

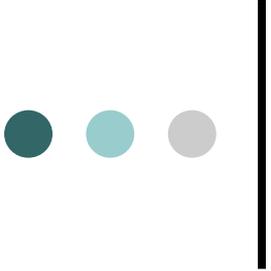
Sewage services resilience to climate change uncertainties

How to use the resilience concept to analyse the changing capacities of the sewage public service?

Emilie Rioust

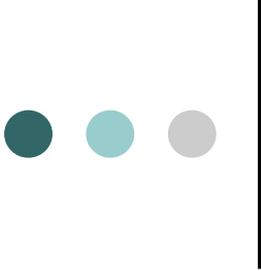
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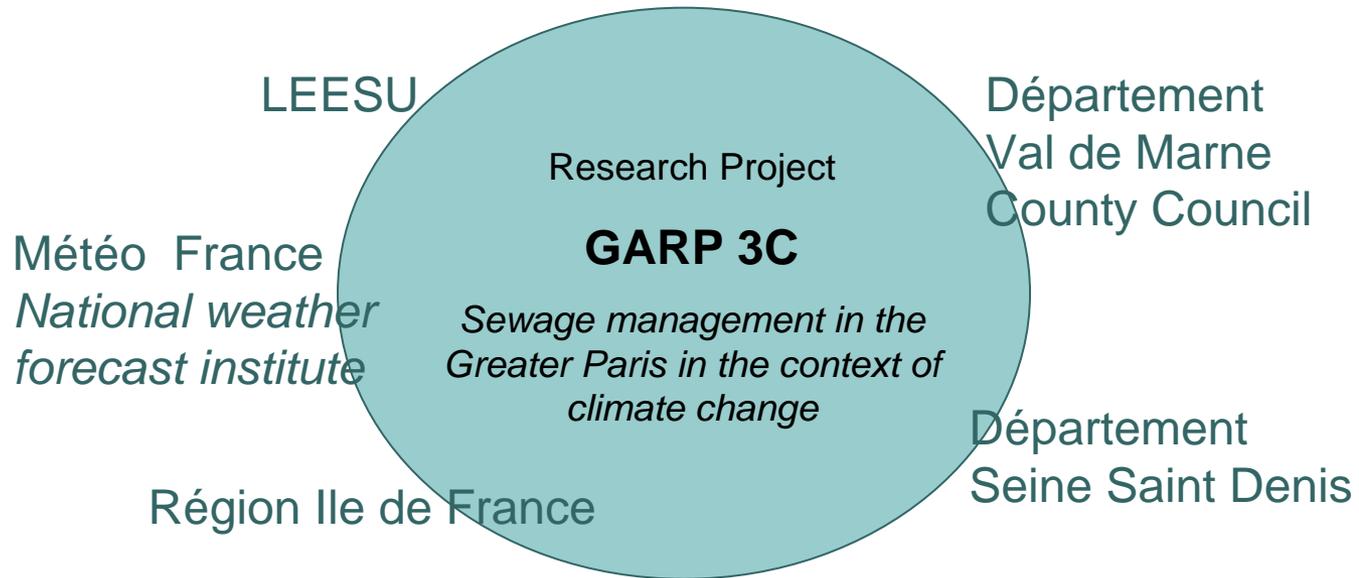


Presentation

1. Introduction
 1. Scientific context
 2. Case studies
2. Research process
 1. Intellectual stages and types of personal involvement
 2. The painful construction of a research problem
 3. Model of analysis
3. Conclusion
 1. Perspectives
 2. Research activities plan



