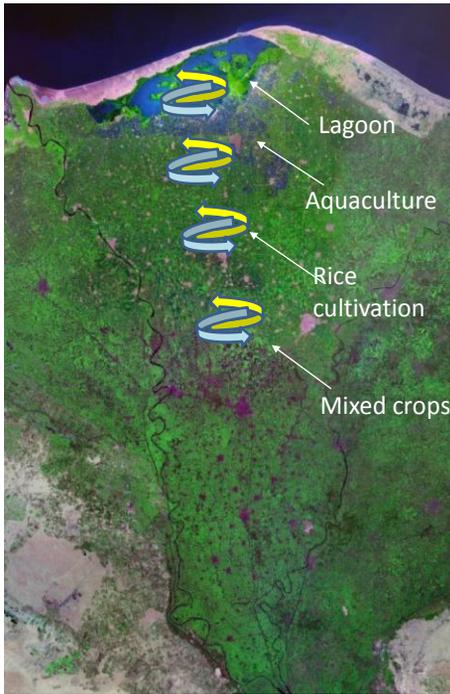


# Irrigation Improvement Projects in the Nile Delta

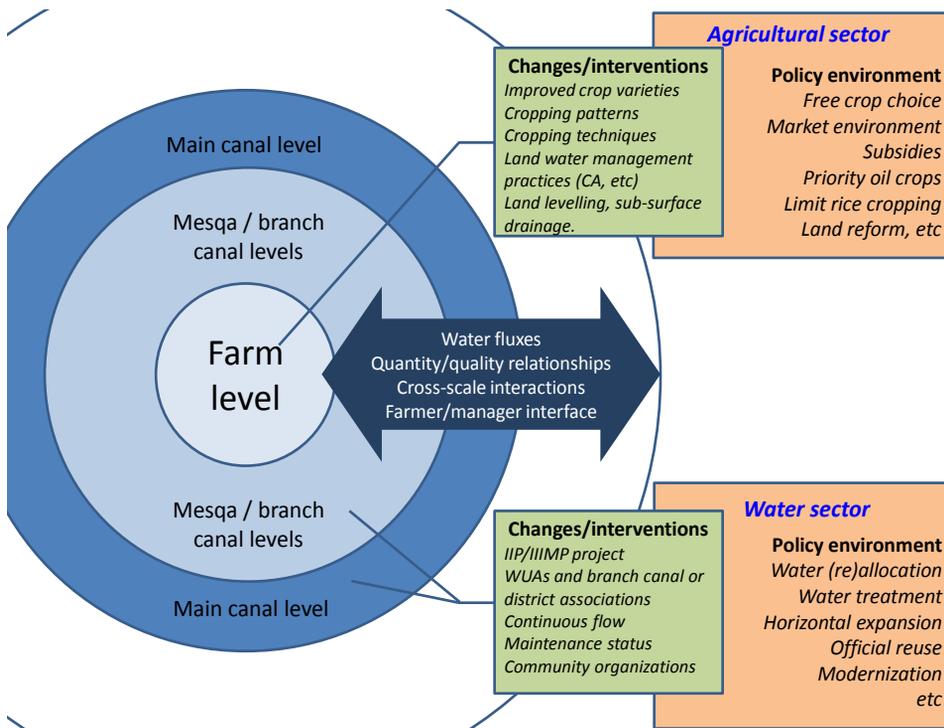




Recycling and nested efficiencies  
Water quantity/quality relationships

**KEYWORDS**

- Nested water and salt balances
- Relationships between water quantity and quality
- Institutions and collective action
- Interface users/managers
- Cross-scale interactions



