

SOCIAL REPRESENTATION TO IDENTIFY FRESHWATER AQUACULTURE ECOSYSTEM SERVICES A comparison France-Brazil

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Content


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1. Context and problematic

Characteristics of environmental policies



Phases	Approaches aiming at regulating effects	Approaches aiming at regulating the direct causes	Approaches aiming at regulating interactions
Scales and objectives	Resources	Resources and socio-systems which have impact on the resources	Socio-ecological systems
Analysis grid	Pressure, State, Response	Driving forces, State, Pressure, Impact, Response	MEA based-services typology
Type of public policies	Sectoral approaches based on regulations or incitives to reduce effects	Territorial approaches based Regulations and incitives aiming at changing behaviours and maintaining sensitive area	Intergrated approaches based on service valorization schemes (Payment for ES)

Social representations : A key for environmental management?

- ◉ What is the process to create value? From problematization to institutionalization (Dewey, 2011)
- ◉ Social representations permit to assess public values
- ◉ Avoiding of reluctance for public policies (Myatt et al, 2003) and facilitating social acceptability.
- ◉ Importance of public perceptions level of knowledge to catch complexity of ecosystem approach (Lewan and Söderqvist, 2002)
- ◉ The manner in which services have been identified and selected and constitute a crucial phase(Kumar et Kumar, 2008).
- ◉ Social representations permit to identify ecosystem services

How to catch social representations

- ◉ Limited bibliography based specially on the step of identification
- ◉ Identification of some characteristics of this works: interdisciplinarity, complementarity between methods to collect data (focus groups, bibliographic review, inquiries)
- ◉ Two approaches based on questionnaire: opened questions or an adapted reference list.



Identification of complementarity between both approaches

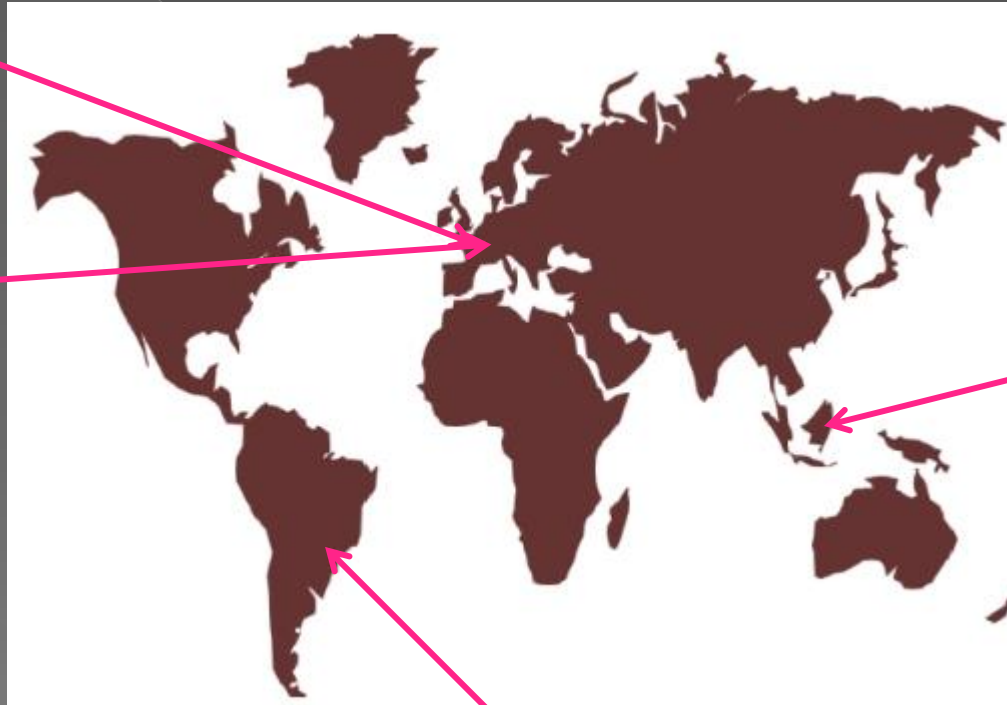
Piscenlit Project

- To answer the increasing demand for aquatic products
- To develop aquaculture production by increasing its effectiveness with ecology levers (ecological intensification) vs To produce more without environment degradation
- To improve territorial insertion of aquaculture by taking into account its bonds with its abiotic, biotic and anthropic environment

