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# Building an ecodesign transition framework toward sustainable product innovation

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Academic Work

## Introduction (1/2)

- Context and relevance:
  - Corporate sustainability has become more global and fundamental to the success for most companies (Kiron et al., 2015).
  - Companies need to update traditional business tools to consider the specialised requirements of environmental sustainability (Lubin and Esty, 2010).
  - Ecodesign: integration of environmental aspects into product development
  - Effective ecodesign implementation still a challenge for most companies
- Most research focused on technical practices: “hard side” of ecodesign
- “Soft side “: organisational and human aspects, including change management (Boks, 2006)



## Introduction (2/2)

### Objectives:

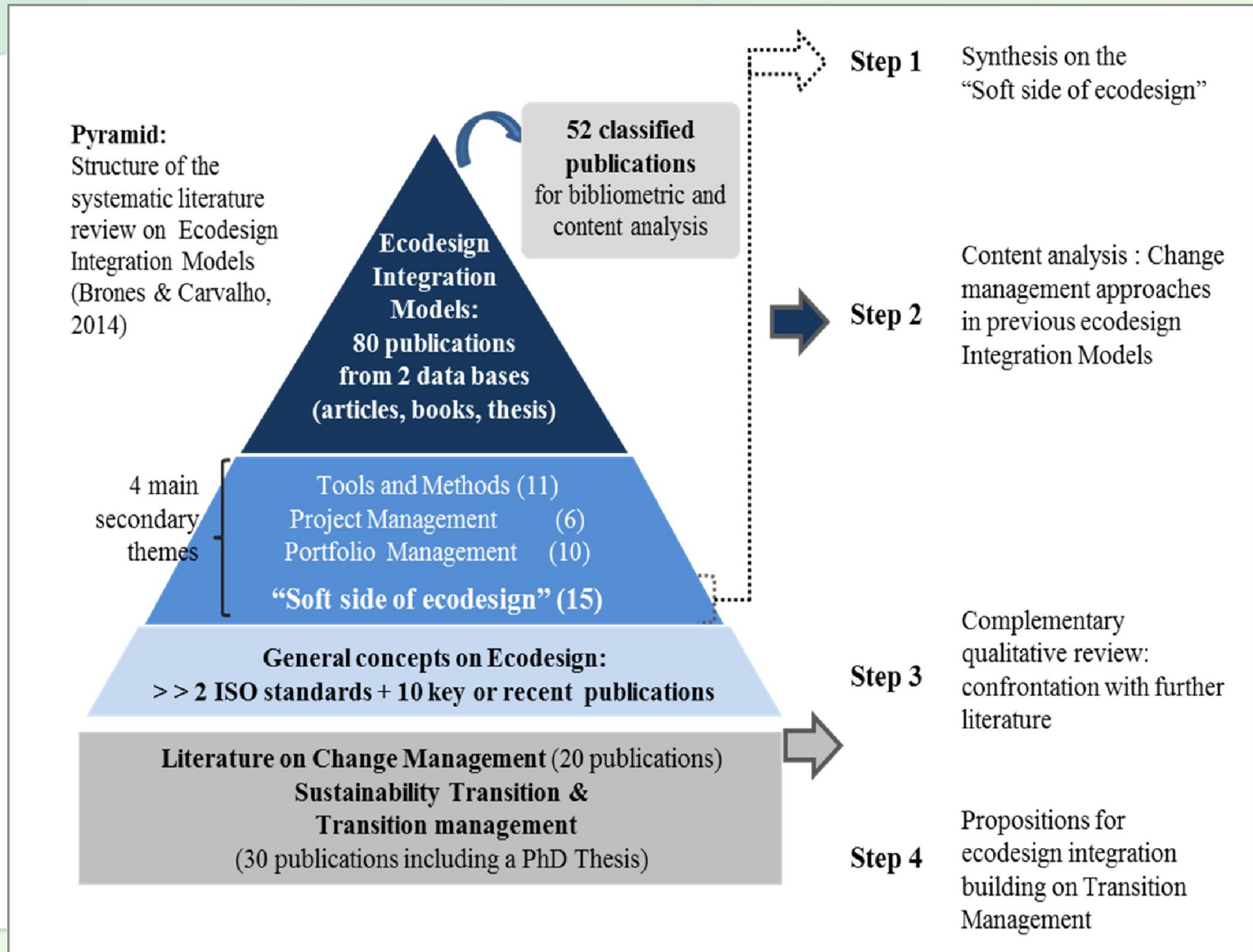
- Contribute to a broader research to build a prescriptive framework to help companies evolve toward more sustainable product innovation processes.
  - >> *Review and synthesis of the literature on the “soft side” of ecodesign integration*
- To link knowledge from operations and environmental management with recent social theories on sustainability transition in organisation.



