



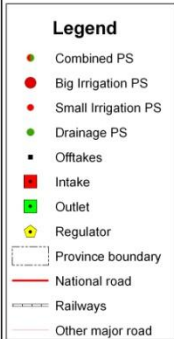
# **Analyzing Cost & Benefits of Multiple Services in Bac Hung Hai Irrigation System, Vietnam**

**Trinh Ngoc Lan**

**Center for Training & International Cooperation (CTIC) under  
Vietnam Academy for Water Resources (VAWR)**



### BAC HUNG HAI SCHEME



Irrigation Pumping station

| FID | Name         | FID | Name         |
|-----|--------------|-----|--------------|
| 0   | Dai Dong Tha | 49  | Binh Gach    |
| 1   | Vang         | 50  | Doan Tung A  |
| 2   | Gia Thuong   | 51  | Doan Tung B  |
| 3   | Thach Ban    | 52  |              |
| 4   | Thuan Phu    | 53  |              |
| 5   | Kieu Ky      | 54  | Dan Trang    |
| 6   | Van Giang    | 55  |              |
| 7   | NHU Quyinh   | 56  | Khe Than     |
| 8   | Van Lam      | 57  | Tong Hoa     |
| 9   | Nghia Tru    | 58  | Chi Bac      |
| 10  | Vinh Khuc    | 59  | Cao Lu       |
| 11  | Tinh Tien    | 60  | An Khoai     |
| 12  | Yen The      | 61  | Tan Phong    |
| 13  | Ban          | 62  | Tan Quang    |
| 14  | Huu Nam      | 63  | Da Te        |
| 15  | Yen Phu      | 64  | Song Lieu    |
| 16  | Binh Tru     | 65  | Mon Quang    |
| 17  | Giao Tat     | 66  | Ngoc Xuyen   |
| 18  | Duc Hiep     | 67  | Xuan Lai     |
| 19  | Chua Tong    | 68  | Minh Tan     |
| 20  |              | 69  | Dong Nien    |
| 21  | Dong Lu      | 70  | Thanh Binh B |
| 22  | Coc Khe      | 71  | Thanh Binh A |
| 23  |              | 72  | Lo Cuong     |
| 24  | Phan Thuy    | 73  | Thach Khoi   |
| 25  |              | 74  |              |
| 26  | Dau Dang     | 75  | Phuong Hung  |
| 27  | An Tao Ha    | 76  | Phuong Hung  |
| 28  | Noi Linh     | 77  | Quan Phan    |
| 29  | Lac Duc      | 78  |              |
| 30  | Dong Cap     | 79  |              |
| 31  | Quan Do      | 80  | Cau Dua      |
| 32  | Xuan Duc     | 81  | Thanh Nien A |
| 33  | Phuc Bo      | 82  | Thanh Nien B |
| 34  | Cau Ghe      | 83  | Hoang Dieu   |
| 35  | Dinh Cao II  | 84  | Hong Duc     |
| 36  | Dinh Cao I   | 85  |              |
| 37  | Tran Ha      | 86  |              |
| 38  | Quang Xa     | 87  | Hong Thai    |
| 39  | Hong Van     | 88  | Kien Quoc    |
| 40  | Tra Phuong   | 89  |              |
| 41  | Mao Xuyen    | 90  | Luong Dien   |
| 42  | Ngoc Quan    | 91  | Nguyet Duc   |
| 43  | Ngoc Lien    | 92  | Co Bi        |
| 44  | Vu Xa        | 93  |              |
| 45  | Phu Huu      | 94  | Doc Loi      |
| 46  |              | 95  |              |
| 47  | Pham Ly      | 96  | Ung Hoe      |
| 48  | Dong La      | 97  |              |

