Non-conventional sewerage services in the City of Dakar

Rethinking sewers, session at World Water Week 2018

Christophe Le Jallé, pS-Eau
August 2018

A city is not an homogeneous area

It includes a diversity of areas regarding:

- **Urban constraints** (planned/unplanned, population density, space available inside plots, layout and width of roads, narrowness of the streets)
- **Physical characteristics of the soil** (infiltration capacity, hardness of the ground, level of the groundwater table, gradient, etc.)
- **Type of water supply & per capita water consumption**
- **Socio-economic aspects & user demand**
- Etc.

Given these characteristics, the appropriate sanitation system should be chosen:

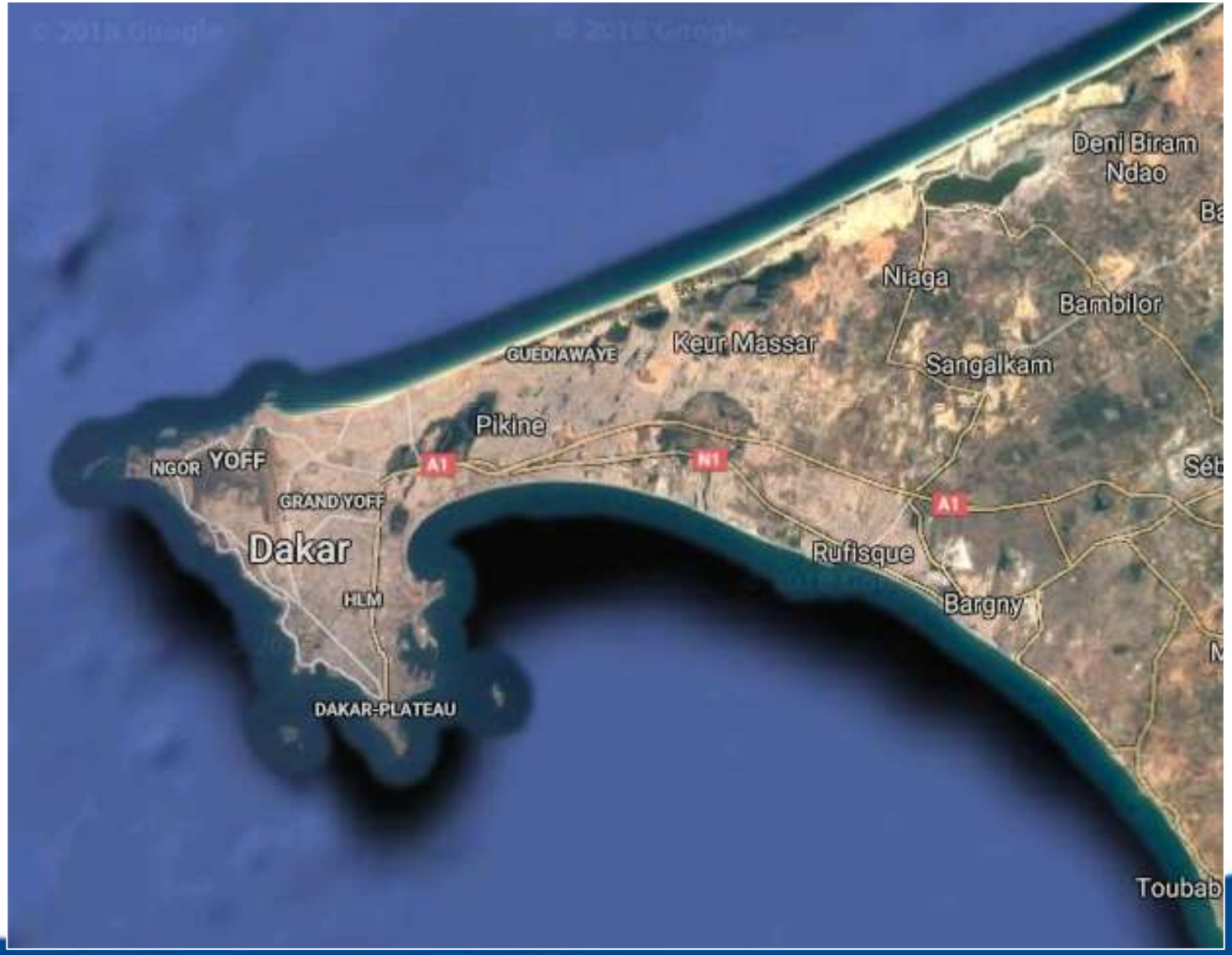
Non sewered sanitation:

- On-site sanitation with on-site treatment
- On-site sanitation + emptying + faecal sludge treatment
- CBS, including faecal sludge treatment

Sewered sanitation

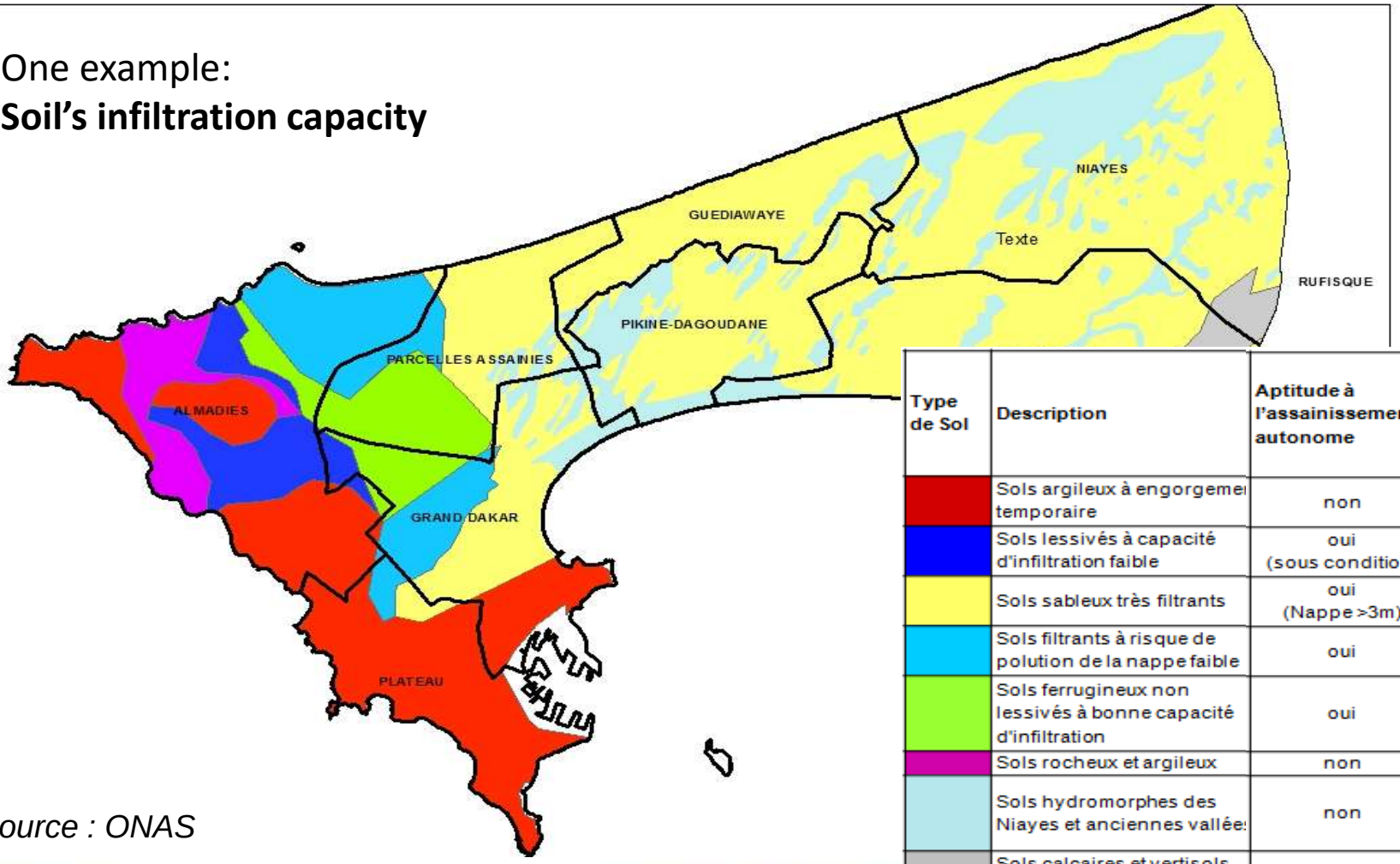
- Conventional sewers
- Non conventional: small bore sewers, simplified sewerage, condominial sewerage…

