



Capacities S-LCA and Participative Score Matrix

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The framework of capacities articulated in a multiple capital model (MCM)

Sen A. K. : Capabilities \Leftrightarrow Human capital

Garrabé M. & Feschet P. :

Capacities as an extension of the concept of capabilities to all capitals

Reminder

In a specific context, the question is to identify and measure :

- Endowments.
- Uses function.
- Functionings achievements.

These elements must be measured with the project and without the project.

Definition of each capital (1/2) :

Capital

Contains

Natural All stocks and flows of natural resources.

Technical All physical stocks and flows used directly and indirectly for production.

Financial All monetary stocks and flows used to finance directly and indirectly a specific activity.

Definition of each capital (2/2) :

Capital

Contains

Human

Labor and all factors linked to working conditions.

Social

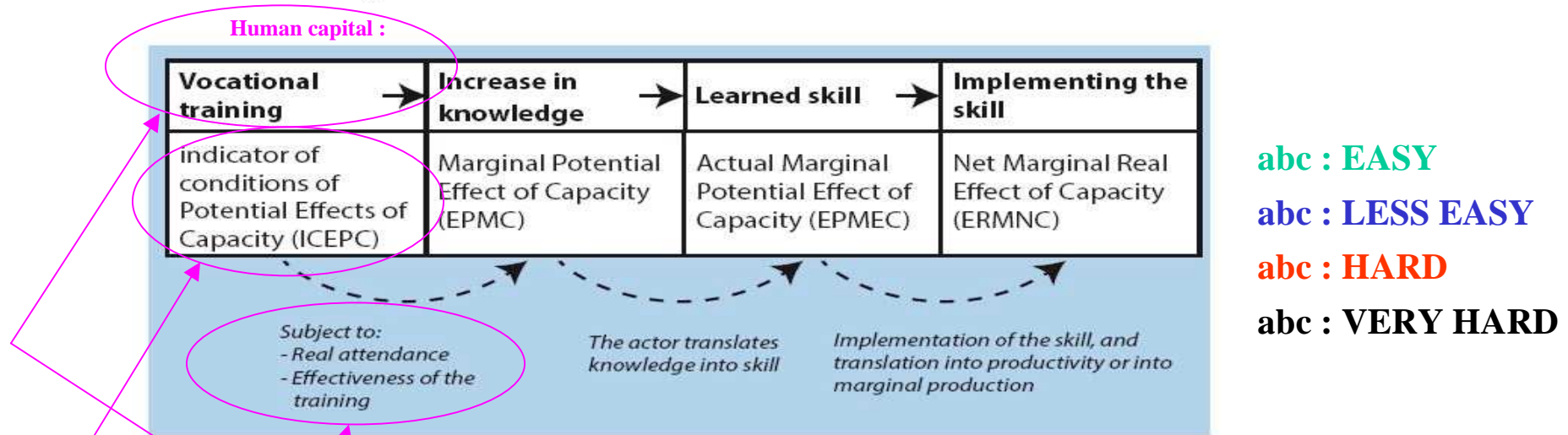
All the consequences (for society) of links developed by people and / or organizations for a specific activity.

Institutional

All the consequences (for society) of laws, rules, norms and labels used or developed for a specific activity.

How to measure capacities with the Participative Score Matrix ? (1/3)

