Facing threats by sharing information in NRM context

Conceptual elements

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Global context

- PhD on information sharing for natural resources management
- Social dilemmas: is information a way out?
- More information $\Longrightarrow$ better resource management?
- Reaching the end
- Theoretical elements developed on case study investigation
- Currently articulating main elements
- Remarks and criticism are more than welcome!

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1. Case study - Goods
2. Threats
3. Information sharing

Case studies

- Oyster farming
- 2 cases: Thau Lagoon, France; New South Wales, Australia
- Method: interviews, meetings, study of info sharing artifacts

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Oyster farming

- Produce oysters
- In estuaries
- Open environment
- Heavy dependence on water quality
- Not usual farmers, not many actions can be performed
- Daily use all types of goods ...

Goods according to Ostrom → Typology

Substractable Do the benefits consumed by one individual subtract from the benefits available to others?

Excludable Is it costly to exclude individuals from using the flow of benefits either through physical barriers or legal instruments?

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4 types of goods and resources:

		Substractable	
		Low	*High*
Excludable	*Low*	Public good	Common-pool resource
	High	Club good	Private good

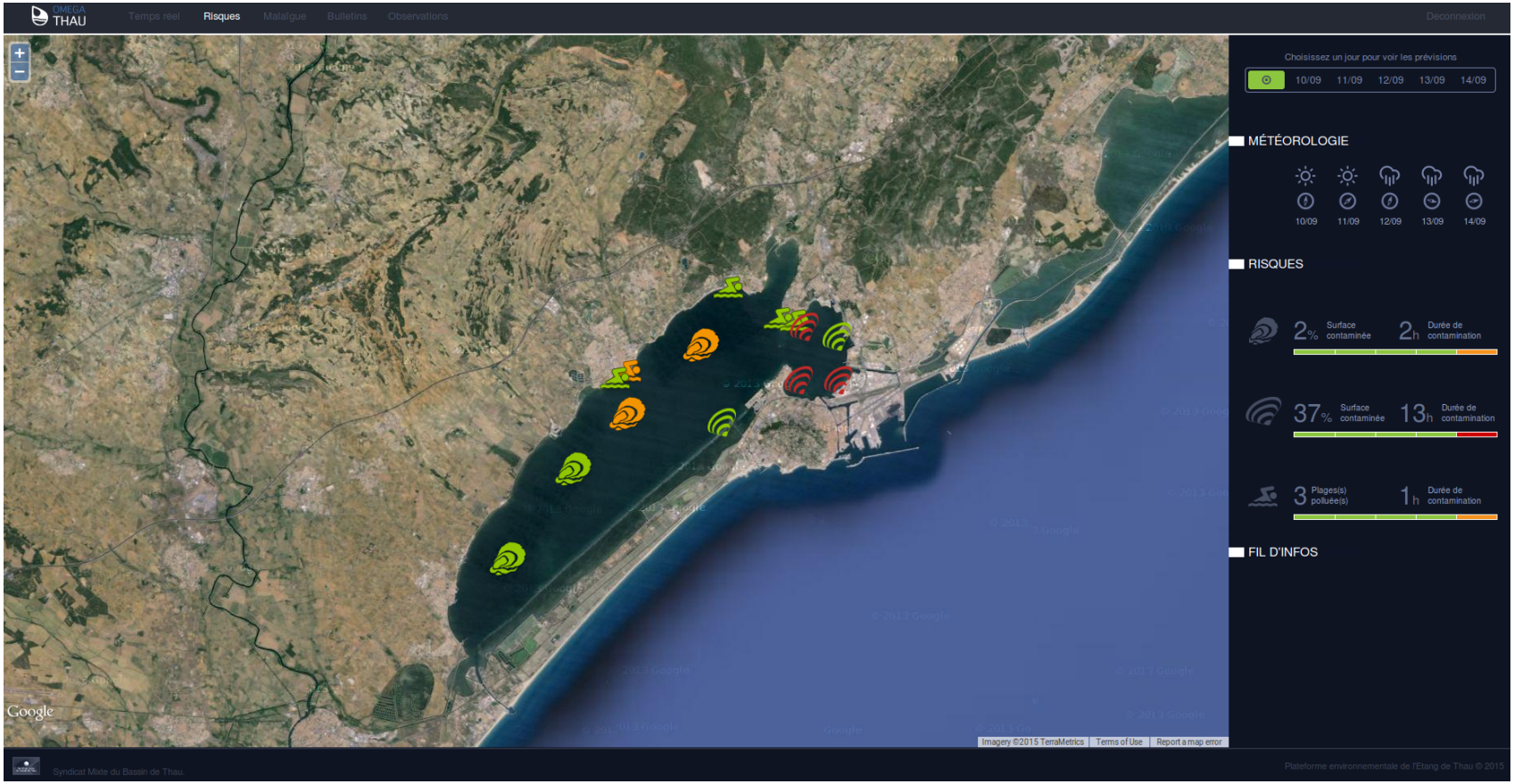
In case study context → Oyster farmers part of a resource system