The situation in Dakar



A set of criteria was used to characterize the various areas

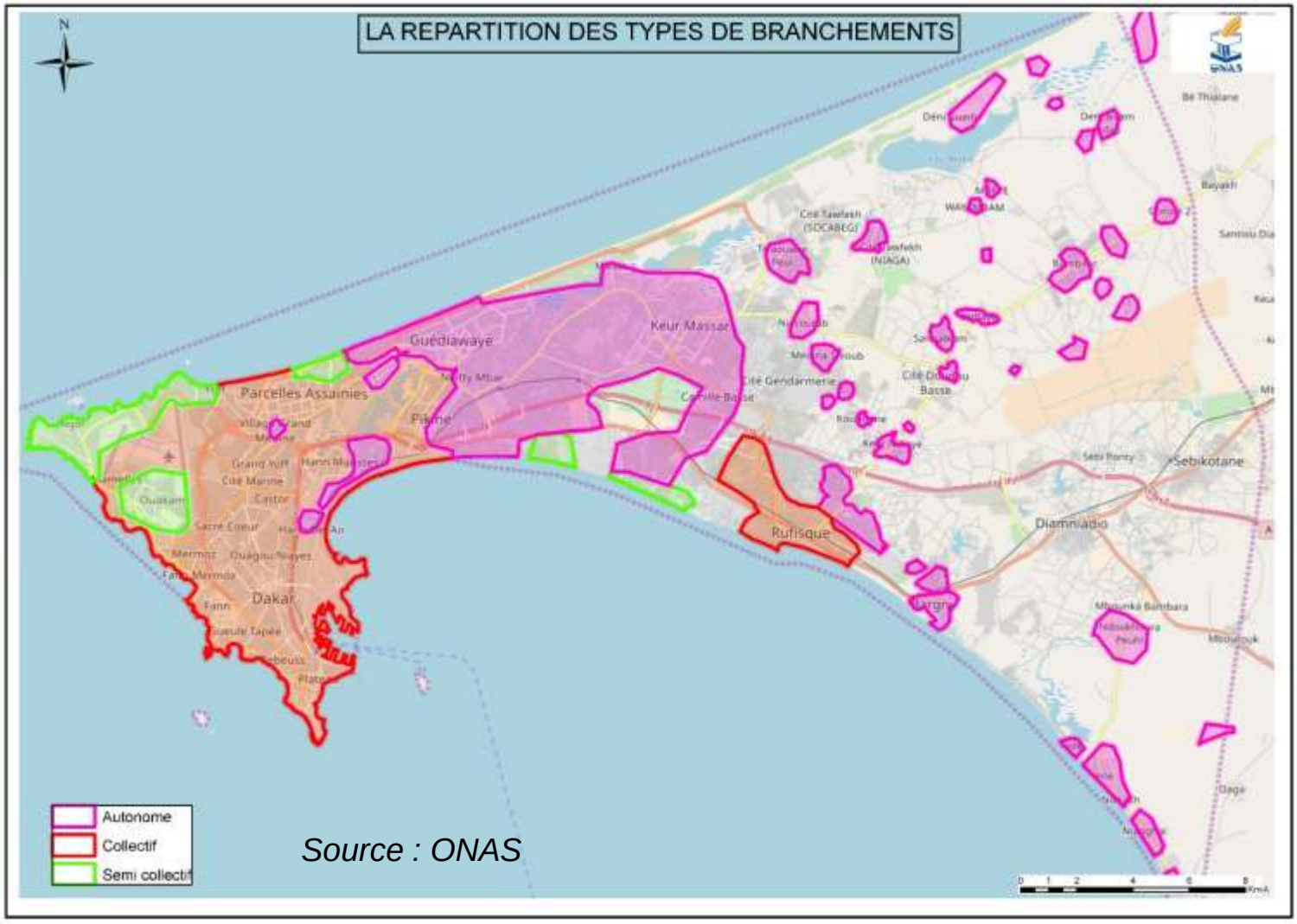
One example:
Soil's infiltration capacity



