



Collective Action and Rice Farming: An Analysis of Irrigation Management in the Cambodian Floodplains



Raksmei Phoeurk (URA) and Jean-Philippe Venot (IRD/URA)

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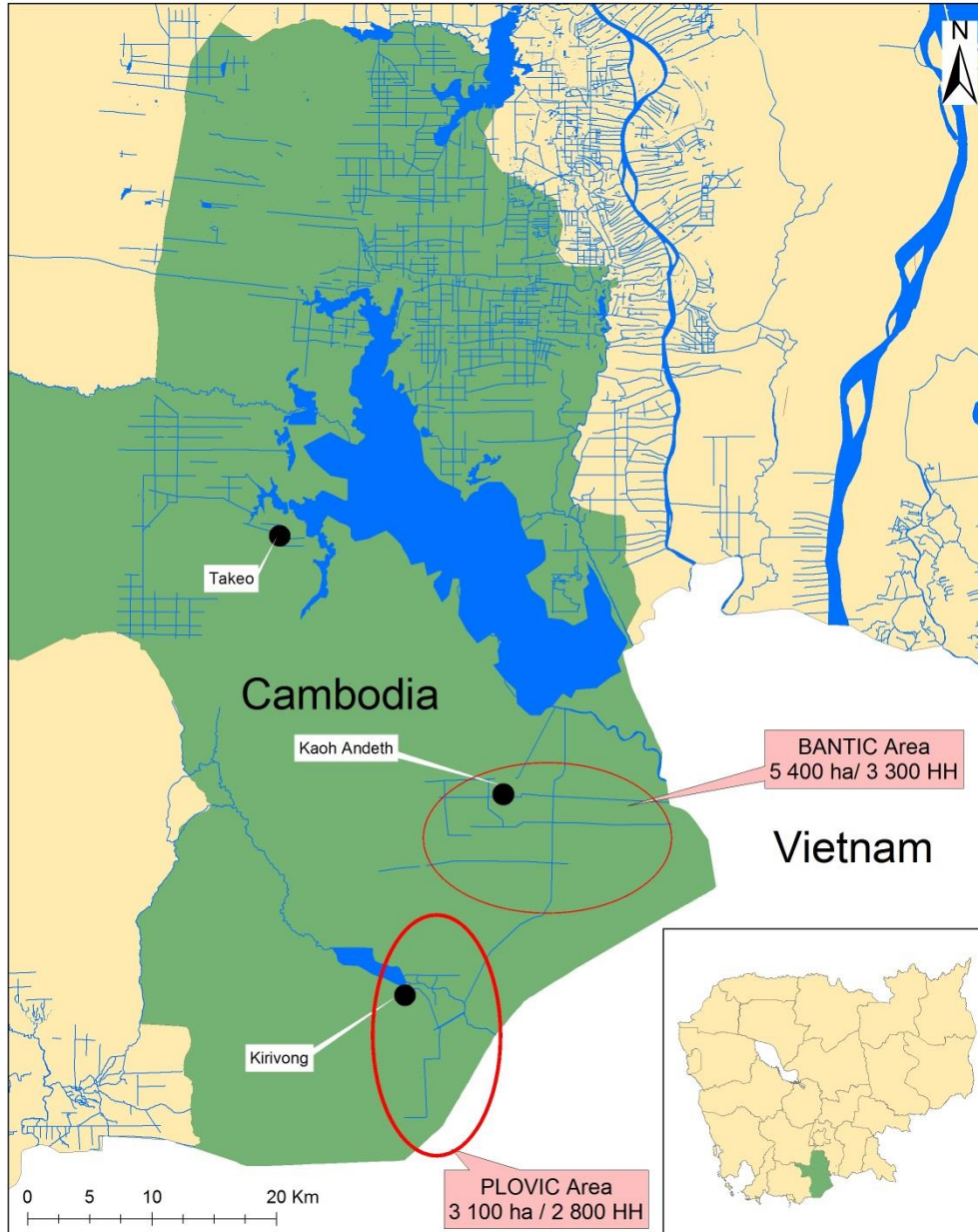
1-5 July 2019, Lima, Peru

Content of the presentation

- Case study area and methodology
- Long term trends in water infrastructure and agriculture development
- Modalities of (Participatory) Irrigation Management
- Institutional Bricolage: Roles and responsibilities of actors
- Key messages



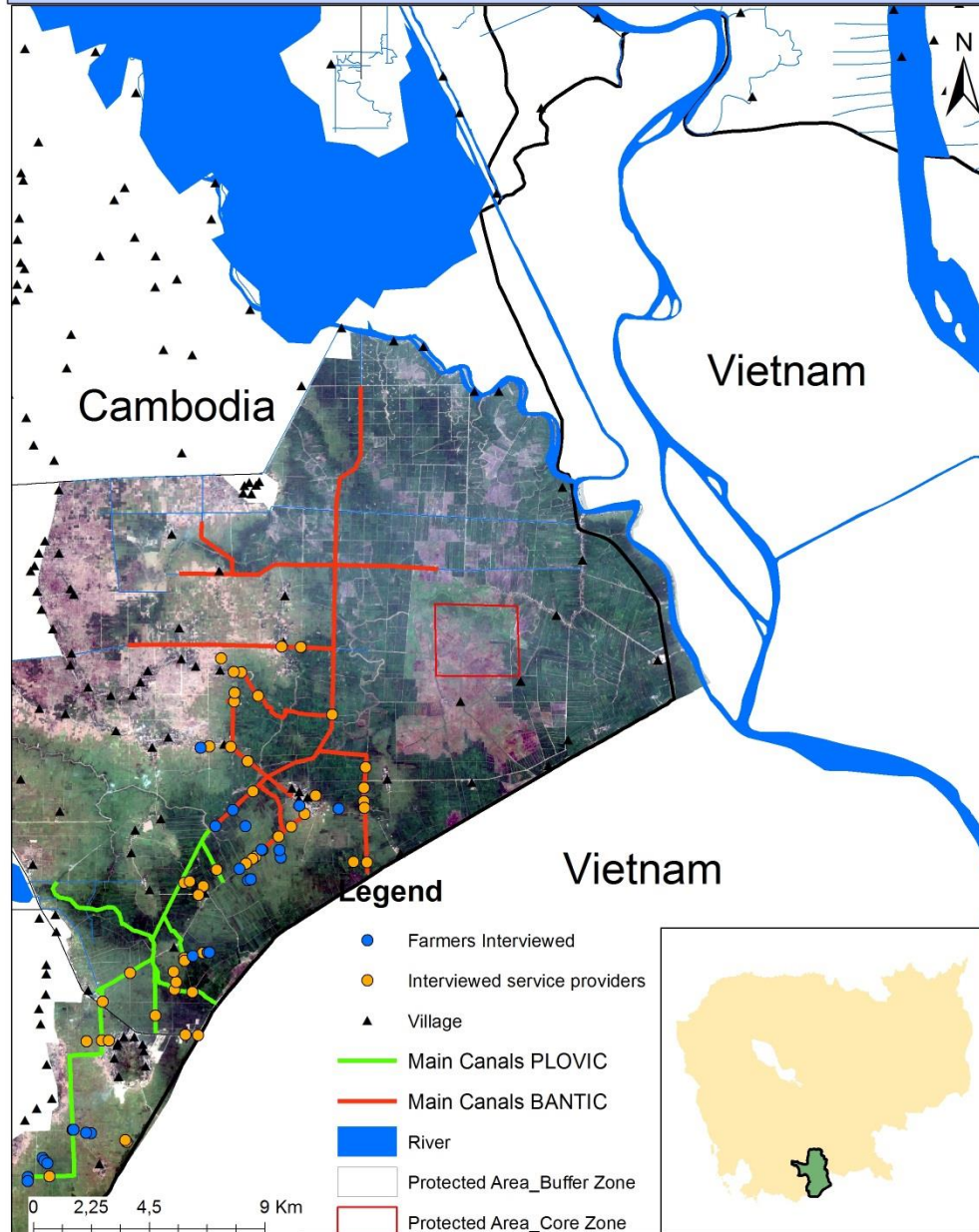
Large Irrigation and Drainage Sites in Takeo Province