Diagram 11. Articulation of different levels of assessment



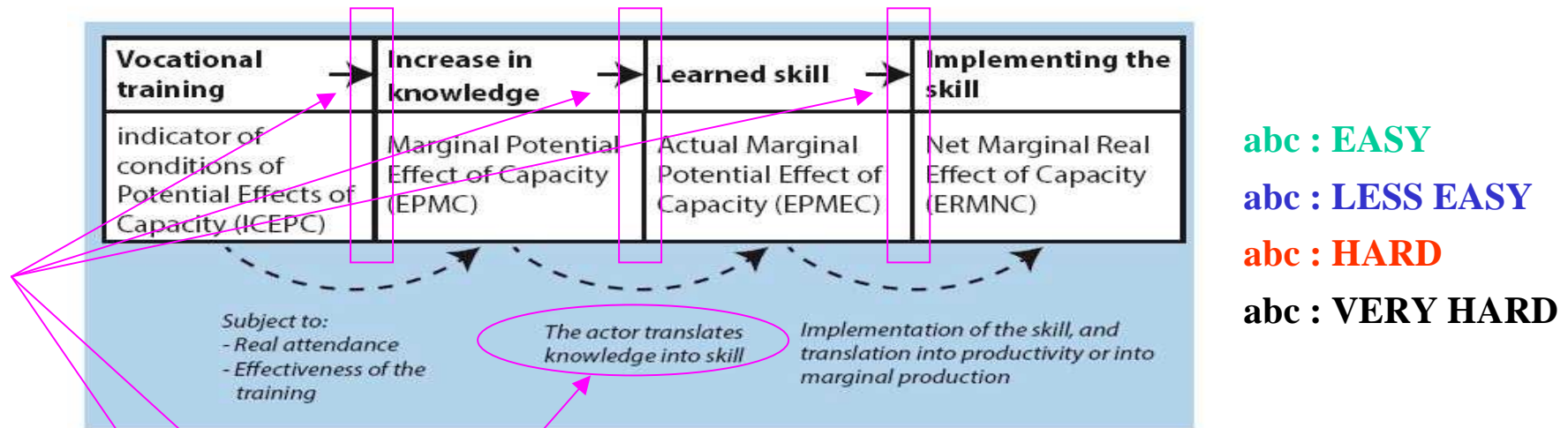
Feschet P. and Garrabé M., Social LCAs socio-economic effects in value chains, Fruitrop Thema 2013.

Phases of S-LCA implementation :

- 1 - Identification of classes and subclasses capital,
- 2 - Identification of potential capacity effects classes,
- 3 - Identification of potential capacity effects conditions indicators,

How to measure capacities with the Participative Score Matrix ? (2/3)

Diagram 11. Articulation of different levels of assessment



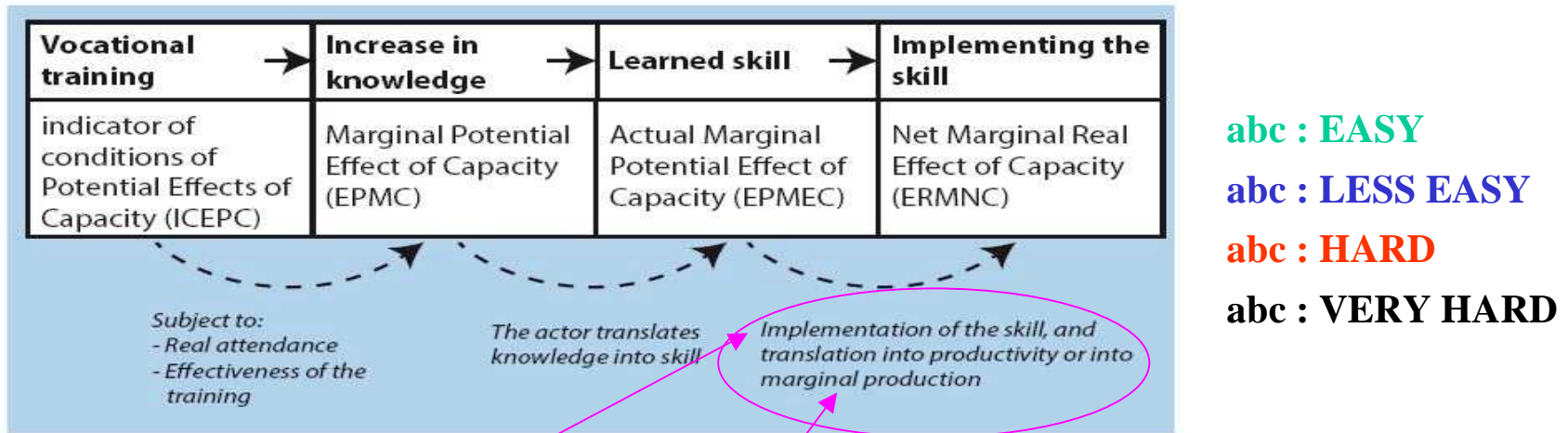
Feschet P. and Garrabé M., Social LCAs socio-economic effects in value chains, Fruitrop Thema 2013.

