

Economic Valuation of Changes in Ecosystem Services Provision with a Life Cycle Approach

Aurélien Bruel, PhD student

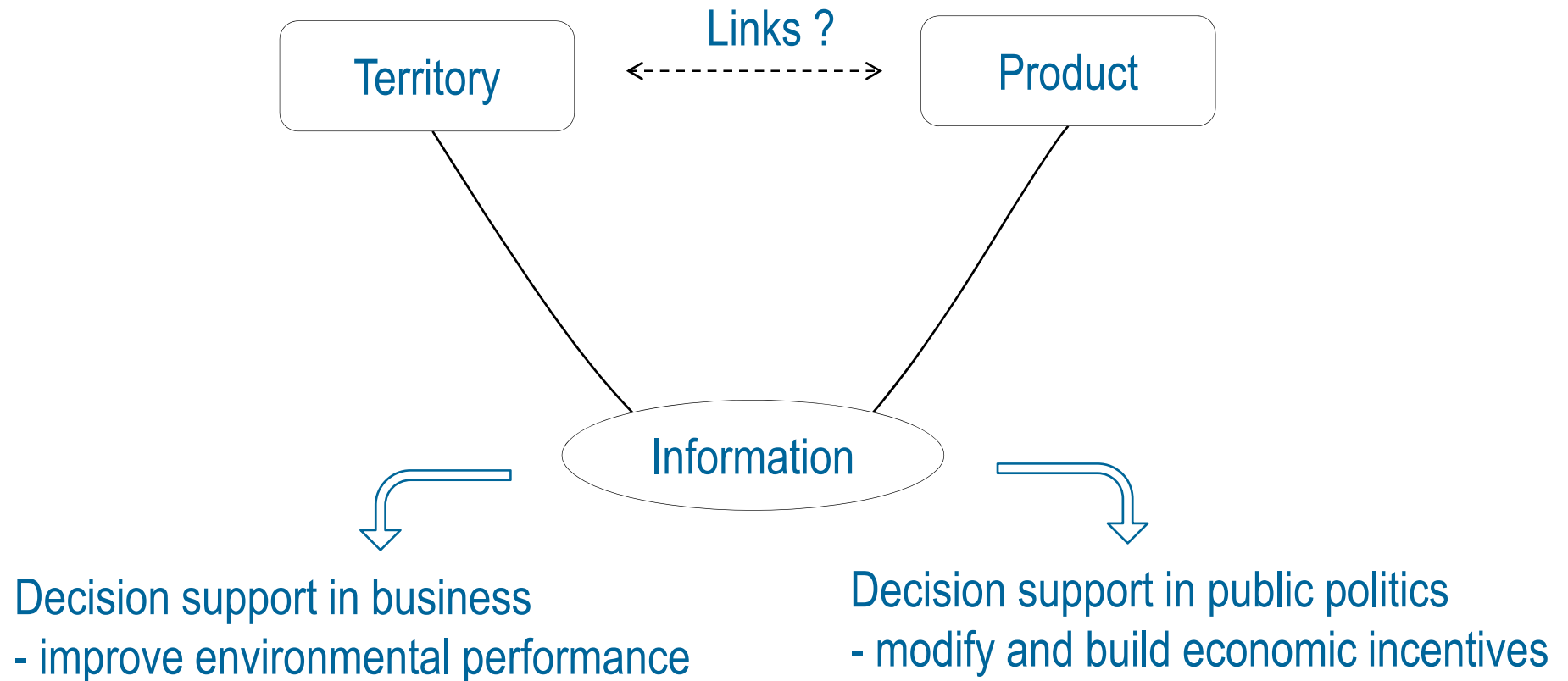
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Supervisors : Nadège Troussier - Bertrand Guillaume

Summary

- Problem
- Hypothesis
- State of the art
- Method
- Illustrative case
- Conclusion

How to make the link between product and territory?



Problem

Hypothesis
State of the art
Method
Illustrative case
Conclusion

What kind of information?

Do we have any information
of our environmental impact
on the territory?

No, we don't only at the
product level with LCA.

To get this information
we could use the ES
concept.

Why not, it seems
to be a good idea.



