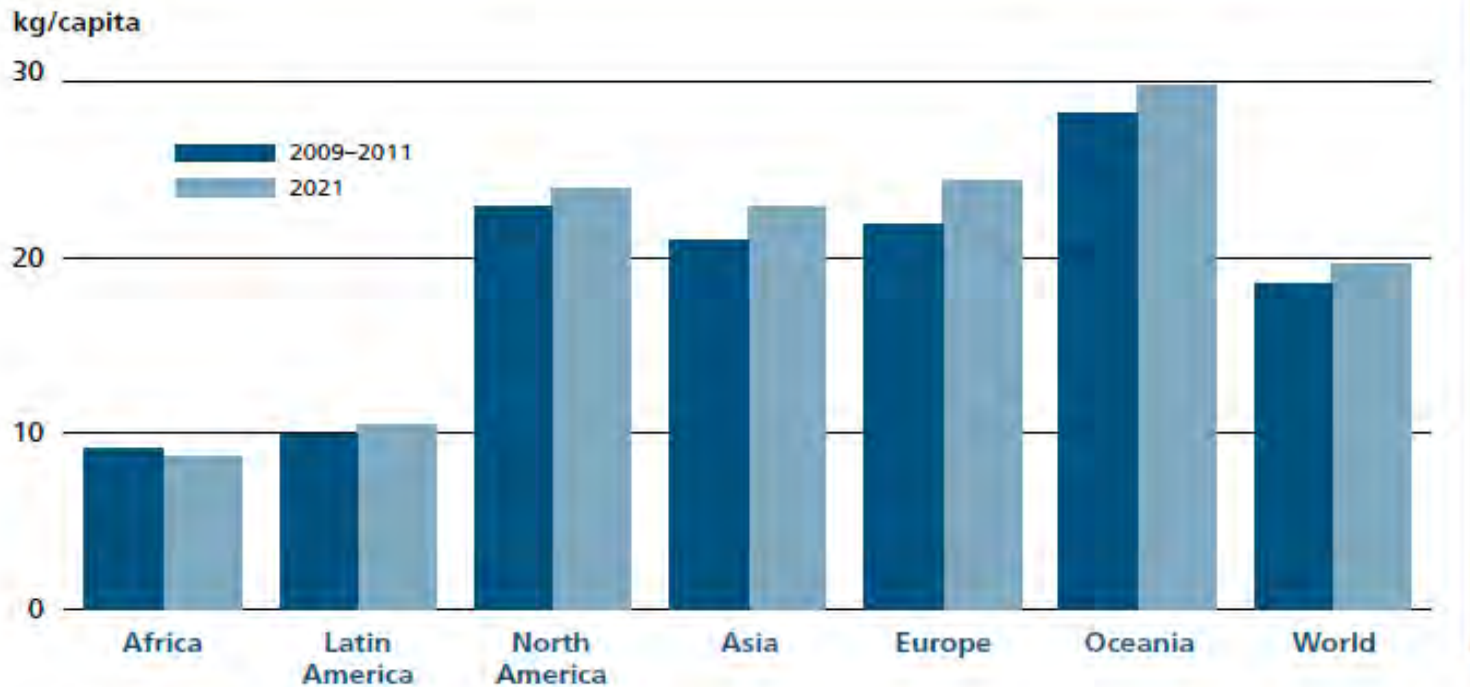


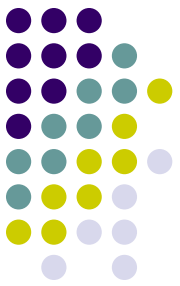
Figure 47

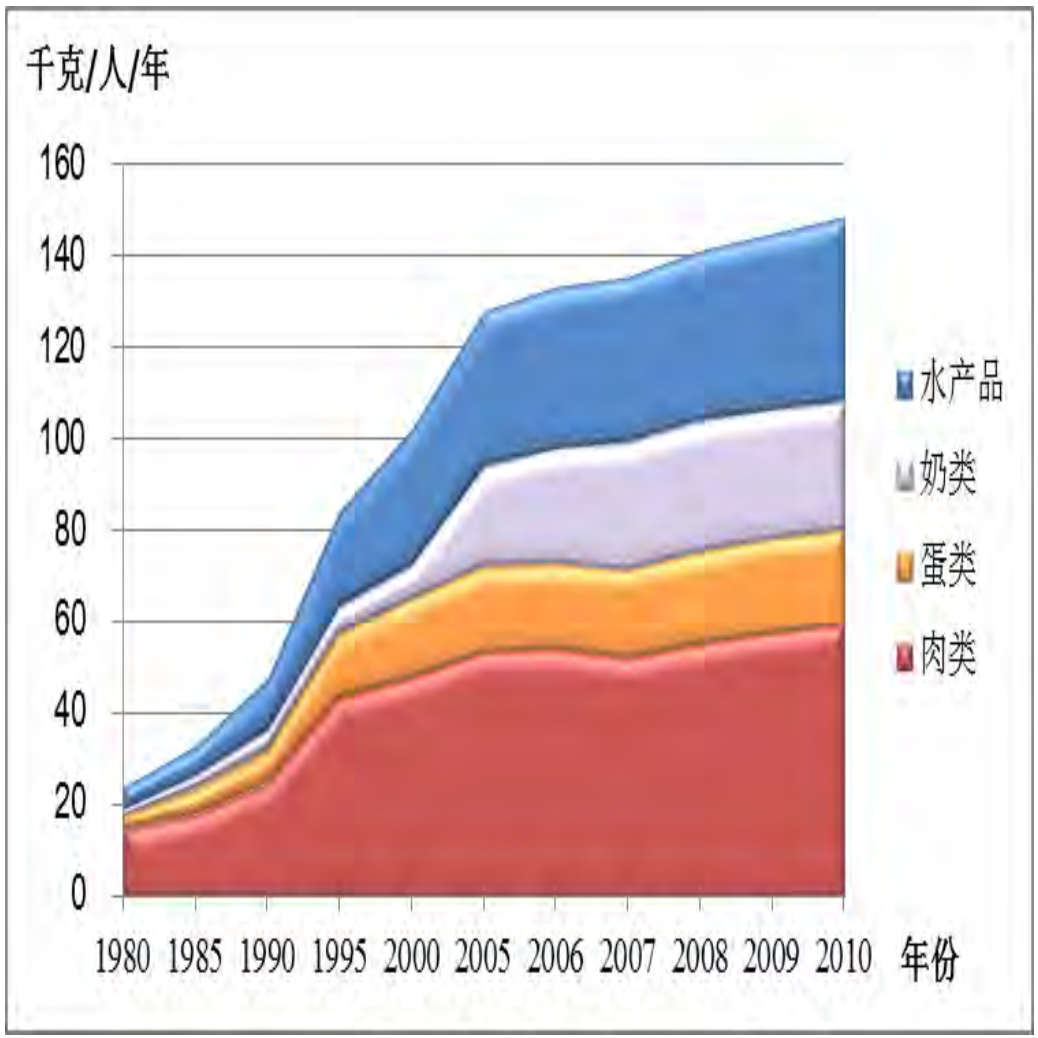
