



# 2<sup>nd</sup> Targeted Workshop for Asia and the Pacific

*Transforming Good Practices from  
Demonstration  
Projects into Scaled-Up  
Investments and Financing*

## Application of IRBCAM: the Experiences with Bohai Sea, China

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IW: LEARN Regional Workshop  
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# Project Background

- PEMSEA III – IRBCAM Project is the demonstration in China for **Integrated River Basin and Coastal Area Management** focusing on **Pollution Reduction and Investment in the Bohai Sea**
- GEF implementation of SDS-SEA project

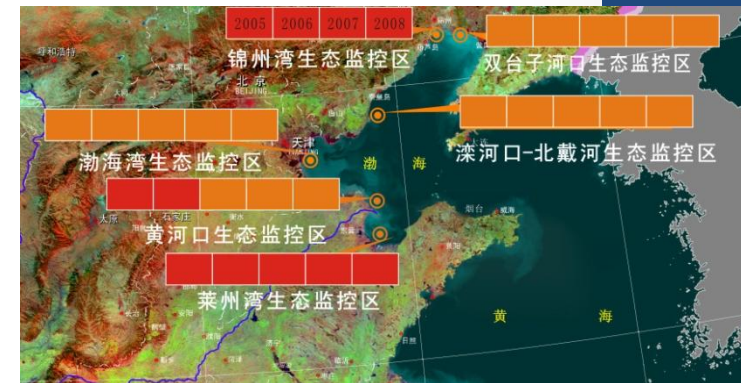


# Background of Bohai Sea and Watershed



- 1.8% of land area
- 2.6% of sea area
- 6.14% of population
- 10% of industry value
- 70% of sea salt product
- 5.6% of sea food
- 14% of GDP

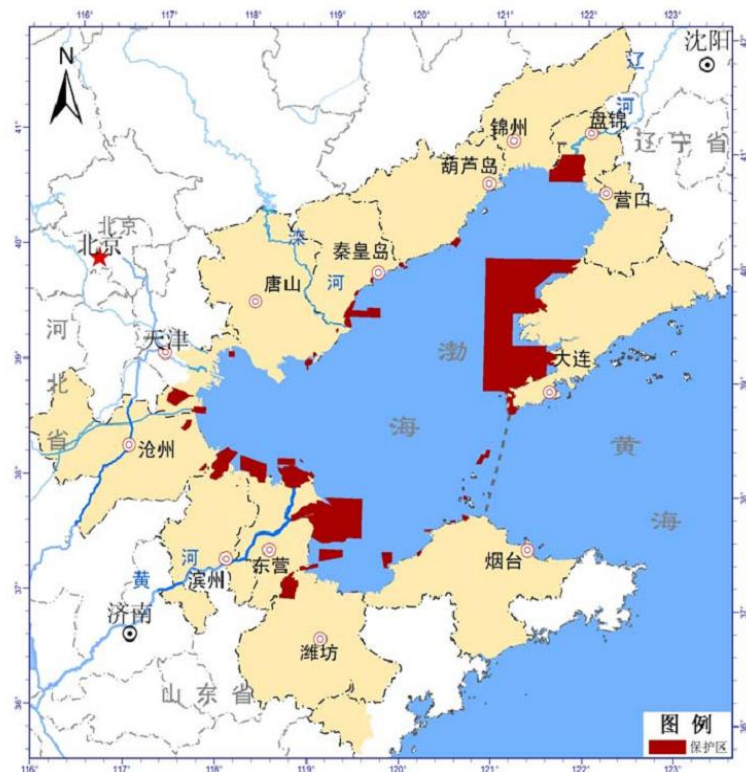
## Ecosystem conditions



	Year	Fair	Low pollution	Middle pollution	Heavy pollution	Total
Bohai Sea water quality (km2)	2004	15 900	5 410	3 030	2 310	10 750
	2005	8 990	6 240	2 910	1 750	10 900
	2006	8 190	7 370	1 750	2 770	11 890
	2007	7 260	5 540	5 380	6 120	17 040
	2008	7 560	5 600	5 140	3 070	13 810