## Research methods (1/2)

- Reviews of existing literature on ecodesign management, change management and sustainability transition.
- Theories confronted with the experience of a longitudinal study conducted in parallel in a consumer goods company, following action research
  - *“Theory-building process [that] occurs via recursive cycling among the case data, emerging theory, and later, extant literature”* (Eisenhardt and Graebner, 2007).





**Fig. 1.** Representation of the four-step methodology



# Results

## 1. Learning from the “soft side of ecodesign”

- Trend formalised in 2004 (Stevens, 2007; Boks, 2006)
- Management and change management aspects raised since early studies.
- 2 approaches:
  - Top-down approaches driven by management leadership
  - or alternatively Bottom-up initiatives , i.e. technical projects emerging from the field (Charter and Tischner, 2001; Stevens, 2007)



# Results

## 2. Change management approaches in previous ecodesign integration literature

**Table 1:** Classification of change management approaches in the 52 ecodesign Models (Brones and Carvalho, 2014).

Change management approach	Not addressed	Bottom Up	Top Down	Bottom Up + Top Down	Total
<b># of Models (1993-2012)</b>	<b>23</b>	<b>5</b>	<b>12</b>	<b>12</b>	<b>52</b>
<b>% of Models</b>	<b>44%</b>	<b>10%</b>	<b>23%</b>	<b>23%</b>	<b>100%</b>
<b>References</b>					
Higher relevance	1	1	5	7	14
Medium relevance	5	2	5	4	16
Lower relevance	17	2	2	1	22

**relevance** (for the purpose of this research): instructive integration principles in one or several of the considered dimensions (systemic levels, consideration of innovation management principles and detailed change management approaches).