Scientific context

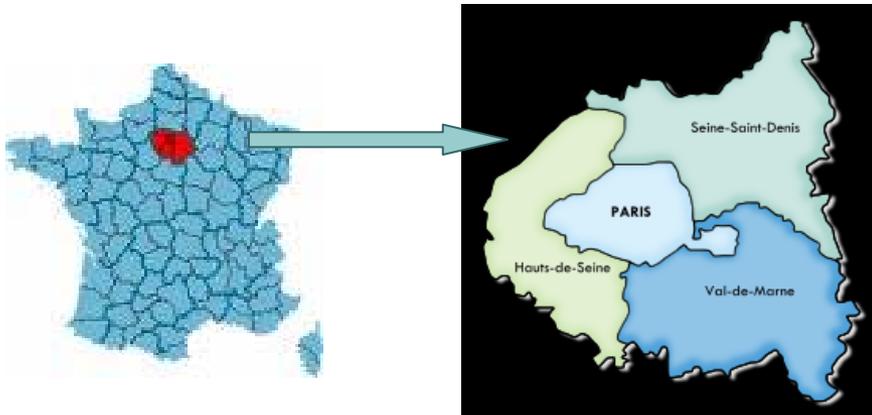


Objectives of the research project :

- Connecting sewage knowledge with the climate change issue
- Involving hydrology, climatology and social sciences in the same project
- Share scientific results with local communities.

Case studies` Seine Saint Denis and Val de Marne

In Parisian suburban areas, what is the ability of the stakeholders in charge of storm water flood management to cope with climate change?



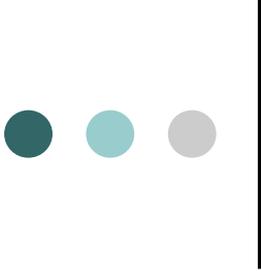
Ile de France

	Surface	Population Density
Seine Saint Denis	236 Km²	6 731hab/Km²
Val de Marne	245 Km²	5 348hab/Km²

Risk : storm water flooding
Occurrence can increase with climate change

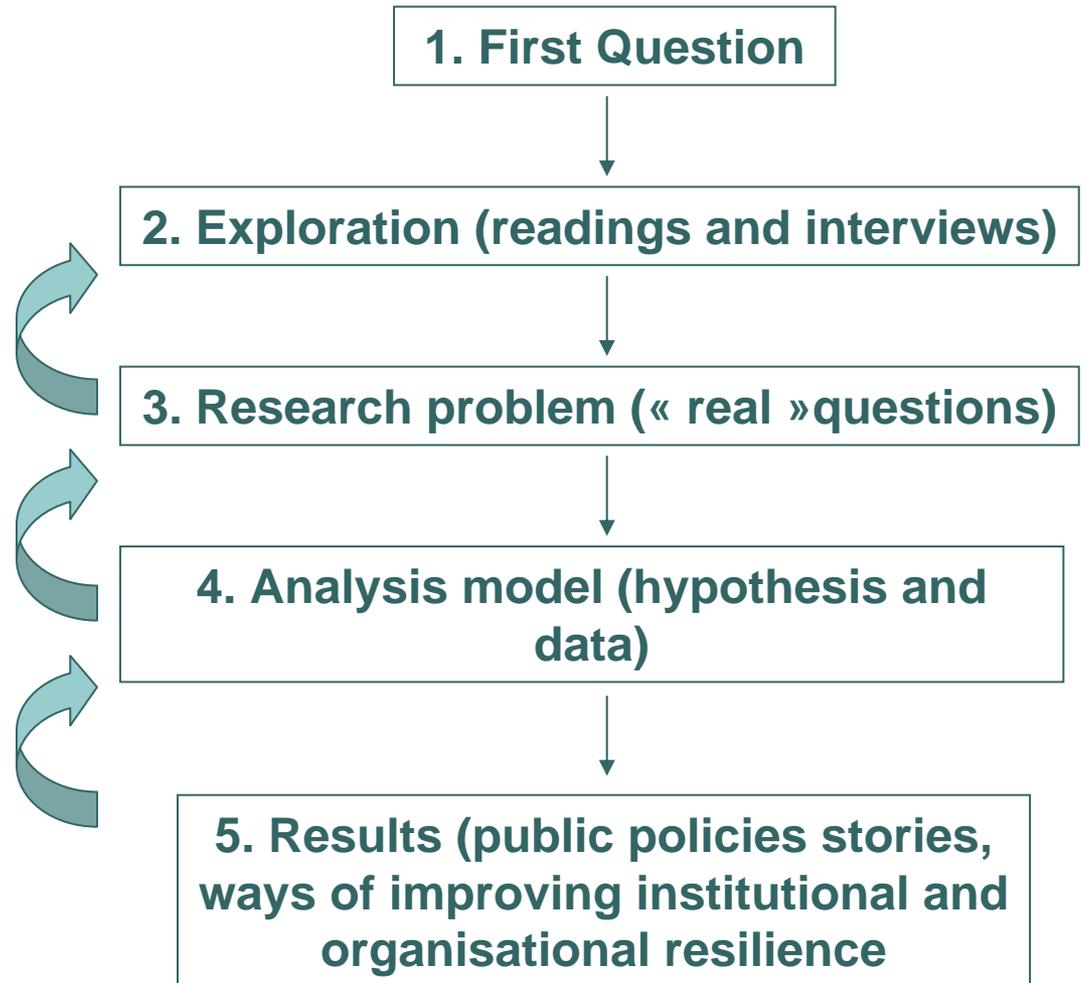
Station RER Val de Marne (07/07/01)