# MUS motivated by



**We used and test MASSMUS auditing methodology**



# Bac Hung Hai Irrigation Scheme

(10 sub-command areas,

Total area 2.14km<sup>2</sup>,

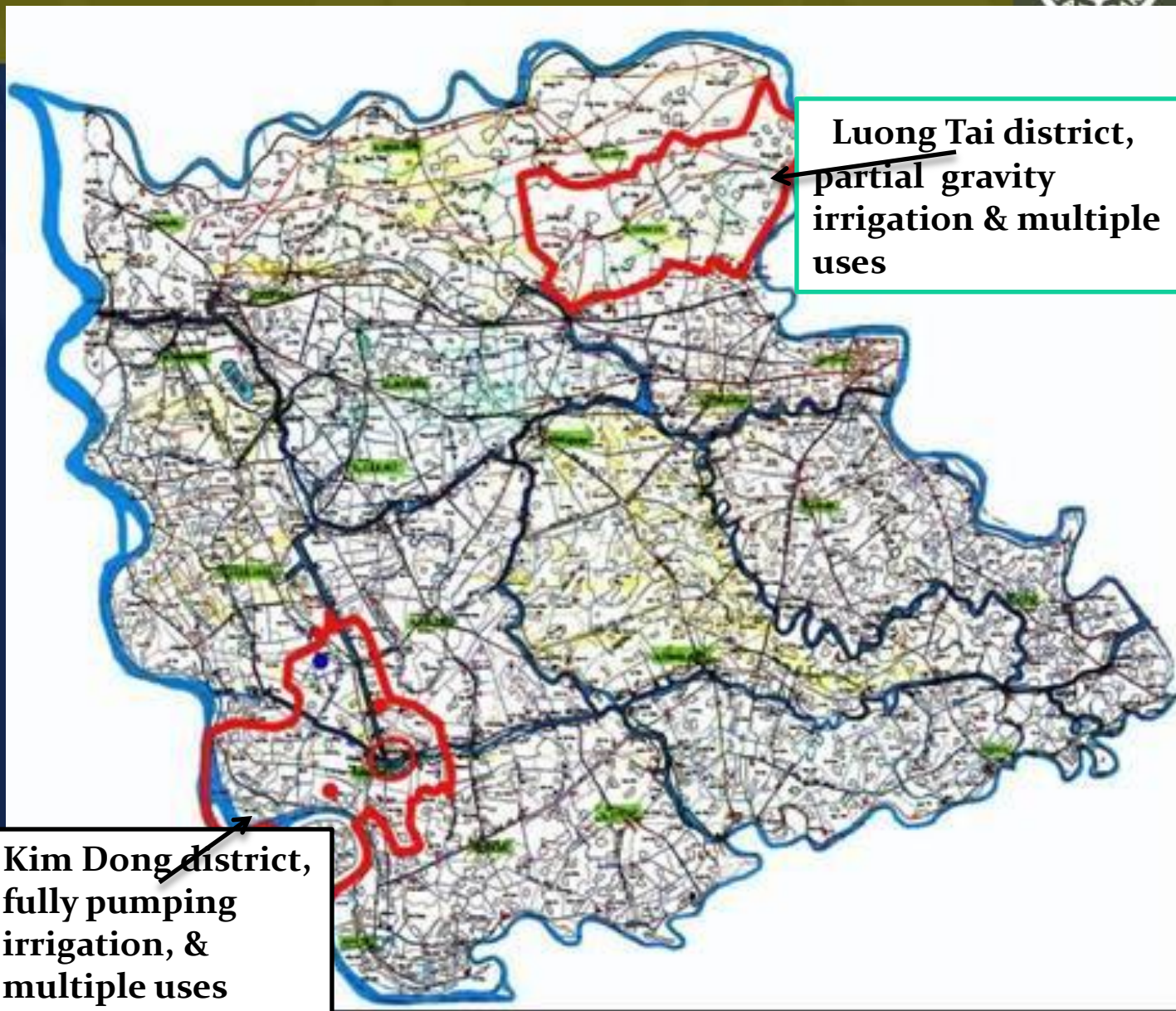
Agri. area 1.43km<sup>2</sup>,

Cultivated 1.24km<sup>2</sup>,

Paddy rice 80%

Population 2.8 Mill.