# MPAs in Bohai Sea

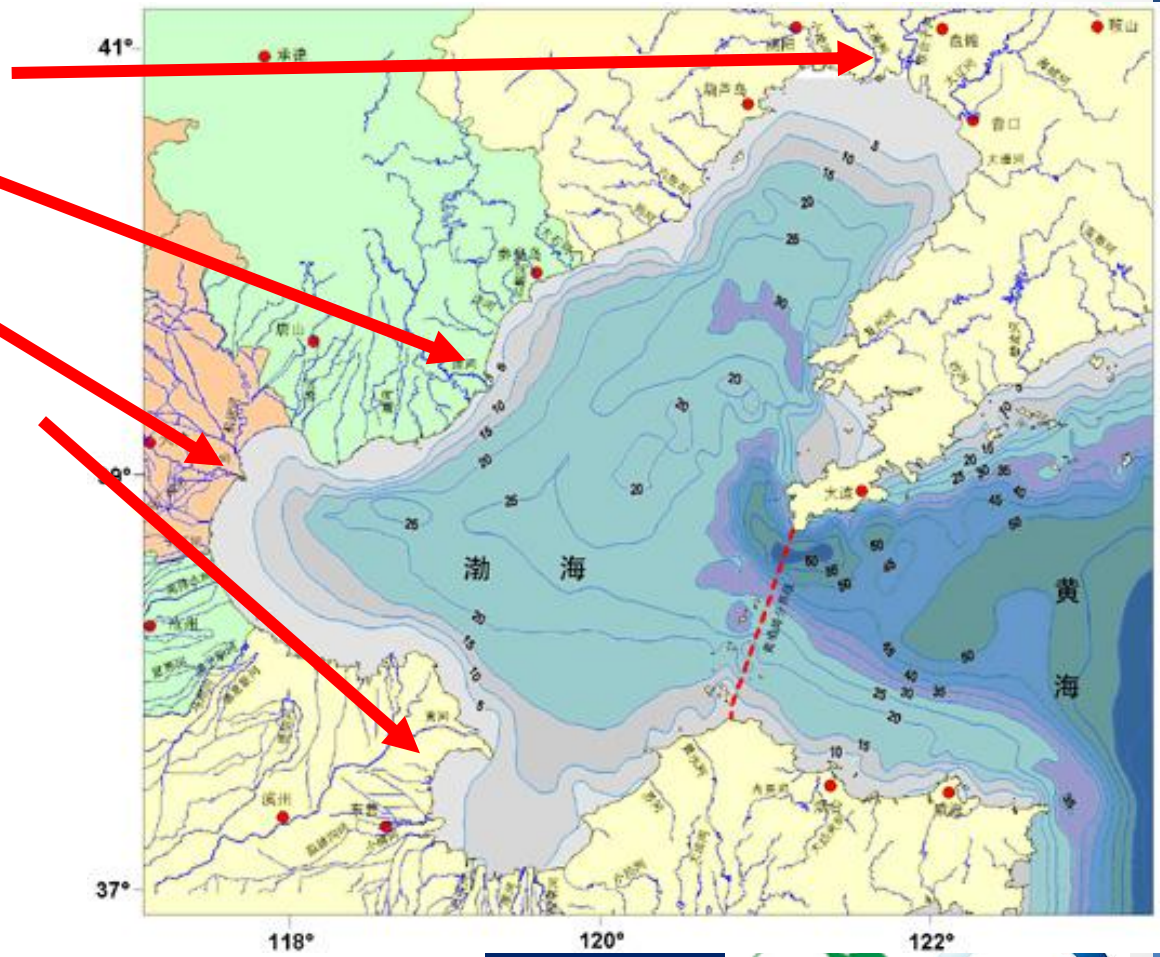
➤ Area of MPAs in Bohai Sea is about 16960 km<sup>2</sup>, involving natural landscape, special islands, estuarine wetlands, natural heritage, and globally significant species