Thesis theoretical framework in social sciences

Empirical investigation
on case studies





Methodology

Theoretical framework

Individual framework

1. First Question

2. Exploration (readings and interviews)

3. Research problem (« real » questions)

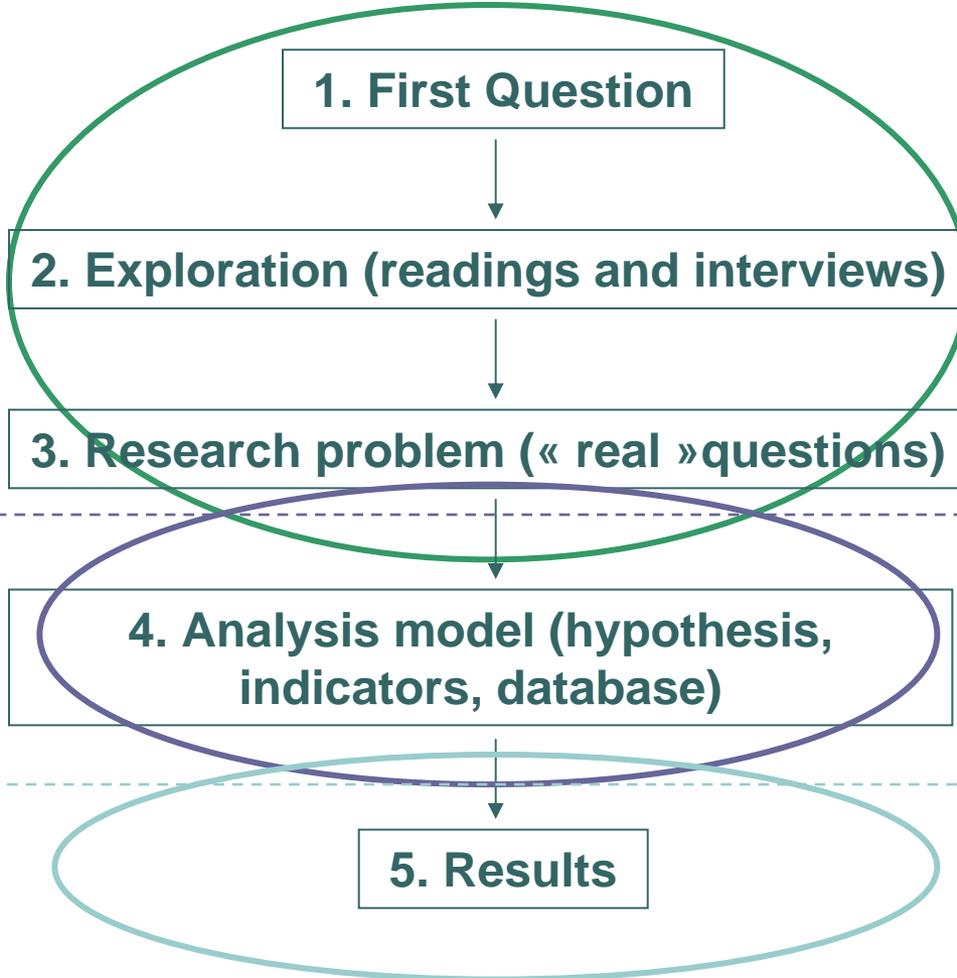
4. Analysis model (hypothesis, indicators, database)

