

# Current trends on Business Models and Biomass: A Literature Review

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# Background

An increasing amount of research evidence shows that business models and business model innovation are seen as a key to companies' competitiveness, renewal and growth (e.g. Chesbrough & Rosenblom, 2002; Johnson, 2010; Lambert & Davidson, 2012; Teece, 2010).

# Background

However, as Lambert & Davidson (2012) point out, empirical research on the business models between 1996-2010 is predominantly European-based in the sectors of media, information technology and biotechnology.

It reveals that the research on business models and business model innovation in the biomass area have gained limited attention.

# Purpose

Business model and business model innovation are fairly new concepts, and therefore little cumulative work has been conducted so far to uncover business models in different sectors.

We find the concept interesting and promising, in the forest and biomass, so the purpose of this paper is to provide an overview of the area of business models in the biomass sector as presented in the literature.

# Conceptual business model framework

- Osterwalder & Pigneur, 2005
- Richardsson, 2008
- Bocken, Short, Rana & Evans, 2014
- Barth, Ulvenblad & Ulvenblad, 2017
- and others....

# Conceptual sustainable business model framework

***Value intention*** – mind set of owners/managers  
(Barth, Ulvenblad & Ulvenblad, 2017)

***Value proposition*** - product, service, customer segments and relationships

***Value creation and delivery*** - key activities, resources, channels, partners, technology

***Value capture*** - cost structure, revenue streams

# The functions of a business model (Chesbrough, 2017)

- 1. *Articulate the value proposition*** - the value created for users by the offering.
- 2. *Identify a market segment*** - the users to whom the offering is useful and for what purpose.

# The functions of a business model

3. ***Define the structure of the value chain*** required by the firm to create and distribute the offering.

***Determine the complementary assets*** (including suppliers and customers) needed to support the firm's position in the value chain from raw materials to the final customer.



# The function of a business model

4. ***Specify the revenue generation mechanisms*** for the firm.

***Estimate the cost structure and profit potential*** of producing the offering, given the value proposition and value chain structure chosen