Diversity of studied fishfarming systems

French
ponds

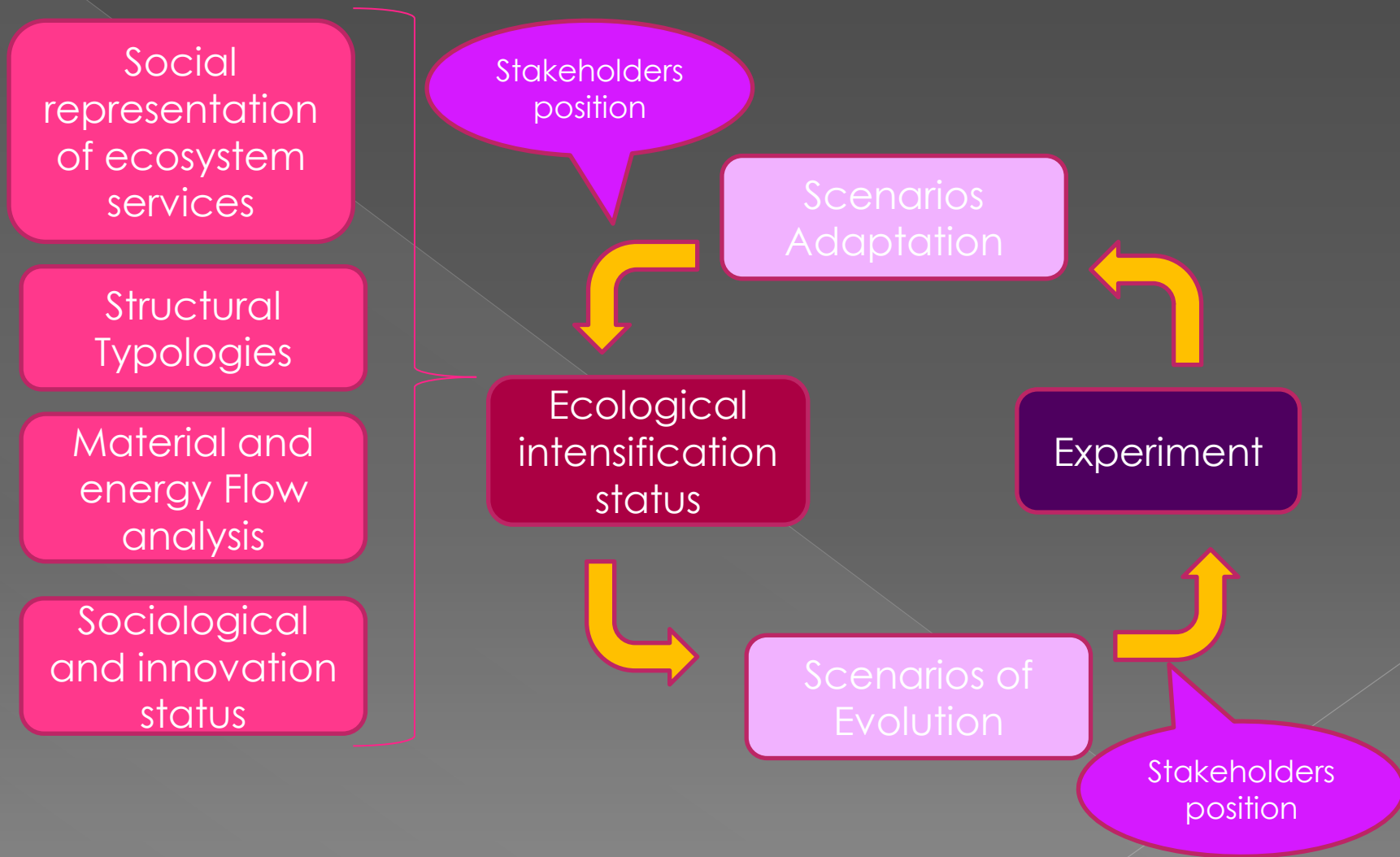
RAS



Indonesian
ponds

Brasilian
ponds

Structure of the project



French ponds



Lorraine



Brenne

Brazilian ponds chapeco



Chapeco

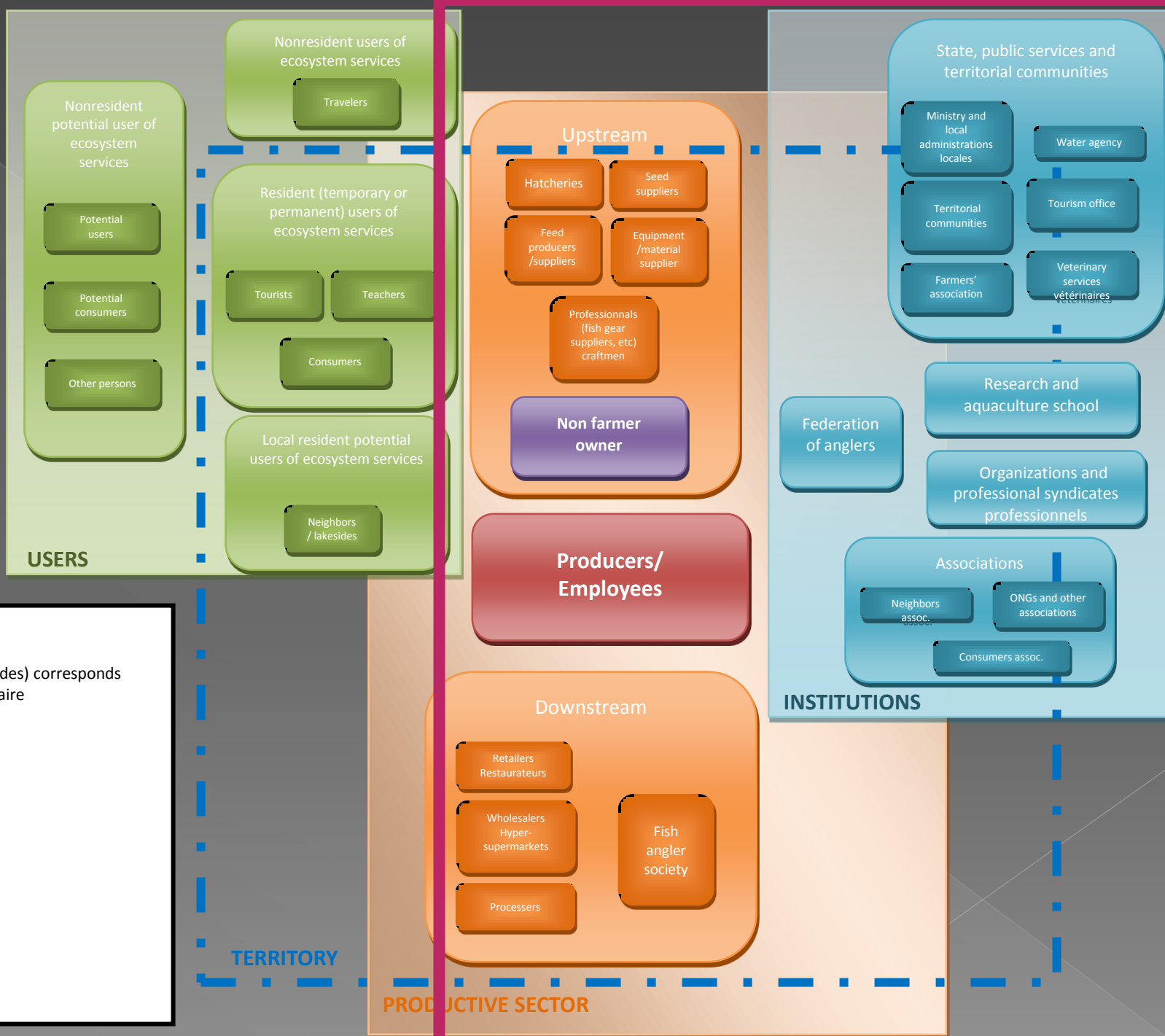


Alto Vale do Itajai



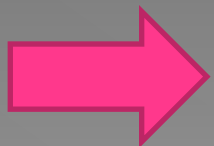
2. Method

Stakeholders identification



Inquiries

	France		Brazil		Total
	Lorraine	Brenne	Chapeco	Alto Vale	
Number of exploitations	42	200	690	242	1174
Number of types of exploitation	Diversity of types	One type	Two types	One type	-
Sample	25	33	50	25	133
Sampling rate	59%	17%	7%	10%	11%
Number of stakeholders	32	27	34		93



