

## Action Plan for Water in Lima and Callao

The **LiWaProject** (“Sustainable Water and Wastewater Management in Urban Growth Centres Coping with Climate Change - Concepts for Metropolitan Lima - Peru”) is an applied research project financed by the Federal Ministry of Education and Research BMBF. The LiWa project is made up by partner institutions such as German Ifak e.V., Stuttgart University (several institutes), Ostfalia University, UFZ Institute and Peru’s SEDAPAL, Instituto Metropolitano de Planificación, Foro Ciudades para la Vida, FOVIDA and Universidad Nacional de Ingeniería. Other key institutions were included along the project such as the Lima Metropolitan Municipality, Callao’s Regional Government, SUNASS, SENAMHI, ANA-ALA and others. Different **research pieces and studies** were developed within the project framework on issues related to water and climate change, ending up with product and proposal results for the city.

In different dialogue events (**roundtables and workshops**), carried out as a main project activity, the principal public, private and civil society players participate to comment and contribute. This **Action Plan for Lima and Callao** has been formulated as one of the results of this dialogue with measures and actions regarding water and sanitation in view of scenarios towards 2040.

This Action Plan includes policies and measures for sustainable water management in Lima, environment and city management, as well as strategies to adapt to climate change, formulated by the Lima Regional Government and Lima Metropolitan Municipality, Metropolitan Planning Institute (IMP), Callao Regional Government, Lima’s Water Company – SEDAPAL, Lima’s Electric Energy Company (EDEGEL), National Superintendence for Water and Sanitation Services (SUNASS), National Meteorology and Hydrology Service (SENAMHI), Local Water Authority (ALA) and National Water Authority (ANA), Ministry of Education (MINEDU), Ministry of the Environment (MINAM), Ministry of Housing, Construction and Sanitation (MVCS).

### **This Action Plan firstly acknowledges that:**

- **Climate change**, depending on the global climate scenario, it can cause a decrease of up to 13% in the flow of the 3 rivers in the Chillón-Rímac-Lurín watersheds towards 2040, as well as in the watersheds of the upper Mantaro river, which is the source of more than 50% of water resources for the city.
- **City Governance** – understood as a way in which decisions are made and cooperation links are established between state institutions and the state, private sector and civil society – is one of the key factors to face possible negative scenarios in the future. The capacity of agreeing to execute plans and investment in the short, mid and long terms -including city, water and risk management- is particularly important.
- Within an **unfavorable scenario**, with weak governance, high population growth and water source decrease due to climatic change, water infrastructure deficit will

## Action Plan for Water in Lima and Callao

lead to a water imbalance between supply and demand towards 2040 with the risk of social conflicts in the city.

- Prioritizing implementation of an **Ecologic Infrastructure Strategy** with comprehensive management to close the water urban cycle will reduce the percentage of open, degraded and not used or unrelated spaces, strengthening the city' and its ecosystems' adaptation capacity.
- A **sustainable tariff** is required which should be differentiated according to different uses (farming, industrial, commercial, energy, mining and population) reflecting the water resource scarcity value, the cost of preserving water sources (superficial and underground) and/or retribution for the water environmental service, cost of large and small hydraulic infrastructure, cost of managing and monitoring underground waters, cost of supplying treated water according to different uses, cost of collection, treatment and reuse of waste waters and also economic efficiency factors, environmental sustainability and social equity, based upon an appropriate coordination between the water resource regulator (ANA) and the potable water regulator (SUNASS).
- Implementing **LiWatool**, a simulation tool for the Lima and Callao urban water system developed within the framework of the LiWa project for long term planning and support to decision making.
- The need to intensify **capacity building** on integrated management of water resources has become evident, particularly concerning waste water treatment, a very important issue for environmental and human health.

Therefore, the subscribing institutions and people commit to cooperate so that the Lima and Callao cities may face future scenarios, working jointly and supporting each other in preparing and executing the following **measures and actions**:

## Action Plan for Water in Lima and Callao

Measures, results and responsible entities

Measure name	Expected result	Term	Entity responsible for implementation
1. Promoting <b>consensus agreements</b> to integrate and coordinate city, water and climate risk management.	<ul style="list-style-type: none"> <li>• There is a related player map identifying their mandates and institutional arrangements</li> <li>• There are groups and spaces (such as the Lima and Callao climate change technical groups) who have started coordination identifying gaps and priorities to build consensus</li> <li>• Consensus agenda</li> <li>• Creating the Water Resource Council for the Chillón, Rímac and Lurín watersheds</li> </ul>	Short term	MML-PGRLM GRC SEDAPAL ANA MINAM SUNASS MINEDU Foro Ciudades para la Vida Civil society
2. Strengthening representation of users of water for human consumption (both urban and rural sectors) in the <b>Water Resource Council</b> of the interregional Chillón-Rímac-Lurín watersheds	<ul style="list-style-type: none"> <li>• Evaluating amendments to the water resource law and its regulation enlarging water users to include water user organizations related to the population.</li> <li>• Representing users of water for human consumption in Lima both in the urban and rural sectors in the Watershed Council</li> <li>• Training 100 neighbour leaders in water resource integrated management</li> </ul>	Mid term	ANA-ALA FOVIDA Civil society
3. Coordinating <b>Ecologic Infrastructure</b> as a new integrating instrument for territorial and urban planning	<ul style="list-style-type: none"> <li>• Creating a regional multifunctional open space system to provide services (environmental, social, cultural, economic, etc.) to the city</li> <li>• Reducing the degraded or not used open space percentage integrating it to the open space system in the city</li> </ul>	Mid to long term	MML-IMP MML-PGRLM/GSC GRC

