

# Industrial Wastewater Discharge Management in Cuenca, Ecuador

etapa

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**cuenca**  
ALCALDÍA

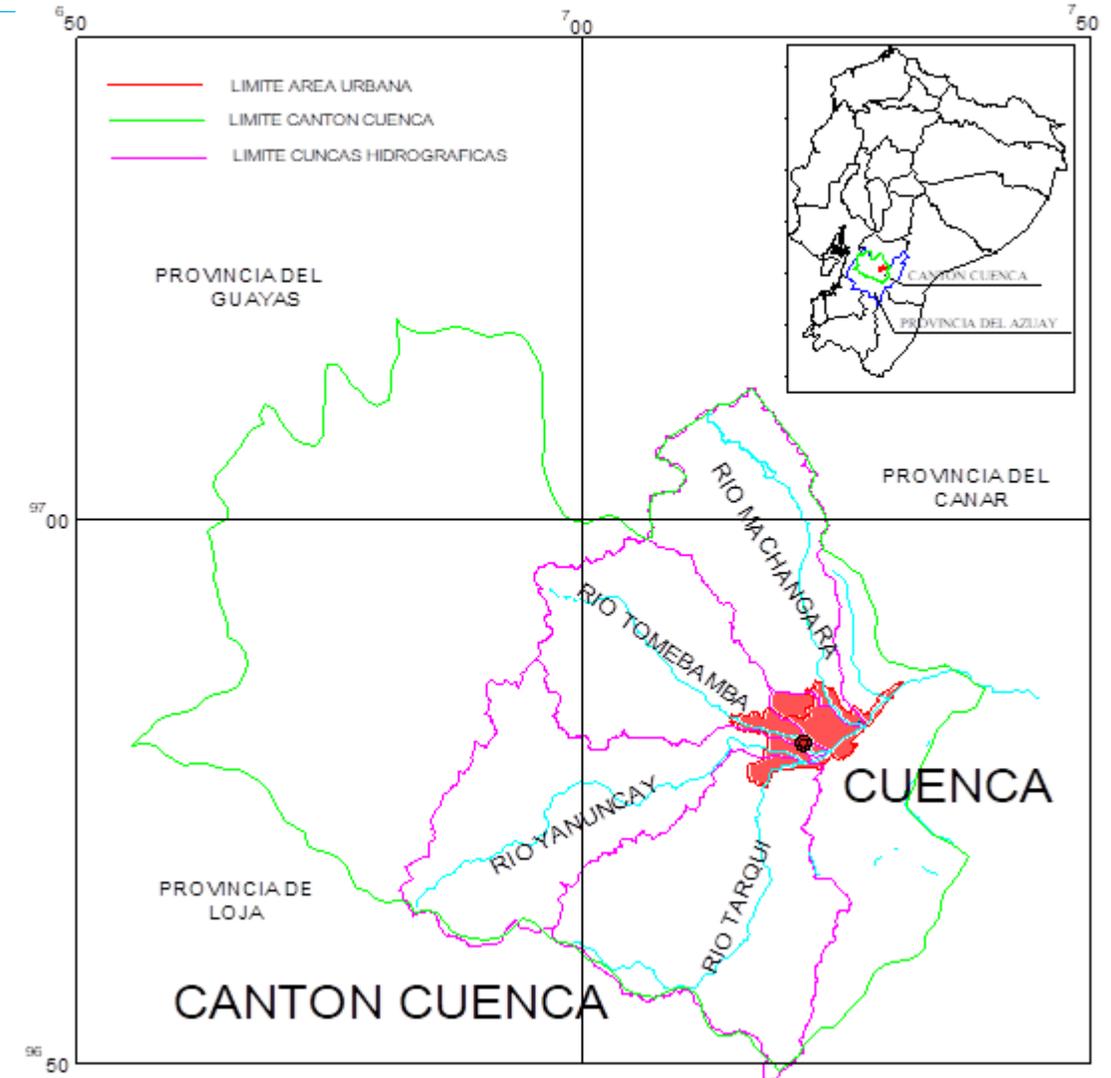
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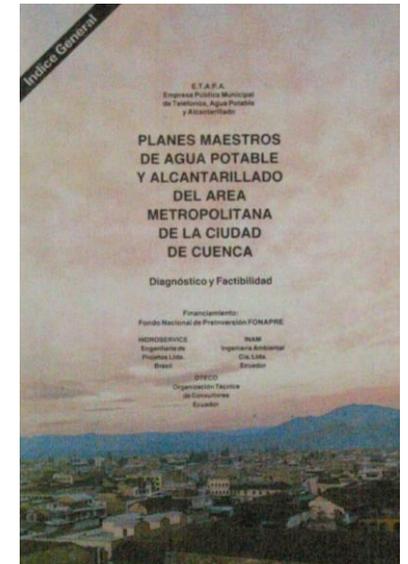
## CUENCA – ECUADOR

- Location: Southern Ecuador in the Interandean Valley
- Altitude: 2,550 masl
- Population:
  - 505,585 inhabitants
  - 329,928 in urban area
- Crossed by four rivers: Tomebamba, Yanuncay, Tarqui and Machángara.