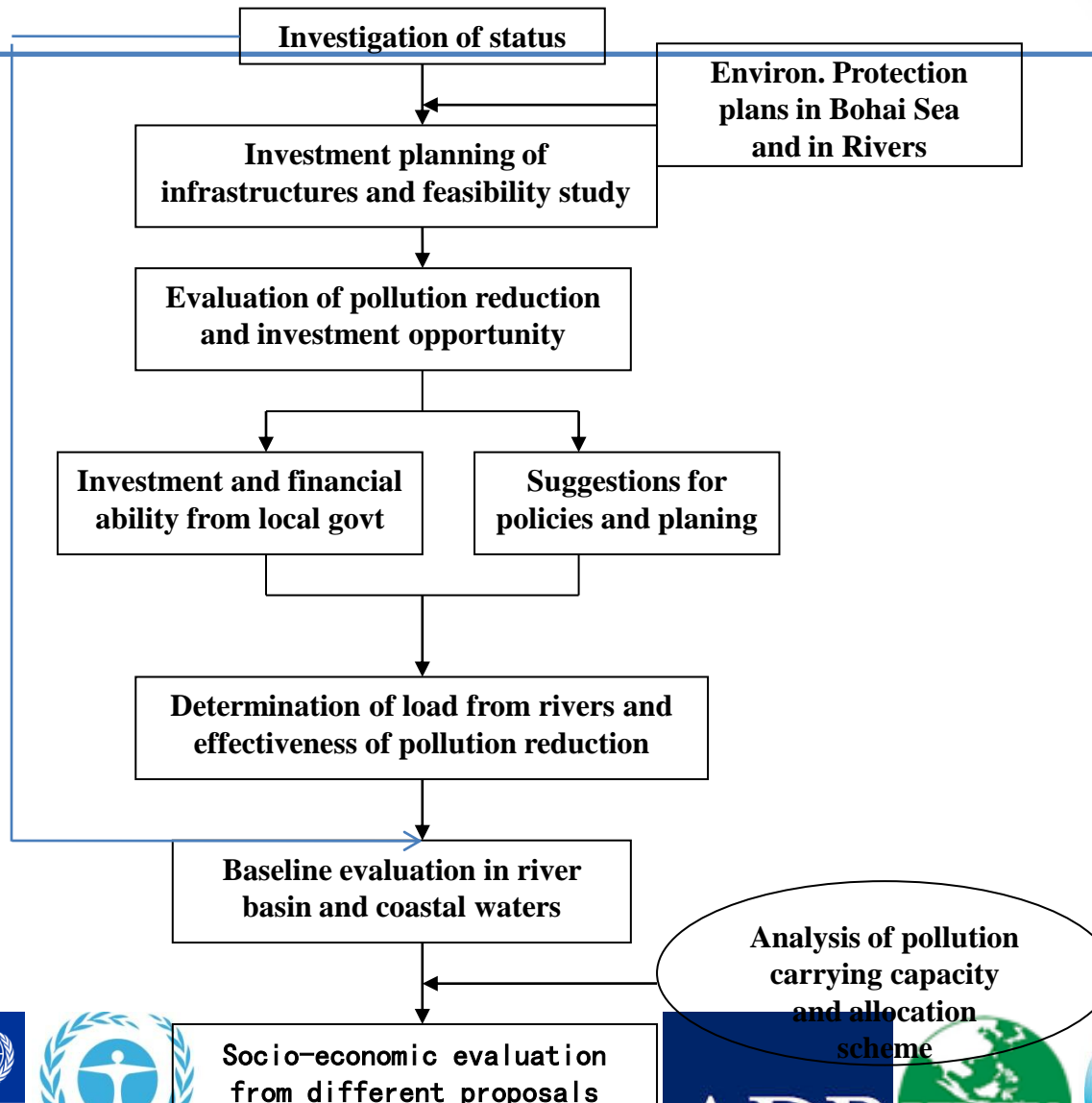


# 4 rivers as demo sites

- Dalinghe River
- Luanhe River
- Haihe River
- Guanglihe River



# TPL as a Methodology for IRBCAM



# Developing and analyzing baseline

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- Administrative boundaries and areal coverage within the river basin and/or adjacent coastal area
- Existing population, and population forecast to 2020
- Socio-economic profile of the area (i.e., GDP/capita, major economic sectors; employment levels; poverty levels);
- Key development issues in the local government's development strategy and master plan
- Major investment projects, proposed, planned or underway, for infrastructure provision



# Results from 4 rivers in Bohai Sea

## Luan River

Area: 54,530 km<sup>2</sup>

Runoff:

1950-1999: 3.192billion m<sup>3</sup> every year

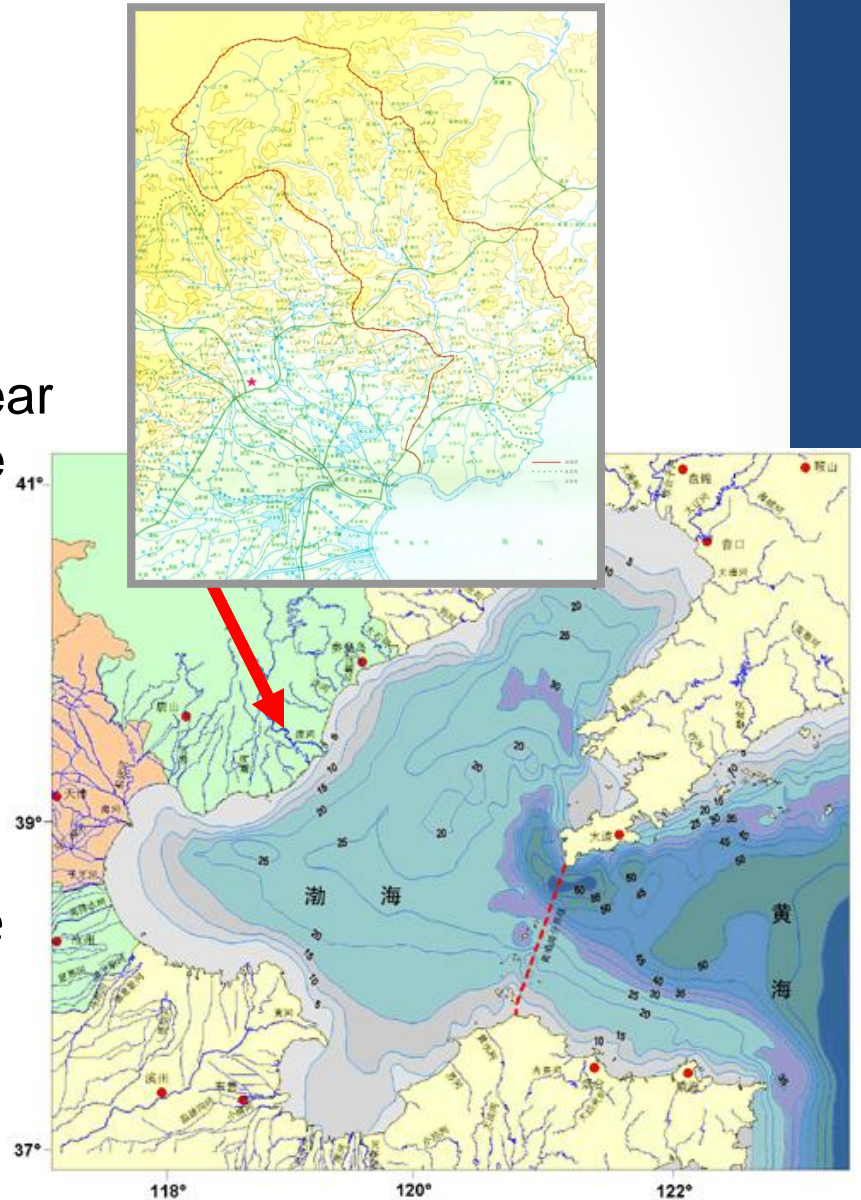
2000-2006: 0.083billion m<sup>3</sup> every ye

