

Promotion of Integrated Systems of Treatment and Use of Wastewater in urban greening and agriculture in Lima, Peru

ETC/IPES



Lima

43 Districts, municipalities (own mayor); 8.5 M inhabitants

< 25 mm rainfall: Surface and subsurface water River Rimac
Mostly for human consumption

-13% treatment of total wastewater, rest ends up in surface water

-**Legislative vacuum** on use of (treated) wastewater

-Parks, Urban Agriculture



Intervention

To promote the use of treated waste water in urban and peri-urban areas:

- Raise awareness on the potential re-use
- Develop national (sectoral) policy guidelines and regulations that promote the use of treated wastewater through research, demonstration activities with the LA.
- Strengthen capacity of local government and the ministry to promote and design/adapt adequate systems



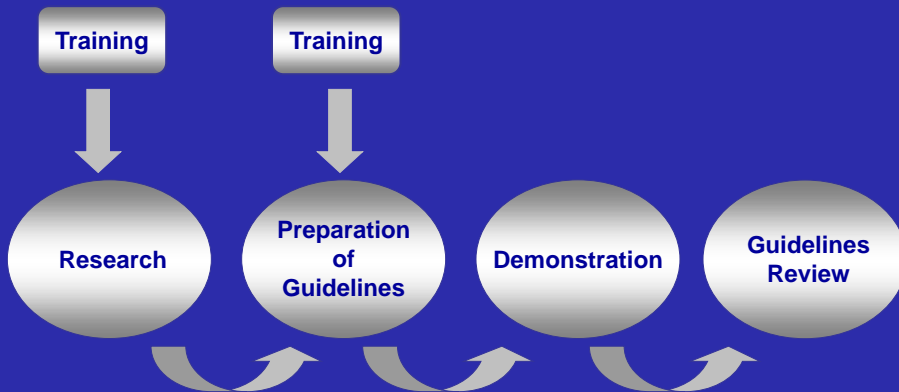
Intervention Logic

Three types of intervention

- 1. Research: generate and systematise (new) knowledge : FIETS
- 2. Capacity Building: Action Research, LA's, Technical and Policy Guidelines for different actors
- LA's: multi-actor platforms to bring together different actor at the right level and link them to the technologies and jointly develop/adapt policy



SWITCH Lima process



Research: Inventory of Experiences

Total experiences inventoried: 37

Scope: Periurban 54%
Intra-urban 46%

Size: Small 11% (less than 1 ha)
Medium 68% (from 1 to 20 ha)
Large 21% (larger than 20 ha)

Technologies: Stabilization ponds 29.4%
Aerated lagoons 29.4%
Activated sludge 23.5%
Constructed wetlands 11.8%
Trickling/percolating filter 5.9%



Location



| Zones | Nº Exp. | (%) |
|--------------|-----------|------------|
| North | 9 | 24 |
| Centre | 5 | 14 |
| East | 6 | 16 |
| South | 17 | 46 |
| Total | 37 | 100 |

SOUTH:

- Almost half of the experiences
- Includes the oldest case (1964)
- Minimal availability of water

CENTER:

- Smaller experiences
- Space limitations
- Oriented toward irrigation of green areas



Typology

- Context (periurban, intra-urban)
- Type of activity (productive, recreational)
- Technologies used for treating wastewater