(Hanson et al., 2008 ; Ruckelshaus et al. 2013 ; TEEB, 2012)

Integrating ES into LCA would give relevant information

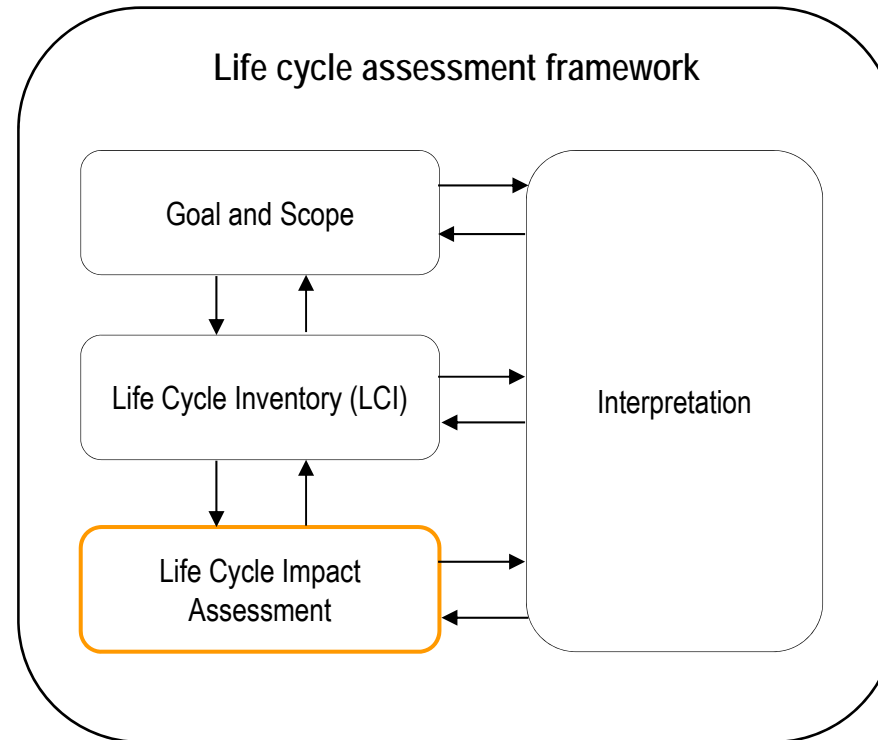
- Existing environmental accounting systems (Zhang et al. 2010 ; Loiseau et al. 2012)
 - Mass Flow Analysis (MFA)
 - Life Cycle Assessment (LCA)
 - Energy analysis
 - Emergy analysis
 - Ecological footprint analysis
- Some works have been suggested integrating ES into LCA (Bare 2010 ; Hau and Bakshi 2004 ; Houdet et al. 2009 ; TEEB 2012 ; WBCSD 2011 ; Zhang et al. 2010)

What is LCA?



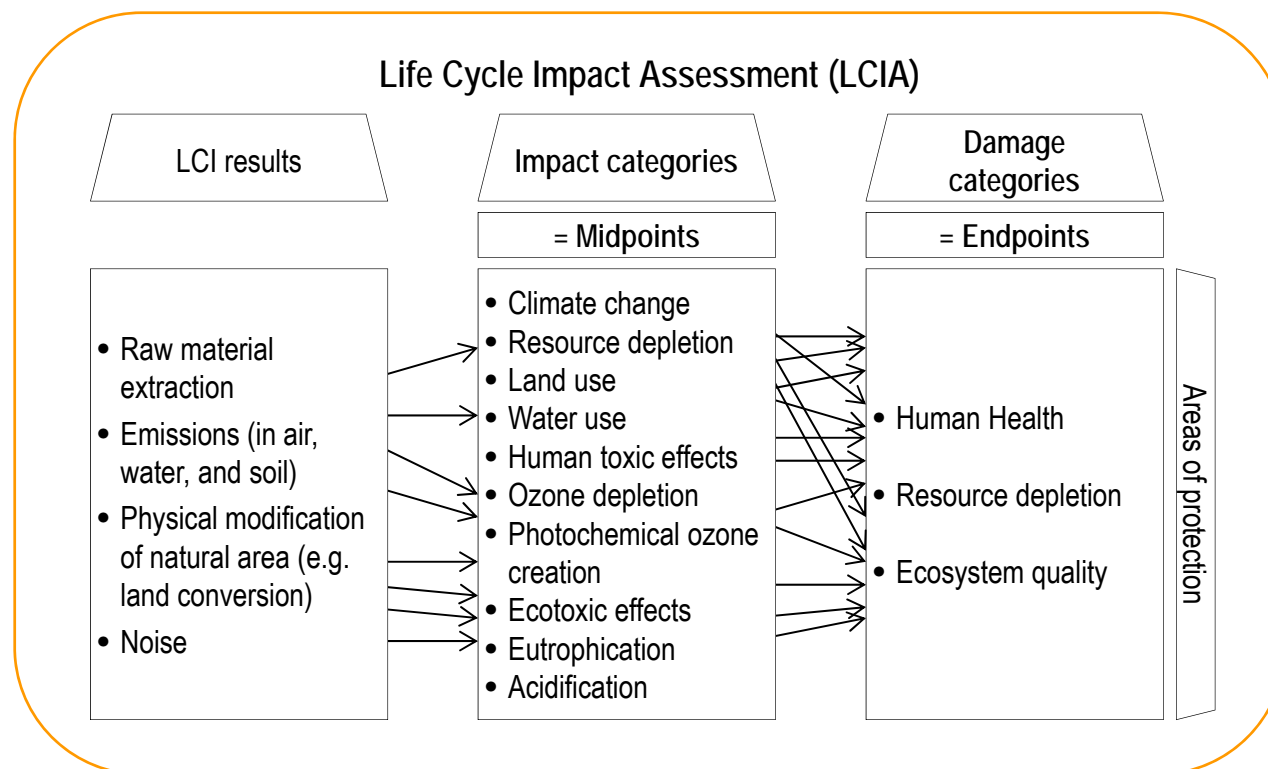
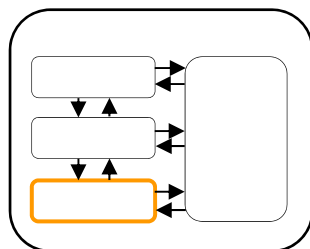
(Azapagic and Clift 1999; EU 2001; Finnveden et al. 2009;
Hunkeler and Rebitzer 2005; Rebitzer et al. 2004)