## **IIP (*Irrigation Improvement Project*): 40 ans d'histoire...**

1977-85: EWUP Project

USAID, Colorado State University, influence de l'expérience du Pakistan

1984-1988: Phase pilote

USAID, UNDP, Sir McDonald & partners

1988-1996: IIP USAID

1996-2006: IIP1 World Bank, KfW

2006-2014: IIP2 KfW

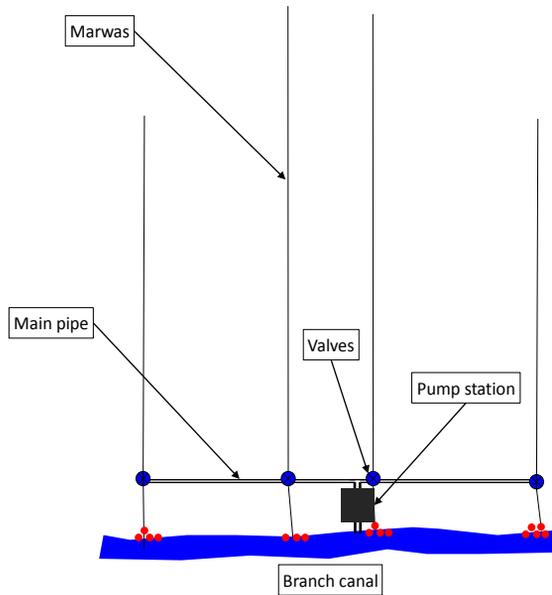
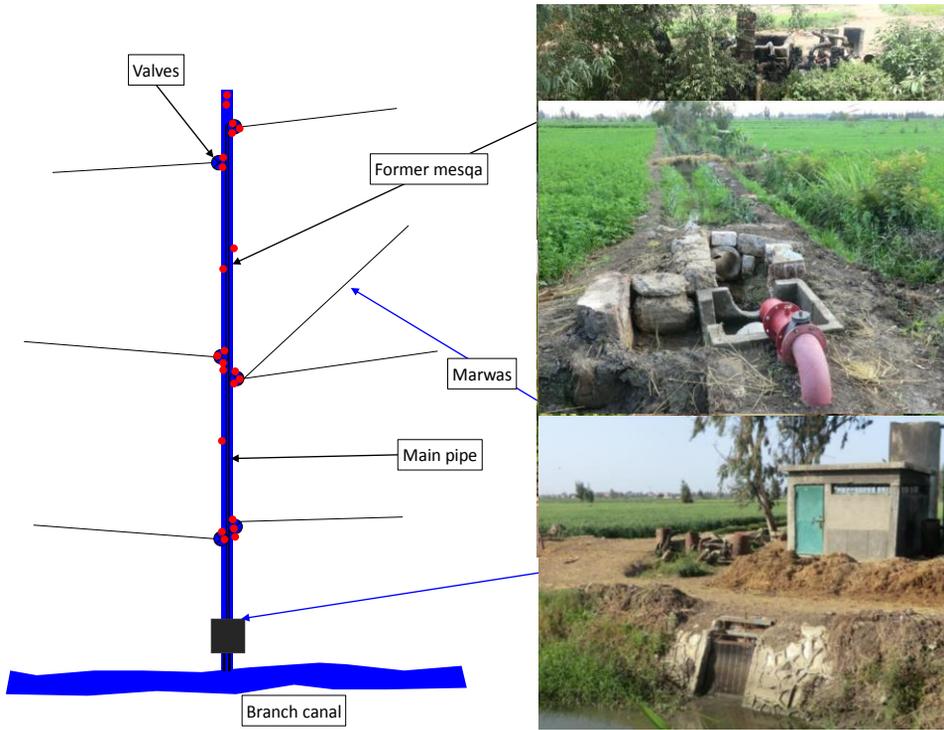
2006-now: IIIMP Banque Mondiale

2010-now: FIMP Banque Mondiale, AFD

### Two major innovations

#### **1. Collective pump stations**

servicing buried **pipelined distribution networks** to deliver water at the tertiary (*mesqa*) level, as a substitute for a situation characterized by diffuse *individual* pumping from multiple points (canals and drains), **managed by WUAs**.





From individual to collective pumps: IIP/IIIMP





## Two major innovations

### 1. **Collective pump stations**

serving buried **piped distribution networks** to deliver water at the tertiary (*mesqa*) level, as a substitute for a situation characterized by diffuse *individual* pumping from multiple points (canals and drains).

2. A technological solution to stabilize supply into (secondary) branch canals: **baffle regulators** (module à masque) at the head; 'downstream control regulation' with **automatic gates** (AVIS) that react to a drop of water level in the branch canal, to establish **continuous flow** in the canal, as opposed to a rotational system.