Case Study Area

- South of Cambodia at the border of Vietnam
- Large flood plains inundated between August and November
- Limited infrastructure development (when compared to Vietnam)
- PRASAC project (financed by the EU) between 1998 and 2004 and CAVAC project (DFAT-Australia) between 2012 and 2017
- Large earthen drainage network supporting single or double rice cultivation

Interviews location in the PRASAC Area, Takeo-Cambodia



Methodology

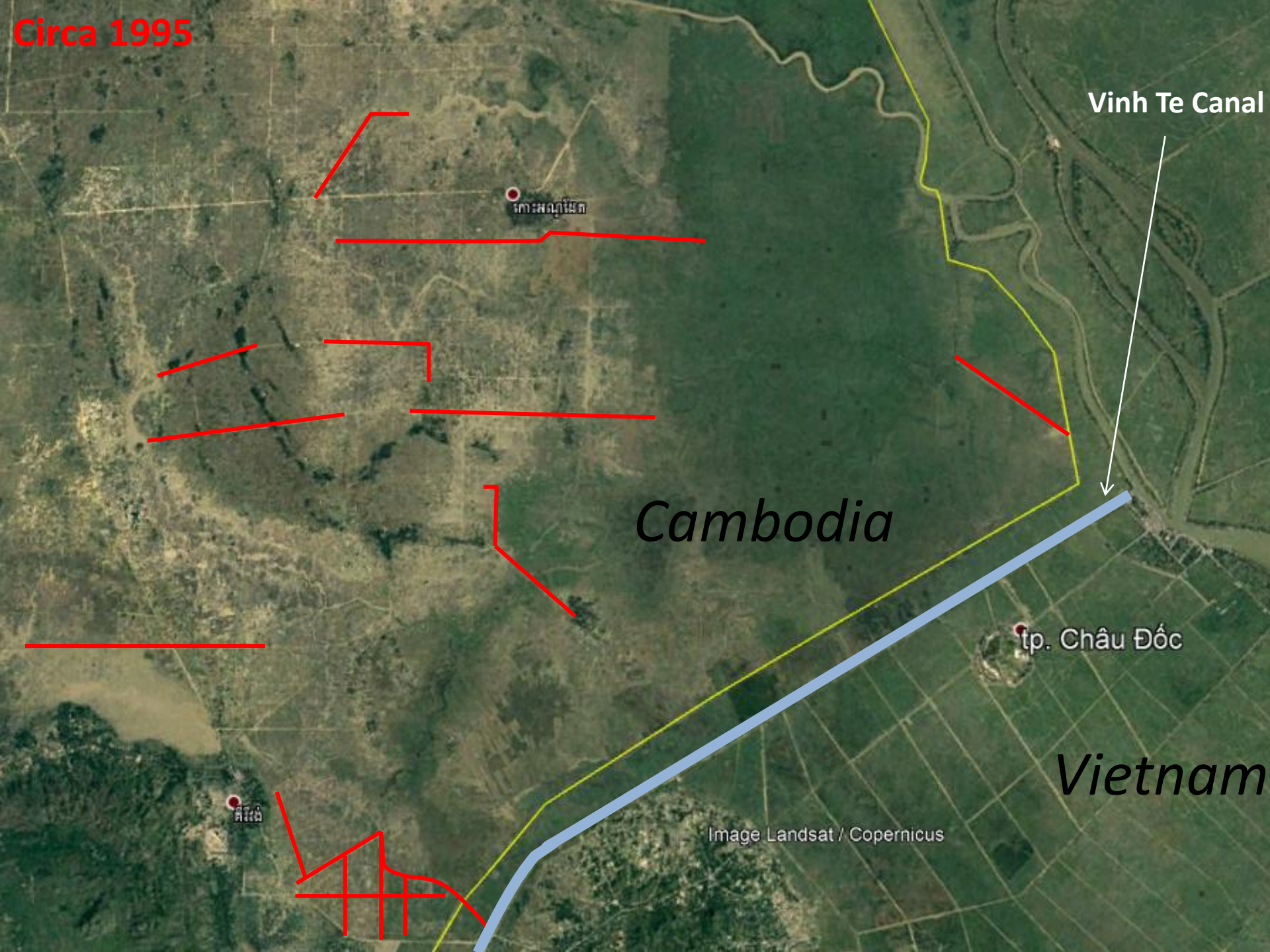
Mixed methods: qualitative interviews, Focus Group Discussion, small N quantitative questionnaire

- **Key informant interviews**
- **Staff of administration** (Ministry of Water Resources and Meteorology -MoWRAM)
- **Representatives of Water User Associations (FWUC)**
- **Local Elected Representatives**
- **Private Water Sellers** (15 in BANTIC and 16 in PLOVIC) representing 55 pumping systems
- **25 farmers** (12 in BANTIC and 13 in PLOVIC) along secondary canals