What is its framework?



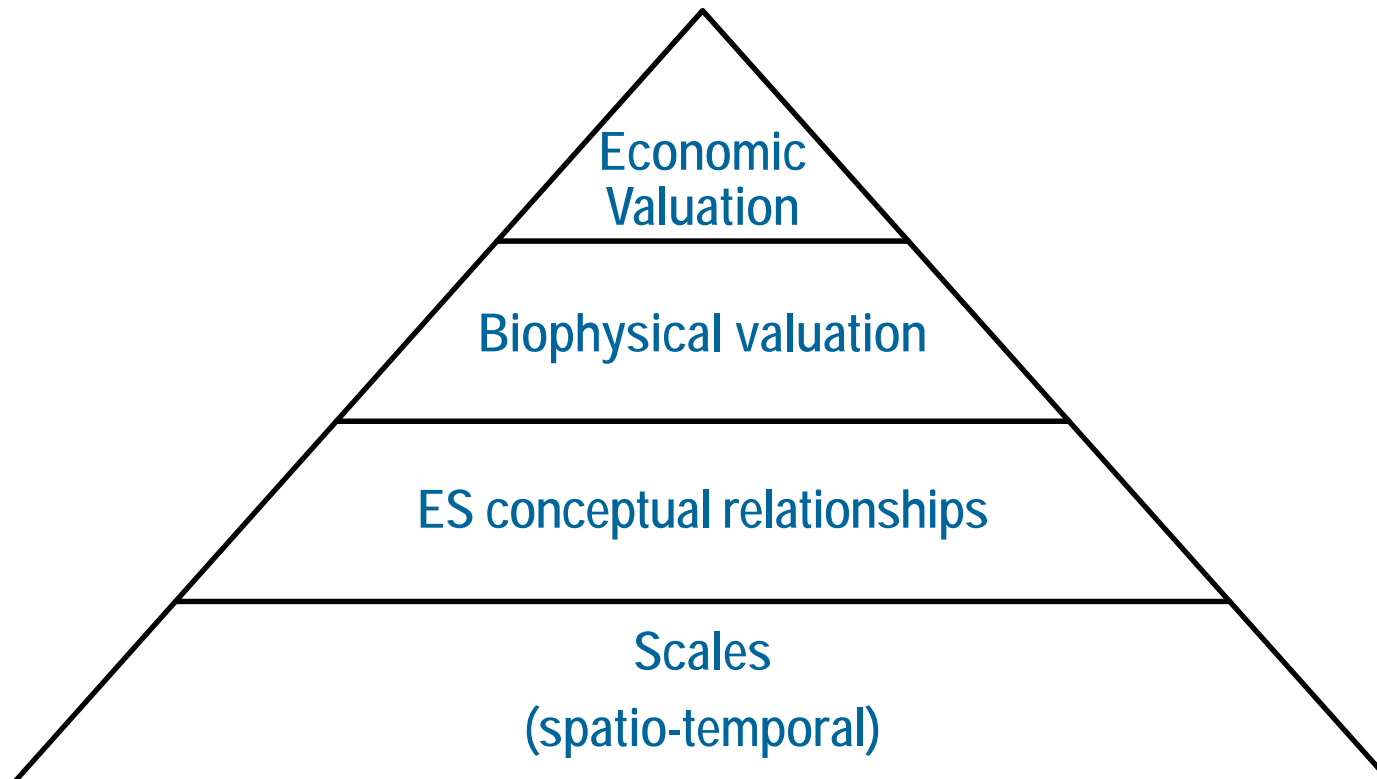
(ISO 14040 and 14044, 2006)

