

A Sustainable Model Village in Chengdu, China: Integrating Agricultural Pollution Control and Ecological Farming

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Outline of Presentation

- **Background: Urban Improvement Project**
- **Local Initiative on Agricultural Pollution Control**
- **Key Components of The Model Village**
- **Outcomes**
- **Next Steps: Scaling Up, Replicating**



Background

- The Chengdu Fu-Nan River Comprehensive Improvement Project: 1992-2002
- Flood control, environmental protection, resettlements, afforestation, road networks, cultural heritage



Unresolved water problems: quality and quantity



Pollution

A photograph showing a concrete drainage structure with two circular openings. Dark, polluted water is flowing out of the openings into a channel. The surrounding area has some greenery and a red building in the background.



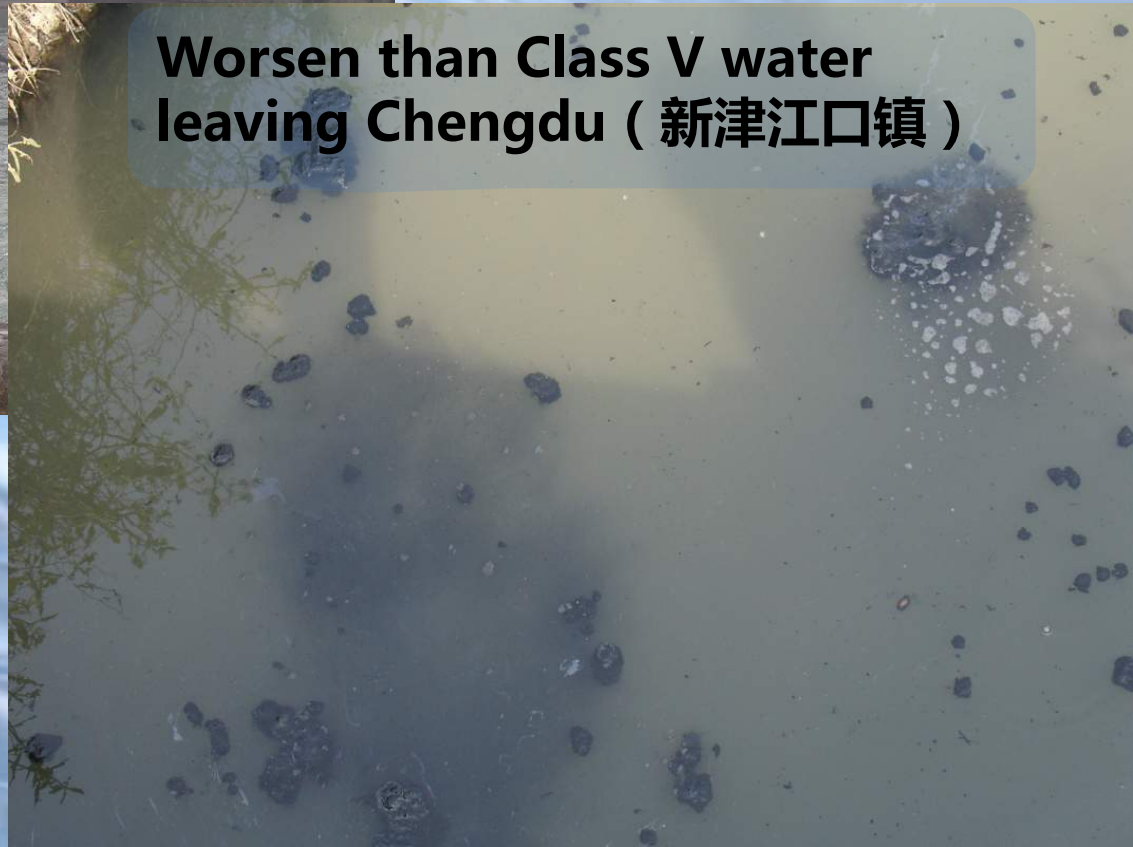
Shortage

A photograph of a riverbed covered in gravel and debris. The water level is very low, exposing the dry riverbed. In the background, there are buildings and a street with a white van.