Historical development of the area



Circa 1995



Vinh Te Canal

ព្រះសីហនុវិហារ

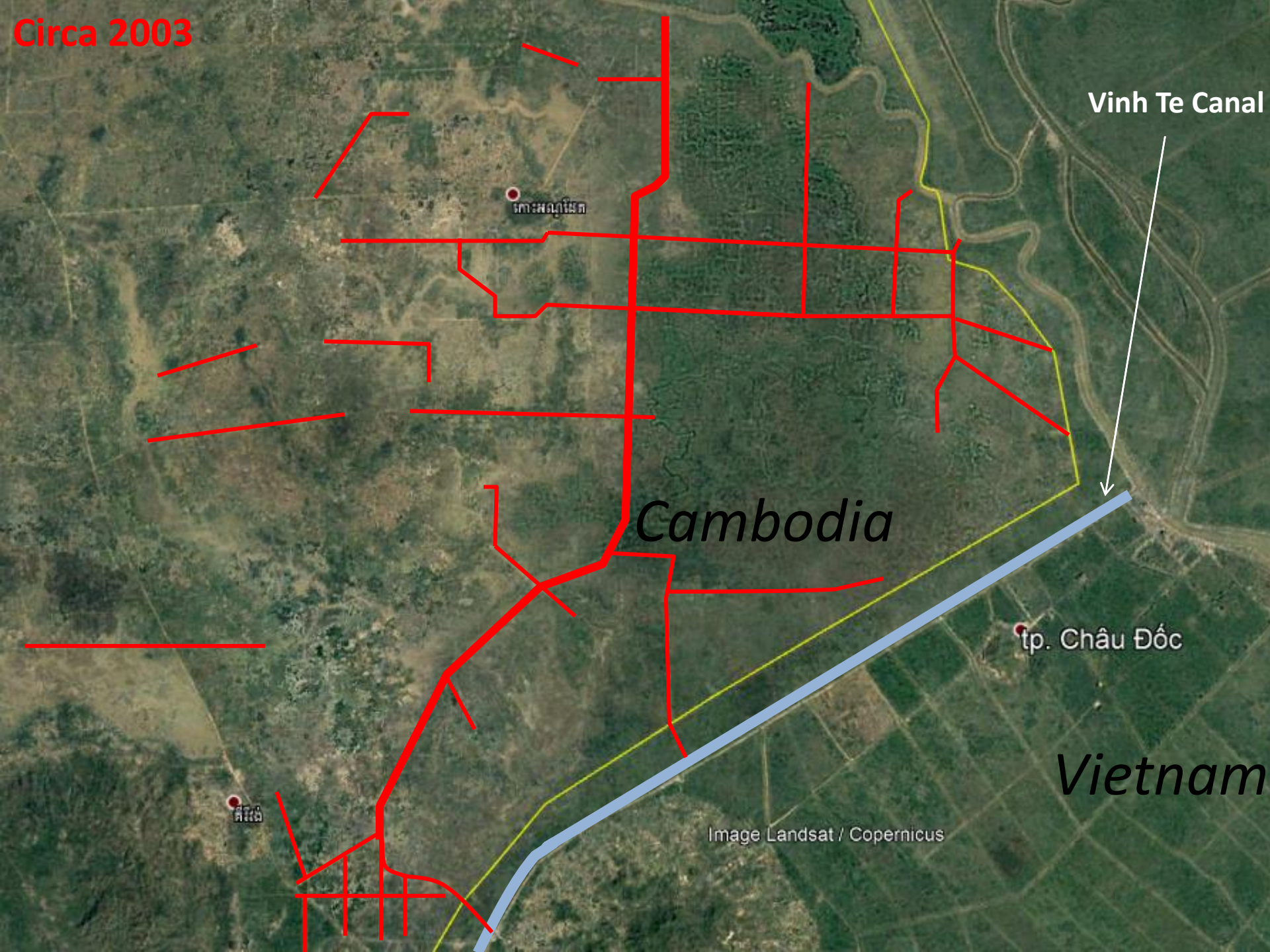
Cambodia

tp. Châu Đốc

Vietnam

Image Landsat / Copernicus

Circa 2003



Vinh Te Canal

เกาะพญายักษ์

Cambodia

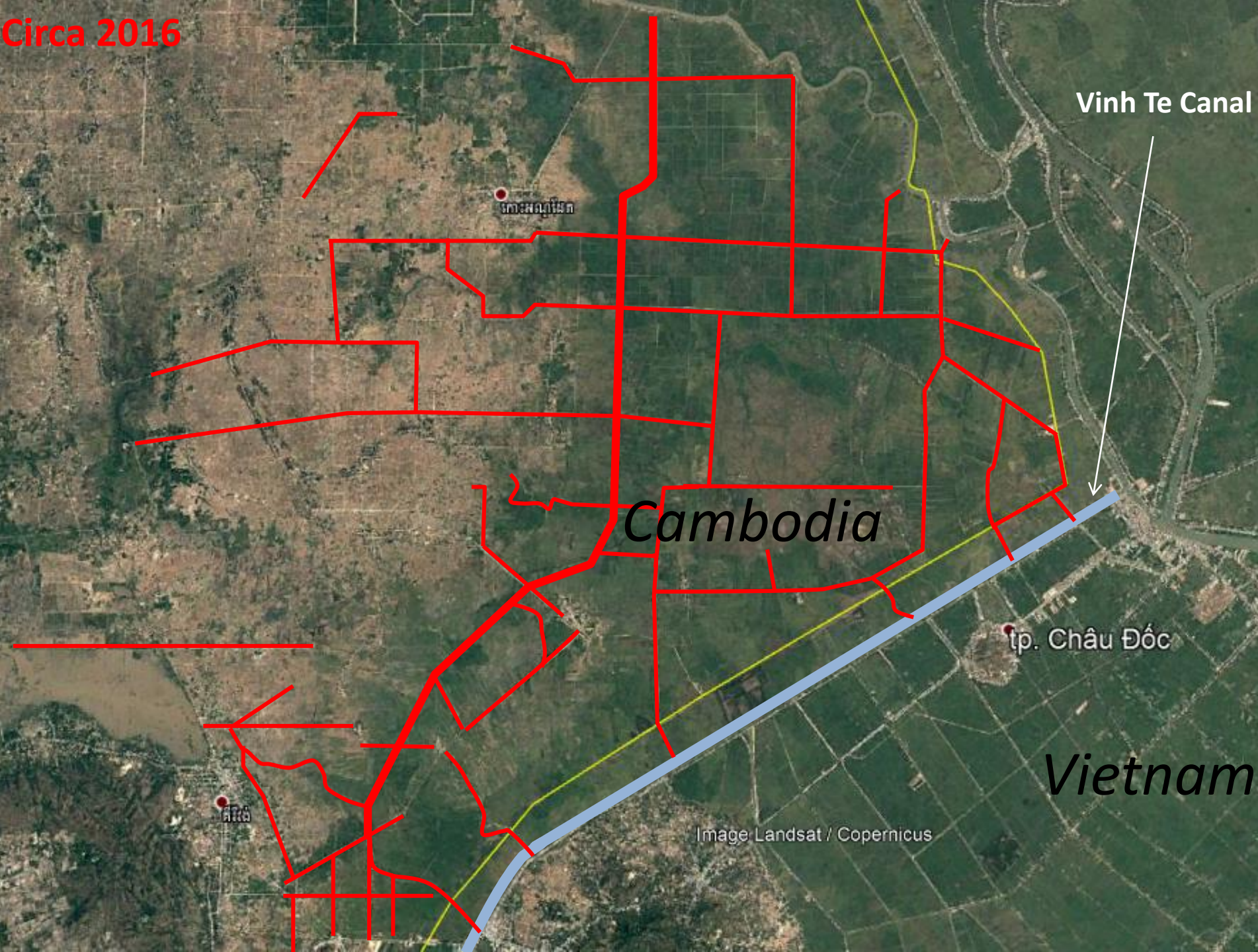
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Vietnam