Type de Sol	Description	Aptitude à l'assainissement autonome
	Sols argileux à engorgemer temporaire	non
	Sols lessivés à capacité d'infiltration faible	oui (sous condition)
	Sols sableux très filtrants	oui (Nappe >3m)
	Sols filtrants à risque de polution de la nappe faible	oui
	Sols ferrugineux non lessivés à bonne capacité d'infiltration	oui
	Sols rocheux et argileux	non
	Sols hydromorphes des Niayes et anciennes vallée	non
	Sols calcaires et vertisols (marneux)	non

Source : ONAS

The zoning was a basis to choose the appropriate sanitation system for each area



On-site sanitation with FSM

Conventional sewerage

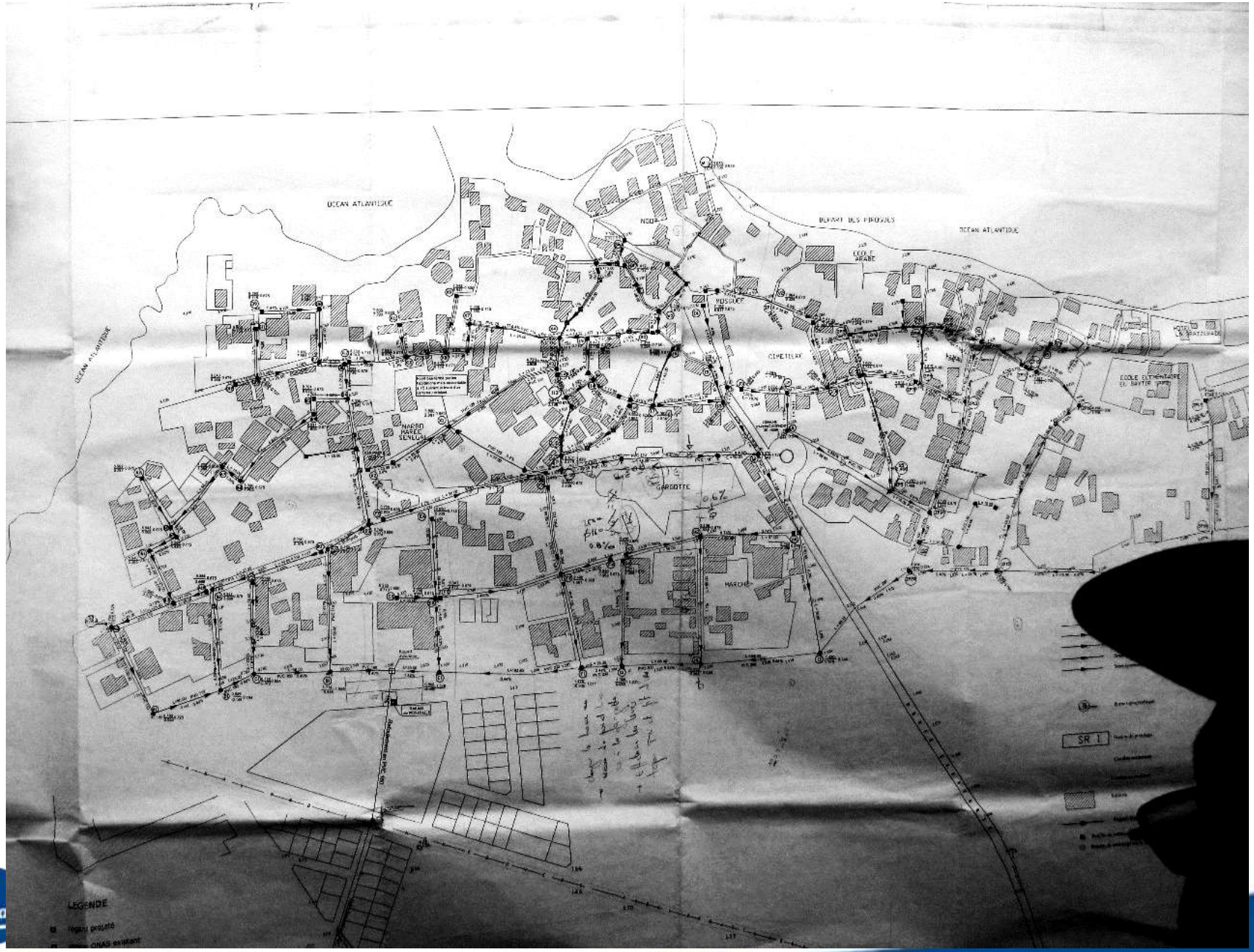
Alternative sewerage

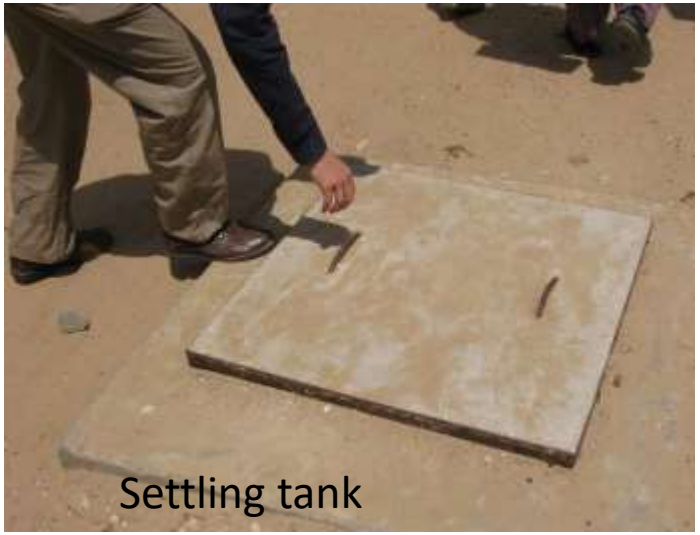
The non-conventional sewerage systems

Historically, two stages of development of the non-conventional sewerage in Dakar

- ***In the 90's***: development of 3 non-conventional sewerage networks managed by the community in poor areas = a pioneering initiative from the NGO ENDA. These networks are still working today.
- ***In the 2000s:*** 13 non-conventional sewerage networks developed as part as a World Bank funded project (PAQPUD).

