



Cali, Colombia, a Demonstration City

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Cali, the city of the seven rivers



Son enormes depósitos naturales de agua que abastecen los siete ríos y determinan su paisaje.

Cali, the city of the seven rivers



Cali and upper basin of the Cauca River Main problems of water sector

- Lack integral vision and long time vision
- The basin is not the analysis unit
- Lack leadership and limited institutional coordination
- Limited participation of the communities
- Resistance to change of new concepts
- Problems related to information management

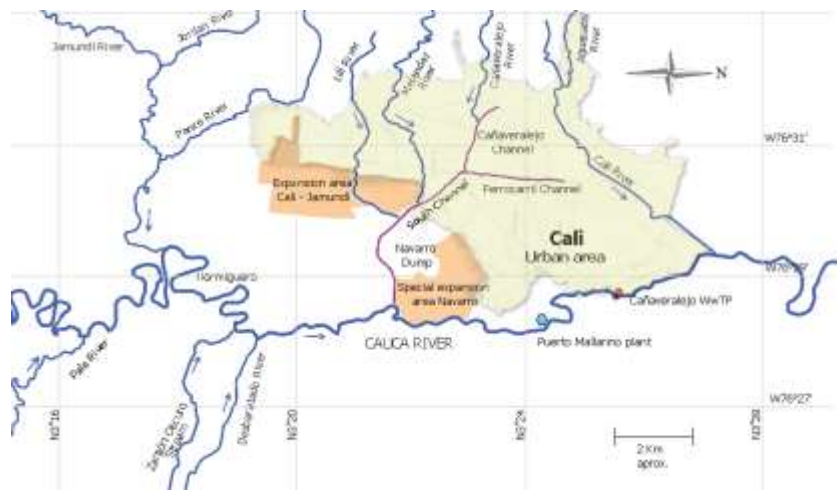
Cali and upper basin of the Cauca River

Main problems of the water sector

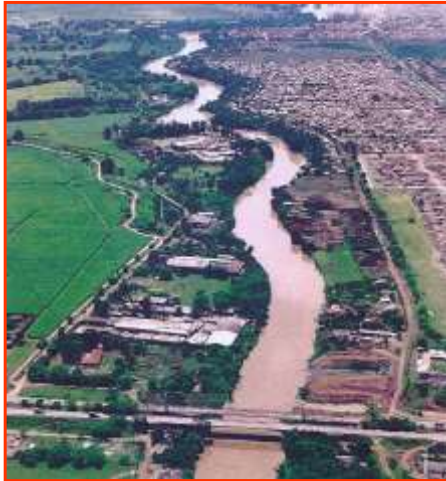
- Limitation in the capacity building
- Limited follow-up and control
- Lack articulation between norms, policies and decision making.
- Vision only in the short term
- Only “end of the pipe solutions”
- Only point source pollution (diffuse pollution is not considered)