ศรีสวัสดิ์

Image Landsat / Copernicus

Circa 2016



Vinh Te Canal

Imeang

Cambodia

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Vietnam

Hố

Image Landsat / Copernicus

Modalities of irrigation management

- Participatory Irrigation Management and Development Policy enacted in 1999/2000
- Establishment of Water User Associations (called FWUC: Farmer Water User Community)
- FWUC responsible for **maintenance** of 2nd and 3rd tier canal system through the collection of an **Irrigation Service Contribution** (ISC)
- Classic shortcomings of PIM policies:
 - Reluctance of administration to devolve power/authority
 - Lack of capacity, legitimacy, accountability of FWUC
 - Unwillingness of farmers to pay ISC
 - Deferred maintenance problems/long term lack of sustainability



Main PRASAC Canal (canal 98/99)

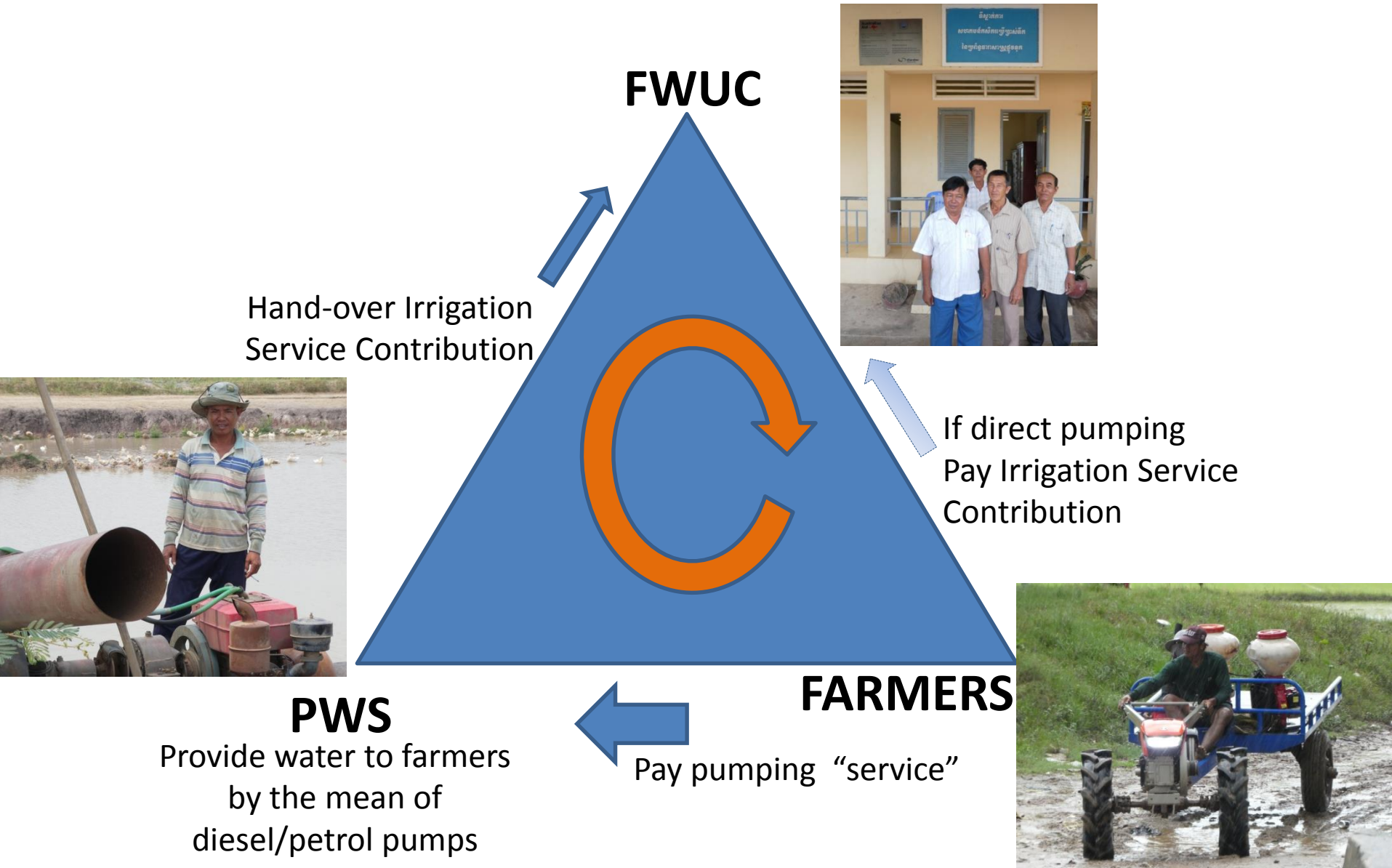
'Secondary' PRASAC Canal (Ex: Saom, Plouv Touk, etc...)