Phases of S-LCA implementation :

- 4 - Identification and collection of internal information,
- 5 - Identification and collection of external information,
- 6 - Diagnosis of effects of potential capacity variations,

How to measure capacities with the Participative Score Matrix ? (3/3)

Diagram 11. Articulation of different levels of assessment



Feschet P. and Garrabé M., Social LCAs socio-economic effects in value chains, Fruitrop Thema 2013.

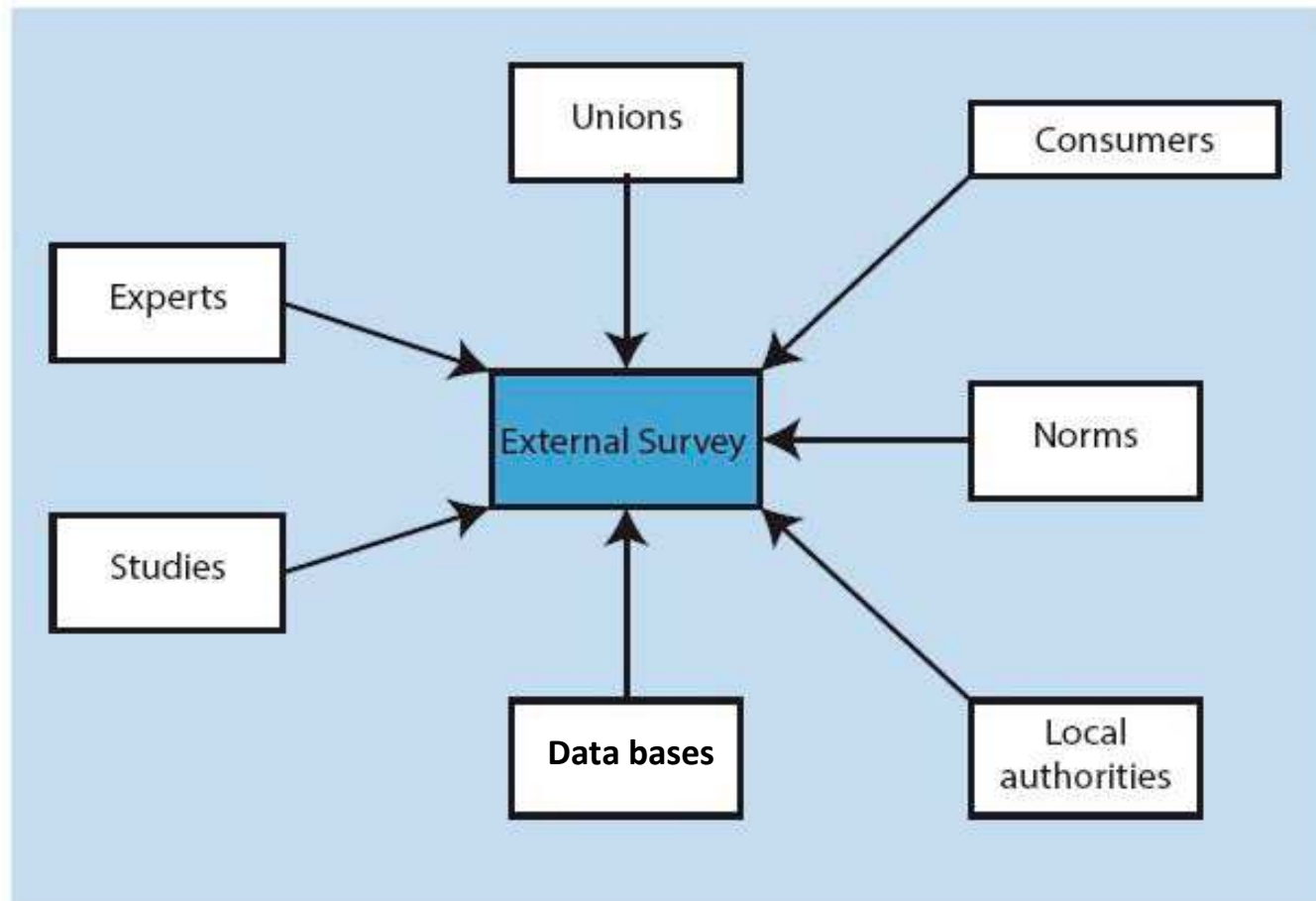
Phases of S-LCA implementation :