## BACKGROUND

- 1968: Creation of ETAPA EP
- 1985 – 2000: Design and implementation of Master Plan I & II
- 1999: Ucubamba Wastewater Treatment Plant starts to operate
- 2000: Parallel programs implemented
  - Industrial wastewater discharge control program
  - Battery collection program
  - Collection program of waste oil from car shops and vehicle lubrication workshops



## EXISTING INFRAESTRUCTURE



- Combined sewerage system
- 1160 Km length:
  - 120 Km are interceptor sewer

- Ucubamba Wastewater Treatment Plant (UWWTP)
- Maximum capacity: 1200 l/s
- Water Line Treatment:
  - Preliminary treatment units
  - Two parallel treatment lines: 2 aerated ponds, 2 facultative ponds, and 2 maturation ponds



## OBJECTIVES

- Prevent health issues of citizens and company workers
- Prevent polluting substances from clogging and affecting the sewer networks
- Prevent alterations to the normal functioning of UWWTP
- Gathering information to set fees for industrial discharge

## LEGAL SCOPE

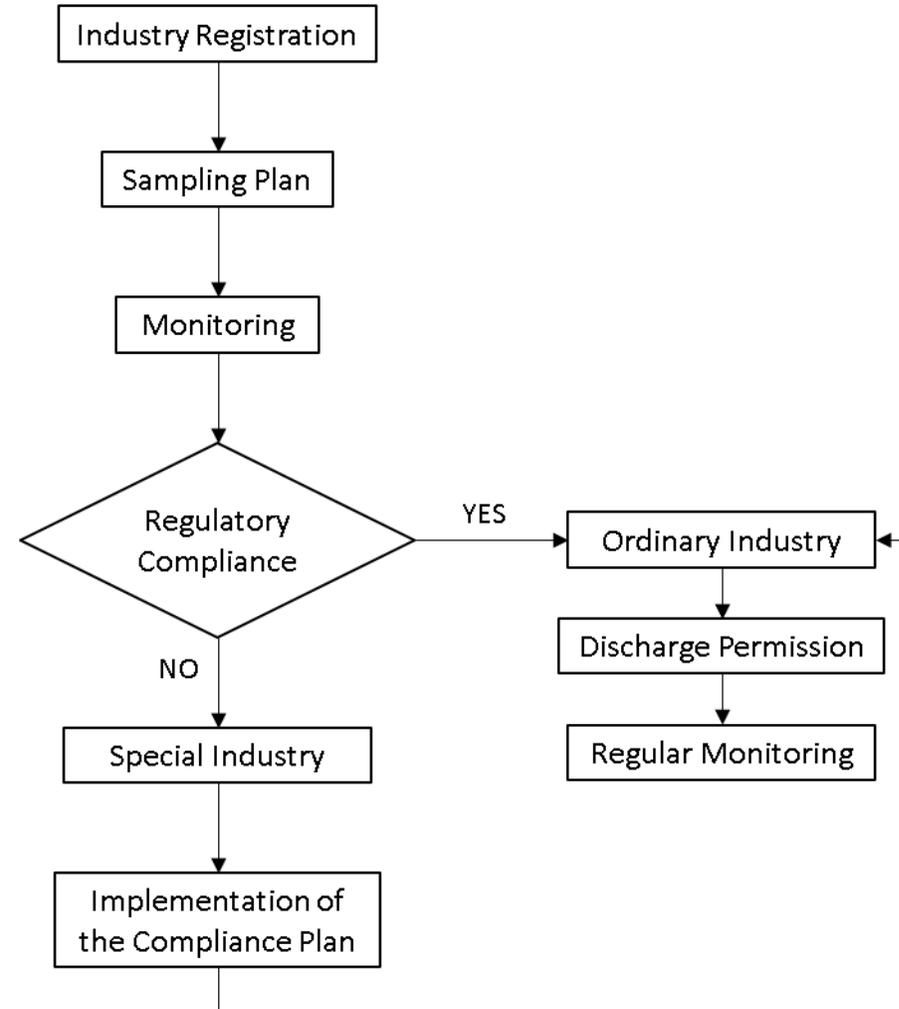
- Constitution of Ecuador 2008
- Organic Law of Public Companies 2009
- Organic Code of Territorial Organization, Autonomy and Decentralization 2010
- Ordinance Regulating the Constitution, Organization and Operation of ETAPA 1968/2014
- Ordinance for Administration, Regulation and Fees for the use of the Sewer Services of Cuenca City 1993