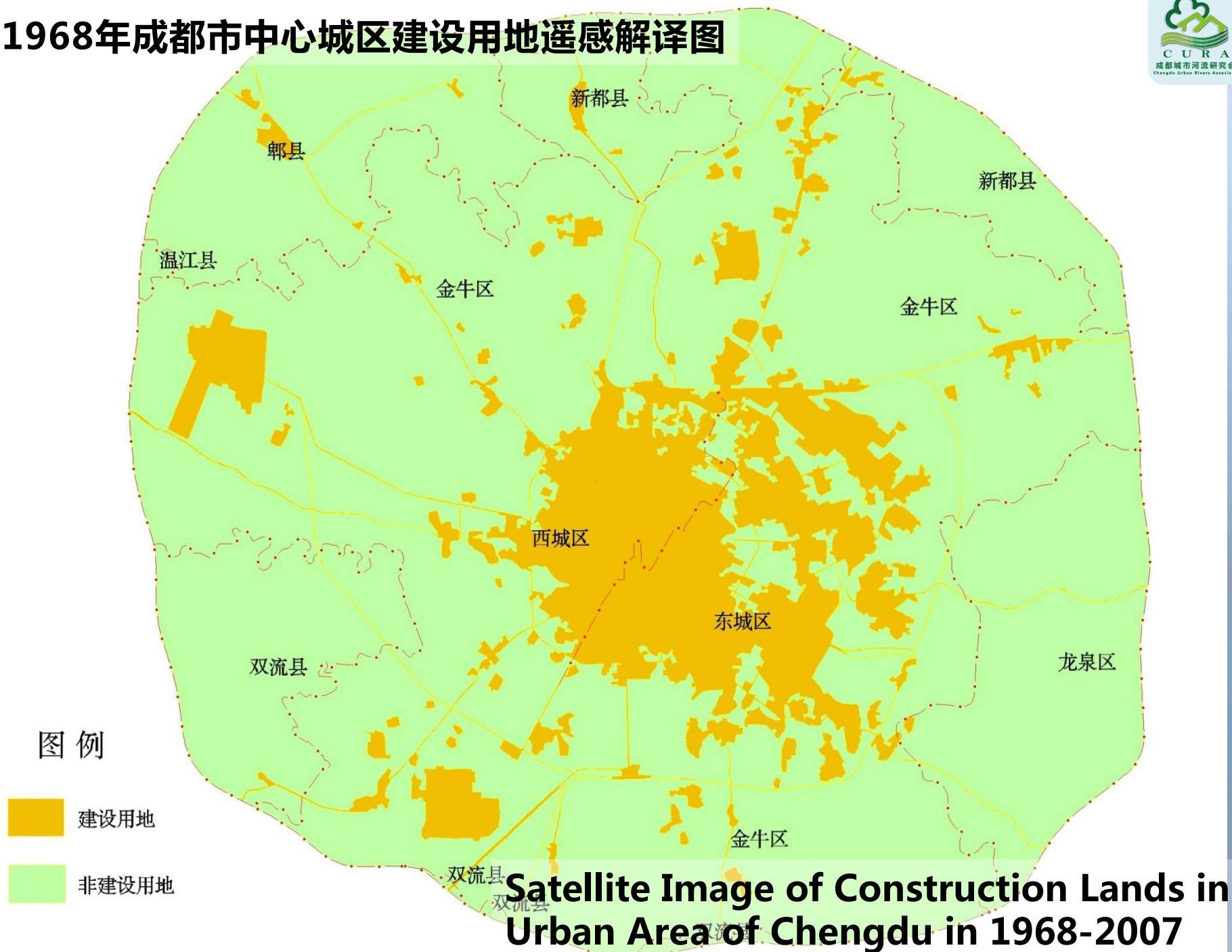
**Class II water entering
Chengdu (都江堰宝瓶口)**