		Substractability	
		Low	*High*
Excl	*Low*	*Public good* Water quality, shore, estuary, genetic pool, image of oysters	*Common-pool resource* Spat production
	High	*Club good* Lease areas	*Private good* Oysters, tables, oyster sheds, boats

Limits for case study

- Typology useful to focus on: not public nor private goods
- Provide ways to discuss common-pool resources issues
- Most important questions in case study not linked to good type

Information sharing artifacts: Thau Lagoon



Information sharing artifacts: NSW

TILLIGERRY CREEK OYSTER FARMERS ENVIRONMENTAL MANAGEMENT SYSTEM
VERSION 1 (JUNE 2014)

A VOLUNTARY, INDUSTRY-DRIVEN ENVIRONMENTAL INITIATIVE

4.4. SUMMARY OF ENVIRONMENTAL RISKS

Internal Risks Risks that arise as a direct result of oyster farming practices, as well as issues of disease

Likelihood	Insignificant	Minor	Moderate	Major	Severe
Rare	Q, R, S, T, U	M		I	
Unlikely	P		J		
Possible	N, O	K		D	C
Likely	L	G, H			
Almost certain		F	E		A, B

A. Loss of stock to unexplained / unidentified agent
B. Loss of Pacific oysters stocks with Pacific Oyster Mortality Syndrome
C. Loss of stock through Qx parasite in Sydney rock oysters
D. Loss of stock through winter mortality in Sydney rock oysters
E. Oyster stocks impacted by mudworm
F. Visual pollution of leases that have not been maintained (including derelict leases)

External Risks Risks that arise from other people's activities, or from natural events such as extreme weather conditions

Likelihood	Insignificant	Minor	Moderate	Major	Severe
Rare	Q				
Unlikely					C
Possible		P		G, H, I, J	B
Likely		O	M		A
Almost certain		N	K, L	D, E, F	

A. Acidic water released through disturbance and drainage of acid sulphate soil
B. Failing septic tanks (especially high risk sites – Salt Ash, Swan Bay, Oyster Cove, Bobs Farm)
C. Sewage treatment plants (Tanilba Bay, Karuah, Boulder Bay and Hawks Nest) and associated pump-stations inability to handle flows during peak periods and wet weather flows
D. Faecal contamination of local waterways as a result of run-off from agricultural land (cattle, chicken, horses)

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Issues for oyster farmers

- Microbiological peaks $\rightarrow$ public good: water quality
- Virus $\rightarrow$ private good: oysters
- $\rightarrow$ Core of studied information sharing artifacts

Sommaire

1 Case study - Goods

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Idea

- Focus on “threats”
- Develop this concept
- Create an effective concept
- Relate to information sharing

Threats: a characterization

- Threat $= < \mathcal{A}, \mathcal{G}, \mathcal{E}, \mathcal{I}, \mathcal{D} >$
- Relative to a set of actors $\mathcal{A}$ and goods / resources $\mathcal{G}$
- Influenced by
- Environmental dynamics $\mathcal{E}$
- Infrastructure $\mathcal{I}$
- Decisions $\mathcal{D}$

Example case study ($\mathcal{A}$ = Oyster farmers)

Threat	$\mathcal{G}$	$\mathcal{E}$	$\mathcal{I}$	$\mathcal{D}$
Microbiology	Water quality, access to market	Weather	Treatment plants	Fertilizer input, improvements in water treatment
Virus	Oysters	Virus epidemiology		Oyster type and quantity

Threats: a typology

Internal Is the threat linked to members of $\mathcal{A}$ behavior and decisions?
Are other people concerned with the threat?
Are actors outside of the threat at the origin of the threat?