Cali, the City of the seven rivers

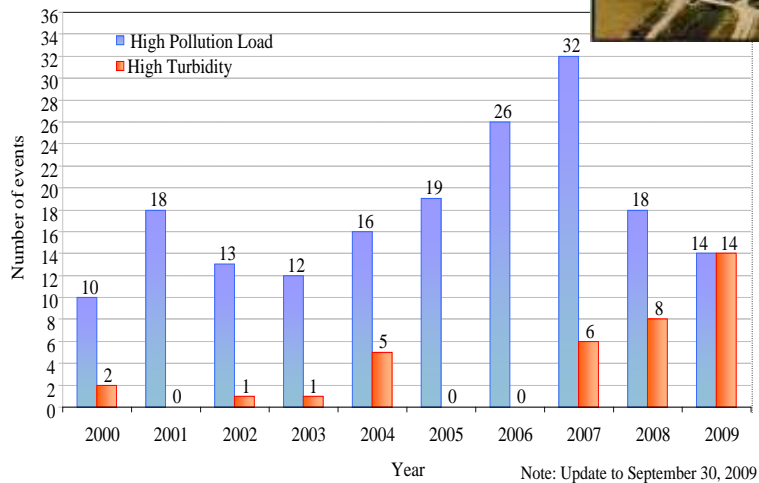
study areas in the LA – SWITCH Project



Cali and the Cauca River



Shutdowns of water intake (Cauca River) of Puerto Mallarino Drinking Water Plant



Some problems

**Discharge of wastewater
(Paso del Comercio
Pumping Station in Cali)**



**Discharge of wastewater
(General Sewer in Cali)**



**Discharge of solid waste
to Cauca River**



Human Settled



Erosion Processes

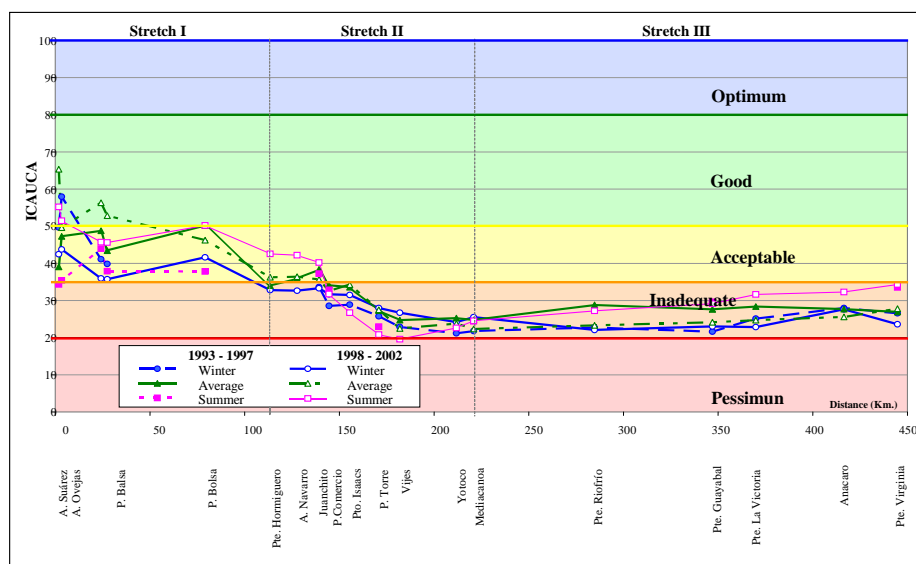


**Leached
(Navarro Dump)**



Cauca River Index – ICAUCA

(Patiño et al, 2005)



Cali Learning Alliances - Background

- Univalle had been in the past important experiences in water sector projects with several city stakeholders.
- Through these projects, the Universidad del Valle managed to establish close relationships with some of the key stakeholders in water management in Cali and the Cauca river basin
- Experiences in several projects with IRC and UNESCO – IHE

Univalle in SWITCH Project (1)

- **2006 SWITCH Project started.**

- **2007 (WP 1.1; WP5.3)**

Univalle started activities in SWITCH Project.

Preparing to become a demonstration city. A start is made with the situational assessment and stakeholder mobilization.

- **2008 (WP 1.1; WP5.3; WP6.2)**

-Formal start as demonstration city, with the establishment of the LA (3 topics)

-Preparation for the planning processes

-First city assessment.

Univalle in SWITCH Project (2)

2009 (WP 1.1; WP5.3; WP6.2)

Vision and strategic planning, the inclusion of the results of research in this, and the first seizing of opportunities for policy advocacy.

2010 (WP 1.1; WP5.3; WP6.1; WP6.2)

- Start of scaling up, by extending the LA to new groups of stakeholders,
- Participation in formal planning procedures.
- Dissemination and engagement with decision-makers.

LA - Cali – some institutions involved

- EMCALI
- CVC
- CRC
- DAGMA
- AIV
- EMSIRVA
- Gobernación del Valle del Cauca
- Municipio de Cali
- Fundación Río Cauca
- Fundación SER
- ACODAL
- Comité de Cafeteros
- Secretaría de Vivienda Departamental
- UMATA
- Universidad Javeriana
- Cámara de Comercio de Cali
- Escuela de Salud Pública
- Universidad del Valle
- Comunidad (JAL)
- CENICAÑA
- CRPML

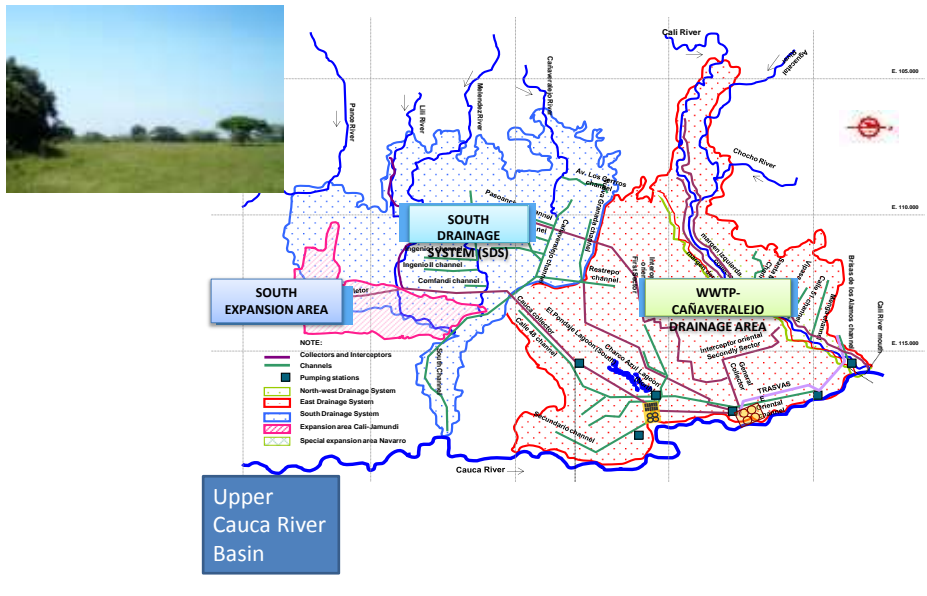
LA - Cali City - Participants

- Stakeholders
- Univalle: Lecturers and other professionals from different disciplines
- Students: PhD, MSc, undergraduate, Internship (Univalle and others)
- IRC, UNESCO – IHE