Population: 13.93million

GDP: RMB 540billion yuan

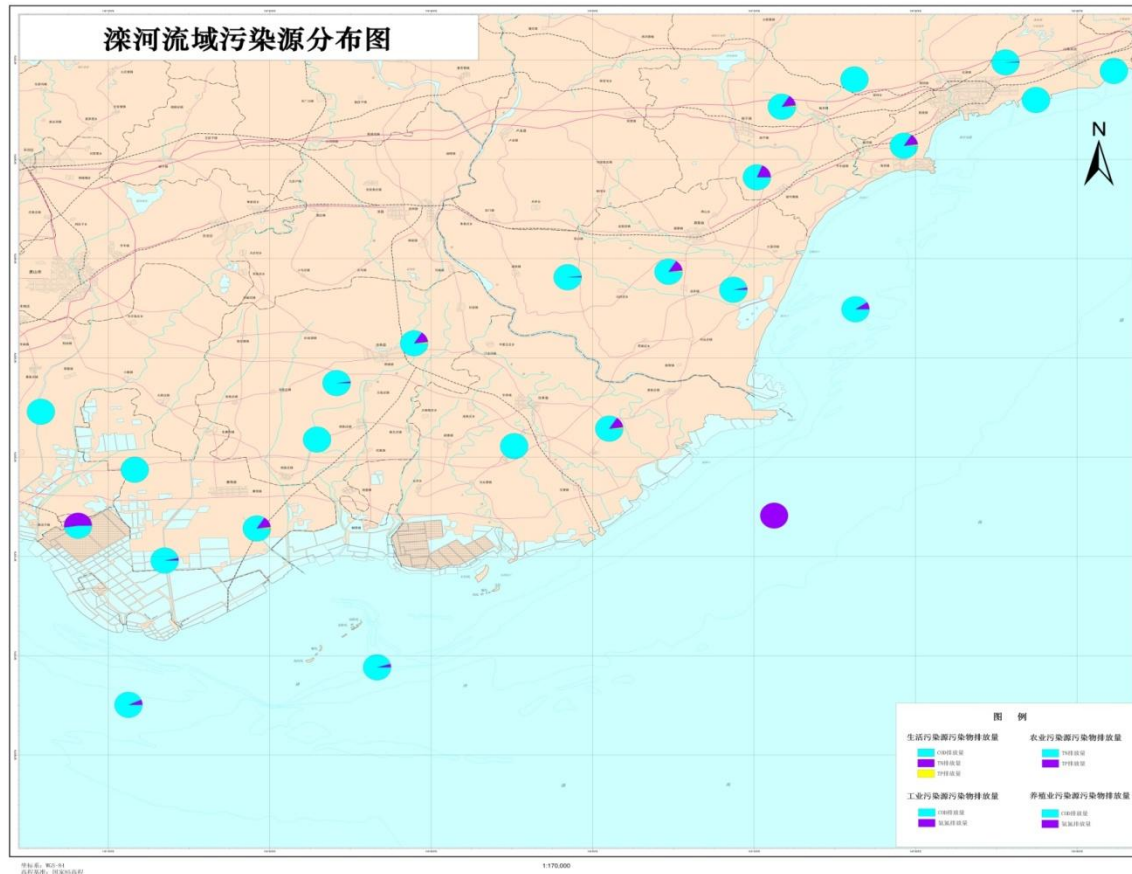
Model:

- Ecosystem-based targets
- Zoning and controlling
- Network for control of discharge





# Distribution of pollution sources



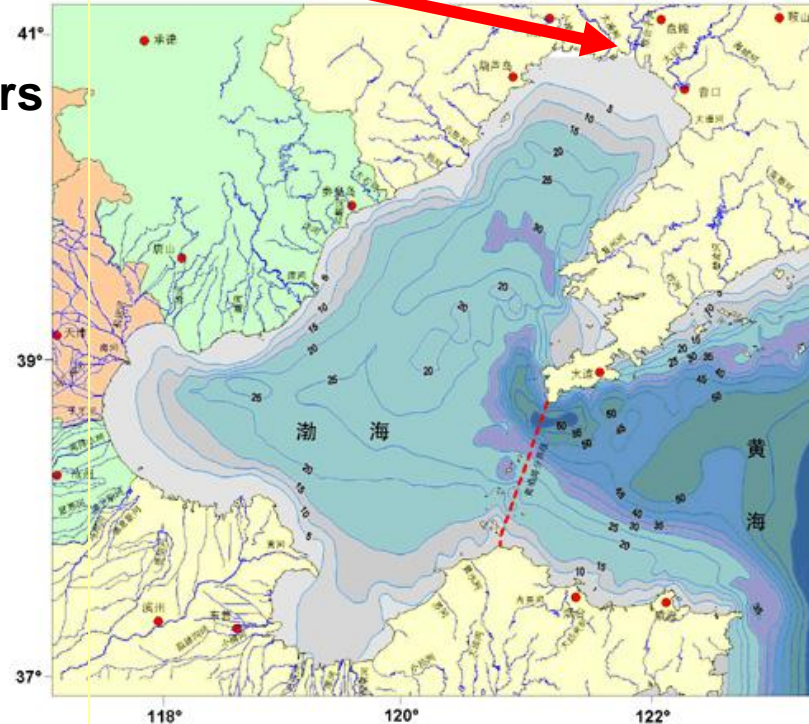
# Pollution reduction potentials from point sources in Luan River