5. Results

Disorientation stage

« The tube » stage

Writer stage



● ● ● | *From the first question to
the research problem*

Disorientation crisis



First question : In Parisian suburban areas, what is the ability of the stakeholders in charge of storm water flood management to cope with climate change ?

Adaptation capabilities : Does the resilience is a relevant concept to analyse adaptation to climate change ?

Stakeholders in charge of storm water flood management : which ones? Civil engineers? NGO? Citizens ? Government ? Insurance ? elective representatives? Firemen?...

Climate Change : Does climate change is occurring? What are the perceptions of climate change?...

Exploration phase

Readings

*Empirical survey
(observation in public meetings and into the services + interviews with technicians, victims, firemen, weather forecast employees)*

Lectures, official reports...

Stop the crisis :The « gruyere metaphor »



This is like a huge cheese with lot of holes



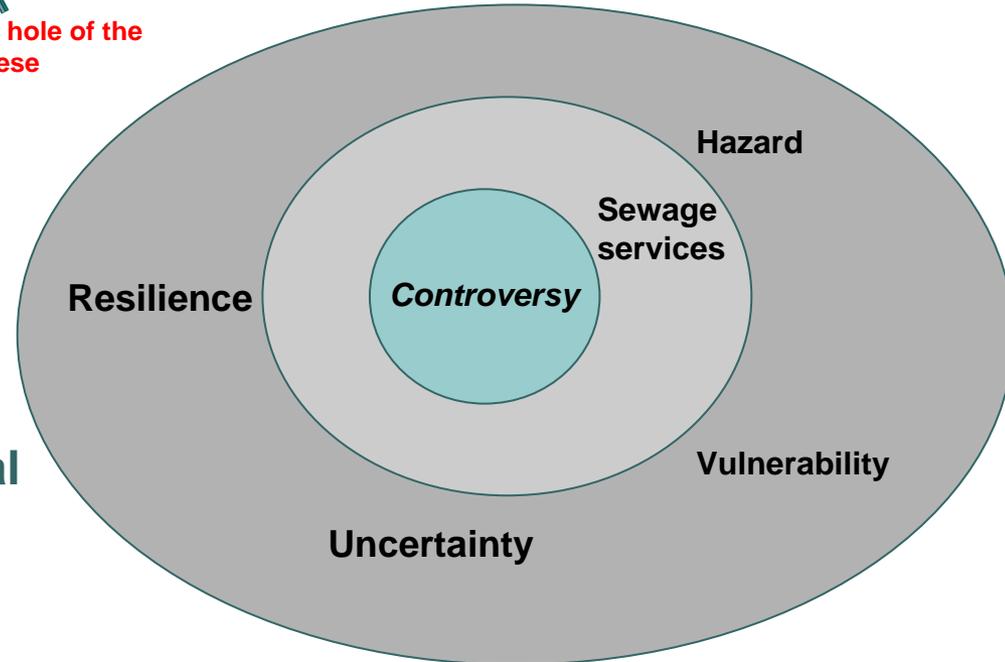
Explore one hole of the cheese

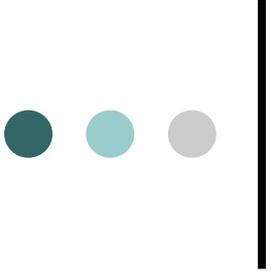


Choose and draw the borders of one cheese hole

Choices have to be done :

- Which perspective with risk management concepts?
- Which actors of social and technical system?
- Which central problem?