To Vietnam

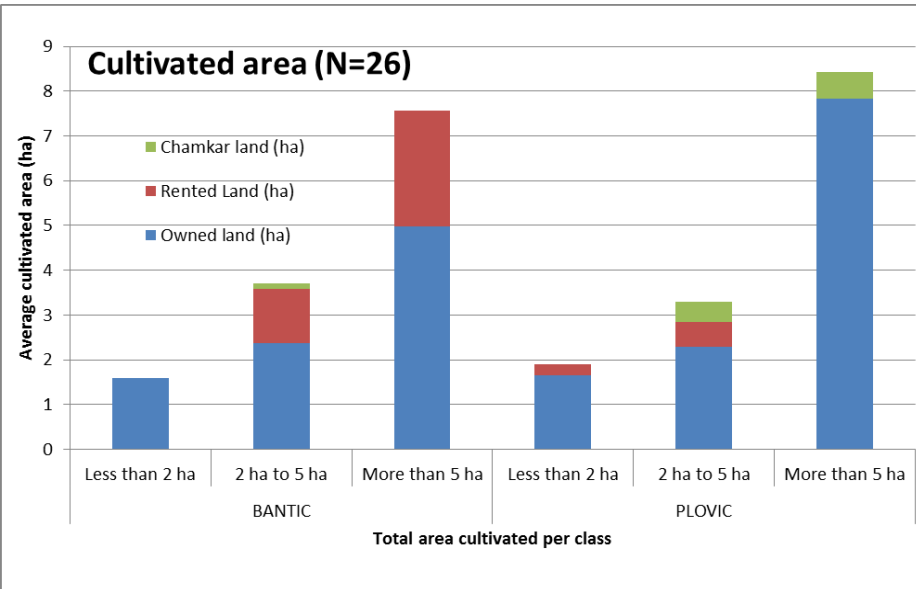
Canal managed by PWS
(can be called
secondary
or tertiary)



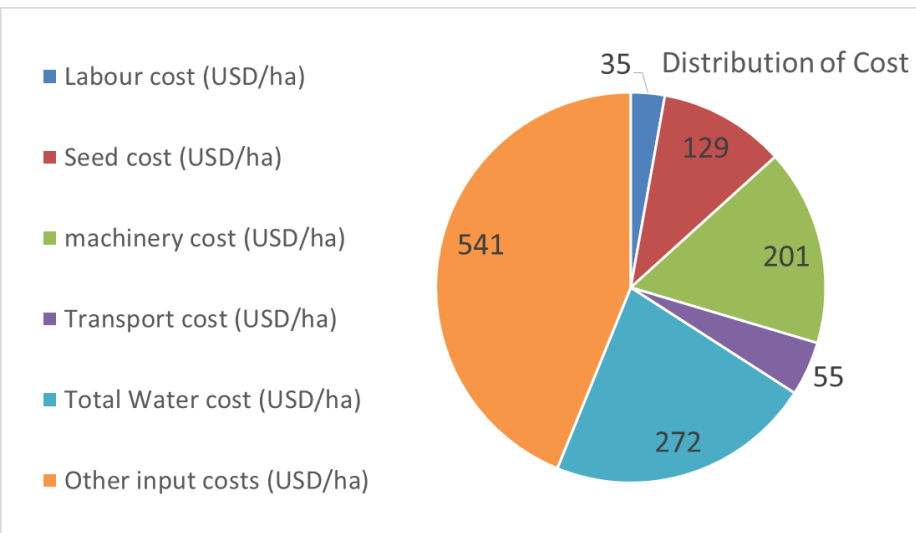
Hybrid local water governance



The Farmers



- Half the farmers < 40 years old
- 95% of farmers have MFI Loans
- All farmers purchase input through short term credits (10% interest rate per season)
- Average owned area is 3,5 ha
 - Minimum= 1 ha
 - Maximum= 12 ha