Project name	Pollutants reducing allocations
Hebei yunghsin paper Co.,LTD. Wastewater recycling	COD 500 groundwater tons/year
TangShanRong cheng steel Co., LTD. Sewage disposal recycling	Cut COD 17tons/year, Ammonia nitrogen 7tons/year
Eight farm papermaking enterprises in tanghai county wastewater treatment engineering	Cut COD 4792tons/year
Eight farm wastewater treatment in Tanghai county	Cut COD 26156tons/year
Hebei qianan region fertilizer Co., LTD wastewater reuse	Reduse salt 10mTons, NH <sub>3</sub> -N 7.128tons
QianAnShi hong industry carpets Co., LTD wastewater treatment	Cut COD 112.5tons/year
Shunfa paper Co., LTD. Wastewater treatment	Cut COD1200tons/year
Hebei tianjin west steel Co., LTD sewage reuse	Cut COD10tons/year
Fans ChangLiXian dragon stores comprehensive control project production	reduce COD 2200tons/year,Ammonia nitrogen 200tons/year



# Daling River

- **Location:** in western Liaoning Province;
- **Total length** is 397 km , 373 km long in Liaoning Province;
- **Watershed** : 23,263 sq. kilometers
- **Watershed population** : 6.52 M people
- **GDP:** CNY 17.95 Billion
- **Model:**  
PA-based targets  
County level model-SME



**The comparison between the needed minimum reduction amount and total reduction amount estimated by pollutant reduction program in 2015 (ton/ year)**

River	No.	Control Unit	Pollutant-holding region	The total reduction amount in 2010	The reduction amount of clean Production in 2015	Total reduction Amount in 2015	The needed minimum amount (Q) of COD to be reduced in 2015	City
Daling River	1	Wangjiawo pu	Jianchan Removalg County	2811	2811	2280	2280	Hulu dao
West branch Of Daling River	2	Habaqi	Lingyuan City	5296	1400	6696	6647	Cha oya ng
Shenjing River	3	Pingandi	Jianping County	9446	300	9746	9573	
Daling River	4	Taipingzhu ang	Kazuo County	1943	400	2343	2146	
	5	zhangjiyin gzi	Chaoyan g City	14555	2500	17055	16971	
	6	wangjiago u	Beipiao City	5789	900	6689	6512	
	7	zhangjiapu	Yi County	2235	2235	813	813	Jinz hou
	8	Xibaqian	Linghai City	93183	13300	106483	106391	
Xi River	9	Gaotaizi	Fuxin City	25126	3900	29026	28921	Fuxi n
Total				160384	22700	183084	180254	



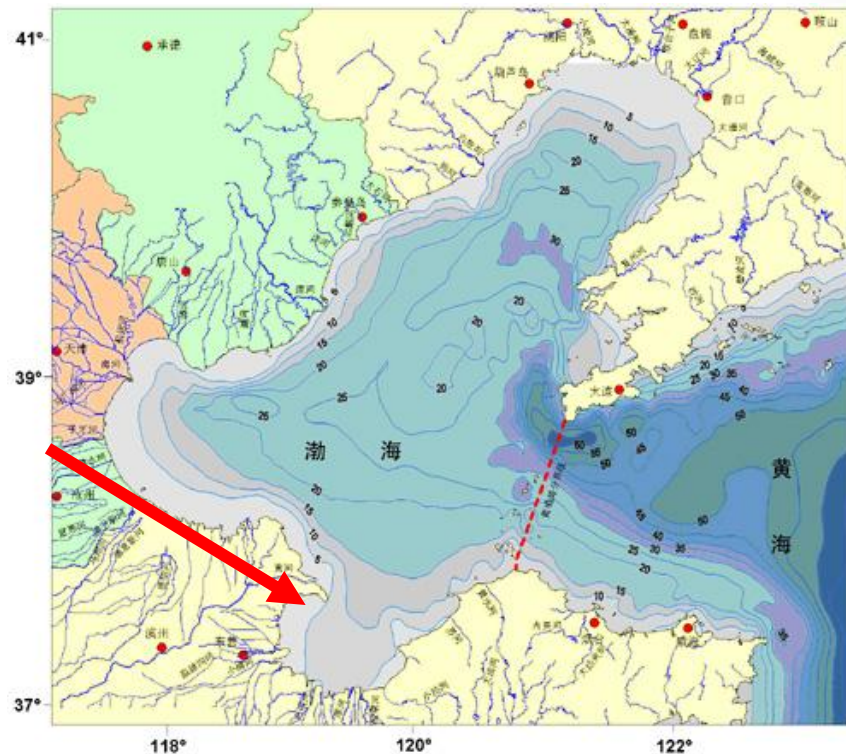
# Guangli River

Guangli River : 48.8 km

Drainage area: 792 km<sup>2</sup>.