Two approaches of social perceptions in the inquiries

First approach : opened questions

16 Questions:

Questionnaire: Perception of ecosystems services	
D. Perception of ecosystem services associated to fishponds	
D1. How do you describe your region as a specific area of fish farming in ponds in three words?	
1 =	D1a
2 =	D1b
3 =	D1c
D2. How do you describe the fish farming in ponds for your region in three words?	
1 =	D2a
2 =	D2b
3 =	D2c
D3. In your opinion, what are the services provided to Human being by fish ponds and their associated ecosystems?	D3
.....	
.....	
.....	
.....	

- Textual analysis regarding sociological methods and MEA (2005) classification.



Classification has been used to built cluster using Multivariate Analysis

Second approach : ranking a reference list of ecosystem services

- Select the 10 most important roles and Rank them (10 =the less important → 1 =the most important)

	Select	most important
Roles of fish ponds		C5a1
Production of fish/shellfish		C5a2
Production of food plants		C5a3
Freshwater reservoir used for irrigation or other		C5a4
Production of timber		C5a5
Production of fuel and energy		C5a6
Ornamental resources (fish, other animals and plants)		C5a7
Medical and veterinary resources		C5a8
Supply of fertilizers for agriculture		C5a9
Regulation of local climate		C5a10
Hydrological regulation (groundwater recharge, water storage,		C5a11
Protection against fire/storms/floods		C5a12
Pollutants storage and pollution abatement		C5a13
Maintenance of biodiversity		C5a14
Regulation of human and animal diseases		C5a15
Link to religion, local culture, traditions		C5a16
Inspiration (for artist), sentimental value		C5a17
Learning a skill		C5a18
Environment Awareness		C5a19
Hunting and fishing		C5a20
Tourism/leisure		C5a21
Leisure		C5a22
Landscape and attractiveness		C5a23
Production of plankton (phytoplankton and zooplankton)		C5a24
Areas of refuge and nesting for migratory birds		C5a25
Area of spawning and/or breeding grounds for aquatic animals		C5a26
Participation in the natural cycles of nutrients (nitrogen, carbon, phosphorus, ...)		C5a27
Soil formation and maintenance		C5a28
Wetlands maintenance		

Type of analysis of the ranking

		Selection	Score
Provisioning	Production of fish/shellfish	10	14
	Production of food plants		
	Freshwater reservoir used for irrigation or other	3	
	Production of fiber		
	Production of fuel and energy		
	Ornamental resources (fish, other animals and plants)		
	Medical and veterinary resources		
	Supply of fertilizers for agriculture	1	
Regulating	Régulation of local climate		6
	Hydrological regulation (groundwater recharge, water storage)	4	
	Protection against fire/storms/floods		
	Pollutants storage and pollution abatement	2	
	Regulation of human and animal diseases		
Cultural	Link to religion, local culture, traditions		11
	Inspiration (for artist), sentimental value		
	Learning a skill		
	Environment Awareness		
	Hunting and Fishing	6	
	Tourism/Ecotourism	5	
	Leisure		
	Landscape and attractiveness		
Supporting	Maintenance of biodiversity	9	24
	Production of plankton (phytoplankton and zooplankton)		
	Areas of refuge and nesting migratory birds	7	
	Area of spawning and/or breeding grounds for aquatic animals or plants		
	Participation in the natural cycles of nutrients (nitrogen, carbon, phosphorus, ...)		
	Soil formation and maintenance		
	Wetlands maintenance	8	