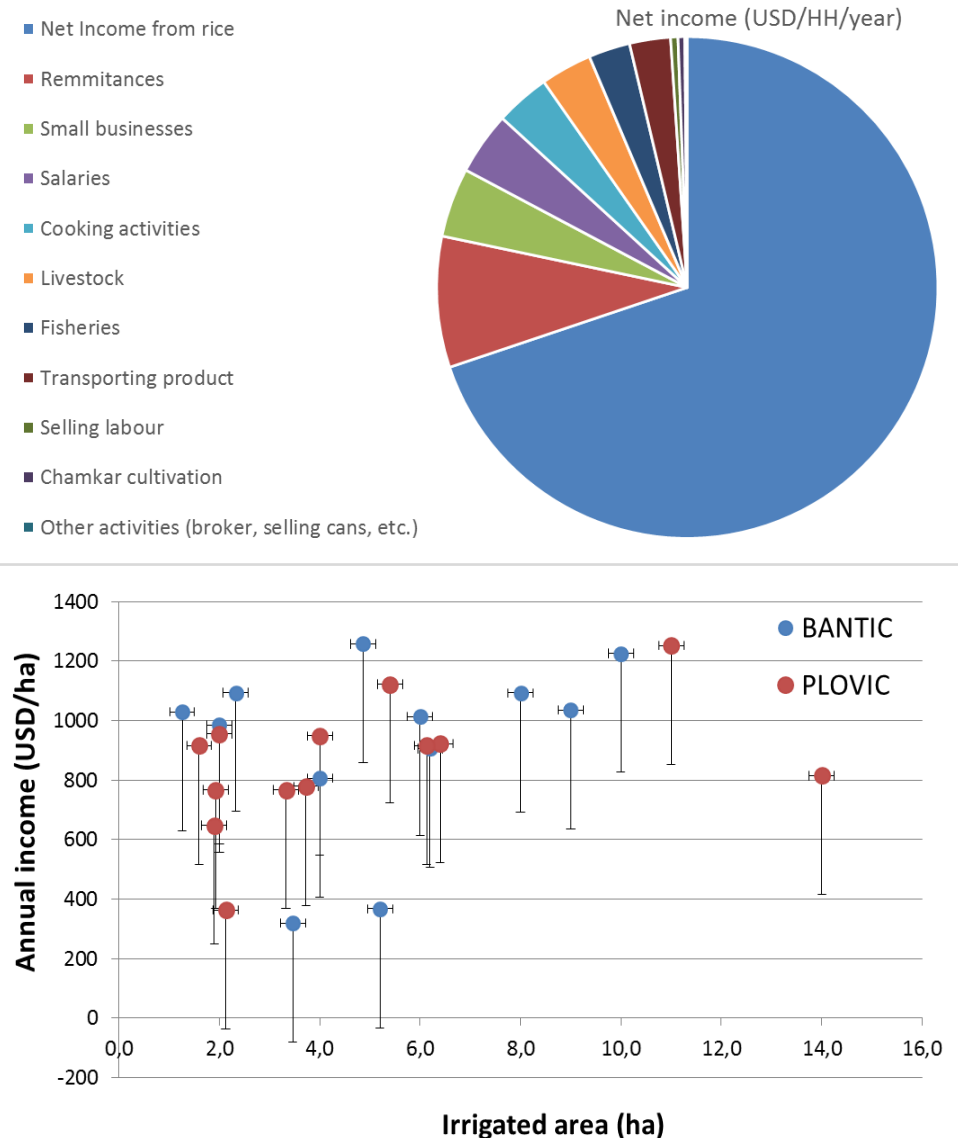


Water cost is

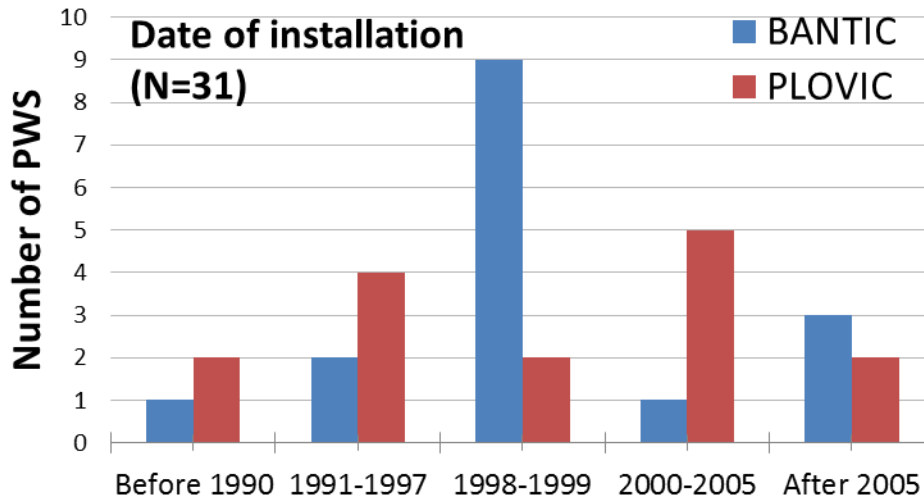
- 20 to 25% of total cost
- 13% of gross rice income

The Farmers

- High diversity of income source
- Rice cultivation is 60% of total income
- Net revenues very sensitive to paddy price in Vietnam (export of paddy)
- Early wet season rice (May-July) sensitive to water supply conditions
- Relative stability of income relative to farm area (little economy of scale)
- Average net income of 600 USD/ha/year (average price)
- Average net income of 3 USD/day/person (for 7 months work) (daily wage in ag. work >5 USD/ha/day)



The PWS

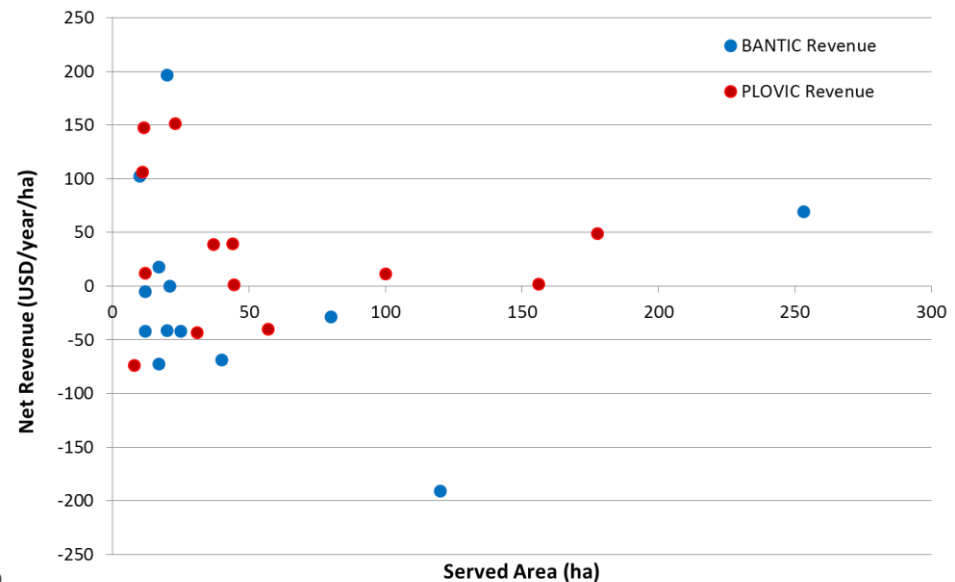
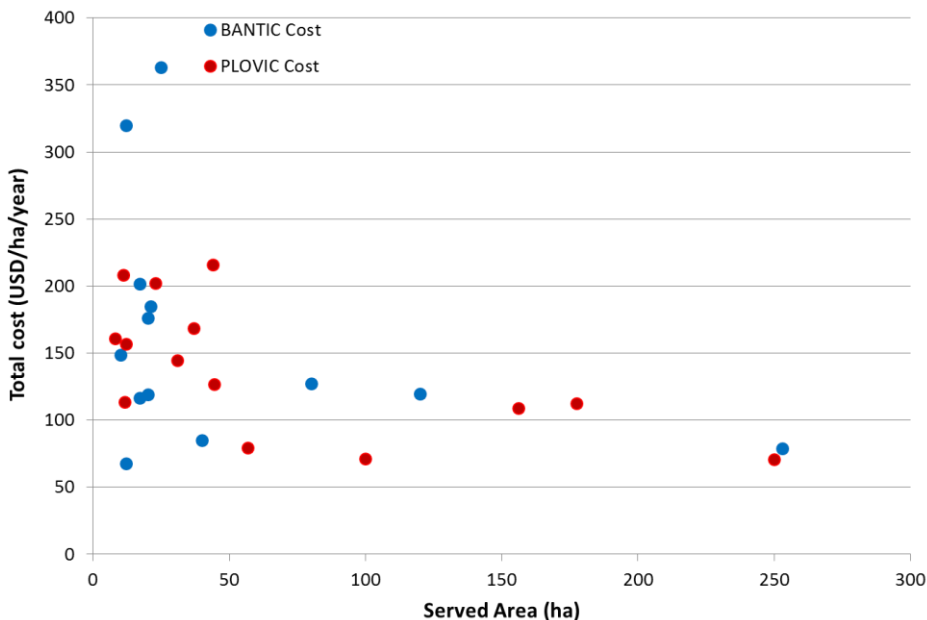