Excludable How collective solutions need be?
Can actors find and implement solutions by themselves?

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Typology

		Internal	
		Low	*High*
Excludable	*Low*	Public	Common
	High	X	Private

Threats for oyster farmers

		Internality	
		Low	*High*
Excl	*Low*	*Public* Microbiological peaks, algal blooms, sewage treatment plants	*Common* Virus transmission, winter mortality, invasion of noxious oyster species
	High	X	*Private* Virus transmission, sea bream

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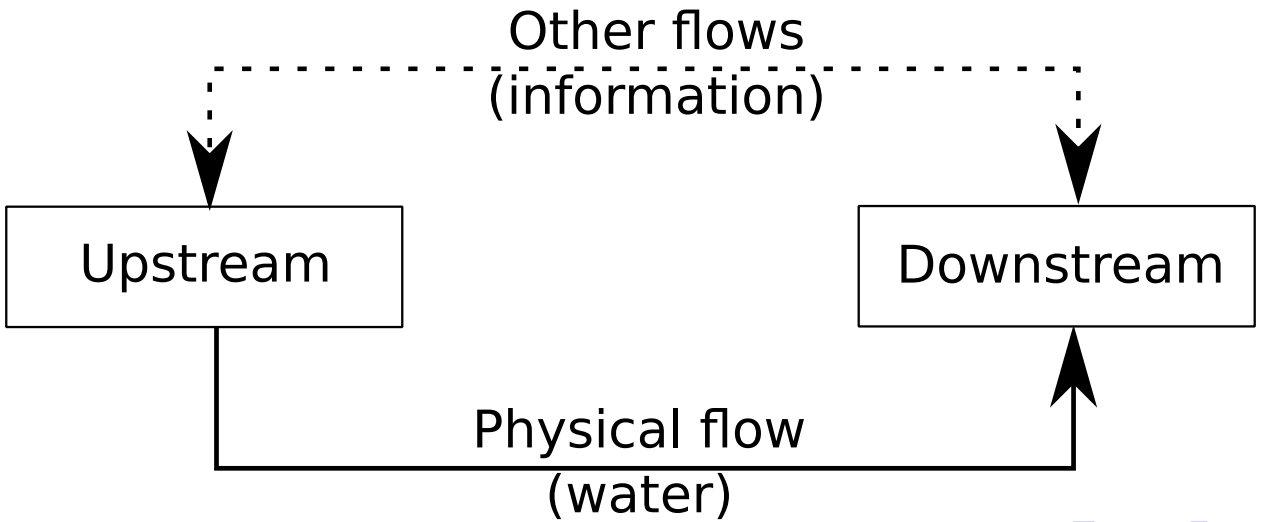
Information sharing stakes

Public threats

- Open systems
- Need to reach non internal actors
- Upstream actors in case study
- Goal = legitimize action / lobby / influence others
- Except unwillingness to participate: no social dilemma



Information sharing stakes

Private threats

- Goal = Spread knowledge / Understand environmental dynamics
- Information sharing dilemma (only one dilemma):
  - Free-riding
  - Strategic behavior
  - Better monitoring lead to better decisions?

Information sharing stakes

Common threats

- Close to common-pool resources classical dilemmas
- Goal = Favor conditional cooperation (reciprocal altruism) / monitoring
- Second order dilemma, same issues as with private threats

Conclusion

- Information sharing artifacts created around threats
- Threat characterization opens information seeking directions
- Threat typology opens collective information sharing strategy
- Other effects: collective consequences of sharing information, or simply a project

How to share information?

Rec Em	1	n	Institution
1	Social network, personal email	Collective email	Court of law
n	Informal meeting	Meetings	Class action
I	Court of law, official letter	School, signs, court of law, leaflets, artifacts, information sharing system	Court of law, negociation

Information sharing artifacts

- Goal
- Media
- Write / Read
- Type of information
- Granularity
- Dynamic