and 80% working in agriculture



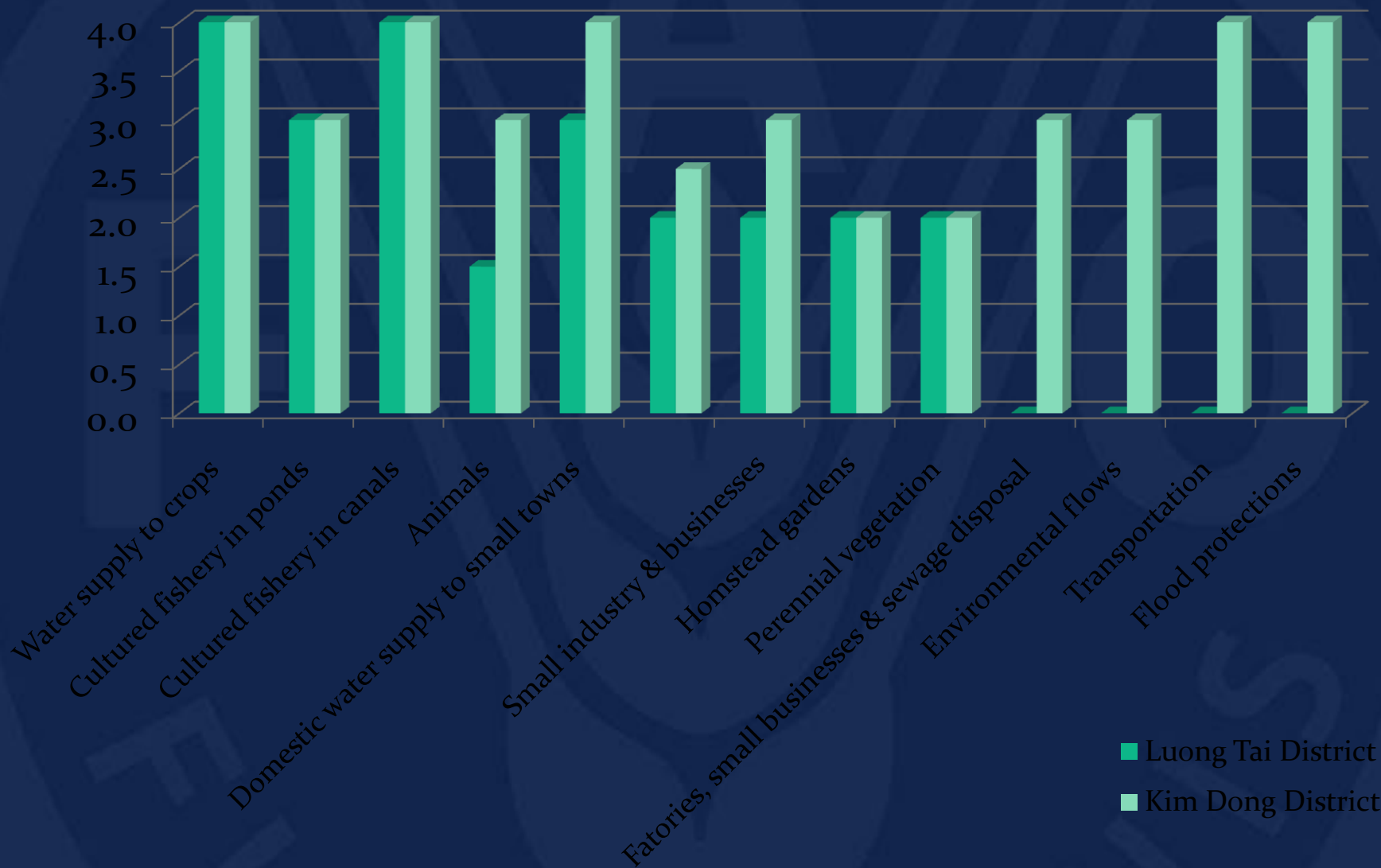


# Bac Hung Hai irrigation scheme

- Originally built for 3 services: irrigation water supply, drainage & flood control,
- In practice, more than 10 different water services:

| Provisioning Services   | Regulating Services  | Supporting Services   | Cultural Services  |
|---|--|---|--|
| <ul style="list-style-type: none"><li>• Domestic water</li><li>• Irrigation</li><li>• Water for cattle</li><li>• Fishery</li><li>• Homestead garden</li><li>• Industry &amp; Business</li></ul> | <ul style="list-style-type: none"><li>• Environmental flows (including ground water recharge)</li><li>• Flood protection</li><li>• Sewage/drainage water</li></ul> | <ul style="list-style-type: none"><li>• Transportation</li><li>• Habitat improvement (raw materials construction, cooling effect, ...)</li><li>• Captured fisheries</li></ul> | <ul style="list-style-type: none"><li>• Social functions linked to the infrastructure &amp; management</li></ul> |

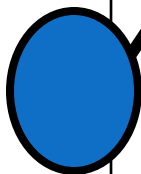
# Ranking of importance of water services: *0 not important, 4 extremely important*



# MUS in management 2.5



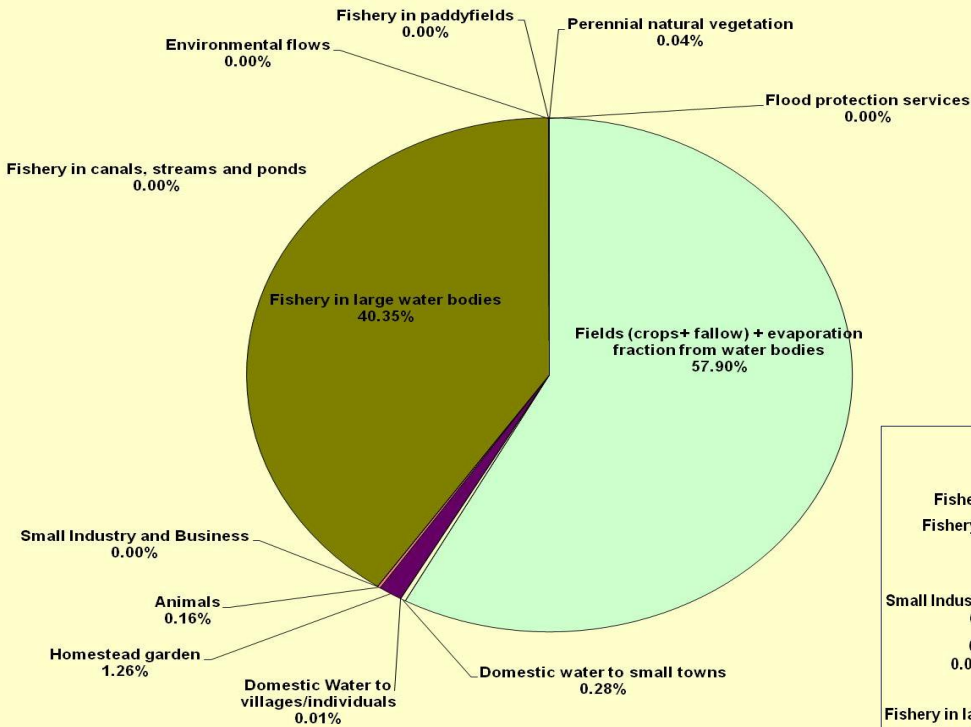
| Indicator value | Management attitude                                       | Manager attitude [as stated]  | Local level operators and local practices [as seen on the field]   |
|-----------------|---|---|--|
| 0               | Ignoring or denying MUS and/or its magnitude              | “There is only one single use for irrigation”   |  |
| 1               | Blind eye on MUS practice by users                        | Manager is aware of some MUS related practices but do not consider them as part of his job.   | <p>No intervention to reduce direct pumping from canals</p> <p>No particular concerns about groundwater pumping</p> <p>No intervention to prevent use of canal as a waste disposal.</p>  |
| 2               | Positive marginal practices to support MUS                |   | <p>Local operators accommodate in their day to day practices the other uses of water. e.g. letting unfixed leakages to drainage when water is used by downstream people/villages.</p> <p>letting unauthorized gate flowing into near by small tanks or drainage.</p> |
| 3               | Integration of other services concerns into the operation | Manager knows and organise the management to serve other uses or to ensure that operation for irrigation do not penalised the other uses. | <p>Bulk water deliveries to villages tanks</p> <p>Main canal filled with water after irrigation season to provide water to people in the GCA.</p> <p>Local reservoirs managed to account for other uses.</p> <p>Minimizing period of canal maintenance.</p>          |