CONSTITUCIÓN



DEL ECUADOR

# REGULARIZATION METHODOLOGY

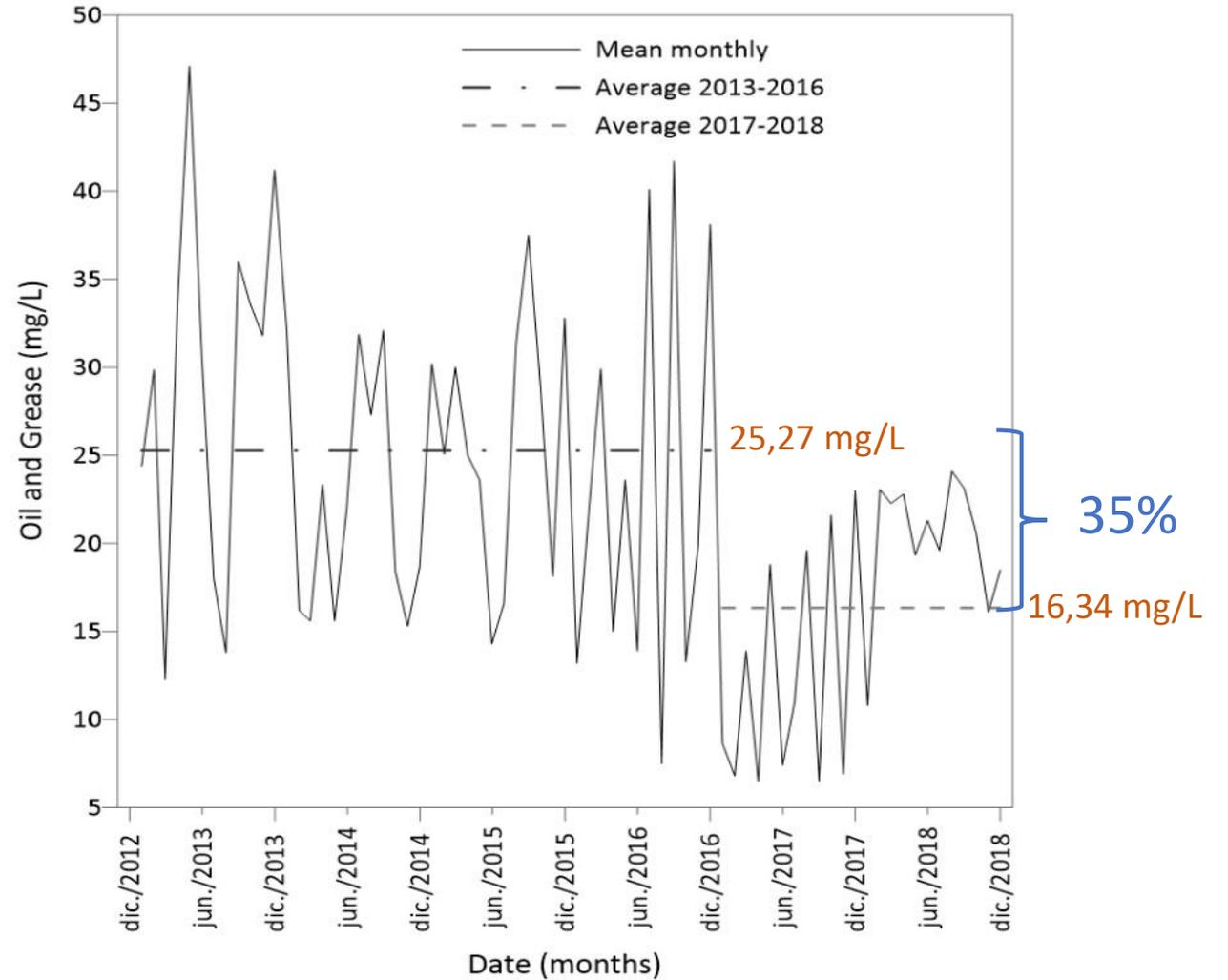


## CADASTRE

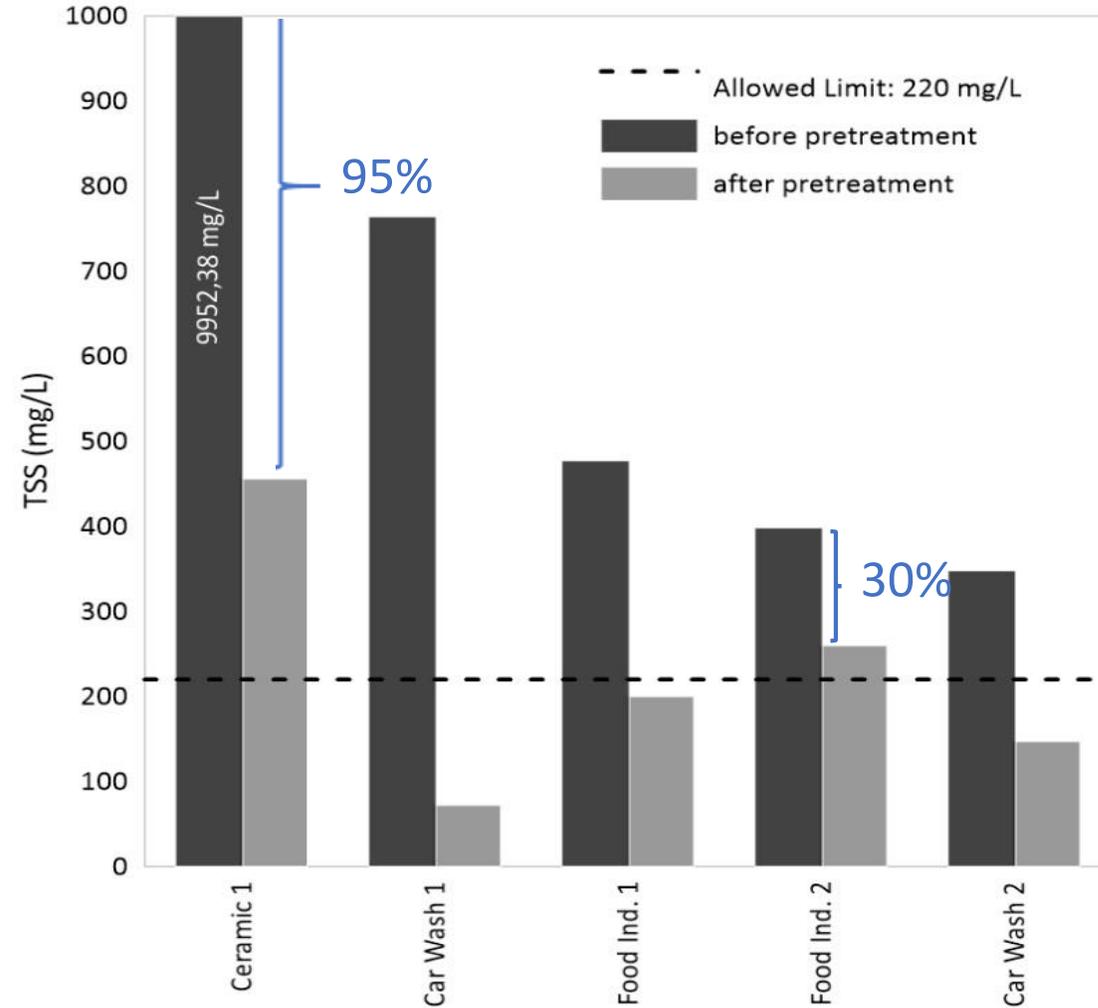
- 100% of Industries register
  - 32% regularized
  - 28% in process of regularization
  - 40% to 2025
- Polluting industries, percentage of contaminants:
  - non-metallic minerals (46%)
  - food (26%)
  - textile (16%)
  - metal products factories (5%)
  - paper mills (2%)

| INDUSTRY                | PERCENTAGE |
|-------------------------|------------|
| FOOD                    | 21%        |
| PAINTS                  | 2%         |
| PLASTIC                 | 1%         |
| RUBBE                   | 1%         |
| PAPER MILLS             | 1%         |
| CERAMIC                 | 5%         |
| CONCRETE                | 3%         |
| METAL PRODUCT FACTORIES | 5%         |
| TEXTILE                 | 23%        |
| TANNERY                 | 1%         |
| CHEMISTRY               | 1%         |
| CAR WASH                | 38%        |
| PRINTING AND SIGNAGE    | 1%         |
| GAS STATIONS            | 20%        |

# REDUCTION OF OILS AND GREASE CONCENTRATION



# REDUCTION OF TSS CONCENTRATION



## AMOUNT COLLECTED

| YEAR         | AMOUNT COLLECTED<br>WASTEWATER TREATMENT |
|--------------|------------------------------------------|
| 2016         | \$235.975,14                             |
| 2017         | \$253.850,91                             |
| 2018         | \$296.075,30                             |
| <b>TOTAL</b> | <b>\$785.901,35</b>                      |

“Polluter Pays” Principle

## CONCLUSIONS

- Maintaining and preserving the sewer network system
- Increase of lifespan of UWWTP
- Charging for the wastewater treatment service
- Improving production processes in regularized industries
- Industrial discharge control program is vital to prevent pollution



# THANK YOU QUESTIONS?

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