Classification has been used to built cluster using Multivariate Analysis

Archetypes of social representations

cat	Categories of services which have been mentioned in the typologies	PERCEPTION ARCHETYPE
1	Provisioning	Production-based perception
2	Provisioning + supporting	Eco production perception
3	Provisioning + culture (patrimonial + leisure)	Patrimonial production perception
4	Provisioning + regulating	Planning production perception
5	Provisioning + plusieurs	Multidimensionnal production perception
6	Supporting	Pro-biodiversity perception
7	Regulating	Planning perception
8	Cultural	Patrimonial, leisure and social perception
9	Two services (cultural + regulating or regulating + supporting)	Territorial perception
10	No perception	

Graduation of the perceptions

**Production-
based
perception**

**Territorial
perception**

**Production-
based
perception**

**Eco producer
perception,
Patrimonial
producers
perception,
Planning
producers
perception**

**Multi
dimensionnal
producers
perception**

**Pro-biodiversity
perception,
Planning
perception,
Patrimonial,
leisure and
social perception**

**Territorial
perception**



3. Results

Diversity of social representations

France

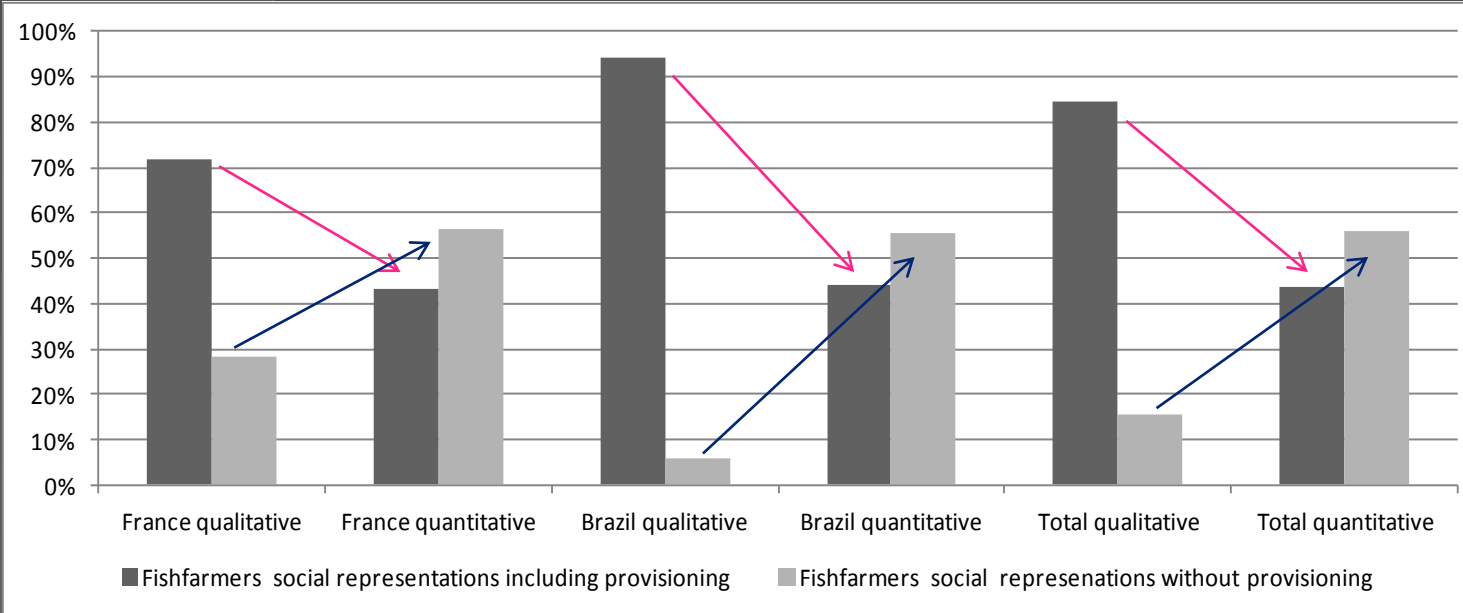
- ◉ The most important services are « production of fish », « maintenance of biodiversity », « wetland maintenance », « areas of refuge and nesting migratory birds » and « hunting and angling »
- ◉ The role of provisioning of ponds is less cited by stakeholders than producers. This role is attributed to the past for stakeholders.
- ◉ In Lorraine, there is a strong interest for biodiversity and patrimonial aspect of the activity (Heritage of monks). These roles are linked with leisure activities.
- ◉ In Brenne, the role of leisure is important particularly for hunting and angling