Research problem

- The **resilience** is used to describe the behaviour and response capacity of communities, economy and institutions to change and to face to uncertainty (Davers and Hammer, 1998)
- **Uncertainty** : *lack of certainty* => a social and political fact because uncertainties generate controversies between stakeholders (Callon et al., 2001)
- **Sewage services** : stakeholders of the sewage social and technical system (= individuals and physical assets of sewage services) technicians, politicians, citizens... and maybe others depending on the context)



**How sewage services cope with uncertainties ?
How the controversies are created and how do they
affect sewage services ?**

Building model of analysis and enter into the tube

Urbanization increase since 1970's. In 1977, a calculation method is developed to design sewage systems. This method is used by the sewage services in order to protect for a ten years event return period

There are uncertainties in calculation + the calculation does not take into account territorial specificities + the calculation method has not evolved since 1977

The electives representatives and some technicians distort the definition « A rainfall which occurs each 10 years »

Controversy : Victims of floods do not understand why they are regularly flooded

The sewage system design method is questioned

Sometimes victims go to court

Associations of victims develop expertise and sometimes create crisis management plan

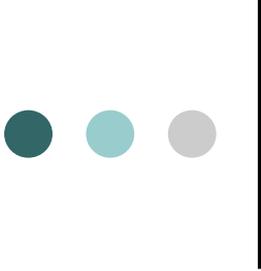
Sewage services suggest technical solution (detention tank, non structural measures...)

Electives representatives does not find the liability for storm water flood management



Risk with the tube : stay into!

→
Consequences



Conclusion

- The resilience perspective is useful to analyse the social treatment of uncertainties in sewage services
- The disorientation crisis is long and uncomfortable
- The model of analysis is a departure and must be tested toward empirical survey

- Perspectives

- Test and develop the model of analysis

- 6 months {
 - Interviews with electives representatives
 - Survey to test the citizens perceptions of flood management

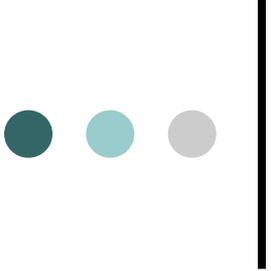
- 3 months {
 - Study of political and technical discourse
 - Analyse of the treatment of uncertainties into sewage services
 - Analyse the history of sewage services in the Greater Paris

- 6 months ● Compare case studies with a foreign case study (england)

- 6 months ● Write the thesis

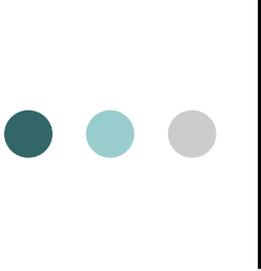


Thank you



Resilience

- *Physics* : « the ability of a material to resist and to recover after a shock »
- *Ecology*: « the amount of disturbances an ecosystem can take without changing structures » *Holling, 1973*
- *Sociology*: « the measure of a part of system's capacity to absorb shock and recover from hazardous events » *Timmerman, 1983*
- *United Nations*: « the degree to which the social system is capable of organizing itself and the ability to increase its capacity for learning and adaptation, including the capacity to recover from a disaster », *UN ISDR, 2001*
- *Urban planning studies* : « Identify, evaluate, design and urban resilience contribute to sustainable societies » *Muller, 2006*



Resilience

- A new paradigm?
- A concept?
- An indicator?
 - A goal : uncertainties (like climate change) must be taken into account
 - A perspective of research with which the uncertainties (like climate change) are considered as « normal » situation.
 - Assessing the resilience consists in analysing the dynamics of a system