7 - Estimated variations of potential capacity effects (effective or potential capacity marginal effects),

8 - Change analysis of potential capacity effects to real capacity effects.

The problem of accessing social data :

Diagram 13. Main sources of external information



Feschet P. and Garrabé M., Social LCAs socio-economic effects in value chains, Fruitrop Thema 2013.

A solution to accessing social information :

the Participative Score Matrix :

Classes of capital (A)	Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change value of weighting classes (I)
	Decision makers	Decision makers	Decision makers	Site investigations	Estimation (E/nx100)	Estimation (FxD)	Estimation (Somme G)	Estimation (HxB)
Natural	20%	Soil	11%	0	0	0,00	7,40	1,48
		Surface water	8%	-1	-20	-1,60		
		Ground water	16%	-3	-60	-9,60		
		Air	6%	2	40	2,40		
		Landscape	18%	1	20	3,60		
		Biodiversity : wildlife	14%	2	40	5,60		
		Biodiversity : flora	19%	1	20	3,80		
		Natural environments	8%	2	40	3,20		
Human	20%	Training	8%	2	40	3,20	20,80	4,16
		Working conditions	40%	-2	-40	-16,00		
		Health	20%	3	60	12,00		
		Security	20%	3	60	12,00		
Technical	20%	Companies	30%	5	100	30,00	75,60	15,12
		Infrastructure	16%	3	60	9,60		
		Information	12%	3	60	7,20		
		Market	22%	4	80	17,60		
		Public administration	8%	4	80	6,40		
		Induced effects	12%	2	40	4,80		
Financial	15%	Grant	10%	2	40	4,00	40,00	6,00
		Equity	30%	2	40	12,00		
		Investment	30%	1	20	6,00		
		Credit	30%	3	60	18,00		
Social	15%	Justice	36%	1	20	7,20	27,20	4,08
		Participation	12%	1	20	2,40		
		Confidence / trust	16%	1	20	3,20		
		Social integration	22%	2	40	8,80		
		Social networks	14%	2	40	5,60		
Institutional	10%	Property / ownership	38%	2	40	15,20	42,00	4,20
		Competition	22%	3	60	13,20		
		Contrats / agreements	22%	1	20	4,40		
		Social disputes	8%	2	40	3,20		
		Norms / labels	10%	3	60	6,00		
SCORE OF CAPACITIES CHANGE : between -100 and +100							35,04	

Building the Participative Score Matrix : step 1

Classes of capital (A)		Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change value of weighting classes (I)
		Decision makers	Decision makers	Decision makers	Site investigations	Estimation (E/nx100)	Estimation (FxD)	Estimation (Somme G)	Estimation (HxB)
Natural		20%	Soil Surface water Ground water Air Landscape Biodiversity : wildlife Biodiversity : flora Natural environments	11%	0	0	0,00		
Human		20%	Training Working conditions Health Security Parity (men/women)						
Technical	Technical	20%	Companies Infrastructure Information Market Public administration Induced effects						
	Financial	15%	Grant Equity Investment Credit						
Social		15%	Justice Participation Confidence / trust Social integration Social networks						
Institutional		10%	Property / ownership Competition Contrats / agreements Social disputes Norms / labels	10%	3	60	6,00		
SCORE OF CAPACITIES CHANGE : between -100 and +100									35,04

Defining the choice of capital and subcapital items :

Actors : Stakeholders

Capital : The capitals you need are defined by the **context** and the **aims** of the survey.