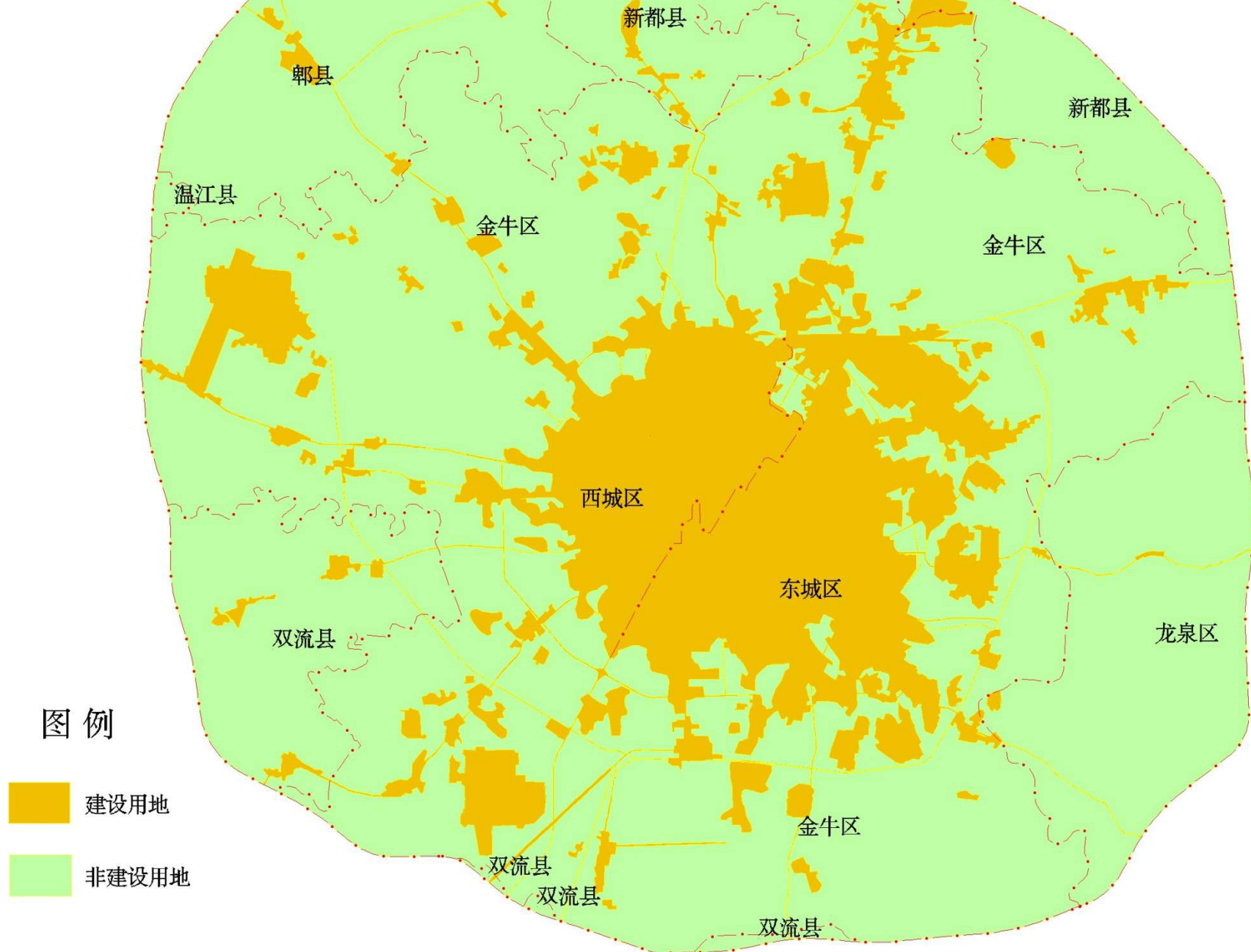
**Worsen than Class V water
leaving Chengdu (新津江口镇)**