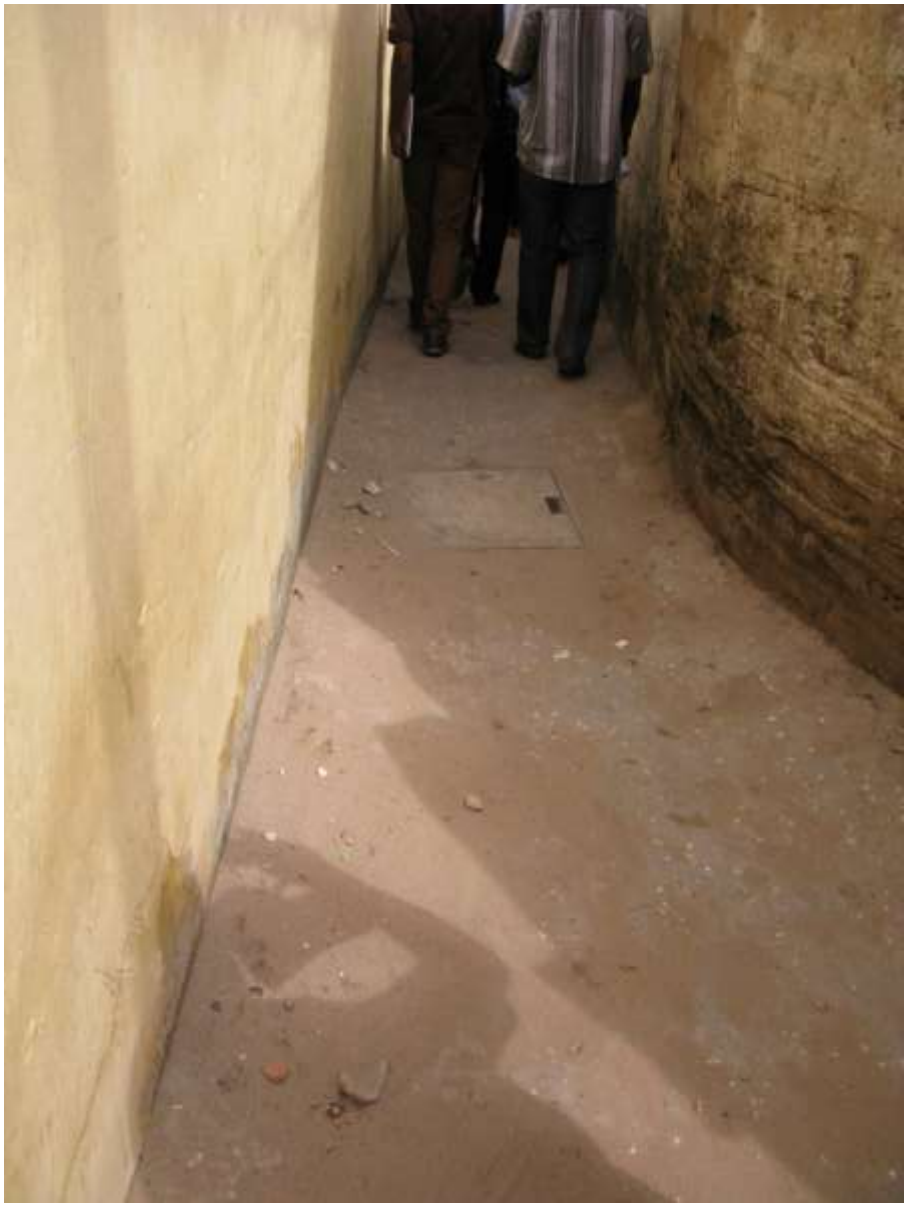
→ *These networks are all connected to decentralised treatment plants or to the conventional sewerage network*


OCEAN ATLANTIQUE
DEPART DES PIROGUES
OCEAN ATLANTIQUE
ECOLE ARABE
MOSQUEE
CIMETIERE
NARBO MAREE SENEGAL
GARGOTTE
MARCHE
SR 1
LEGENDE



Settling tank

Shared settling tank



Lessons from the Dakar experience

→ **non-conventional sewerage is a mature technology** (be attentive to the design, in particular dimensions)

→ It can be **very appropriate in certain contexts**, particularly in old settlements with narrow streets

→ It can be developed in **complementarity with other types of sanitation systems.**

Choosing a sanitation system should be decided following an analysis, based on a series of criteria, to assess if a technology is appropriate

Lessons from the Dakar experience

But "small sewer systems" do not mean "small management"!

In practice, some question are often not considered enough, and can undermine the service's viability:

- **Institutional arrangement** (need for a clarification of roles and responsibilities, contractual framework, monitoring)
- **Operation and maintenance, financial arrangement** (professional capacities of the service provider, knowing who pays for what?)
- **User relation** (listening to the users' expectations and complaints regarding the service, marketing and promotion)

For more information on non-conventional sewers

Non-conventional sewerage services.
***When to choose this option, how to implement this solution*.**

- A **guidebook**, but also:
- **5 country case studies** (Brazil, Ghana, India, Mali and Senegal)
- A **synthesis report** of the studies

Open access, in French or in English

www.pseau.org/en/non-conventional-sewerage-services

Thank you for your attention