Traditional Life Cycle Impact Assessment



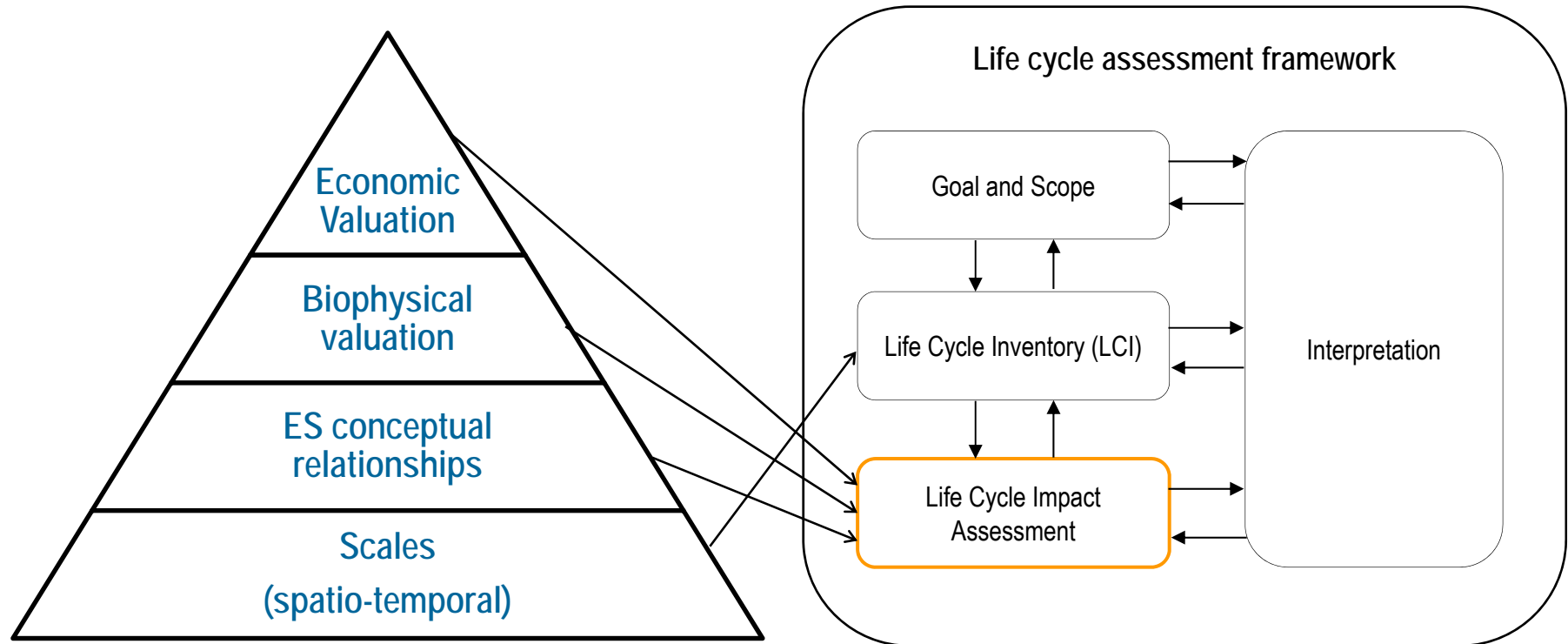
(Jolliet et al. 2003, 2004)