Population of the watershed:  
838 000.

- Model:
- City river with eco-landscape
- Re-constructing relationship  
between human and water

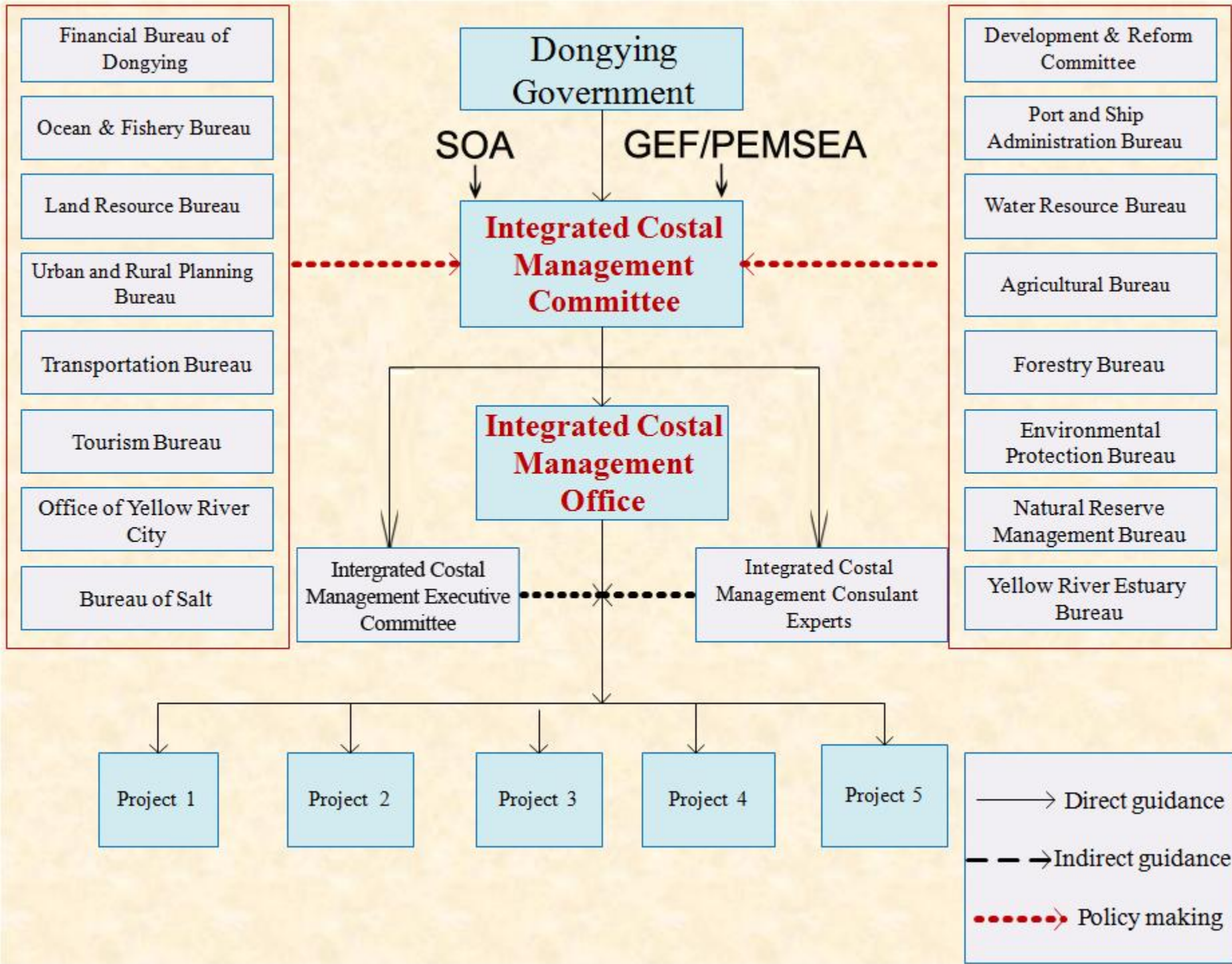


# River Channel restoration - Guangli

- Set up targets of water quality
- Planning pollution reduction
- Infrastructure planning and construction
- Channel clean-up activities