## Action Plan for Water in Lima and Callao

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4. Promoting water savings through <b>massive</b> dissemination and sensitization <b>campaigns</b>	<ul style="list-style-type: none"> <li>Reducing water consumption by 10% in 10 years</li> </ul>	Short, mid and long term	ANA MINAM MINEDU SEDAPAL National Society of Industry Private sector
5. Promoting water savings through <b>incentives</b> for water saving equipment and technology use	<ul style="list-style-type: none"> <li>Reducing water consumption between 50% and 25% according to equipment to be installed</li> <li>By 2017, these water savings equipment and technology will be used by 25% of the total population</li> </ul>	Short, mid and long term	SEDAPAL National Society of Industry Private sector
6. Promoting <b>waste water treatment and reuse</b>	<ul style="list-style-type: none"> <li>Reducing 80% of potable water use for irrigating green areas</li> <li>Increasing domestic waste water secondary treatment to 7 m<sup>3</sup>/s for irrigating green and farming areas</li> <li>Developing 9,000 ha of green areas and 4,000 ha of farming areas in Lima with treated waste water</li> </ul>	Short and mid term	SEDAPAL MML-SERPAR/PGRLM/GSC
7. Implementing a water and sewerage <b>sustainable tariff</b> to contribute to reducing consumption and improving equity	<ul style="list-style-type: none"> <li>ANA acknowledges investment made by SEDAPAL in the Chillón, Rímac and Lurín watersheds allowing efficient costs recovery by SEDAPAL and, hence, a better capacity for carrying out required investments</li> <li>Reducing per capita water consumption</li> </ul>	Mid and long term	SUNASS ANA SEDAPAL
8. Reducing <b>water losses</b> in the public network (not invoiced water)	<ul style="list-style-type: none"> <li>Reducing losses caused by leaking in networks and clandestine consumption to 25%.</li> </ul>	Short, mid and long term	SEDAPAL
9. Improving <b>farming irrigation efficiency</b>	<ul style="list-style-type: none"> <li>Reducing 60% of water that is currently used for farming irrigation from 12 m<sup>3</sup>/s to 4.8 m<sup>3</sup>/s</li> <li>Reducing the amount of vegetables polluted with pathogenic germs from 70 to 15%</li> </ul>	Short, mid and long term	Farming User Board ALA - Chillón Rímac Lurín MINAG

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10. Building <b>reservoirs in the high and middle watersheds</b> to store water during rainy seasons	<ul style="list-style-type: none"> <li>Each reservoir storage capacity during rainy seasons is 150 MCM of raw water to generate more than 7,0 m<sup>3</sup>/s of potable water to supply the population</li> </ul>	Short, mid and long term	SEDAPAL PROINVERSION EDEGEL
11. Protecting the <b>river banks and</b> cleaning the beds to recharge the aquifer	<ul style="list-style-type: none"> <li>Implementing a series of wells to recharge the aquifer (25 – Rímac, 10 – Chillón, 10 – Lurín) and a possible contribution of 1m<sup>3</sup>/s for 30 wells</li> </ul>	Short and mid term	SEDAPAL ANA-ALA District municipalities MML, GRC
12. Promoting <b>water-sensitive urban design (DUSA)</b> on open spaces in the city, thus reducing potable water consumption when irrigating green areas	<ul style="list-style-type: none"> <li>Increasing the area percentage by integrating open spaces where the urban water cycle should be closed and promoting use of native vegetation with low water consumption</li> <li>Increasing environmental services by creating multifunctional spaces (recreation, water purification, production, etc.) that respond to population needs while keeping the larger percentage of free and easy access area</li> <li>Reducing the use of potable water to irrigate green areas by collecting, treating and reusing different urban water sources (waste water, canals, rivers, etc.)</li> <li>Implementing the Parque Lomas concept where collecting fog water is part of the design</li> </ul>	Mid and long term	MML-SERPAR District and Province municipalities (environment and park departments)

Annex: Measure fact sheets

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Lima-San Isidro, April 16, 2013

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