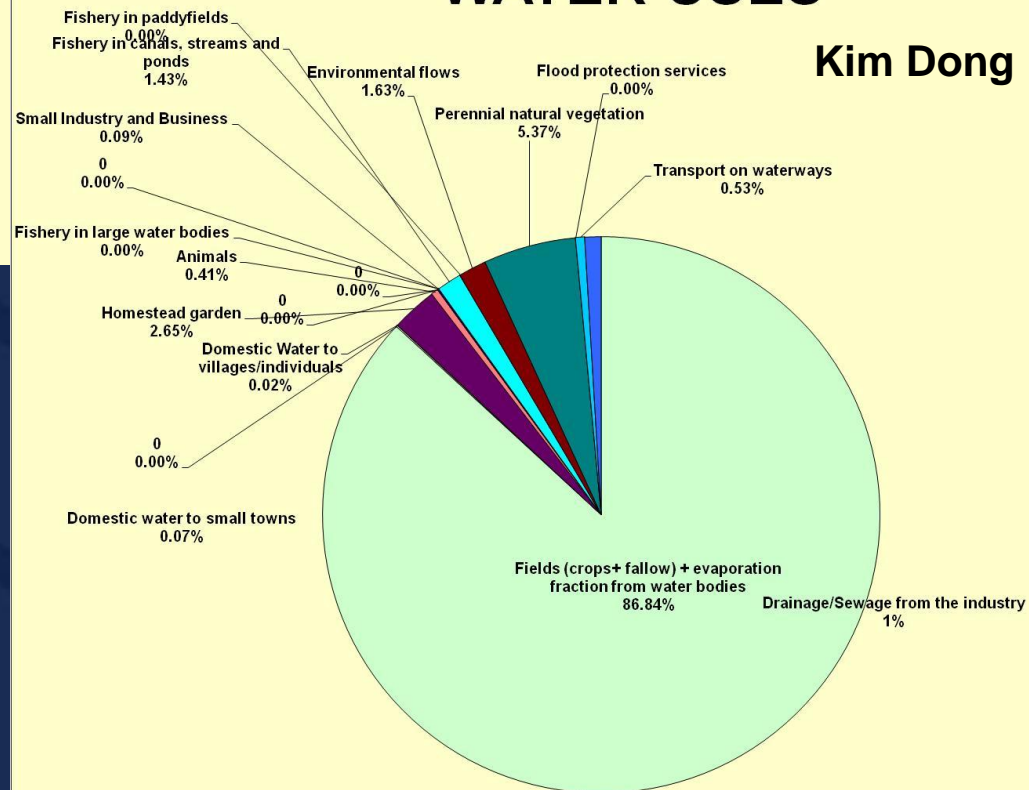
# WATER USES

## Luong Tai district



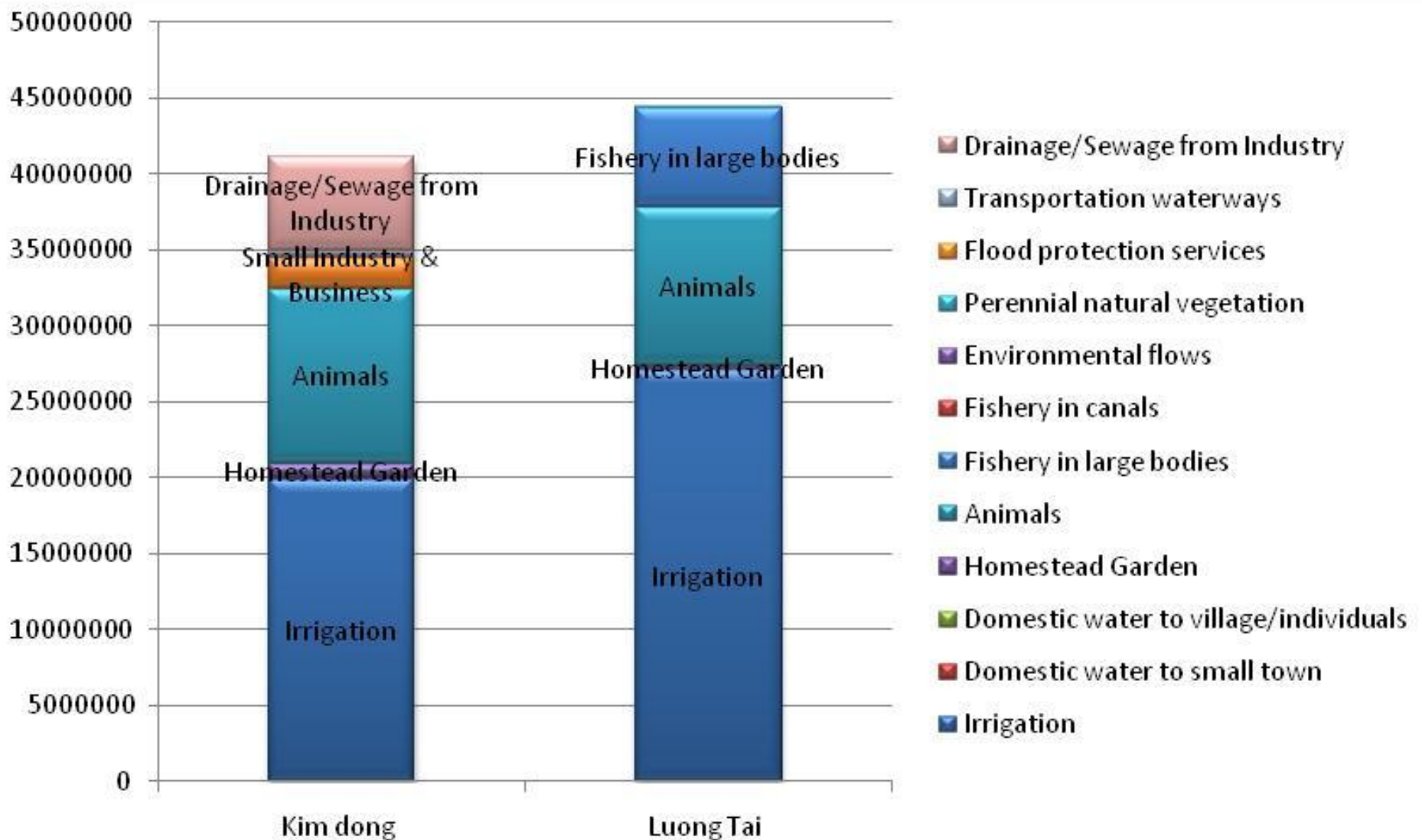
# WATER USES

## Kim Dong





# Value from each use

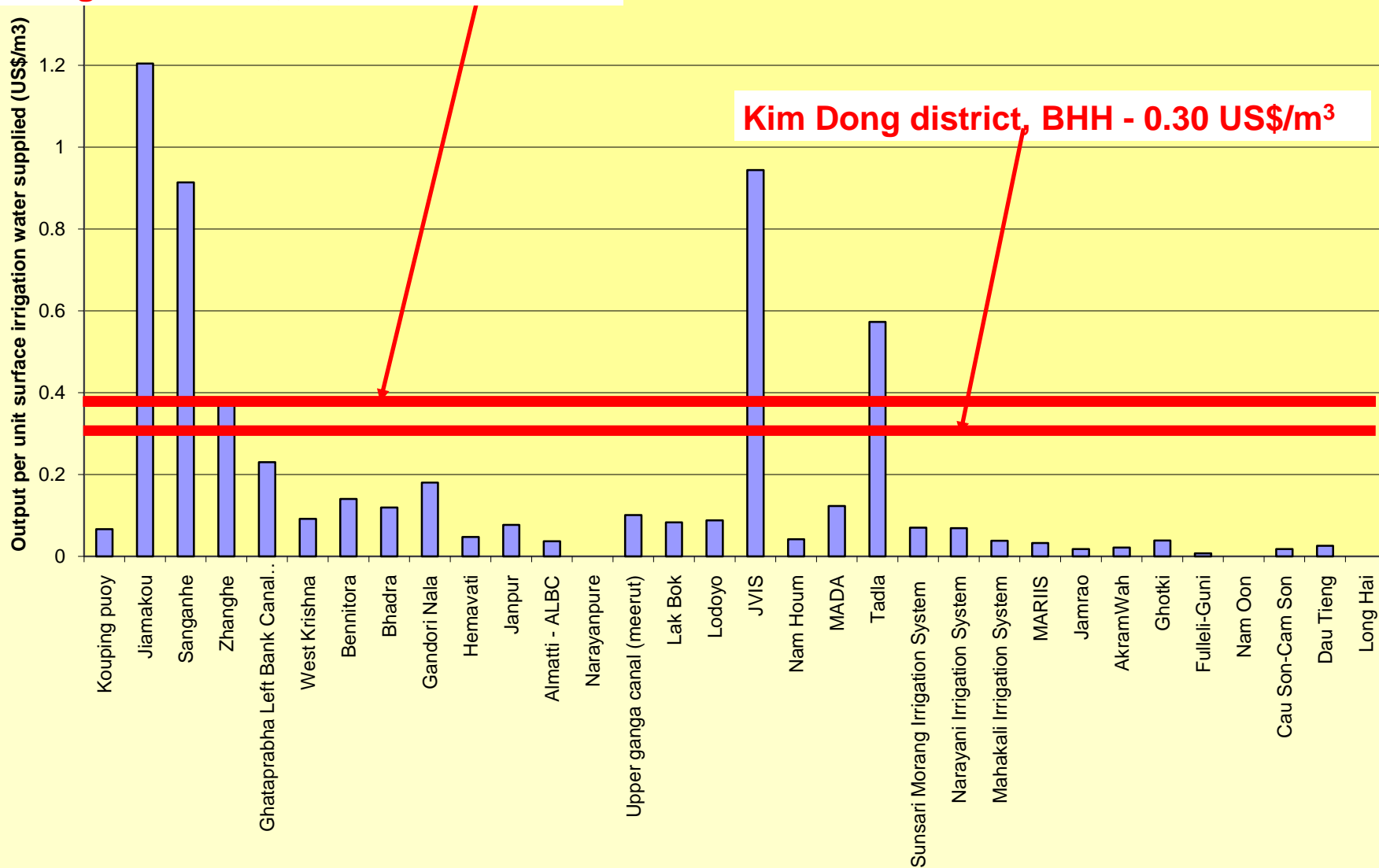