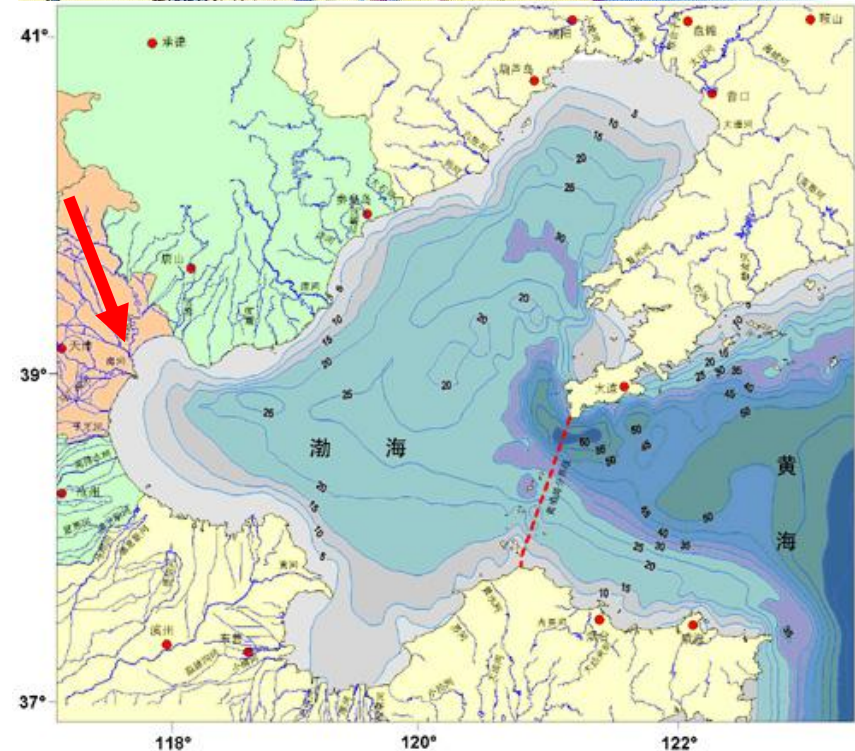






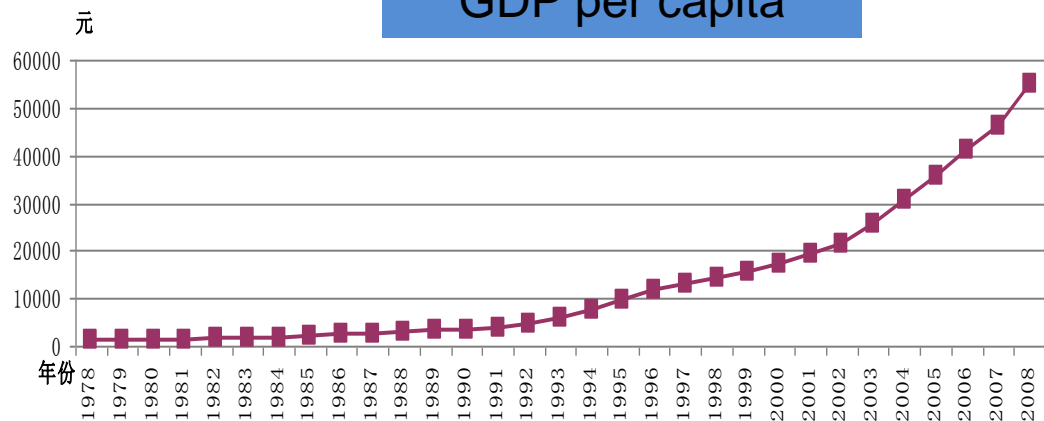
# Hai River

- 19 channels, 1095.1km long
- 6 man-made channels
- Population in Tianjin: 11,760,000
- GDP(2008): RMB 635 billions
- Model:
- Coastal-water-based
- Controlling under rapid development

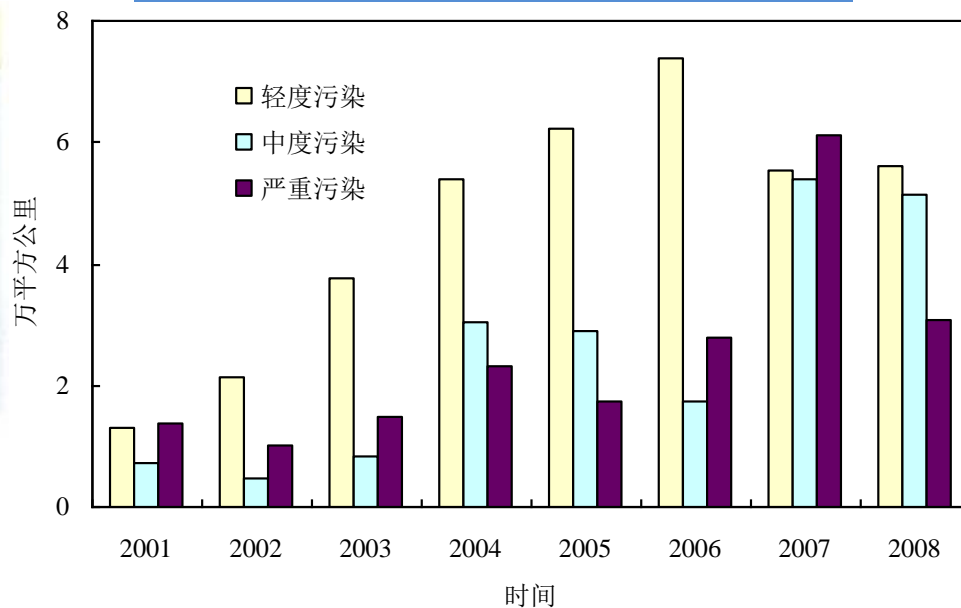




## GDP per capita



## Coastal water pollution trends



# Main measures to reduce pollution

行政区	COD 排放量 (万吨)	削减率 (%)
北 京	9.9	14.7
天 津	13.2	9.6
河 北	56.2	15.0
河 南	15.4	10.5
山 东	16.64	18.0
山 西	11.8	14.5
内 蒙 古	0.6	0
合 计	123.7	14.2

