





The rise of resilience Inside the strange world of risk and sustainability governance

Myriam MERAD

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CNRS

*UMR ESPACE (Université de Nice)

UMR LAMSADE (Université Paris-Dauphine) – PSL*

Researchgate.com myriam.merad@unice.fr





Risk governance vs risk management

- Concepts and methods
- Example
- Resilience design



Resilience governance VS Sustainability governance

- Open questions Concepts and methods
- Example
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Adverse fragmented past Events

Major Adverse Events

Seveso II Plant, Chemical plant: AN fertilisers and explosives,...

1.1

A REAL PROPERTY AND A REAL

Toulouse 1996

8. mm

- •30 fatalities (21 on site with, 9 off-site)
 •10 000 injured,
- •14 000 curing post-traumatic acute stress
- •27 000 housings damaged,
- 1 300 companies damaged,
- •1 500 to 2 000 million € of damages (Toulouse is a city of 750 000 inhabitants)
- •Emergency response : 1 570 firemen and militaries, 950 policemen... no network, no adequate plan...
- •75 000 notifications to insurers







Reduce risk at the source





Participative and deliberative plans (CLIC, risk culture, etc.)



LUP -Reduce present and future territorial vulnerabilities





Insurance and reinsurance mechanisms (CATTech)





Emergency planning (PPI, POI)





Low signals detection, citizen empowerment

Low signals detection, citizen empowerment



concept

implementation

month

update

grid

call

adb

fs

intelligence

defense

technology

earthquake

approach

solution

public

health

work

isac

directorate

office

private

sector

Resilient design for sustainable risk governance policy and/or strategy



Resilient design for sustainable risk governance policy and/or strategy



- Systems:
 - "Critical"

• Resilience:

- Reliability and safety based approaches
- Silo risk management
- Ability to learn:
 - Orchestrate.

Resilience governance VS Sustainability governance

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Yale paradox





Resilience?

Resilience

Open questions?

- **Resilience of** (critical infrastructures, territories, classified installations, humans, communities,) and "**resilient to**" (Hazards, constraints, ...)?
- Inner properties of a system or an end?
- According to who?
- Who is responsible?
- Who put the analysis/diagnostic? Other stakeholders?
- Before? After? During an event?
- Is resilience an instable equilibrium? Depends on what? Organizations?
- Time framing and scales

Sustainability, responsibility and resilience

- Resilience:
 - "an intrinsic ability of a done system to adjust its functioning prior to or following changes and disturbances, so that it can sustain operation even after a major mishap or in presence of continuous stress" (Steen and Aven, 2011).
 - But... confusion between
 - The ecological resilience suggested by Grimm and Vissel (1997), where resilience is "the capacity of an ecosystem to resist disturbance and still maintain a specific state" and
 - The ecological resilience vision suggested by Folke (2006) that insists on the capacity of an ecosystem to renewal, reorganise and develop its self. Resilience is here still *a mean* for a system to an *end* (*achieving sustainability*).

• Sustainable system should:

- be *reliable* by maintaining and by being *performant* and *efficient* in its functions or missions,
- preserve the integrity of stakeholders in and out the system by insuring their safety and;
- balance its trade-offs in a new way considering environmental, social and economical dimensions;
- promote and maintain the ability of the system to *learn and innovate*.
- the ability to think beyond the limits and make choices and decisions should and must be stimulated

Risk and resilience governance



Resilience governance

Risk governance

Risks and opportunities governance



Risk policy/strategy

Resilience *encapacite*

Corporate social responsibility -Sustainability







Plan for energy transition

Corporate Social Responsibility plans



Some findings about resilience and sustainability (1/2)





Four models of conceiving organizations

Some findings about resilience and sustainability (2/2)



(Khalil Gibran)

Resilience can not be taken for granted