- Some PWS started operating before the PRASAC project
- PWS accessed water from natural lakes, reservoirs and Vietnam
- Often well connected to local authorities and administration

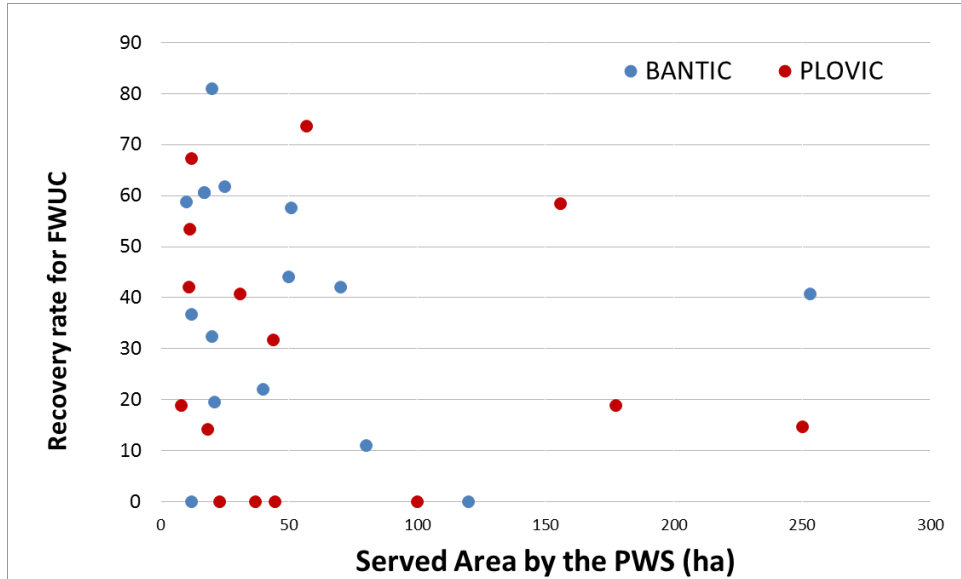
- Average area served in BANTIC is 51 ha (between 3 and 250 ha)
- Average area served in PLOVIC is 65 ha (between 3 and 250 ha)
- 9 out of 31 PWS have increased the area they served since their installation
- 16 out of 31 have decreased the area they served since their installation
- On average, PWS own 35% of the area they serve
- More than half the PWS have purchased land since they started their business

The PWS

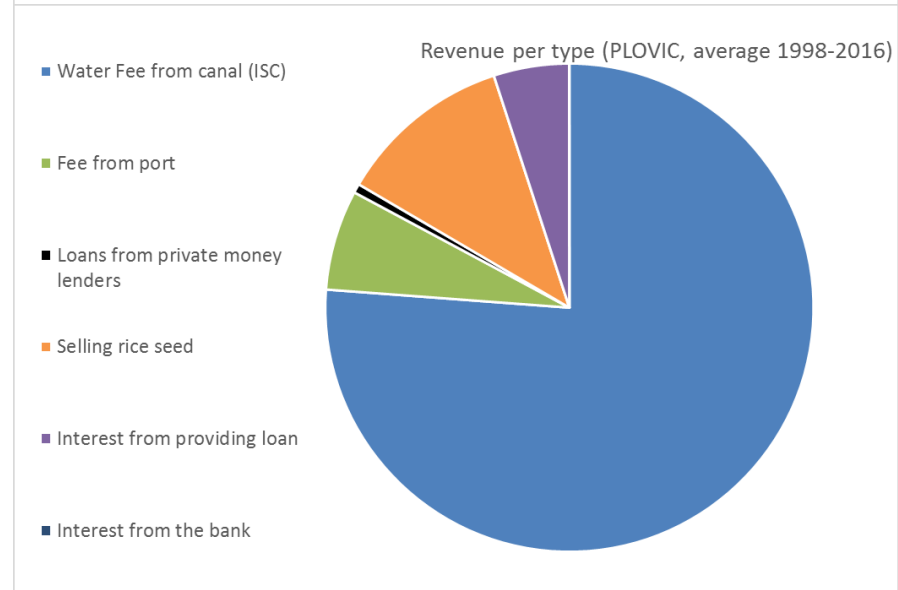
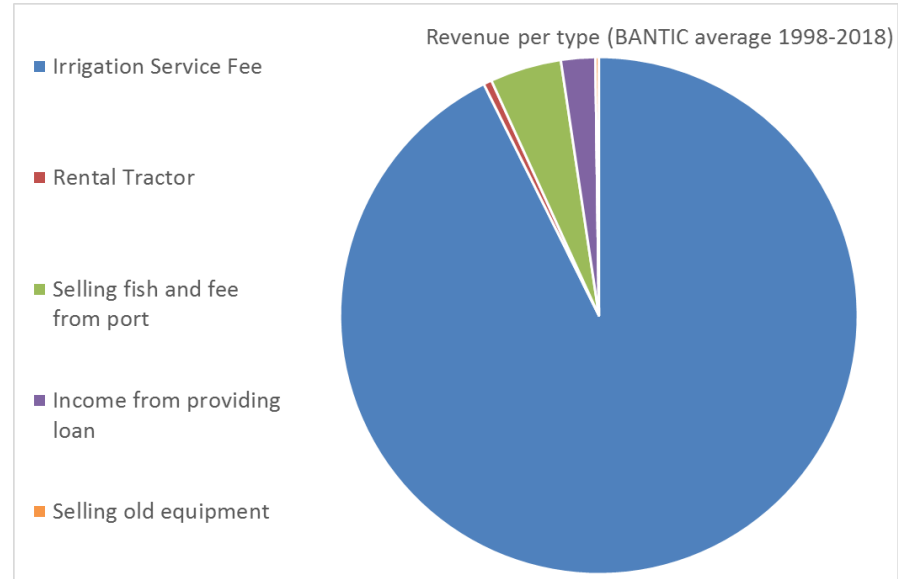
- Pumping fee BANTIC: 125 USD/ha/season
- Pumping fee PLOVIC: 165 USD/ha/season
- Average operating cost of 155 USD/ha/year
- 55% of all cost are petrol cost
- Cost distribution high if served area < 50 ha
- Economy of scale if area served > 50 ha
- Based on cost and revenue declaration, half the PWS appear to be losing money
 - Recovery rate around 70 %
 - 10-15% discount is common practice
- Average loss: 82 USD/ha/year
- Average gain: 66 USD/ha/year