If you proceed at the same time with S-LCA and E-LCA, you can remove the natural capital.

Building the Participative Score Matrix : step 2

Classes of capital (A)	Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change value of weighting classes (I)
	Decision makers	Decision makers	Decision makers	Site investigations	Estimation (E/nx100)	Estimation (FxD)	Estimation (Somme G)	Estimation (HxB)
		Soil	11%	0	0	0,00		
<p>Establishing a specific metric for each subcapital.</p> <p>Actors : Professionals of S-LCA. External experts.</p> <p>Subcapital : It is necessary to choose criteria and a measuring scale for each subcapital.</p>					-20	-1,60		
					-60	-9,60		
					40	2,40	7,40	1,48
					20	3,60		
					40	5,60		
					20	3,80		
					40	3,20		
					40	3,20		
					-40	-16,00	20,80	4,16
					60	12,00		
60	12,00							
80	9,60							
100	30,00							
60	9,60	75,60	15,12					
60	7,20							
80	17,60							
80	6,40							
40	4,80							
40	4,00	40,00	6,00					
40	12,00							
20	6,00							
60	18,00							
20	7,20	27,20	4,08					
20	2,40							
20	3,20							
40	8,80							
40	5,60							
40	15,20	42,00	4,20					
60	13,20							
20	4,40							
40	3,20							
60	6,00							
SCORE OF CAPACITIES CHANGE : between -100 and +100							35,04	

Building the Participative Score Matrix : step 3

Classes of capital (A)	Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change value of weighting classes (I)
	Decision makers	Decision makers	Decision makers	Site investigations	Estimation (E/nx100)	Estimation (FxD)	Estimation (Somme G)	Estimation (HxB)
Natural	20%	Soil	11%	0	0	0,00		
		Surface water	8%	-1				
		Ground water	16%	-3				
		Air	6%	2				
		Landscape	18%	1				
				2				
				1				
				2				
				2				
				-2				
		3						
		3						
		4						
		5						
		3						
		3						
		4						
		4						
		2						
		2						
		1						
		3						
		1						
		1						
Social	15%	Confidence / trust	16%	1				
		Social integration	22%	2				
		Social networks	14%	2				
Institutional	10%	Property / ownership	38%	2				
		Competition	22%	3				
		Contrats / agreements	22%	1				
		Social disputes	8%	2				
		Norms / labels	10%	3				
					40	3,20		
					60	6,00		
SCORE OF CAPACITIES CHANGE : between -100 and +100								35,04

The measuring scale changes from -5 to +5.
This scale should be adjusted for each item, for each project.

Before weighting capitals and subcapitals, indicators and measuring scales must be tested on case studies.

This work allows testing of :

- **Relevance** and **consistency** of each indicator.
- **Sensibility** of each measuring scale.

Building the Participative Score Matrix : step 4

Classes of capital (A)		Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change value of weighting classes (I)
		Decision makers	Decision makers	Decision makers	Site	Estimation	Estimation	Estimation	Estimation
Natural		20%	Soil	11%	3	60	6,00		
			Surface water	8%					
			Ground water	16%					
			Air	6%					
			Landscape	18%					
			Biodiversity : wildlife	14%					
			Biodiversity : flora	19%					
			Natural environments	8%					
Human		20%	Training	8%	3	60	6,00		
			Working conditions	40%					
			Health	20%					
			Security	20%					
			Parity (men/women)	12%					
Technical	Technical	20%	Companies	30%	3	60	6,00		
			Infrastructure	16%					
			Information	12%					
			Market	22%					
			Public administration	8%					
	Induced effects	12%							
Financial	15%	Grant	10%						
		Equity	30%						
		Investment	30%						
		Credit	30%						
Social		15%	Justice	36%	3	60	6,00		
			Participation	12%					
			Confidence / trust	16%					
			Social integration	22%					
			Social networks	14%					
Institutional		10%	Property / ownership	38%	3	60	6,00		
			Competition	22%					
			Contrats / agreements	22%					
			Social disputes	8%					
			Norms / labels	10%					
SCORE OF CAPACITIES CHANGE : between -100 and +100								35,04	