Complexity in ES assessment

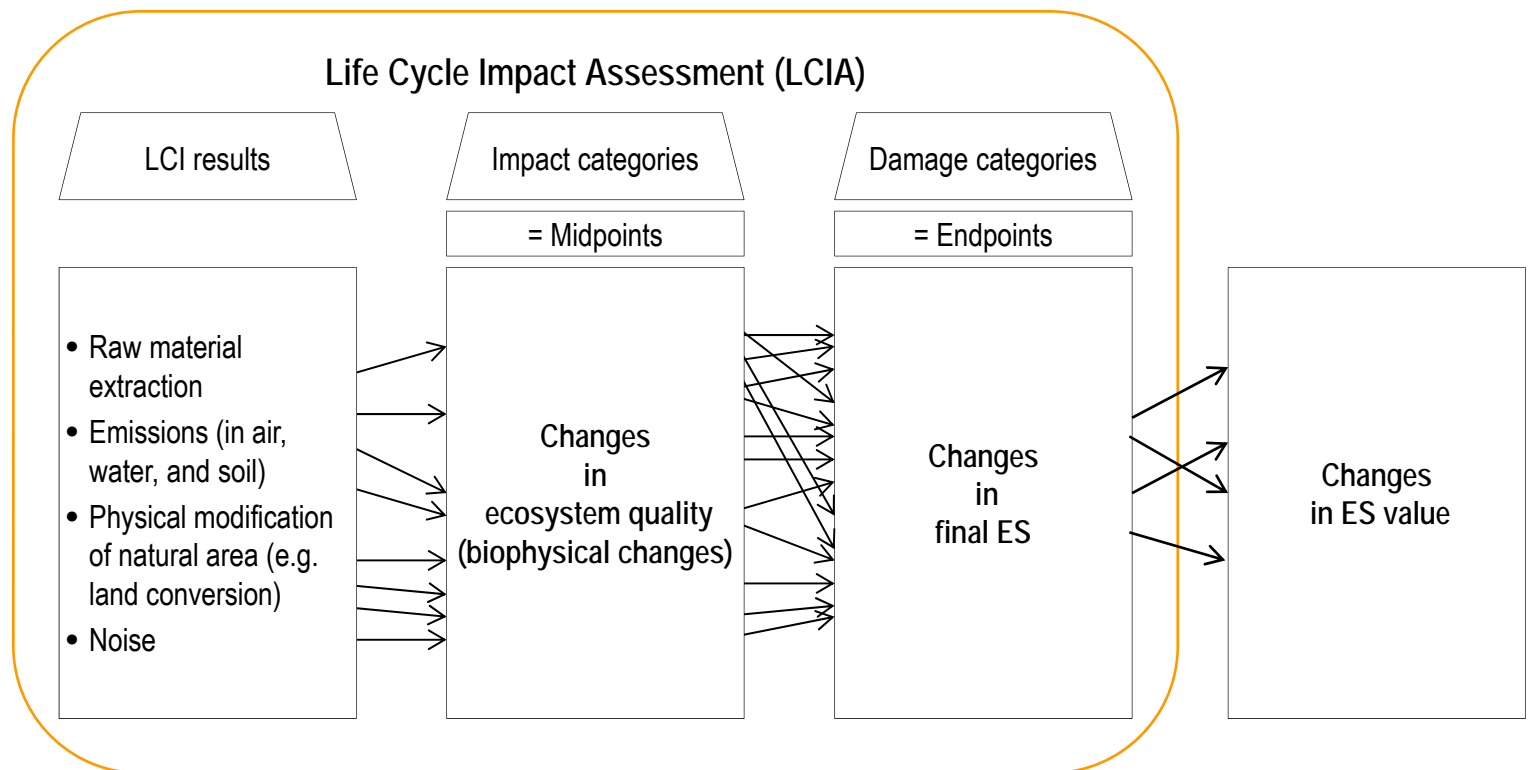
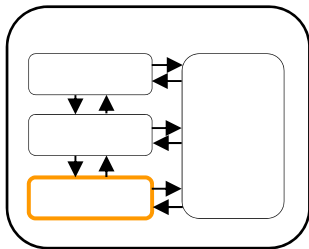


(Boyd and Banzhaf 2007, ten Brink, 2008 ; Fisher et al. 2009 ; Hein et al. 2006 ; Hanley and Shogren 2002 ; Randall 2002 ; Turner et al. 2003 ; Wallace, 2007 ; Yang et al. 2006)