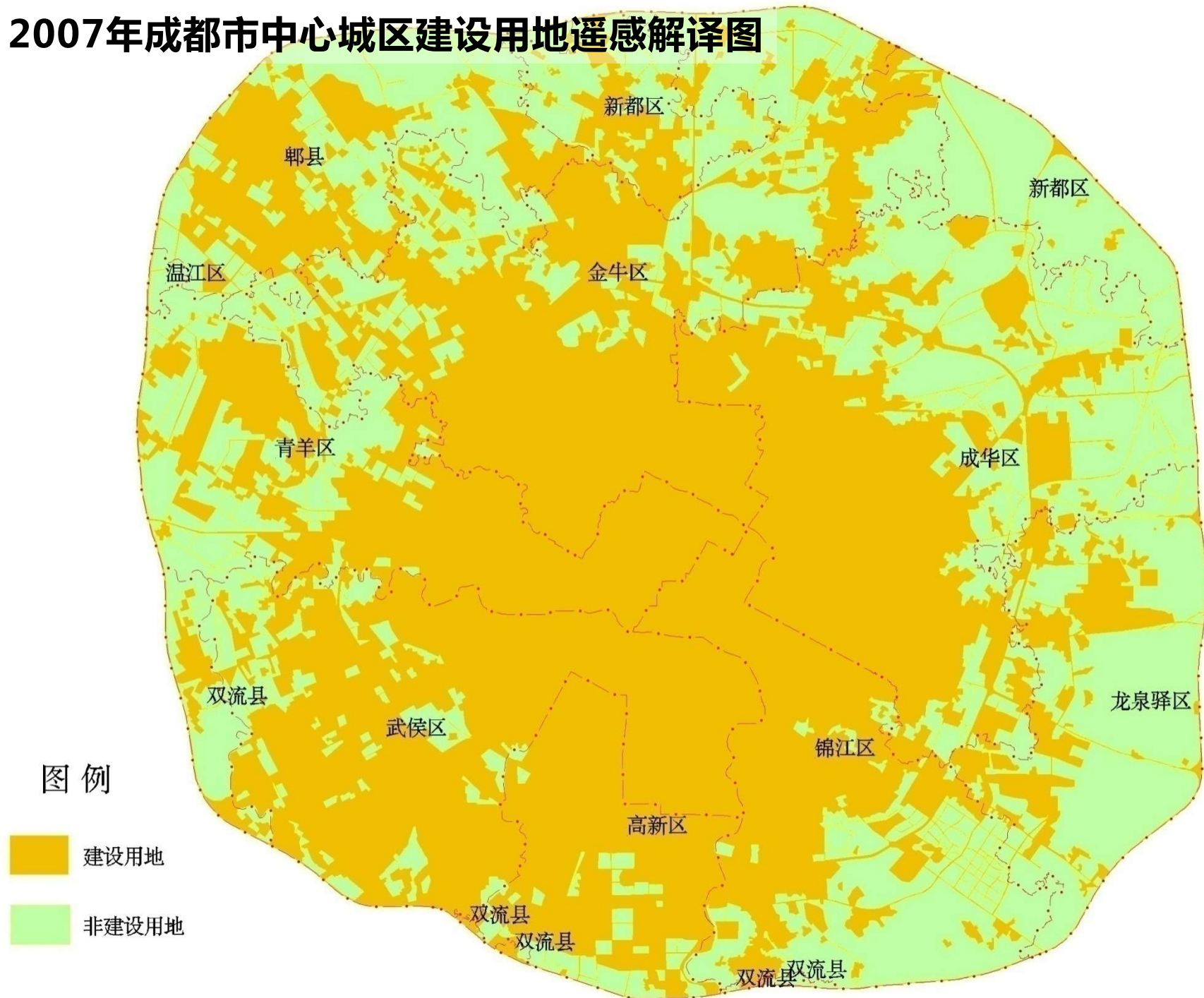
1968年成都市中心城区建设用地遥感解译图



1988年成都市中心城区建设用地遥感解译图



2007年成都市中心城区建设用地遥感解译图



CURA Founded in 2003

- **A non-profit, non-governmental organization**
- **Area of work:**
 - **Research on water environment**
 - **Policy advocacy, information-provision to the public**
 - **Water pollution treatment**
 - **Community environmental education**
- **Focus on peri-urban and rural areas**

Prior Research and Actions

- Organized and conducted surveys on water pollution in 2003
- Identified non-point source Agricultural pollution as a major pollution source
- Decided to focus on pollution control at the source within the rural village itself
- Built a coalition: farmers, volunteers, research institutes, NGOs, local governments