The FWUC



- ISC Rate of 17 USD/ha/year in BANTIC
- Recovery rate of 40% in BANTIC
- ISC Rate of 30 USD/ha/year in PLOVIC
- Recovery rate of 30% in PLOVIC
- Self-irrigation of PWS land often not accounted for though 1/3 of the area
- Farmers who provided land for canal construction partially exempted



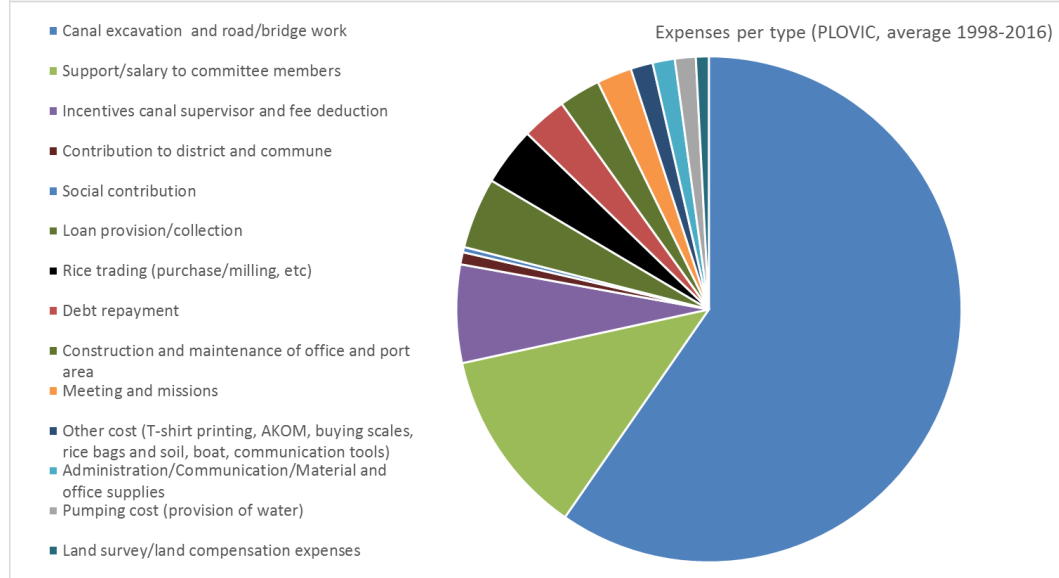
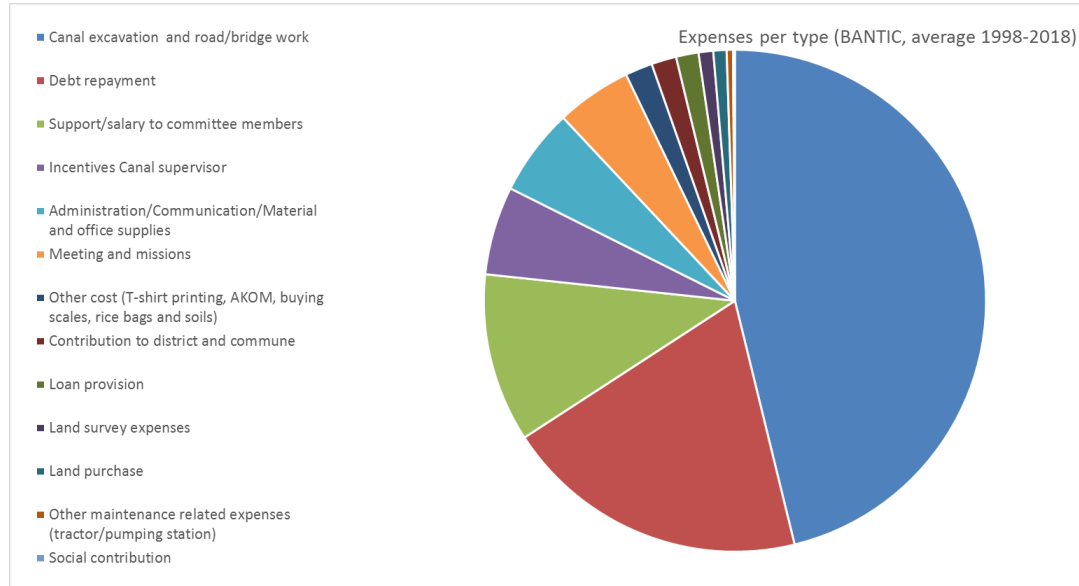
The FWUC

BANTIC Investment in maintenance

- 45% of all expenses
- 0,7 USD/ha/year
- 15 USD/ha over 20 years
- Needs: 5 USD/ha/year
- ISC Collected: 7 USD/ha/year
- ISC rate: 17 USD/ha/year

PLOVIC Investment in maintenance

- 65% of all expenses
- 3,4 USD/ha/year
- 64 USD/ha over 18 years
- Needs: 6 USD/ha/year
- ISC Collected: 10 USD/ha/year
- ISC rate: 30 USD/ha/year



Key messages

- Irrigation and drainage management in the PRASAC area takes a hybrid form involving farmers, public organization and small rural entrepreneurs selling water to farmers
- Dynamic Agricultural Landscapes
 - Relatively young farmers
 - Widespread indebtedness and vulnerability to water availability/price fluctuation
 - Underlying land concentration process (to the benefit of PWS notably)
- Water pumping service
 - In general well-off farmers-cum-entrepreneurs
 - Profitability of the service is rather low (eq. to 400 kg of rice/ha)
 - Significant scope for reducing operational costs (e.g. petrol)
 - The main advantage of being a PWS might be that it leads to lower rice production cost (20-25%) and related increase in income
- Drainage system management
 - Current rate of ISC recovery could allow for meeting O&M needs
 - Investment in maintenance lower than needs
 - Monitoring: Need to account for land dynamics and land transactions

Thank you for your attention