### Many benefits expected...

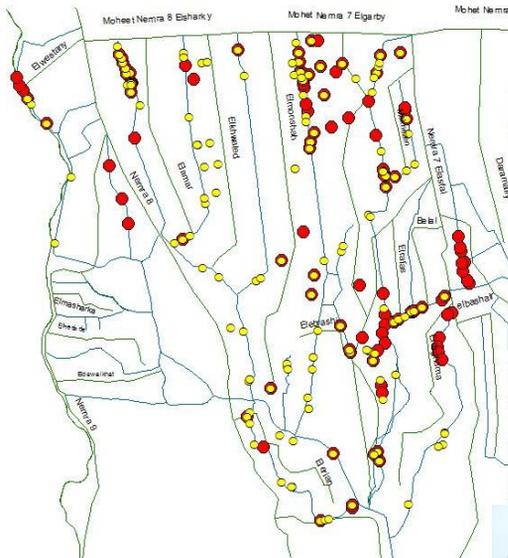
1. better **equity** among farmers of the same mesqa
2. increased efficiency through better distribution, **saving water** (27%)
3. **increase in yields** (from 4% to 25% depending on crop and location)
4. **reduce time** (50%) and irrigation costs
5. **increase in cultivated** land (1-2%)
6. **stop using drainage** water (with its salinity and quality problems)
7. **continuous flow** would bring certainty in supply, allowing farmers to **diversify** to cash crops
8. Water User Associations will **reduce conflicts**





<p>IIP station with one pump added to the two original ones by farmers (1)ᄁ</p>		<p>IIP station with one pump added to the two original ones by farmers (1)ᄁ</p>	
<p>Three IIP diesel motors replaced by electric motorsᄁ</p>		<p>Original motors replaced by more powerful onesᄁ</p>	
<p>Only one motor changed to powerful electric engineᄁ</p>		<p>Mixed stations, with both electric and diesel pumpsᄁ</p>	

Adapting pumping capacity



Our global survey found out that 26% of the pump stations had had their motors **stolen** at least once, of which 22% had their pumps stolen twice and 3% thrice.

## 4 strategies to increase supply

**Increase supply availability at the pump level** (maximize the flow available in front of their PS)

- **Bribing, complaining** to gate-keepers/engineers, politicians or decision-makers, so that the rotation be enforced and/or the number of days 'on' increased;
- **lowering the intake** of the pump
- **tampering** with hydraulic structures
- building **obstacles** and weirs with stones, mud or trash in the canal

**Increasing the abstraction capacity:**

- **more powerful** engine for the pump
- **adding** another pump
- using **both** electric and diesel pumps
- **adding IPs** along the branch canal for direct irrigation.

**Increasing supply by conjunctive use**

- Using **drainage water** (from main , secondary , and tertiary drains), wells

**Improving internal management rules**

- This does not increase the overall availability of water but can help in ensuring equity and reducing conflict

lowering of intake pipe		Farmers demonstration	
Leaking gate after being damaged		Perforated gate (Bosees canal)	
The radial gate has been fully removed by farmers (Hasafa canal)		Farmers have installed a bypass around the regulator (Daqalt canal)	
Creating small weirs in the canal to retain water		Creating obstacles in the canal to increase inflow to the pump station	
Creating small weirs in the canal to retain water		Cleaning the mud in front of the inlet pipe	