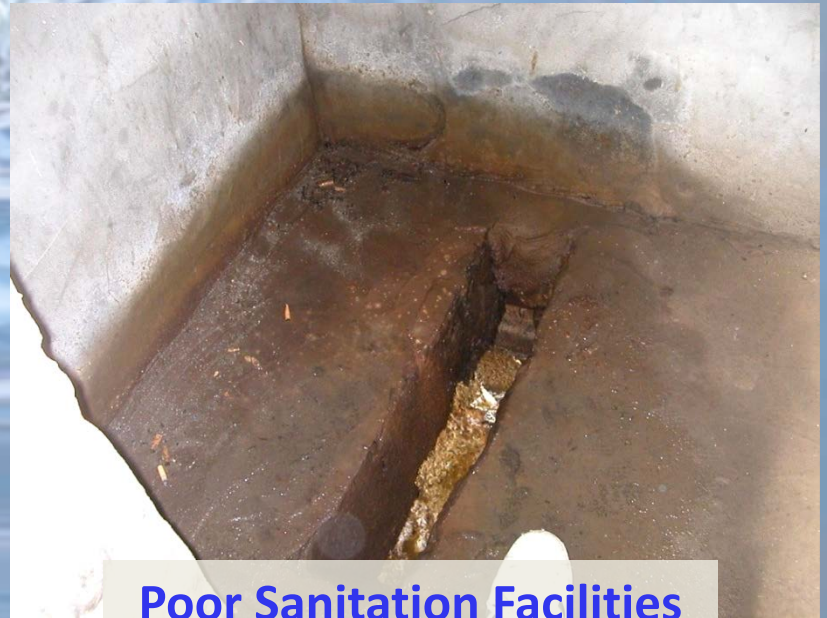
Mushroom Residue



Waste of Resources



Garbage Dumping



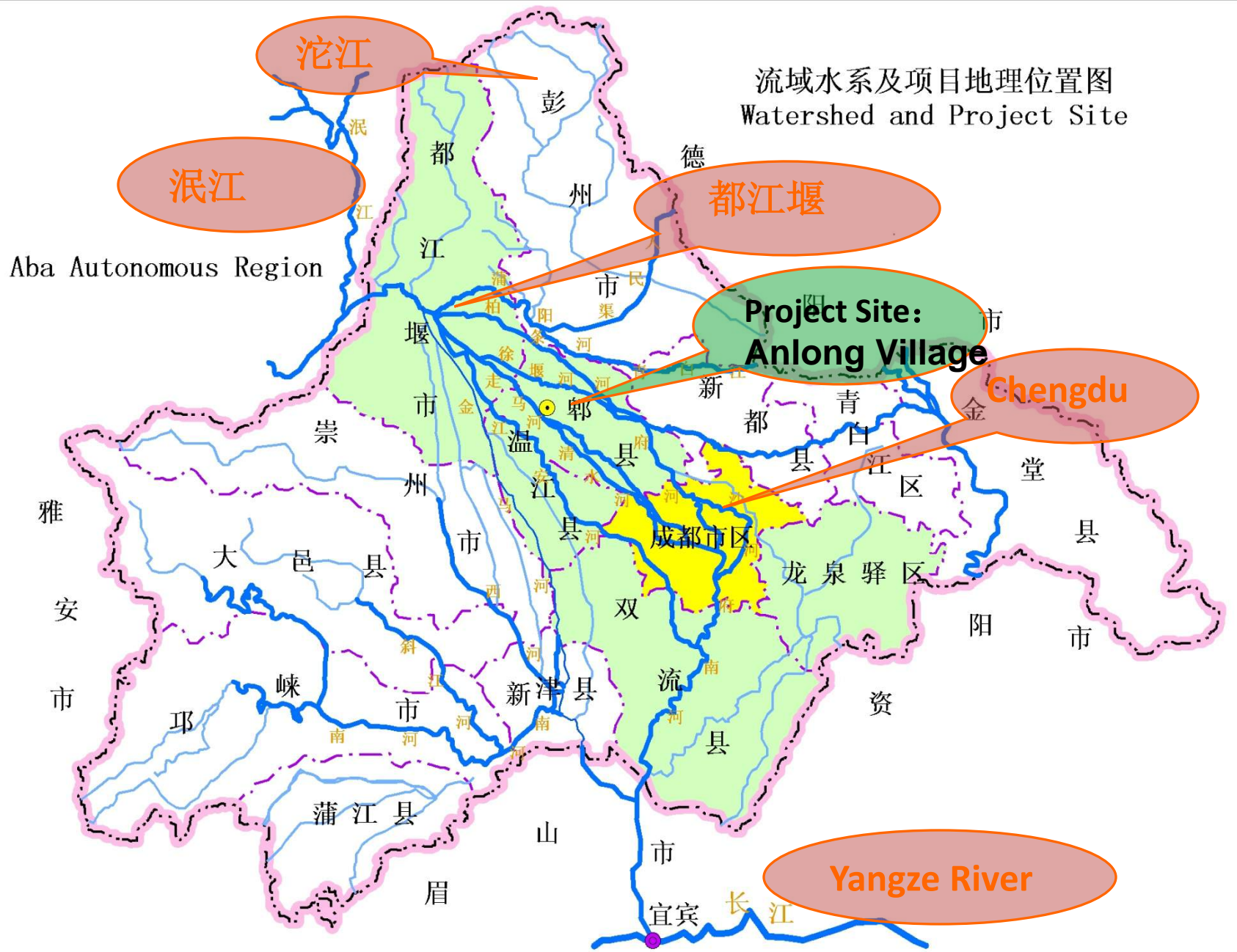
Poor Sanitation Facilities



**Overuse of chemical
fertilizer and pesticide**



流域水系及项目地理位置图
Watershed and Project Site





Transportation

安龙村问题排序

问题	男♂	女♀	排序
获取信息的途径少	5	4	(6)
交通运输不方便	52	34	①
技术培训不足	27	10	②
没有服务农民的农民协会	14	5	③
厨房、厕所卫生条件差	9	9	④
养殖场、加工户排污	2	5	⑦
缺乏青壮年劳动力	2	23	⑧
小额贷款申请难	10	0	⑤