# Results

## 2. Change management approaches in previous ecodesign integration literature

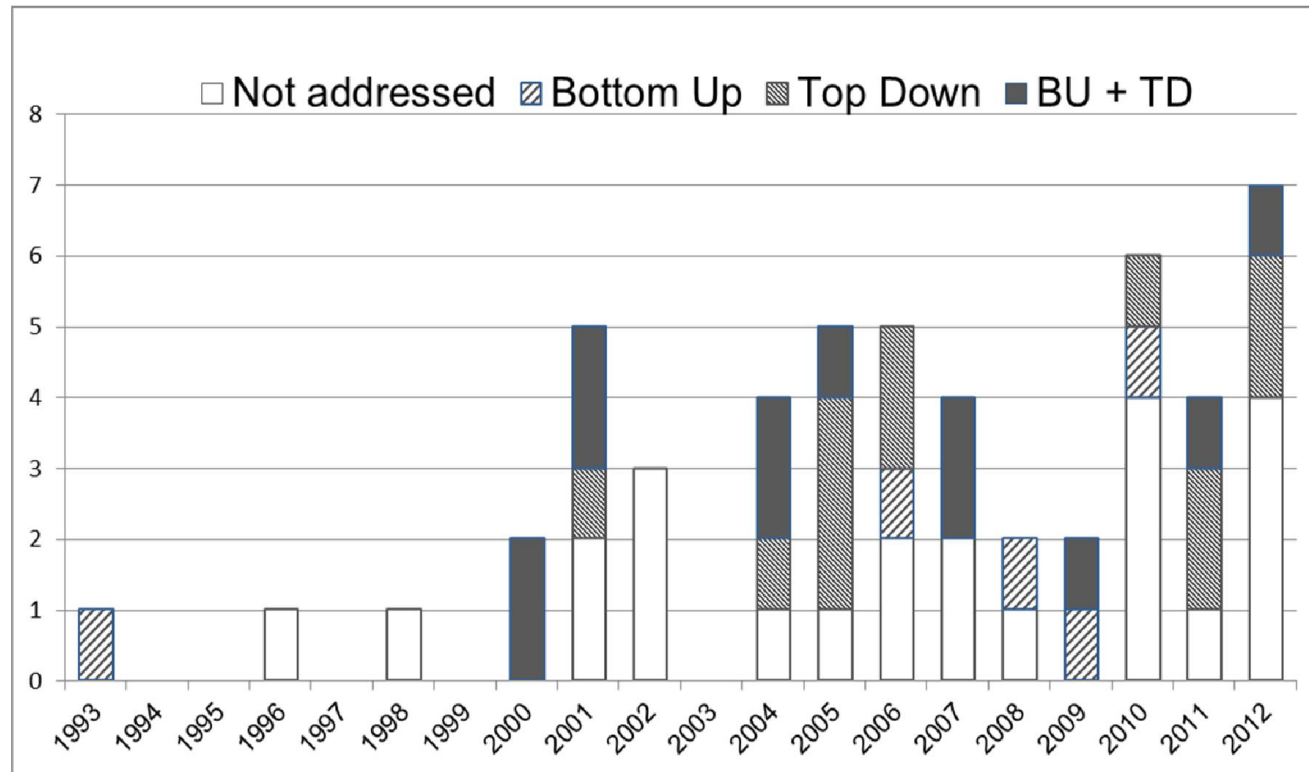


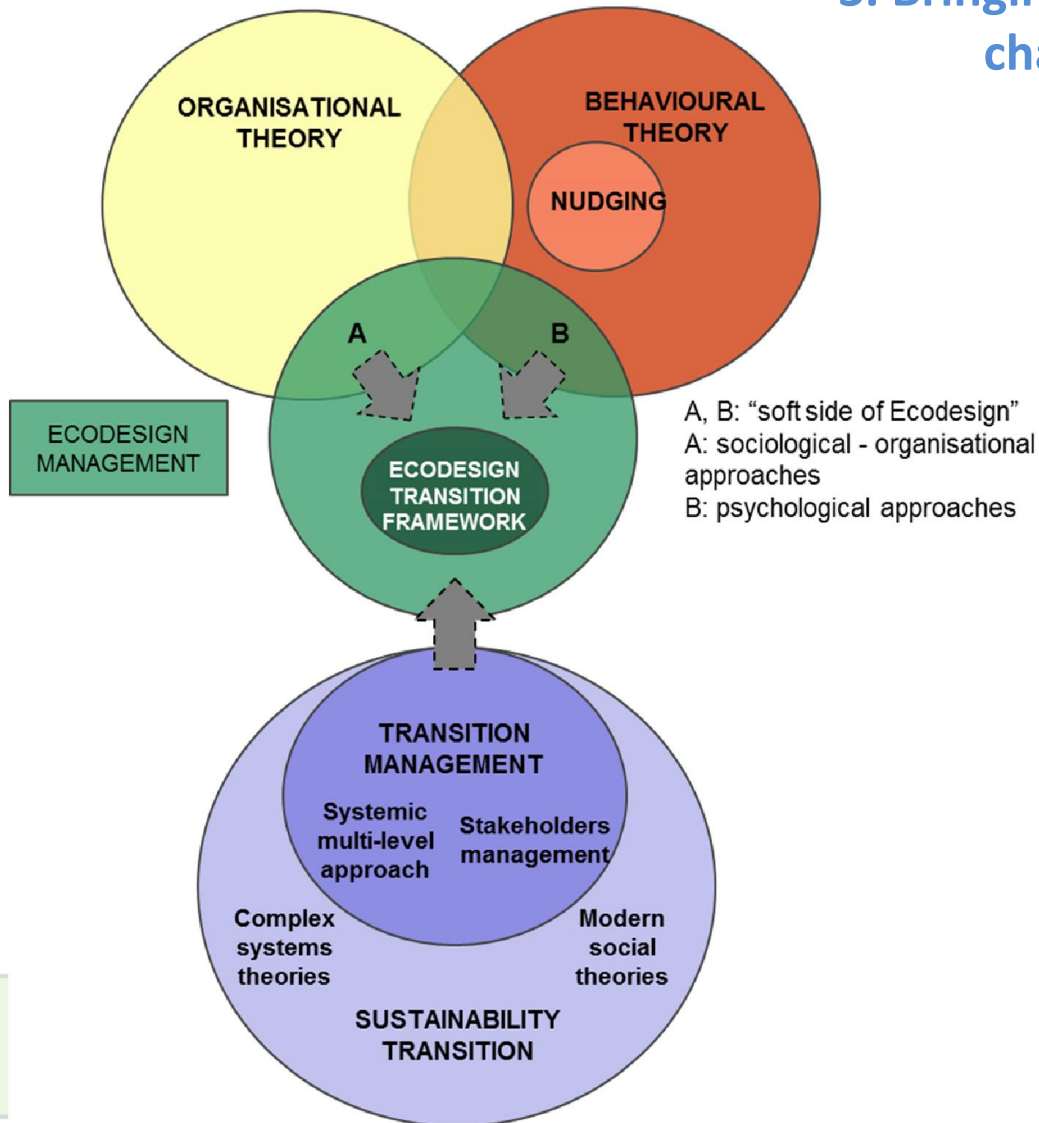
Fig. 2. Evolution of change management approaches in ecodesign models (1993-2012)