LA Cali City - Focus

- Shift paradigm in waste water management . **From the focus in WWTP to a holistic view of pollution control**
- Cali demonstration city, urban area in the context of the upper basin of the Cauca River.
- 3 topics:
 - The water quality of the Cauca River and its impact on the water supply system of Cali.
 - The southern drainage system of Cali city.
 - Expansion area and the possibility of including SWITCH approach.
- Holistic view (WP1.1); Applied research (WP5.3) Learning Alliances (WP 6.2); Governance (WP6.1)

Cali - SWITCH Project - Study area



Vision for Cali in 2040

“Cali is a city where all citizens can enjoy a clean and healthy environment, having vital eco-systems and offering extensive green areas in the urban area. The city’s water resources are of good quality, maintain sufficient flow to preserve aquatic life, and are the source for different human uses. There is a safe environment for healthy coexistence in an atmosphere of respect, peace, awareness and environmental culture, where citizens have a decent home and live in areas with low risk for natural disasters”.

Main activities

- Applied research
- Study cases (3 areas in Cali; upper basin of the Cauca River)
- LA (20 Meetings, 12 Workshops, Seminars, fieldtrips, etc.).
- Activities with specific stakeholders (projects, meetings, SWITCH meetings, fieldtrips)
- City assessments (2008; 2010)
- Seminars, International Short Courses
- PhD thesis, MSc thesis, undergraduate thesis, Internships
- Symbiosis with the related process with the IWRM at local, regional at national level

SWITCH approach for the comparison with conventional solutions

- Use natural systems in WWTP
- Decentralised Systems
- Reuse in sugar cane irrigation
- Pollution prevention and minimization
- Cleaner production in urban area
- Self purification capacity
- Diffuse pollution control
- Cost – benefit analysis
- MCA Analysis

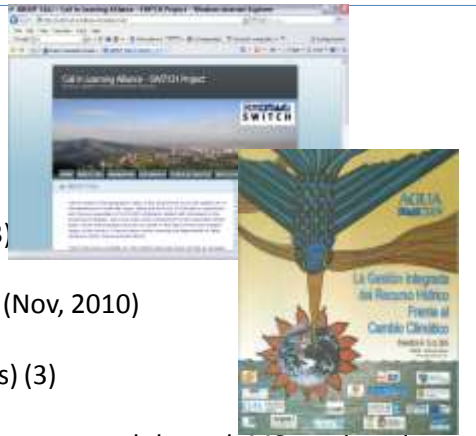


Academic outputs

- MSc Thesis (2 completed, 1 in development)
- Graduate thesis (2 completed; 2 in development)
- Internships (2) ; Younger research program - Colciencias (1)
- Chapters in books (3)
- Posters (4)
- Presentation in conferences (3)

Diffusion strategies

- Broadcast programs (2)
- Brochures (2)
- Web site
- International short courses (3)
- Costa Rica training workshop (Nov, 2010)
- National courses (Diplomados) (3)
- The transfer of the knowledge generated through MSc and graduate courses in Univalle (2007-2010). Several courses between 2007 and 2010.



Strategic Results - contribution to water sector (1)

Medium and long-term planning

- Cali vision 2036 (500 anniversary of Cali City)
- Rehabilitation of the Cauca River (2020)

Planning based on basin like analysis unit

- Institutions from different districts work together for Cauca river basin (12 meetings in 2010)

Strategic Results - contribution to water sector (2)

Considering innovative strategies

- Decentralised system (South WWTP)
- Early warning (real control time) to optimize operation of drinking water plant
- CP - industries
- SUDS
- Reuse
- Natural system
- Technology selection in sewerage system
- River bank filtration Project (alternative for drinking water treatment plant) – New Project



Strategic Results (4)

Inter-institutional and multidisciplinary planning

- CVC+CRPML+UNIVALLE (CP small industries in urban area Cali)
- DAGMA + EMCALI (Environmental objectives)
- DAGMA and several institutions of the basin
- CONPES Río Cauca (8 different institutions during 1.5 years, 20 meetings approx.)

Formulation of public policy

- CONPES Río Cauca was approved in November 20, 2009 (US\$ 1 billion)

Perspectives – After SWITCH January 2011

- Strengthen inter-institutional group - CONPES Cauca River. To stimulate the investment in SWITCH approach in Cali and the upper basin of the Cauca River.
- To participate in research activities – CONPES Río Cauca
- Continue positioning of the SWITCH approach in public policy, regulations and local and regional plans (Cali 2036, POT Cali, etc.)
- Implementation of a new project with EMCALI: Evaluation of river bank filtration technology for the Cauca River as a water source to Cali City.
- “La Vieja” River Project (2010 – 2012) (6 institutions) to implement the SWITCH approach at the basin level. La Vieja is a tributary of the Cauca River.
Pilot Project in Colombia

La Vieja River

One basin – 3 districts

3 environmental authorities



Univalle working group