Farmers' Participation

Major Components of Model Village

1. Closed Cycle Eco-Households :

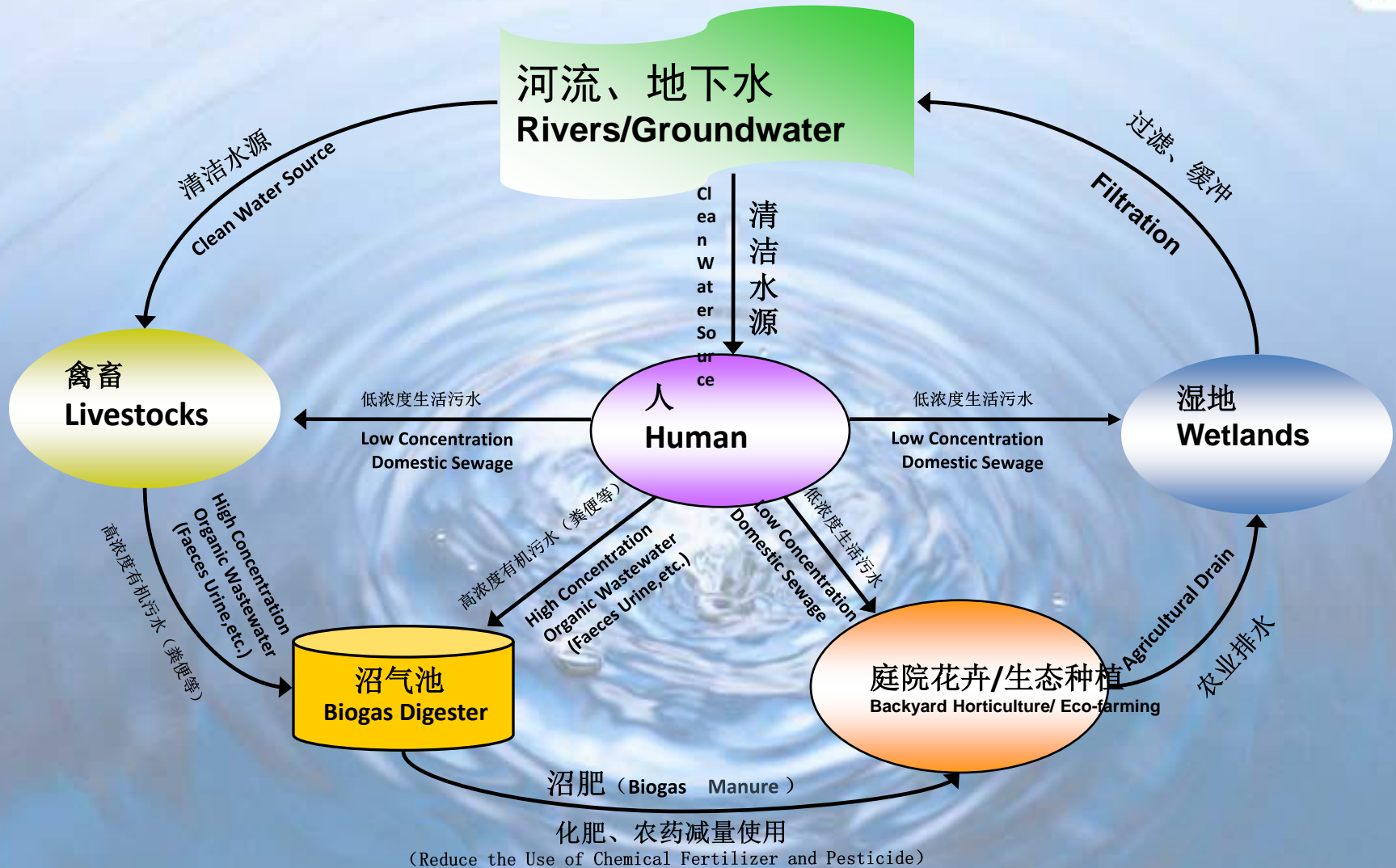
- Biogas digesters
- Urine-diverting composting toilets
- Constructed wetlands for wastewater treatment

2. Ecological Farming

3. Community Supported Agriculture (CSA)

4. Rural Environmental Education

5. Rural Cultural Development



安龙可持续发展示范村水污染防治

Water Pollution Prevention of Anlong Model Village of Sustainable Development

Closed Cycle Eco-Households: Biogas Digester

- Treats animal waste
- Provides clean energy for rural families
- Produces efficient organic fertilizer
- Built the trust of farmers, laid foundation for further steps