Brazil

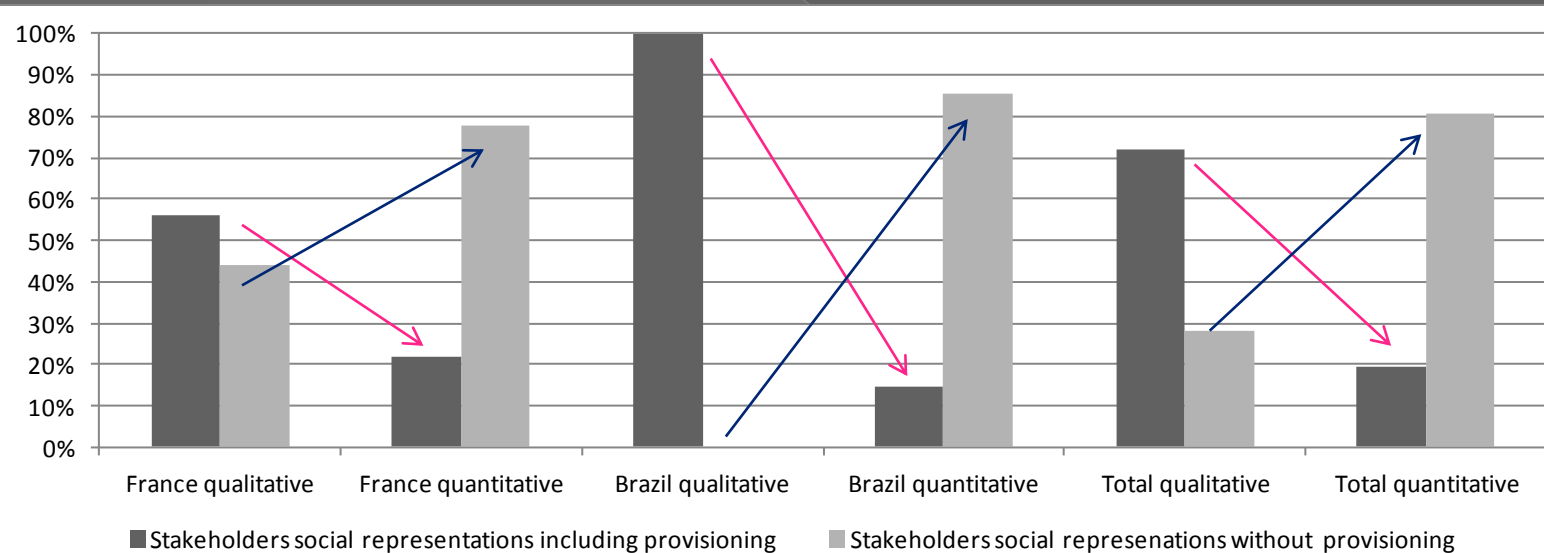
- ◉ The most important services are « production of fish », « freshwater reservoir », « pollution control », « production of plankton » and « hydrological regulation (aquifer and groundwater) ».
- ◉ The role of provisioning of ponds is stronger than in France
- ◉ Provisioning is associated with supporting function of recycling manure
- ◉ In Chapeco, provisioning concerns fish but also production of comestible plants
- ◉ In Alta Vale, the provisioning functions are associated with regulation (pollution control) and supporting (plankton production)

Comparison per category

Fishfarmers



Stakeholders



Conclusion

- ◉ Qualitative approaches increase the place of provisioning services in social perceptions particularly production.
- ◉ Qualitative approaches permit to have a more descriptive vision concerning patrimonial aspects and identify dis-services (Zhang et al., 2007).
- ◉ Quantitative approaches based on check-list permit that the respondents broaden their visions to territoriale dimensions.
- ◉ Interest to adopt complementary approaches (qualitative and quantitative) to construct scenarios of ecological intensification and implement environmental public policies

A photograph of two koi fish in a pond. One fish is white with orange patches, and the other is mostly white. They are swimming near a grassy bank. The text "Thank you for your attention" is overlaid in pink.

Thank you for your attention