Before asking the stakeholders to define the weighting of capitals and subcapitals, the professionals of S-LCA **have to test many weighting changes.**

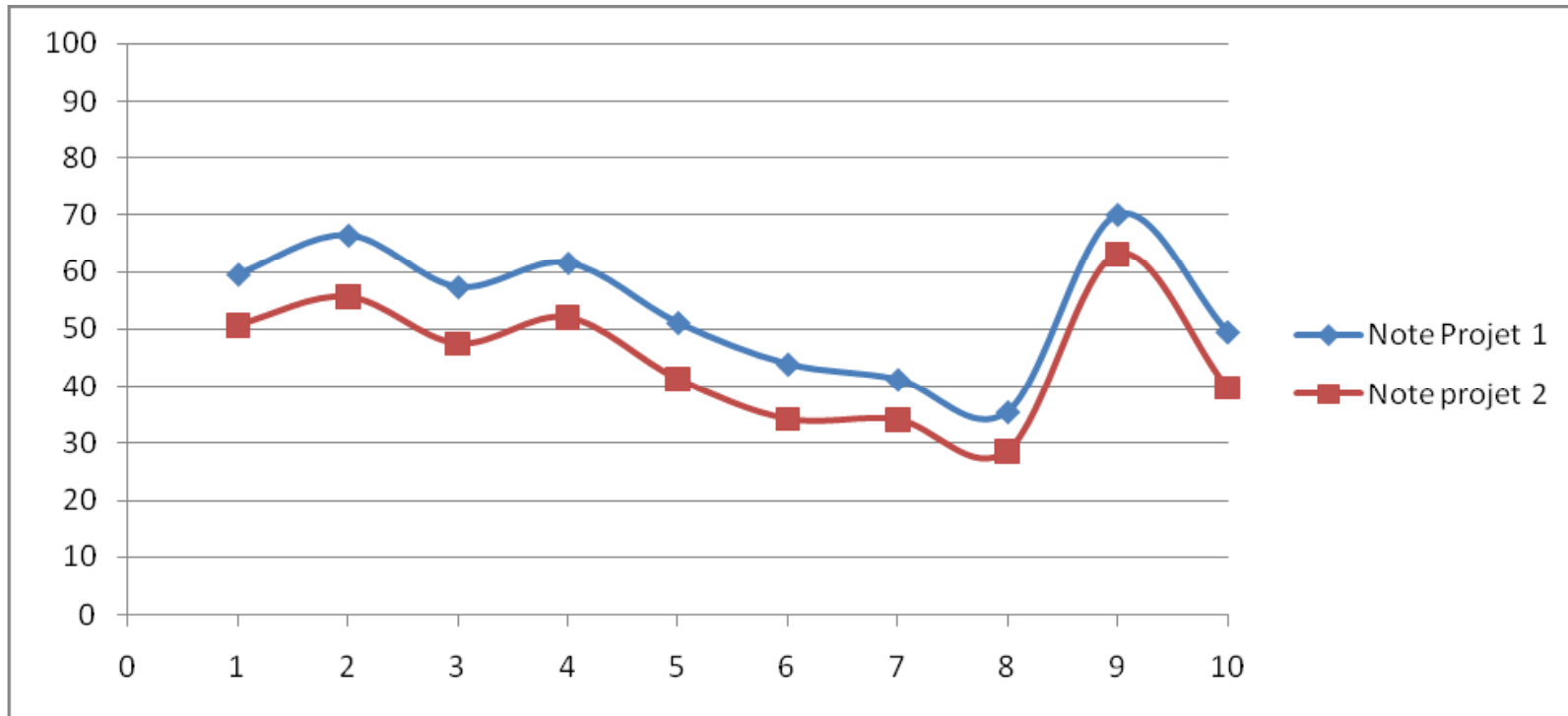
The conclusions of these tests are presented to the stakeholders before weighting.