On-site Expert Technical Support



Using Biogas



Training for Building and Managing Biogas Digesters

Closed Cycle Eco-Households: Composting Toilets

Urine-diverting Composting Toilets

- Sweden technology
- Modified to suit local conditions

Main Characteristics

- Treats human waste
- Conserves water
- Provides safe organic fertilizer





Prior to and after the project implemented

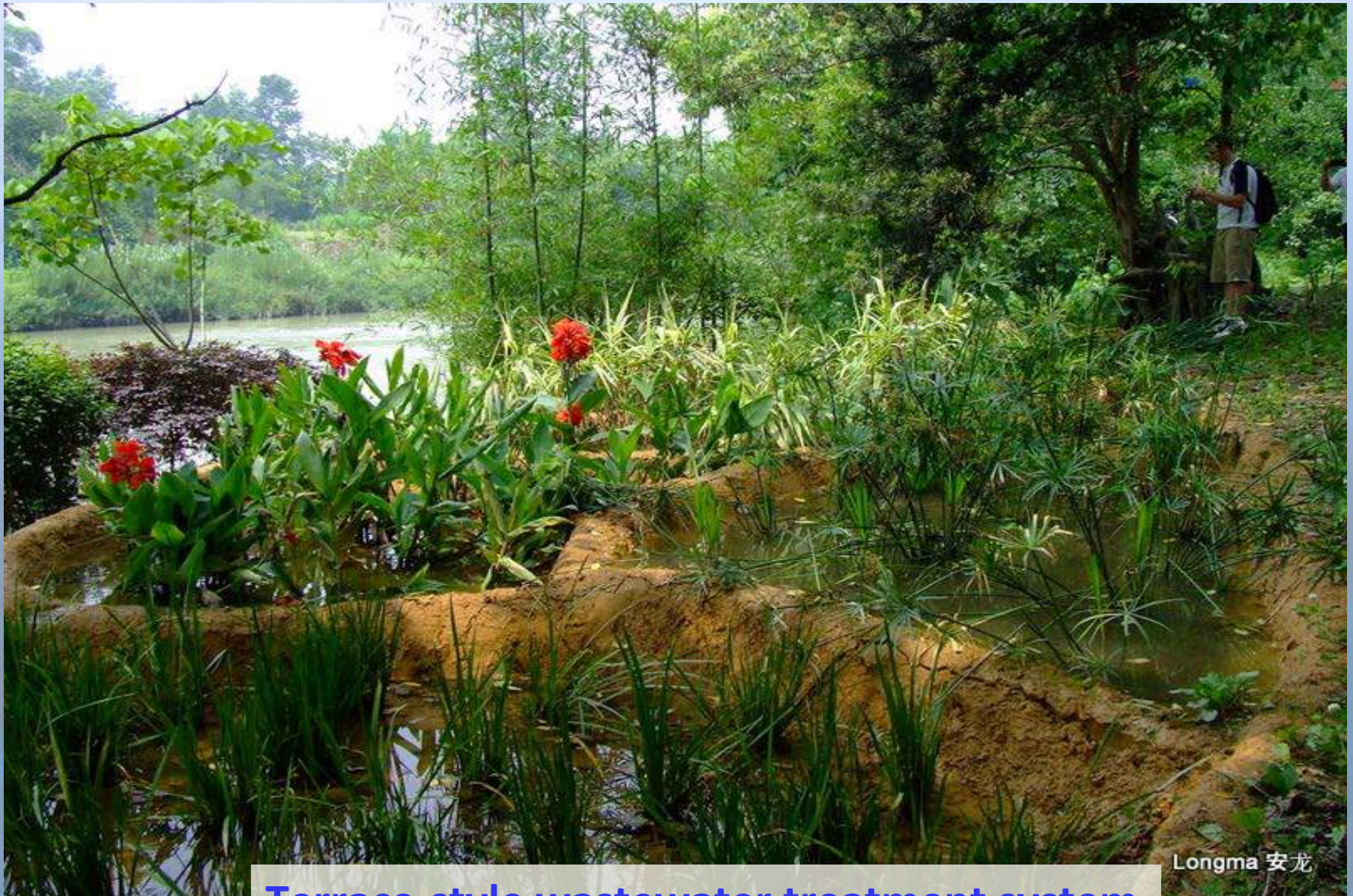


Closed Cycle Eco-Households: Constructed Wetlands

- Treats household wastewater
- Recycles water for irrigation



Pond-bed wastewater treatment system



Longma 安龙

Terrace-style wastewater treatment system

Ecological Farming

Reuses waste materials

Bio-diverse crop rotation

3-year transition period



Ducks in rice padi fields

Chengdu Urban Rivers Association 2003~2014



Community Supported Agriculture (CSA): “Green Consumers Alliance”







Villagers Participating in Environmental Education





Environmental Educational Center



Outcomes

- **Anlong Village: eco-infrastructure for 160 households, 500 people**
- **Yuantian Village: a centralized wastewater treatment system for 40 households, affecting 200 people**
- **Yunqiao Village: eco-infrastructure for 3 model households, 20 people**

Outcomes (continued)

- **Human solid waste treated: 43.8 tons/year**
- **Human urine treated: 174.2 tons/year**
- **Water conserved: 5,256 tons/year**
- **Wastewater treated and reused: 25,112 tons/year**
- **Annual income of ecological farmers: doubles**

Outcomes: Low-carbon Effects

- **Organic fertilizers do not use petroleum in the production process**
- **Organic fertilizers are plant-based and carbon-neutral within a definite time period**
- **When agrochemicals are not used, soil can act as a carbon sink**

Next Steps Under Consideration

- **Scaling up the Model Village**
- **Coordinated Pollution Control**
 - **Considering Air & Water Pollution and Soil Remediation**
 - **Integrating Industrial and Non-point Source Agricultural Pollution Control**
- **Building A Drinking-Water-Source-Area Protection Platform to Support Similar Efforts in Other Parts of China**

International Support and Influence



Thank you!