## Results

### 3. Bringing complementary knowledge from change management literature



- *"50 and 80% of change project fail"*
- *Different trends from social science*

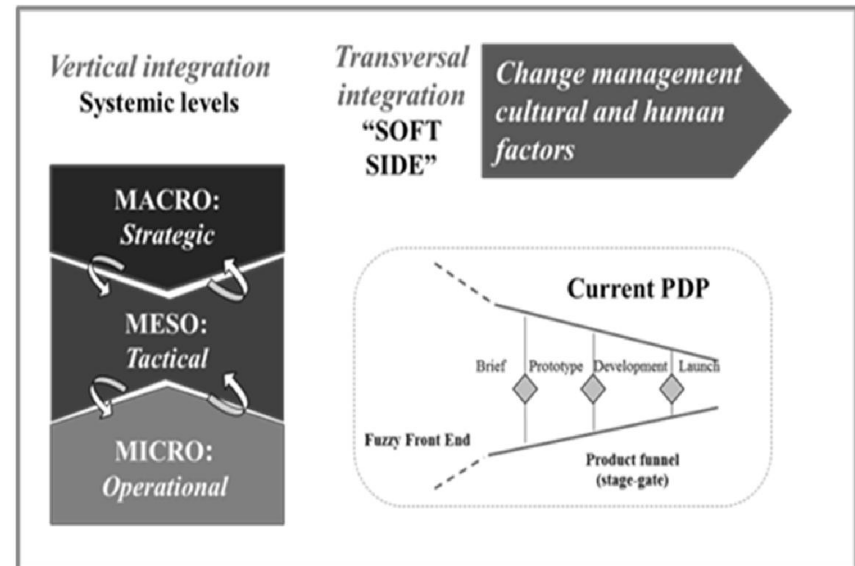
**Fig. 2.** Joining several change management approaches for ecodesign integration

## Results

### 4. Transition Management for ecodesign integration



Multilevel approach in transition management  
(Kemp et al., 2007)



Full ecodesign integration model: combining vertical and transversal integration axes into the existing PDP  
(Brones and Carvalho, 2014)

*Strong convergence and complementarities*

**Fig. 4.** Systemic multi-level approaches from transition management and ecodesign integration



## Discussion

### Transition management:

- a governance approach including a framework for experimental implementation.
- based on a central multi-level concept that describes the dynamics of a transition as the interactions between strategic, tactical and operational levels.
- claimed advantage: possibility to bridge the gap between Top-down planning and Bottom-up incrementalism, through new types of interaction and cycles of action and learning, with a deeper stakeholder management (Loorbach and Wijsman, 2013).

### Convergence with broader business management tendencies:

- command-and-control approach to management is no more viable and that lateral and bottom-up communication has become as important as the top-down one Groysberg and Slind (2012)
- 5th Discipline based on systems thinking and organisational learning (Senge and Sterman, 1992)

*An emerging approach at company level and novel for ecodesign  
(Loorbach and Wijsman, 2013, Verhulst 2012).*



## Final considerations

*An exploratory study as a useful step within a broader research*

- **Conclusions:**
  - “soft side” of ecodesign still an emerging trend
  - Relevant to face the change management challenges
- **Limitations :**
  - based on qualitative explorations and preliminary in-company observations.
- **Contributions:**
  - a new synthesis of diverse sources from the engineering literature and social sciences.
  - proposition to combine TM principles with the systemic ecodesign integration model to compose a promising “Ecodesign Transition Framework”.
- **Future research:** action research to develop, formalize and operationalize the ETF



# Obrigado!



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