| Matriz de Tipología | | | | | | |
|---------------------|-------|-------------------|-------|---------------------------|-------|------|
| Ambito | Casos | Tipo de actividad | Casos | Tecnología de tratamiento | Casos | Tipo |
| Periurbano | 21 | Recreativa | 8 | Lagunas de estabilización | 3 | 1Aa |
| | | | | Lodos activados | 1 | 1Ab |
| | | | | Lagunas aireadas | 4 | 1Ac |
| | | Productiva | 15 | Lagunas de estabilización | 5 | 1Ba |
| | | | | Lodos activados | 1 | 1Bb |
| | | | | Lagunas aireadas | 6 | 1Bc |
| | | | | Humedales artificiales | 1 | 1Bd |
| | | | | Ninguna | 2 | 1Bo |
| Intraurbano | 16 | Recreativa | 14 | Lagunas de estabilización | 2 | 2Aa |
| | | | | Lodos activados | 4 | 2Ab |
| | | | | Lagunas aireadas | 2 | 2Ac |
| | | | | Humedales artificiales | 3 | 2Ad |
| | | | | Filtros percoladores | 2 | 2Ae |
| | | | | Ninguna | 1 | 2Ao |
| | | Productiva | 3 | Lagunas de estabilización | 2 | 2Ba |
| | | | | Lodos activados | 1 | 2Bb |

Fuente: (Moscoso, IPES 2007)



FIETS analysis of (case studies)

- **Financial and economic:** investments, cost of investment , annual operating costs, treatment costs, price of treated wastewater, cost/benefit analysis.
- **Institutional Legal and politic :** Actors, Roles and Mandates, conflicts, management and legal problems that occur in practice, taxes.
- **Environmental and health:** negative impacts (risk factors) and positive impacts (benefits), and control (link to Inst.).
- **Technical:** Characteristics of the experiences: (quality and quantity of) water, irrigation methods, soil types, crops/parks/gardens; available technologies, treatment plants, sanitary quality, final disposal of treated water, main problems in management.
- **Socio-cultural:** A description of the direct and indirect beneficiaries, acceptance of using treated wastewater for irrigation, technology adoption.



Learning alliance

Started as Multi stakeholder platform under WP 5.2
(IRC/ETC/IPES decided to use MPAP/LA approach)

The Learning Alliance is set by two multi-stakeholder platforms:

- National LA
- Local LA (Lima)

Identification of stakeholders members of both platforms through:

- Stakeholder analysis (WP 5.2)
- Study on institutional and legal framework on treatment and use of wastewater
- Study on governance of urban environmental sanitation (lead by IRC in LAC cities)



National LA

Responsibilities:

- Identify the weaknesses to use treated wastewater.
- Identify research lines related with the weaknesses in order to generate more knowledge about their causes and effects.
- Elaborate policy guidelines and regulations to overcome the weaknesses.
- Review and update the policy guidelines and regulations.



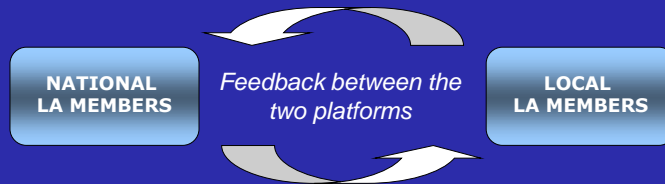
Local LA

Responsibilities:

- Implement research activities based on the "Research Lines" identified by the National LA (implementation of 6 case studies) in Lima.
- Develop an analysis of the 6 case studies and extract conclusions based on the Research Lines, providing new knowledge to the National LA for formulation of policy guidelines and regulations.



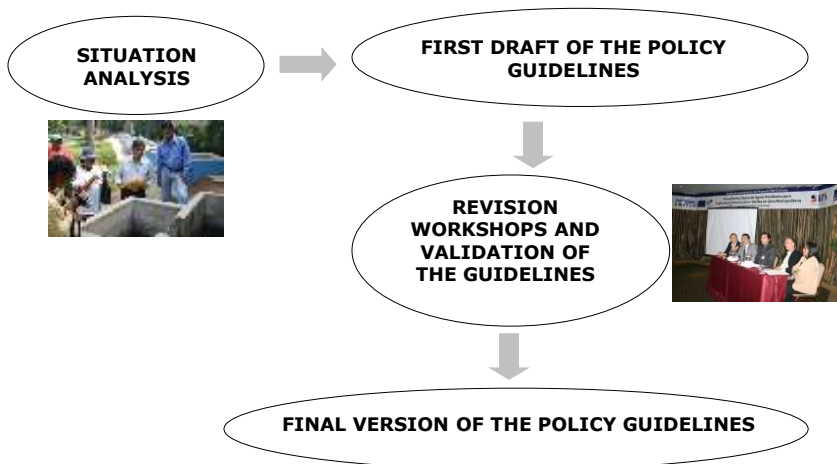
Learning Alliance and research/strategic planning