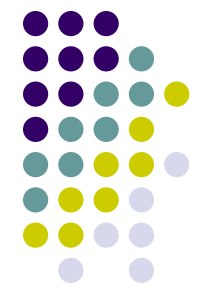
## Per capita fish consumption



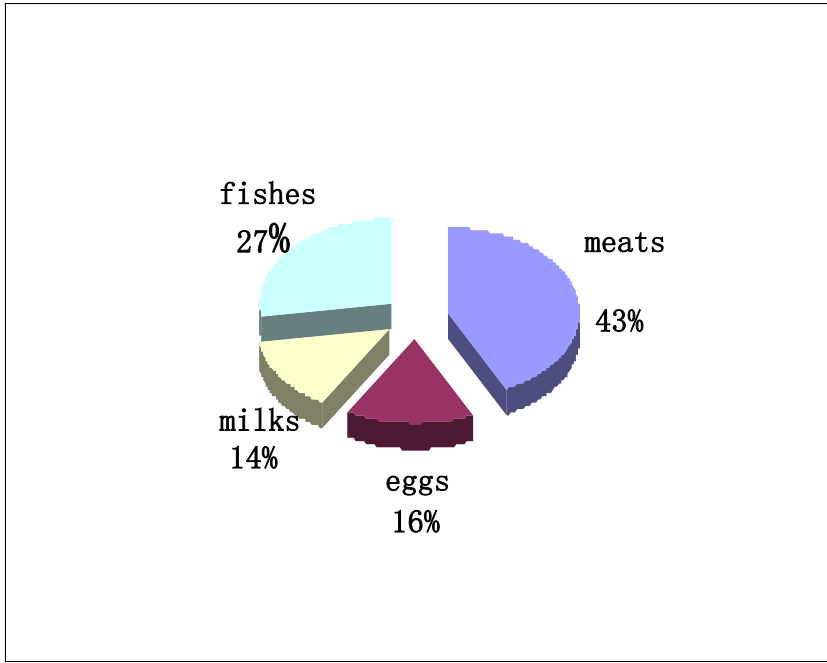
Sources: OECD and FAO Secretariats.