It is very important that each of them understands the consequences of their choices.

After reflexion, the stakeholders define the weighting of capitals and subcapitals :

- the sum of capitals weighting must equal 100%.
- for each capital, the sum of subcapitals must equal 100%.

Exemple of a test before weighting :



Epsil 'Hôm, Montpellier, France.

The graph presents the scores of 2 projects with 10 different weightings.

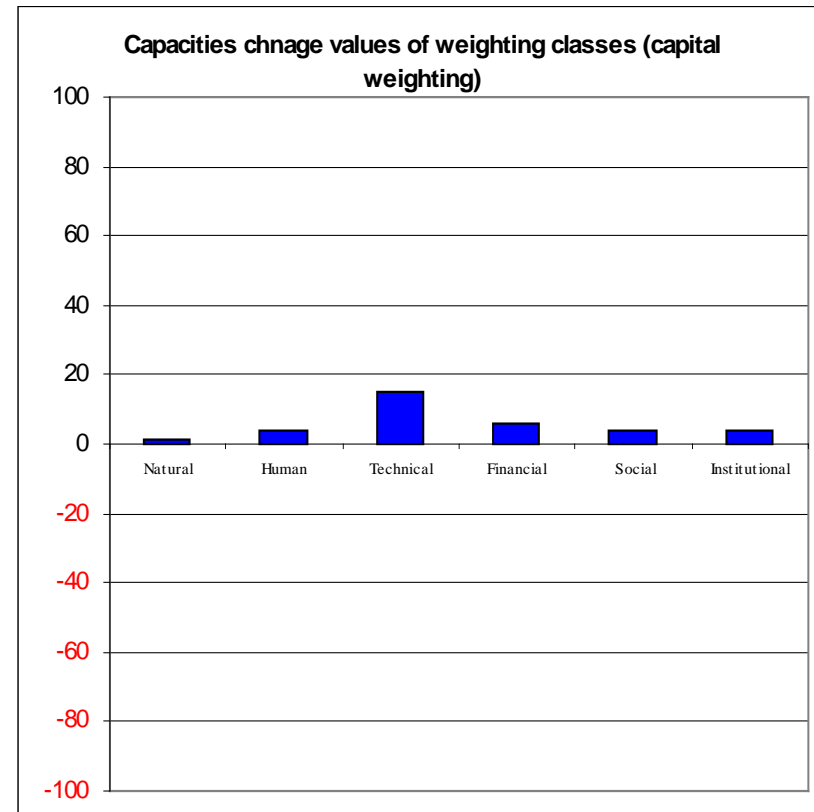
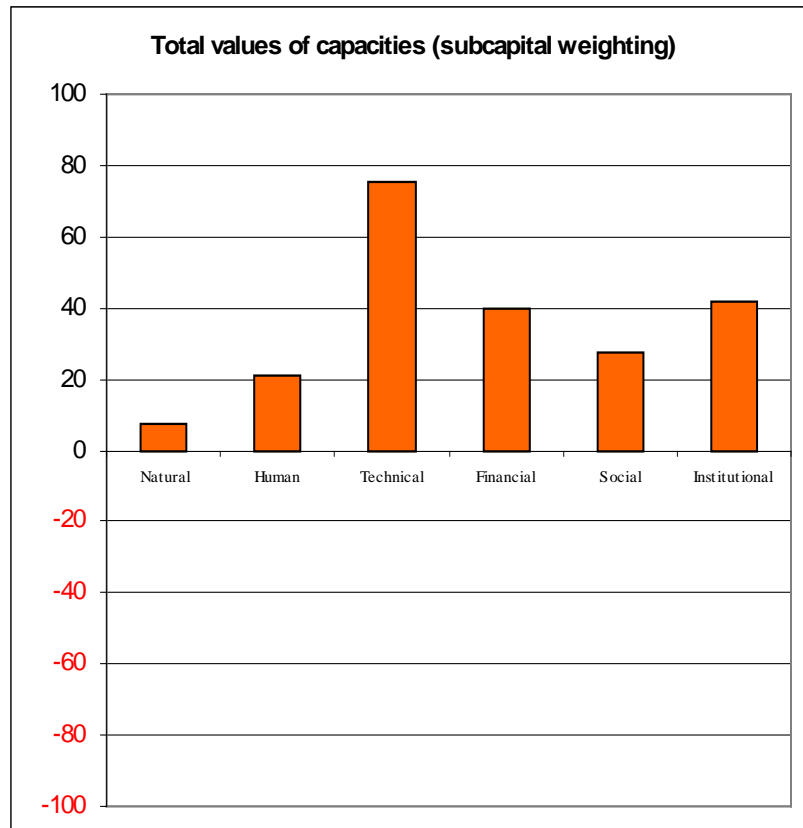
Building the Participative Score Matrix : step 5