# Productivity of water delivered for crop cultivation in different irrigation systems in the world

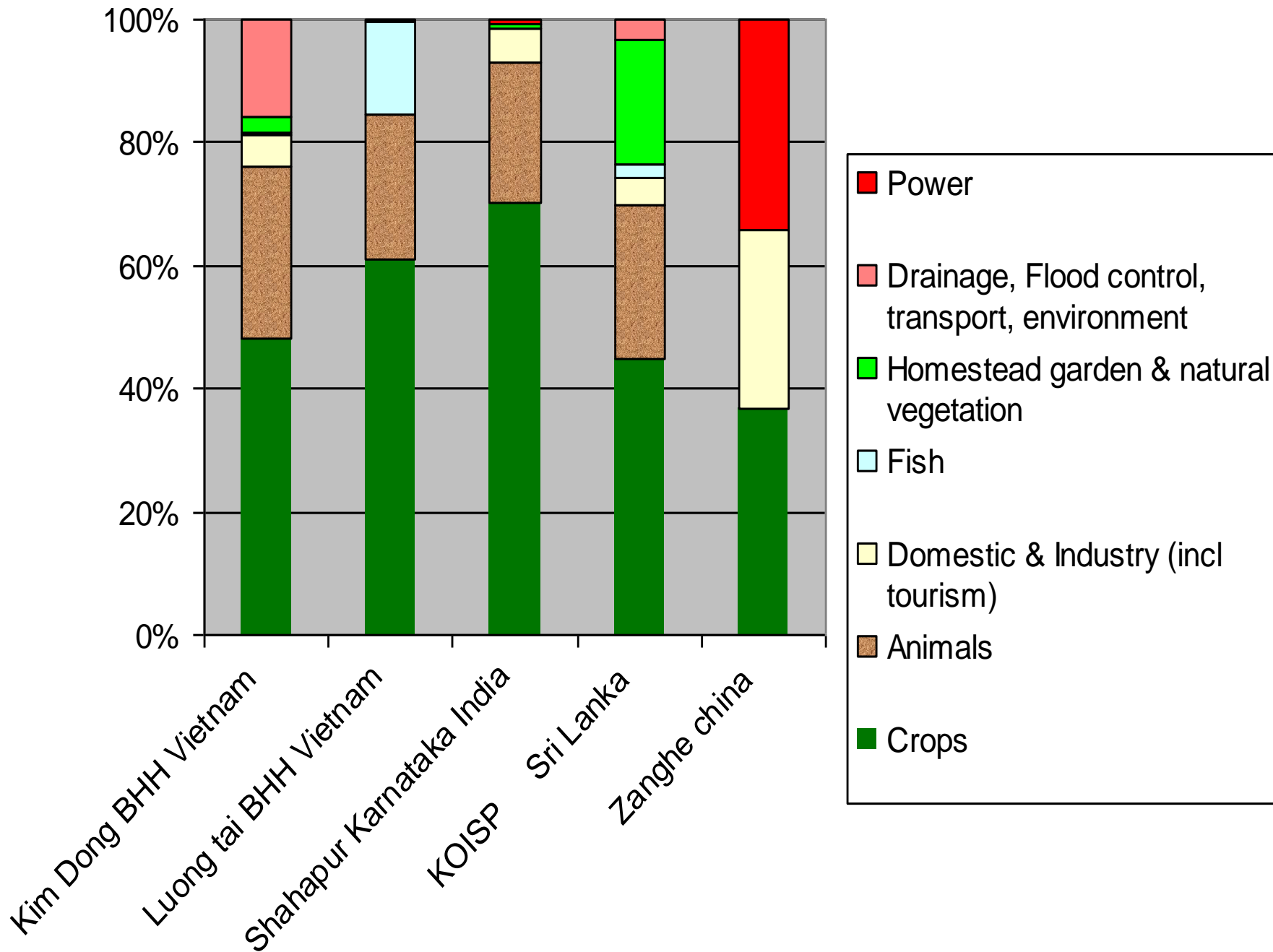


**Luong Tai district, BHH - 0.39 US\$/m<sup>3</sup>**

**Kim Dong district, BHH - 0.30 US\$/m<sup>3</sup>**



Share of estimated benefits







# Perspectives ? What next ?



Improvement of capacity for Irrigation Management Companies to get better benefit in their services.

Mobilizing participatory in water management from water users to obtain more efficiency.



*Thank you for  
your attention!*