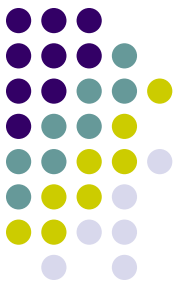
- World per-capita fish consumption is expected to reach 19.6 kg in 2021, 16 percent higher than the average level for 2009–2011.
- Owing to high fish prices, fish consumption growth is projected to slow to 0.3 percent per year, compared with 1.7 percent per year in the previous decade.
- Per capita fish consumption will increase in all continents, except in Africa (owing to population growing faster than supply), with Oceania showing the highest growth rate.





Per capita consumption of animal protein in China 1980-2010

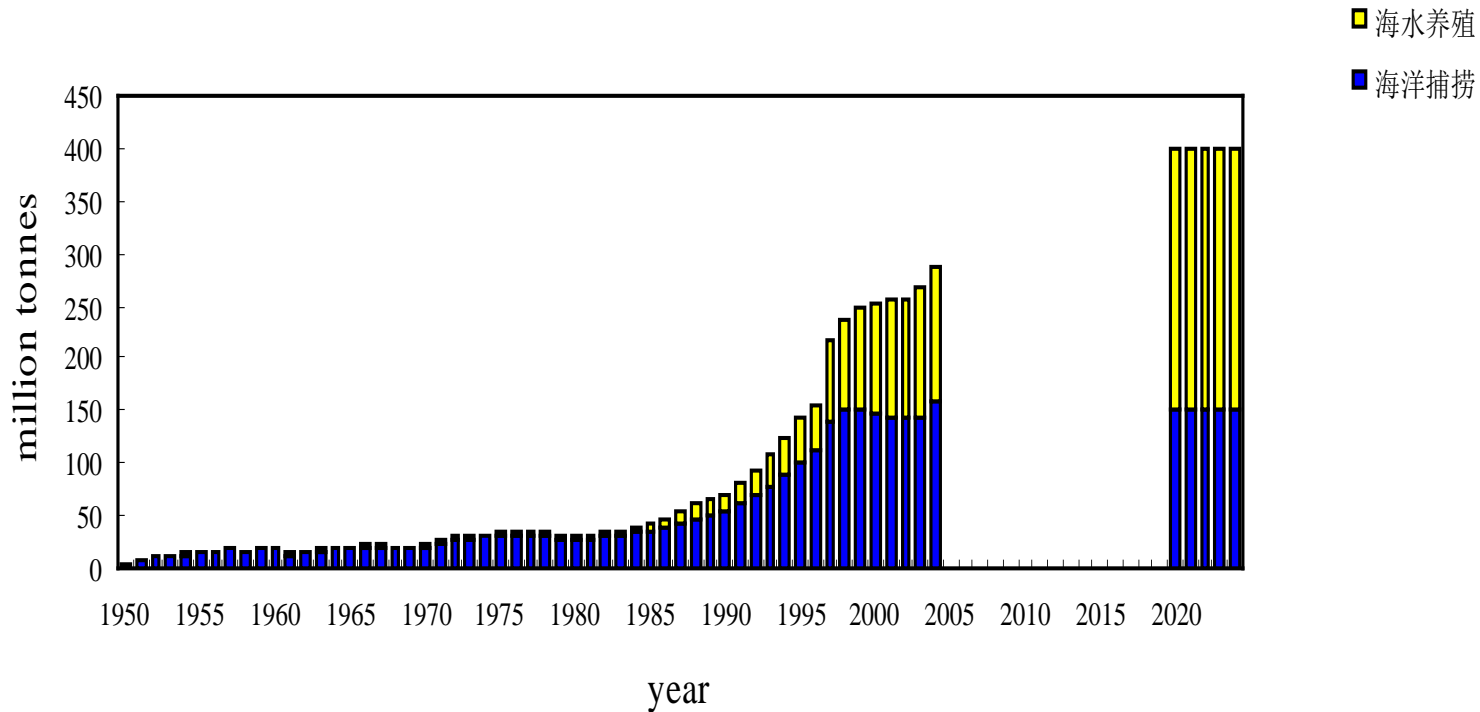




Items	year 2010	year 2015	expected annual growth
Total fishery output (billion Yuan)	670	1000	8.3
Value added (billion Yuan)	380	640	11
Fish export value (billion USD)	13.8	18	5.4

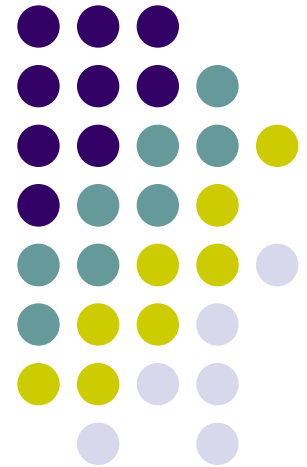
- This table shows a projection of China fishery development in "The State Twelfth five-year plan" (2010-2015)
- About 40% of the world total fish products for international trade, but China only 10% at the moment, a large room for development.