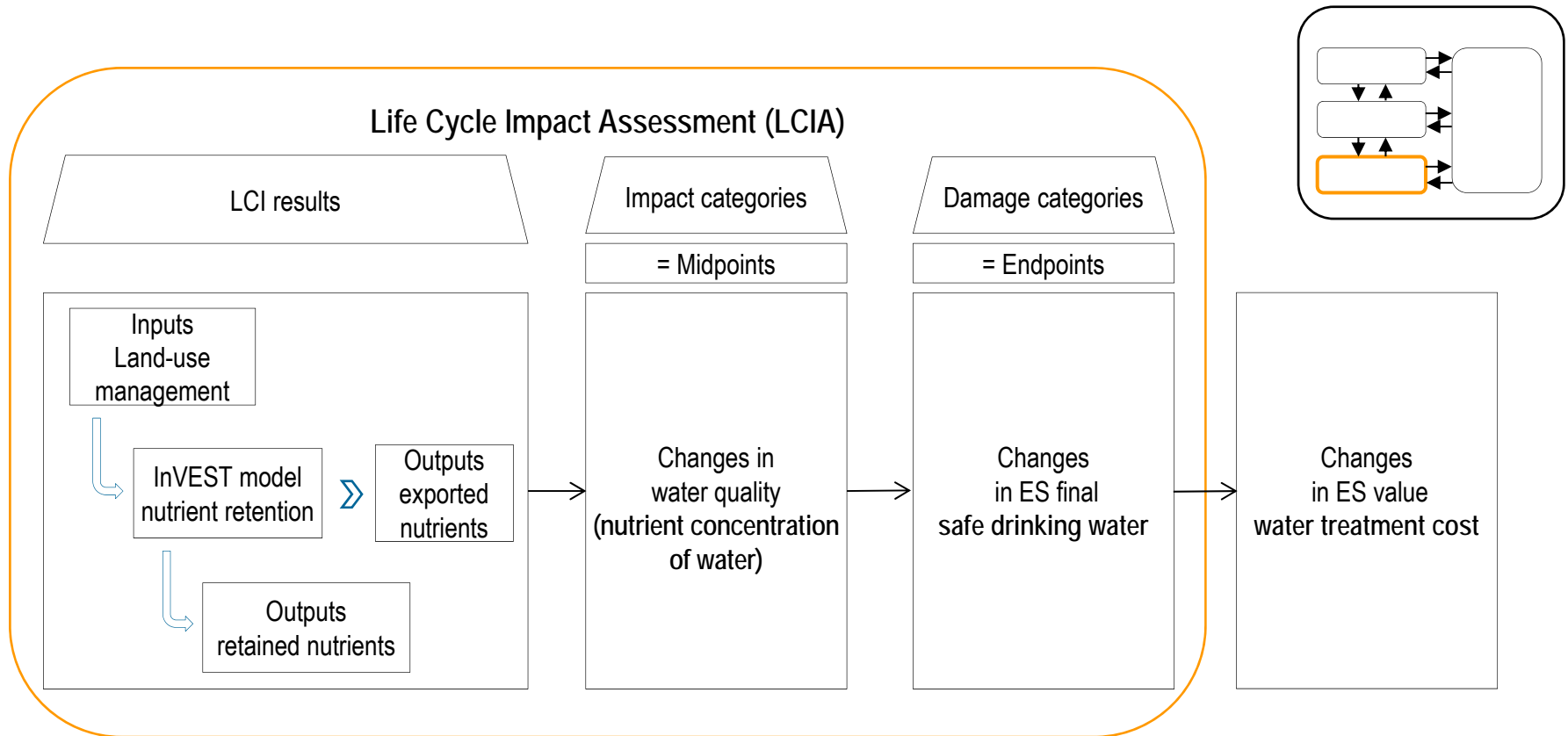
Proposition



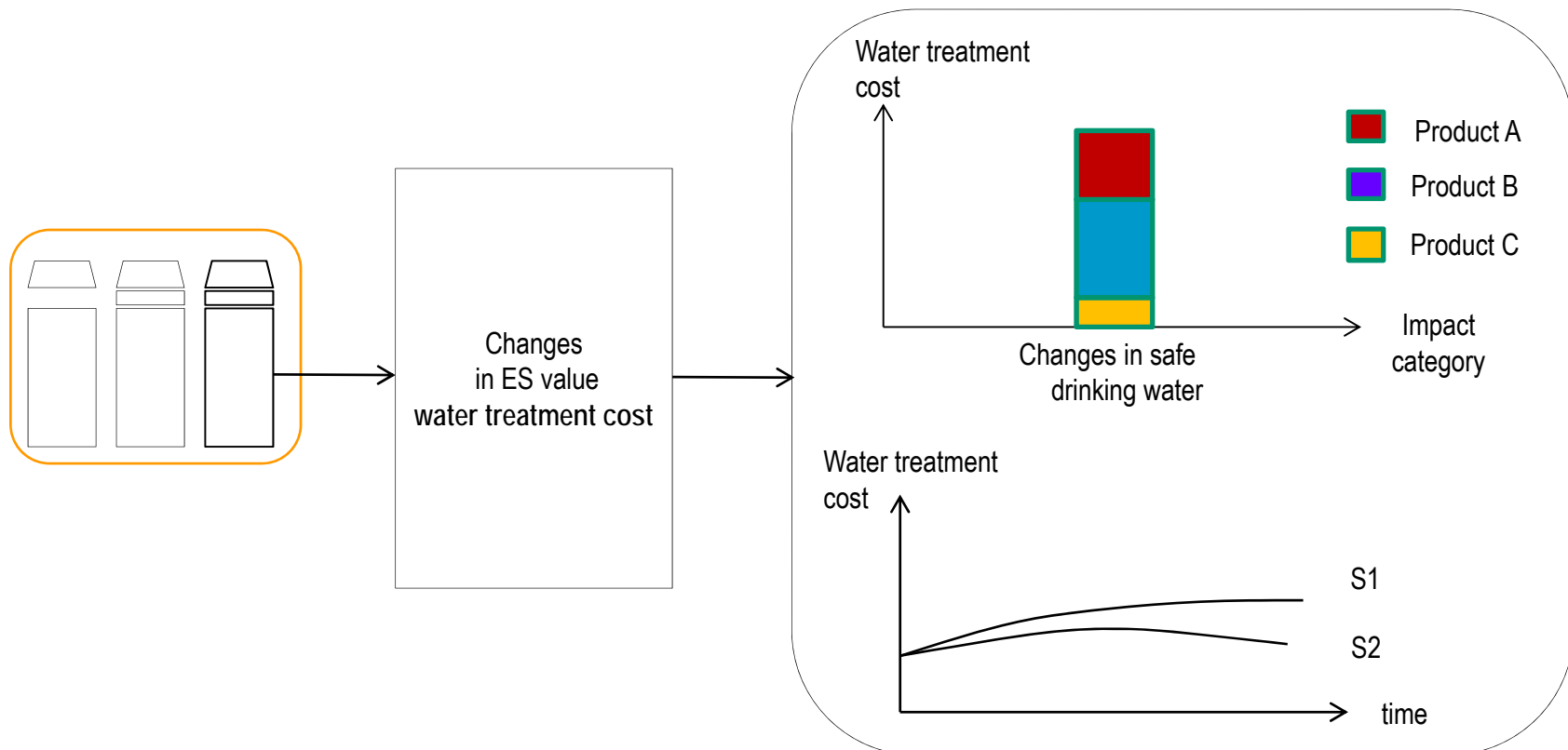
Proposition



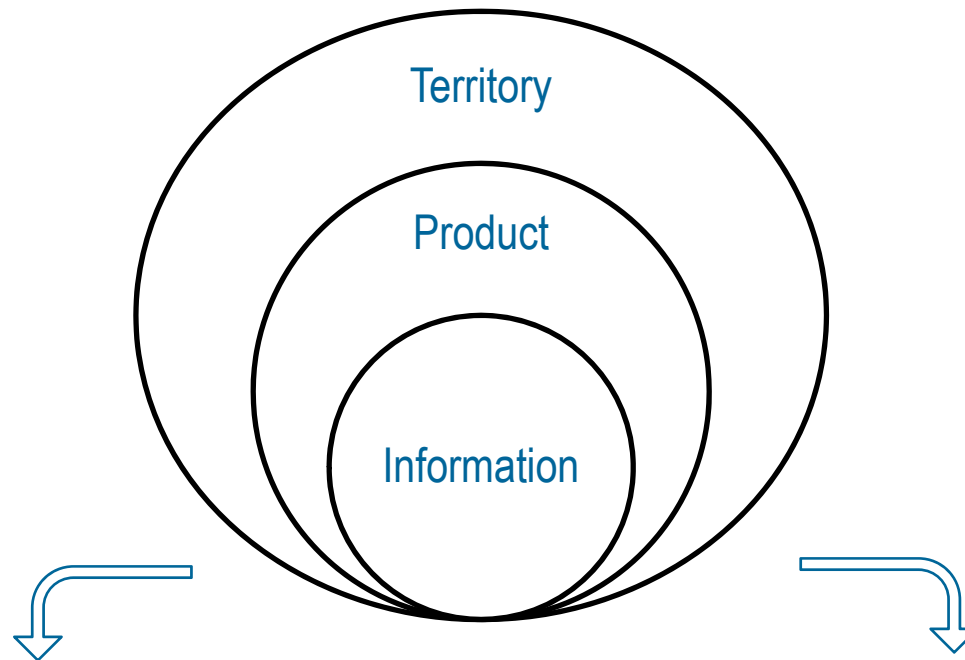
Changes in safe drinking water



Expected results



Towards an integrated product-territory approach



Decision support in business
- improve environmental performance

Decision support in public politics