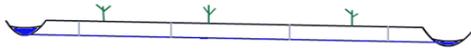
Strategies to increase water supply

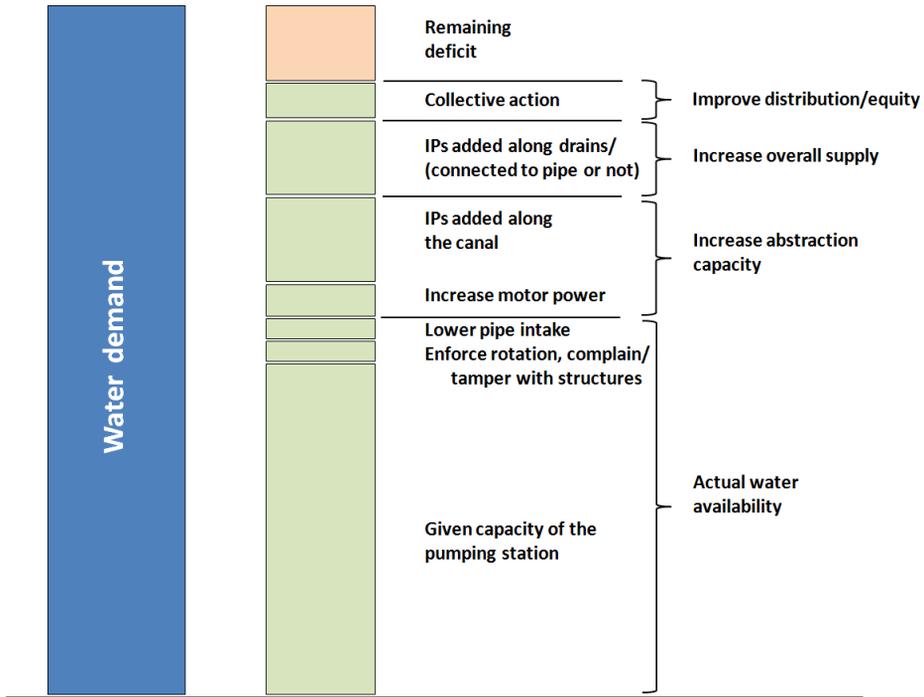
**Canal water**



**Drainage water**

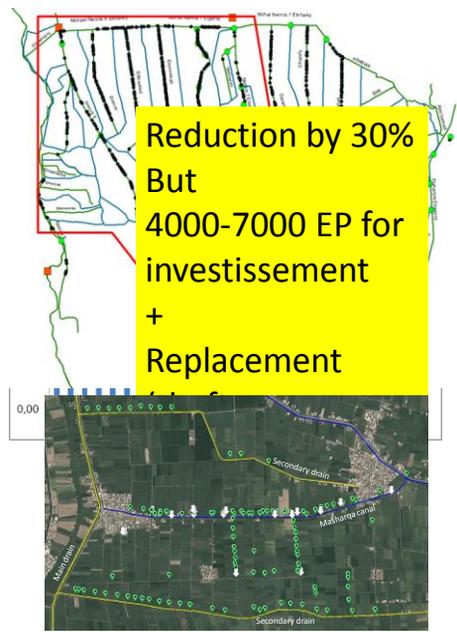
Abandonning the Pump Station?





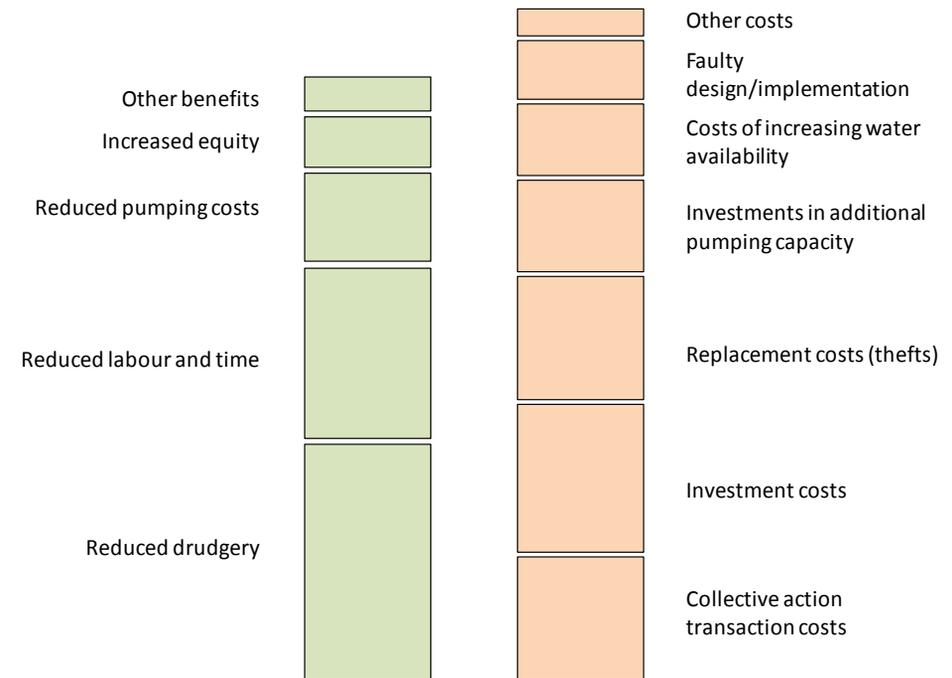
**Impact of Irrigation Improvement Projects**