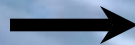


British Middle School Summer Camp in Anlong, 2011

← US KQED



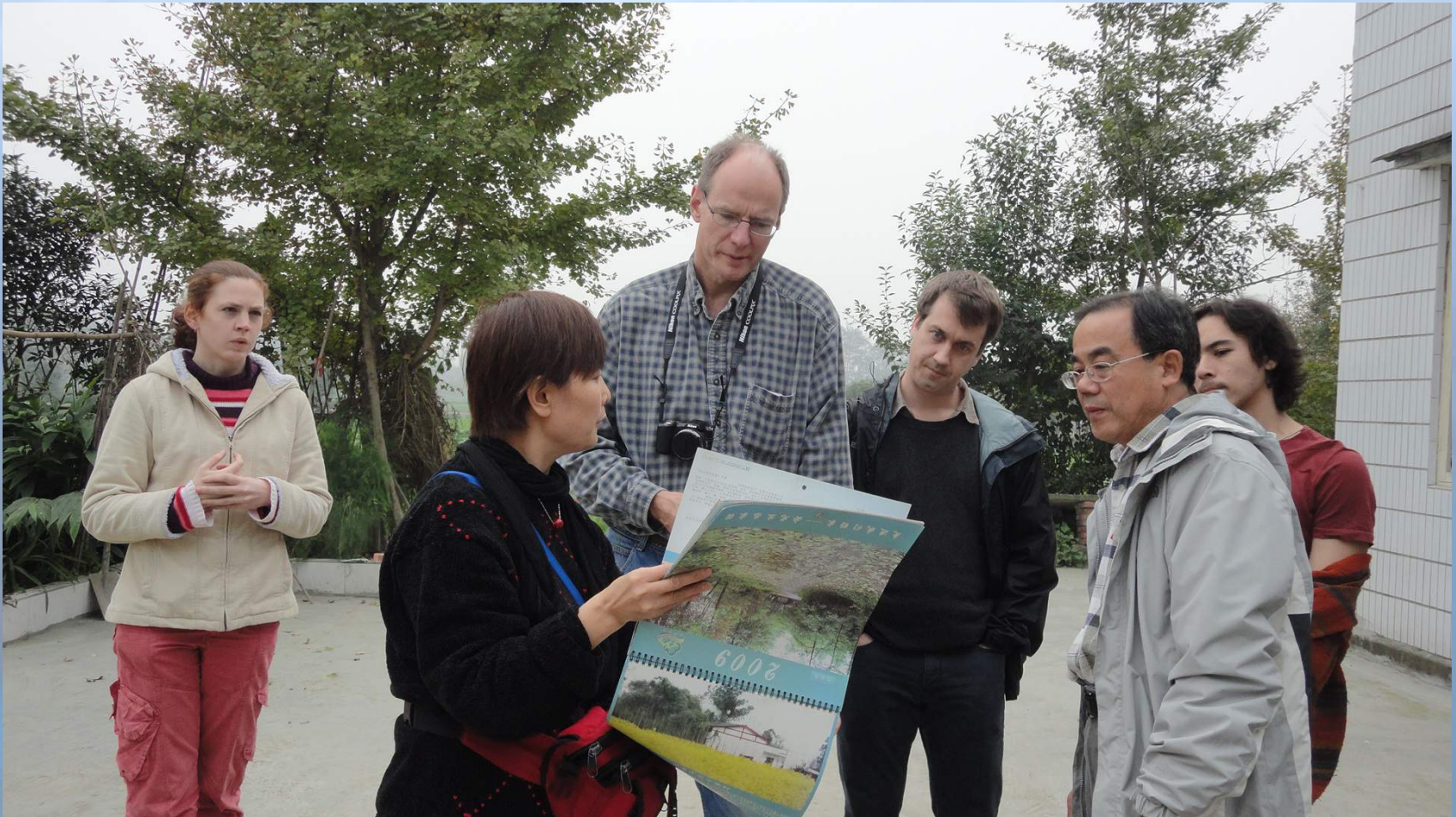
France Water
Media



Mayor of Copenhagen, Demark, October 2010



Policy Director of US Federal Reserve, November 2010



CCTV Interviews for Special Programs, September 9-13





Recovery of natural watercourses





碧凤蝶



黄缘萤



黑斑蛙



灰鹊鸂



Thank You!