1. Identify weaknesses
2. Identify research lines
3. Implement research activities
4. Analyze information and provide new knowledge
5. Elaborate the Guidelines
6. Demonstration Project
7. Review/Update Guidelines

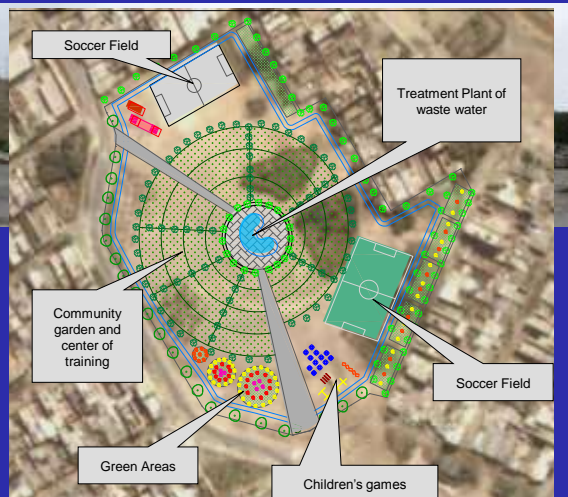


Development of Policy Guidelines



Summary of the Policy guidelines

1. Incorporation of wastewater reuse into existing national policies, plans, and strategies.
2. Recognition into the General law of sanitation services and has an specific legal framework.
3. Promotion of use of effective technologies adapted to potential and current uses and contexts and reducing use of drinking water for irrigation.
4. Participation of the private and public sector, civil society and international agencies to strengthen water management and guarantee sustainability and financing.
5. Promotion of civil society participation and public access to information guaranteeing transparency, control and efficiency of the WW treatment/reuse systems.
6. Strengthening capacities and training of public and private actors for policy implementation (resources oriented to demands)



Demonstration Project

Partners (Members of LA):

- Ministry of Housing, Construction and Sanitation (Peru)
- Villa El Salvador (VES) Municipality
- IPES Promotion of Sustainable Development
- *(funded by Cordaid, Municipality El Salvador, SWITCH)*

Fits in priorities of Peruvian government to increase coverage, improve quality and sustainability for drinking water services, sewer systems, sewage treatment and solid waste regulation.

Demonstration project OGAPU will be a pilot experience for validation of integrated treatment systems and use of treated residual water in green areas and agriculture (to be replicated in similar contexts).



Location: Villa El Salvador

Area: 3,546 ha
Population: 330 143

Decentral wastewater treatment/reuse system managed by a local committee (Municipality-residents- others)

2.6 ha of productive green areas
Interaction and Community
Increased Income



Conclusions 1

- The LA at two levels allowed for active participation of different members to its interest and capacities
- Involvement of NGO, Academic, Government (3 champions) was important.
- Set up worked in raising interest, involvement, dissemination, validation



Conclusions 2

- Process and focus initially WP 5.2 focused. But gradually developed to wider perspective of IUWM.
- No “new”, science but bringing reality and best practices under the attention of relevant stakeholders. The FIETS analysis was new and proved important to the stakeholders: showing what was already there!!
- The demo developed into action research, and showed the multiple functions of decentralised re use (FIETS), and created awareness and interest.



Conclusions 3

- Interest raised with Municipality and Ministry: now additional –SWITCH- funds obtained for research on the replicability of the demonstration, and for a training for Ministry CH staff on guidelines.
- Next to information sharing, new synergies were created between institutions (community, municipality, university, between municipalities.
- There is interest in pursuing LA/SWITCH platform.



THANKS