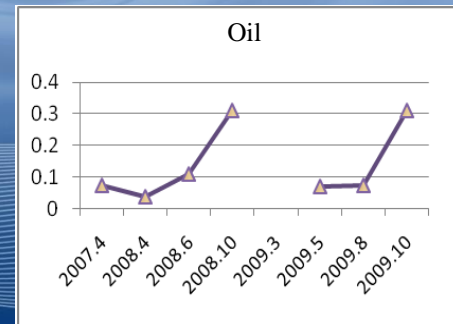
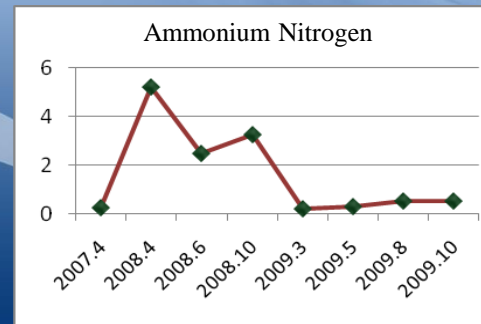
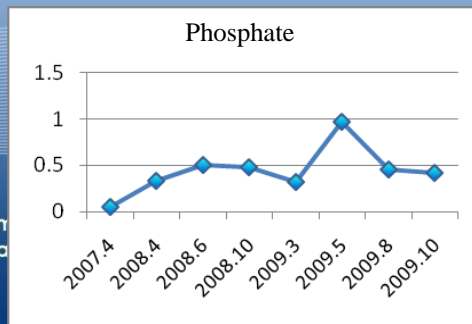
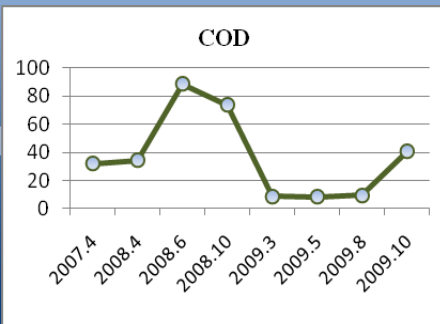
- Targeting
- Analyzing reduction capacity
- Planning
- 19 sewage and waste water treatment plants constructed and improved
- 524 projects determined with proposed investment of RMB 29 billions
- Promoting clean production
- Promoting reduction of poultry farming pollution
- Integrated monitoring system

# Achievements

## in Guangli River from IRBCAM

◆ In Guangli River the implementation of 1,086 projects since 2007 with a cost of RMB3.4 billion (US\$540 million) resulted in reduction of COD and ammonia nitrogen by 74% and 89% from baseline year of 2007.

◆ However phosphate and oil emissions will be the future mitigation priorities.



# Achievements in other areas

- With project support, total pollutant loading control reports including investment plan are produced by all four river basins
- 163 mitigation projects are planned in three river basins with planned investment of 16.4 billion yuan (US2.6 billion dollars), focusing on mitigation from **industrial pollution, urban sewage, aquaculture, ecosystem degradation and partly agriculture runoff**





# Experiences

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- Concept and experience into local decision process
- Formulated experiences and framework into local plans
- Central government and agencies pay more attention on those rivers and coastal waters
- The local governments and agencies can plan as a whole for river basin and coastal waters
- The experiences and lessons exchanging with other ICM parallel sites



# How to implement investment plans

- **Bohai Sea Environmental Strategy**
- **Integrated Plan for Reducing Pollution in Bohai Sea**
- **12<sup>th</sup> Five-year Plan for National Environmental Protection**
- **Provincial plans of environmental protection around Bohai Sea**
- **Scientific research programs on pollution reduction and ecosystem remediation**

12<sup>th</sup> Five-year  
Plan of National  
Socio-economy

## China 12<sup>th</sup> FYP Environ Targets:

- ◆ Water use perunit industrial add-value reduced by 30%
- ◆ Irrigation water use efficiency index reaches 0.53
- ◆ Non-fossil energy accounts for 11.4% of primary energy use
- ◆ Energy consumption persunit GDP reduced by 16%
- ◆ COD emission reduced by 8%
- ◆ Ammonia nitrogen and nitrogen oxide emissions reduced by 10% each
- ◆ Forest coverage increased to 21.66%
- ◆ MPA area accounts for 3% of total seas

# Conclusions

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- The project was just a starting to integrate river basin and coastal area management focusing on pollution reduction and investment in the Bohai Sea in China.
- Integrated river basin and coastal area planning for pollution reduction is a complicated process requiring understanding and consensus of the concept, capacity to use tools at local level, and putting in place effective coordination mechanism and monitoring
- It is key to putting in place an enabling policy and regulatory environment and integration of mitigation measures into national and local investment plans



# Questions?

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- ✓ What are the most cost-effective approaches and/or activities for controlling the pollution from river to coastal water from non-point sources?

Thank you very much !

