



# **Innovation in Sustainability Focused Networks – The Case of Industrial Ecology**

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# Presentation Structure

- **Introduction**
  - Research Context
- **Research Objectives & Focus**
  - Why Innovation Networks?
- **Mapping the Territory**
  - Research Findings, Industrial Ecology, Gaps
- **Next Steps**



# Key Objectives of My Research

- To investigate the process of innovation in sustainability focused networks
- To analyse the drivers and characteristics of these networks and the role of 3<sup>rd</sup> party knowledge brokers or innovation catalysts.
- To contribute to the development of robust business innovation systems and networks that contribute more broadly to our environmental, economic and social well-being and accelerate the innovation process.



# Key Assertions of My Research

- Waste, water and energy are now being treated as valuable resources, business models are being redesigned to harness this opportunities.
- Firms are ever more connected; inter-organisational networks becoming more important, particularly for innovation and particularly in the area of sustainability (IE, SSC, PSS)
- Embodied in Industrial Ecology (IE) bringing together hitherto unconnected actors into new, networked relationships
  - IE clusters are implicitly collaborative (Chertow, 2000); take a 'networked' approach to innovation (Borgatti & Foster, 2003)
- More sustainable business models require a networked approach.



# Key Messages

1. Theory and empirical research highlight a number of characteristics of successful innovation networks in the broader literature.
2. Paucity of literature on how innovation happens in sustainability focused networks (Patala et al., 2014; Crossan and Apaydin, 2010; Ojasalo, 2008)
3. Next step is to understand in more depth the innovation process in these sustainability focused networks through research( case studies, interviews).

# Why This Research Theme ?

- Empirical, observed evidence of the role of environmental networks in disseminating knowledge and fostering sustainable innovation :
  - Technical and social as well as environmental
  - Building collaboration, trust
  - Encouraging peer support, risk taking
  - Access to resources
  - Role of 3<sup>rd</sup> Party Facilitator
  - Fostering innovation





## Characteristics of Successful Innovation Networks

- Access to resources, network orientation of human resource management, integration of intraorganizational communication, and openness of corporate culture (Ritter & Gemunden, 2003)
- More frequent information sharing/knowledge flows with customers, suppliers and NFPs (Echeverri-Carroll, 1999)
- Facilitate the sharing of tacit knowledge critical to innovation (Freeman, 1991)
- Loosely coupled organisations with both strong and weak ties (Imai & Baba, 1991)
- High degrees of social capital, trust and acquaintance (Bouty, 2000)

# Characteristics of Successful Innovation Networks

- Build trust and develop personal relationships (Keister, 2001), key success factors for external collaboration (Lawton Smith et al. 1991)
- Foster collaboration (Brass et al., 2004)
- Foster learning and pursuit of long term goals (Uzzi, 1997)
- Supportive, preferential and reciprocal (Burt, 1993)
- Resource acquisition, risk reduction, technology especially in supply chain (Zaheer, Gulati and Nohria, 2000)
- Strong network ties enhance firm performance and longevity (Hager, Galaskiewicz and Larson, 2004)



# Innovation in Sustainability Focused Networks – The Case of Industrial Ecology

- Networks are often self organising but with a coordinating organisation;  
organic growth of network over time
  - Role of Government (US EPA), especially in EIPs?
- Driven by business case - Reduces compliance cost, generate economic return
- Factors critical for IE network success (Jacobsen and Anderberg, 2005)
  - Common goals and values, ‘institutionalisation of IS’
  - Pre-existing social and professional relationships ‘shortening the mental distance’ between partners
- Cooperation and trust among industries and other stakeholders oft cited as the strongest driver
- Role of third parties in driving collaboration and innovation



# Innovation in Sustainability Focused Networks – The Case of Industrial Ecology

- Not just local networks that matter for innovation – regional and national networks important (Kaufmann and Todtling, 2000)
- Occasionally network appears to play little or no role in waste exchanges, driven by cost (Posch, 2010)
- Cooperation can take a long time (Chertow, 2000)
  - Information sharing or stakeholder engagement can accelerate the process; pre-existing exchange relationships a beneficial trigger.
- Existing business models sometimes hinder collaboration
- No two IS networks are the same, drivers vary from site to site
  - Hence prescriptive approaches may not work effectively
- Lack of information sharing cited as the weakest element of IE clusters.





# Innovation in Sustainability Focused Networks – Summary and Next Steps

1. Rich literature highlights characteristics of successful innovation networks which suggest that they largely self organise around critical factors such as geography, shared trust and values, existing social relationships, management capabilities and formal collaboration with third party institutions
2. Yet there exists a paucity of literature on how innovation happens in sustainability focused networks (Patala et al., 2014; Crossan and Apaydin, 2010; Ojasalo, 2008); opportunities and barriers..
3. Next step is to address the key research questions, namely drivers and characteristics of innovation in sustainability focused networks and role of 3<sup>rd</sup> parties in shaping innovation process.