Classes of capital (A)	Share of capital classes (B)	Subclasses of capital (C)	Weighting of subclasses (D)	Score (1...n) of capacities change (E)	Values of capacities change (F)	Capacities weighting values (G)	Total values of capacities (H)	Capacities change values of weighting classes (I)
	Decision makers	Decision makers	Decision makers	Site investigations	Estimation (E/nx100)	Estimation (Fx D)	Estimation (Somme G)	Estimation (HxB)
Natural	20%	Soil	11%	0	0	0,00	7,40	1,48
		Surface water	8%	-1	-20	-1,60		
		Ground water	16%	-3	-60	-9,60		
Human	20%						20,80	4,16
Technical	20%	Technical					75,60	15,12
		Financial	15%				40,00	6,00
Social	15%						27,20	4,08
Institutional	10%	Competition	22%	3	60	13,20	42,00	4,20
		Contrats / agreements	22%	1	20	4,40		
		Social disputes	8%	2	40	3,20		
		Norms / labels	10%	3	60	6,00		
SCORE OF CAPACITIES CHANGE : between -100 and +100								35,04

The score of capacities change is an important result but it isn't the main result of the survey.

The main result is the analysis of the contribution of each capital to the final score.

Results analysis :



Epsil 'Hôm - Centre d'Études de Projets, Montpellier, France.

These results show that **the capital's weighting makes the score.**

The subcapital's weighting has **very little effect on the score.**

Is this project sustainable ? (1/2)

Score : 35 / 100

What 's the **acceptability threshold** ?

- Positive and more than **X / 100** ?
- Could the acceptability threshold **be negative** ?

The minimum score of acceptability is defined by the stakeholders.

Is this project sustainable ? (2/2)

Performance of each capital :

Capital	Notation	Minimum	Maximum	Efficiency
Natural	7,40	-100	100	7,4%
Human	20,80	-100	100	20,8%
Technical	75,60	-100	100	75,6%
Financial	40,00	-100	100	40,0%
Social	27,20	-100	100	27,2%
Institutional	42,00	-100	100	42,0%

If necessary, the stakeholders could define a minimum threshold for each capital as an **acceptance condition**.

For some subcapitals, experts could define a minimum threshold used as a **technical veto**.

Conclusion :

The Participative Score Matrix is a tool of **knowledge production** for the organization that implements it.

The feedback shows that the Participative Score Matrix is very useful in the following contexts :

* Projects which need a **multicriteria approach**.

or / and

* Projects or programmes which :

- are **complex** (technical / economical / social / environmental).
- are developed within a **high stakes context**.

THANK YOU FOR YOUR ATTENTION

Michel GARRABE, Charles GILLET, Denis LOEILLET, Pauline FESCHET

4th international seminar - Social LCA- November 2014 - Montpellier (France)