1. Impact on land and water productivity
2. Impact on equity (within the mesqa)
3. Impact on equity (within the BC)
4. Labour requirements: - 35%
5. Pumping costs
6. Reduction of drainage water reuse
7. Agricultural land saving



## Functioning of WUAs

1. Very **normative plans**: no WUA functions as planned
2. Decision-making is often **informal**, fundamental role of the PS **operator**
3. Very **little participation** in design of PS and network; limited training; reception of PS often problematic
4. Large diversity of **water distribution arrangements**, with rotations only during peak summer time
5. Running costs and **fee collection** un-problematic; investment decisions by consensus when needed
6. **Conflicts** happen when supply/demand ratio too low (tail-ends, or), with **social capital** as amplifier/reducer





## Banque Mondiale; KfW

- **Changement du discours** sur l'objectif du projet (économies d'eau sur le devant quand il s'est agi de justifier des extensions de terres)
- Maintenir coûte que coûte la **rentabilité du projet**. 'Créativité' pour maintenir et 'évaluer' les bénéfices (études partielles, ad hoc, ou anciennes de projet pilote)
- Réduire les coûts à l'hectare des stations (FIMP/OFIDO): réduction de la qualité des tuyaux ou des pompes > problèmes sérieux et **rejet du projet**
- **Contradiction** avec 1) le fait que les gens se déclarent prêts à payer plus pour une meilleure qualité et/ou des options (mais payent-ils?); 2) le principal attrait du projet se trouve être ... le seul qui n'est pas monétisé dans l'évaluation!
- '**Paradigm maintenance**': l'idée du *continuous flow* est maintenue ; les experts diront comment la faire marcher. Car la philosophie du projet repose initialement sur la synergie entre les deux innovations.
- Recycler/adapter le projet et le discours pour une phase supplémentaire : la **logique du 'prêt de plus'** l'emporte sur la question de l'intérêt d'un tel investissement (60% public, 40% usagers)
- **M&E** fait par... le ministère ; 15 ans de tentatives de montrer économies d'eau ou hausse des rendements – sans résultat (évidemment)

## Ministère

- Le projet recrute en interne et offre des compléments de salaire, voyages, voitures, etc (**fringe benefits**) ; rivalités, jalousie, opportunisme, rotation de staff
- Gros **retard** de mise en œuvre; **irrégularités** sur marché publics; efforts du ministère pour garder la construction en régie (à travers des compagnies para-étatiques)
- **Opposition du staff de terrain** (*continuous flow* jugé impossible; attachement à la gestion par rotation traditionnelle, jalousie envers le staff du projet, etc)
- **Rhétorique participative** de façade; "Training/capacity building" meilleurs absorbeurs de budget



## Ministère

- Sur le papier, projet participatif ; en réalité **stations de pompage imposées**, parfois avec aide de la police ; *Irrigation Advisory Service (IAS)* formé d'anciens cadres
- Staff du projet: **pression récurrente** (après visite staff de la Banque) pour faire du chiffre. Dans un contexte post-révolution faire accepter le projet par les paysans = accepter de laisser les pompes individuelles ; pompes diesel additionnelle ; capacité pompe accrue  
 >> **la capacité de pompage augmente** et déséquilibre la rotation au sein des canaux secondaires.
- **Pas de coordination** entre Ministère de l'énergie (qui doit fournir les lignes électriques) et le ministère de l'Irrigation (chaos après la révolution) – Stations abandonnées, détruites.
- **Débats en interne** sur le projet, mais ...
- Incapacité pour un projet top-down conventionnel de prendre en compte **l'hétérogénéité sociale et environnementale** du terrain



## Situation à la David Mosse...

- Project formulation is technically expressed but politically shaped (by the interests and priorities of agencies); policies (IIP) legitimize rather than orientate development practice
- Development interventions are driven by the exigencies of organizations and the need to maintain relationships
- Development project (constantly) work to maintain themselves as coherent policy ideas
- 'Success' and 'failure' are policy-oriented judgements that obscure project effects

Thank you for your attention!