- modify and build economic incentives

Question time



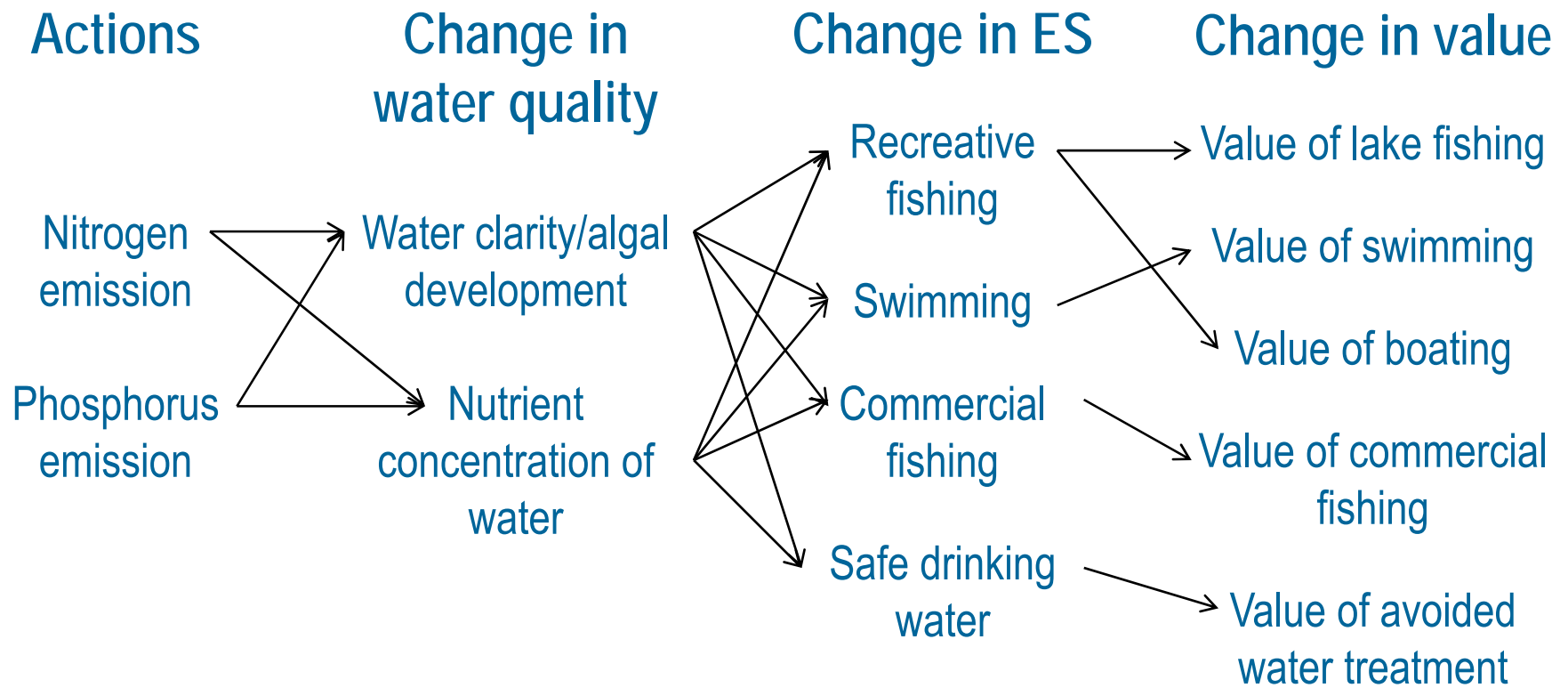
Université de technologie de Troyes (UTT)
ICD/HETIC/CREIDD
12, rue Marie Curie 10010 Troyes
<http://www.creidd.utt.fr>

INSPIRE Institut
11, cours Joseph Thierry 13001 Marseille
<http://www.inspire-institut.org/>

Fondation 2019 (Fondation de France)
40, avenue Hoche 75008 Paris
<http://www.fondation-2019.fr/>

Contact :
aurelien.bruel@utt.fr

Linking changes



(Adapted from Keeler et al. 2012)

Change in Safe drinking water : steps

Σ nutrient emission that reach aquatic system



Define a steady state of concentration (N and P)



Assessing changes in concentration (N and P)



Assessing effect of this changes on water treatment cost



Allocating these cost to emissions