# Outlook of China's marine capture fisheries and aquaculture



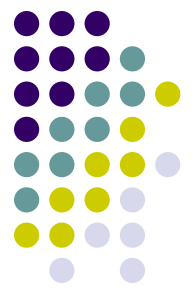
- In 2030, China's population will reach 1.6 billion, 300 million more than now
- If the per capita fish consumption is kept the same as now, China will need produce 20 million tonnes fish more than now
- Where to get the fish? Aquaculture is probably the only choice.

# Challenges





- water constraint & pollution
  - China per capita fresh water occupation only one fourth of the world average.
- limited availability of land space for aquaculture
  - China population 1.3 billion, per capita land occupation only one fourth of the world average.
- economic viability (rising costs of energy, fish meal, feeds and labor force)
- environmental concerns and related public perception, particularly environmental effects of intensification or expansion of aquaculture



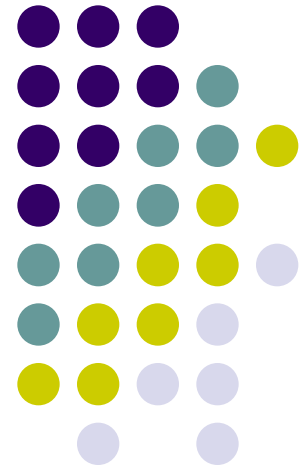


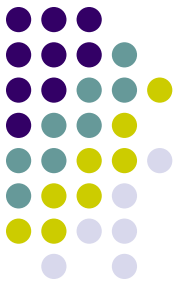


- international trade barriers
  - quality & safety increasingly being used as reasons to 'limit access' to markets
  - particularly important for export targeted products
  - export prices strongly linked to quality & safety
- capital for investment (financial crisis)
- aquaculture disease outbreaks
- aquaculture genetic deteriorations



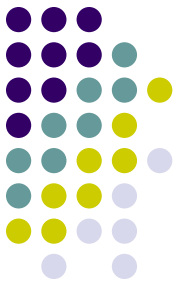
# Development strategy





- Prioritize aquaculture, especially mriculture due to limited resources (land, fresh water....)
- Upgrade infrastructure and equipments in fishery sector
- Speed up technological innovation and improve production efficiency (to decrease production cost)
- Encourage farmer organizations, producer groups, codes of conduct
- Promote a financial incentive or simply enable access to markets
- Improve management patterns and framework





### 本土品种

在家鱼人工繁殖成功的鼓舞下，本所在随后的发展中逐步形成了水产动物繁殖、育种研究的学科优势，在本土野生品种和引进品种的驯化繁殖养殖方面成绩显著。



广东鲂 (*Megalobrama hoffmanni*), 广东省科技进步三等奖(2000)



斑鲮 (*Mystus guttatus*), 人工繁殖初步成功



翘嘴红鲮 (*Erythroculter ilshaeformis*), 人工繁殖成功并批量生产。

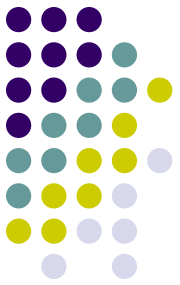


倒刺鲃 (*Spimibarbus denticulatus denticulatus*), 人工繁殖成功。



鳗鲡人工繁殖研究已经取得大量获得仔鱼的进展。图为日本鳗鲡 (*Anguilla japonica*) 的怀卵亲鱼

- Greater need for 'monitoring & control' over aquaculture
  - concern over abuse of chemicals and drugs in some production systems
  - Test environmental contaminants (heavy metals, dioxins)
  - BMP practices
- Comply with international criteria and overcome international trade barriers



# Summary

- Demand from international fish markets will increase
- Fishery production will increase
- Rising share of aquaculture (vs. capture fisheries)
- Rising price of fish
- Global trade will become more rigorous (greater need for control)
- Choice of strategy - balance resource constraints, increase economic efficiency.



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**Thank you for your  
attention!**