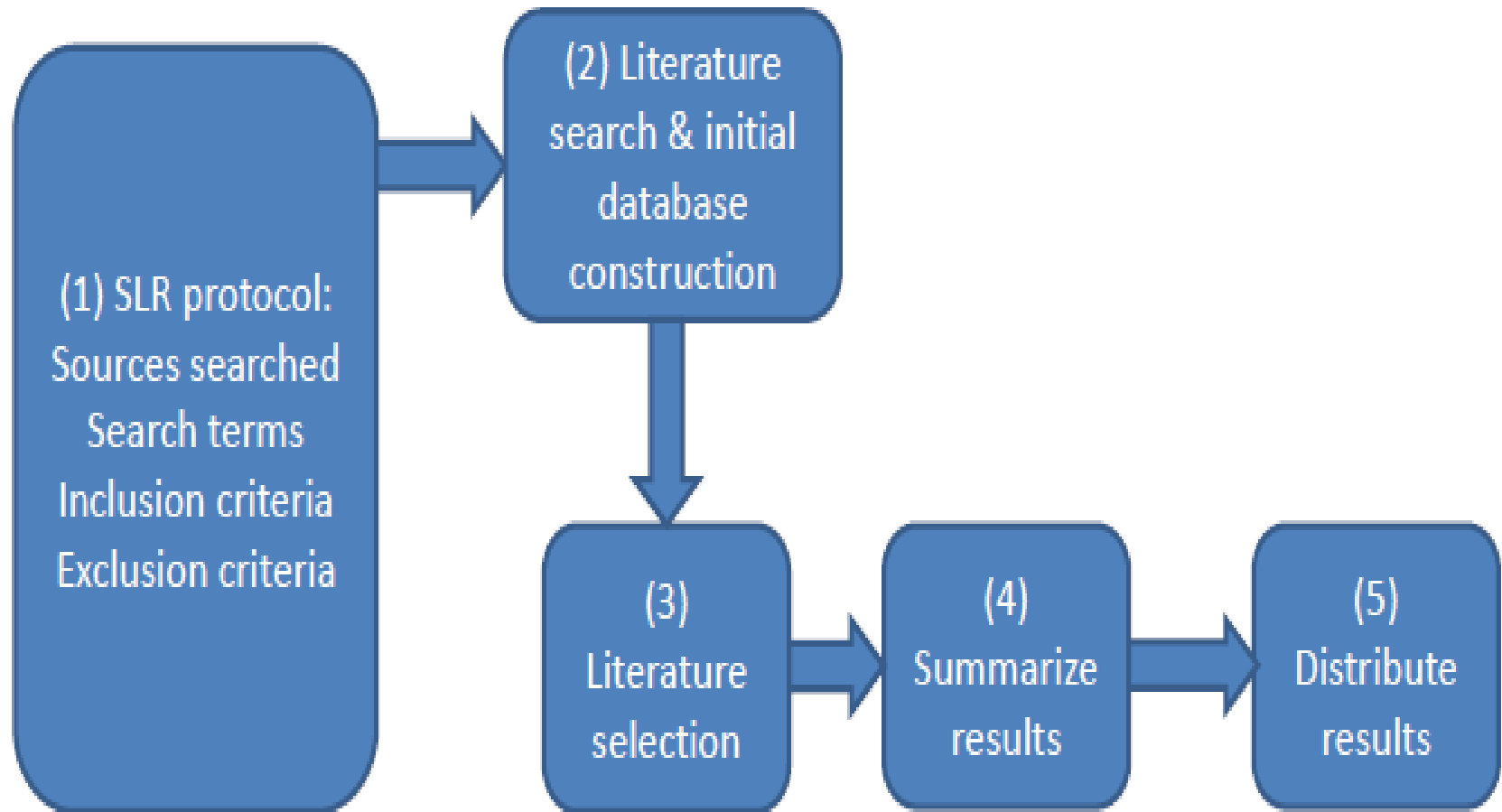
# The function of a business model

**5. Describe the position of the firm within the value network** (also referred to as an ecosystem) linking suppliers and customers, including identification of potential complementors and competitors.

# Methods

The methodological approach used in this paper is a review of scientific journal papers. Inspiration for the study was found in for instance the work of Collin et al. (1996), Hart (2001), Fagerberg (2012), and Hörte et al. (2008). Our working process is presented in the figure on the next slide:

# Methods



# Methods

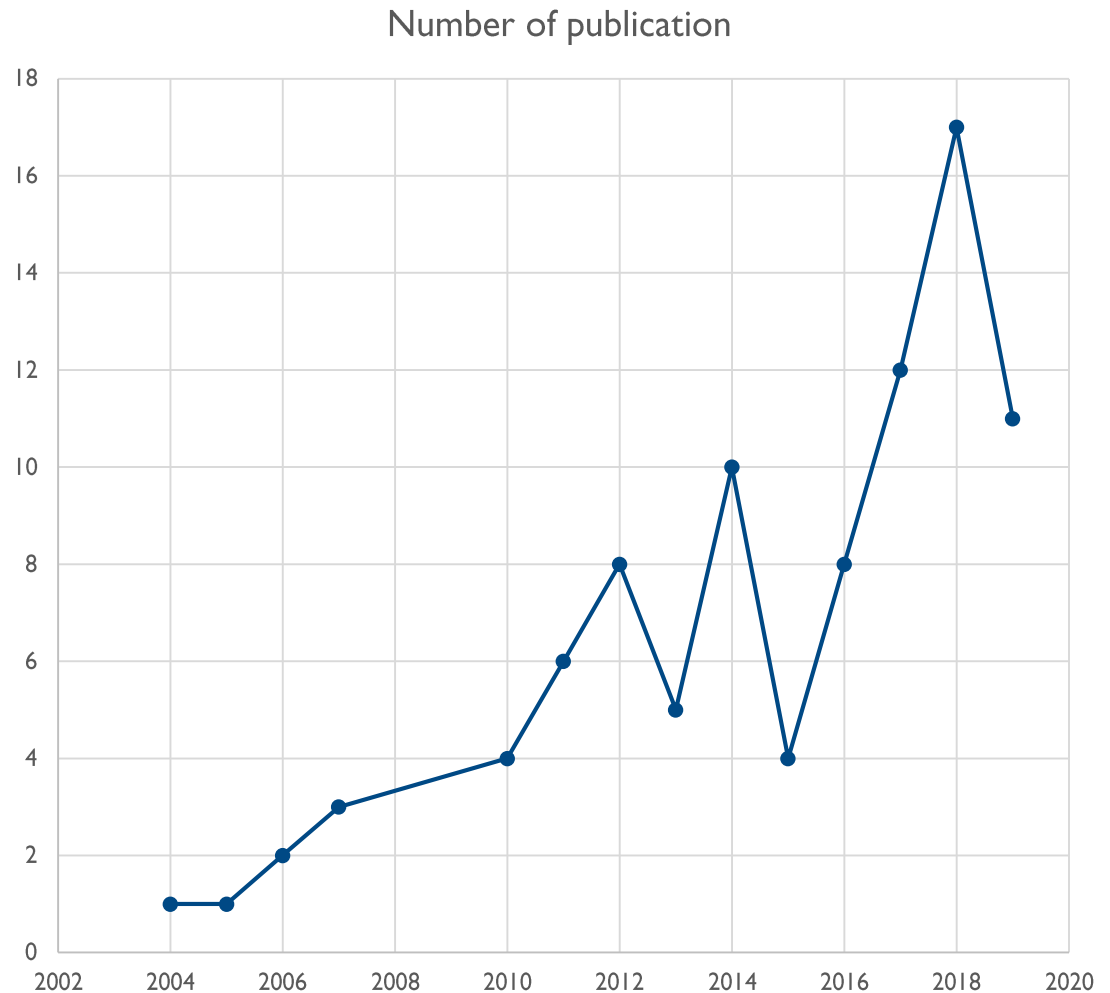
- Creating database – 145 articles
- Screening (ongoing) of every article; title and abstract – 100
- Exclusion (8 articles) due to different focus – 92
- 92 articles included in this presentation

# Methods

- After the screening - going through the full text of those papers in order to map the following: *key words, area of subjects, unit of analysis, affiliation country of authors, country of data collection, and methodological approach.*

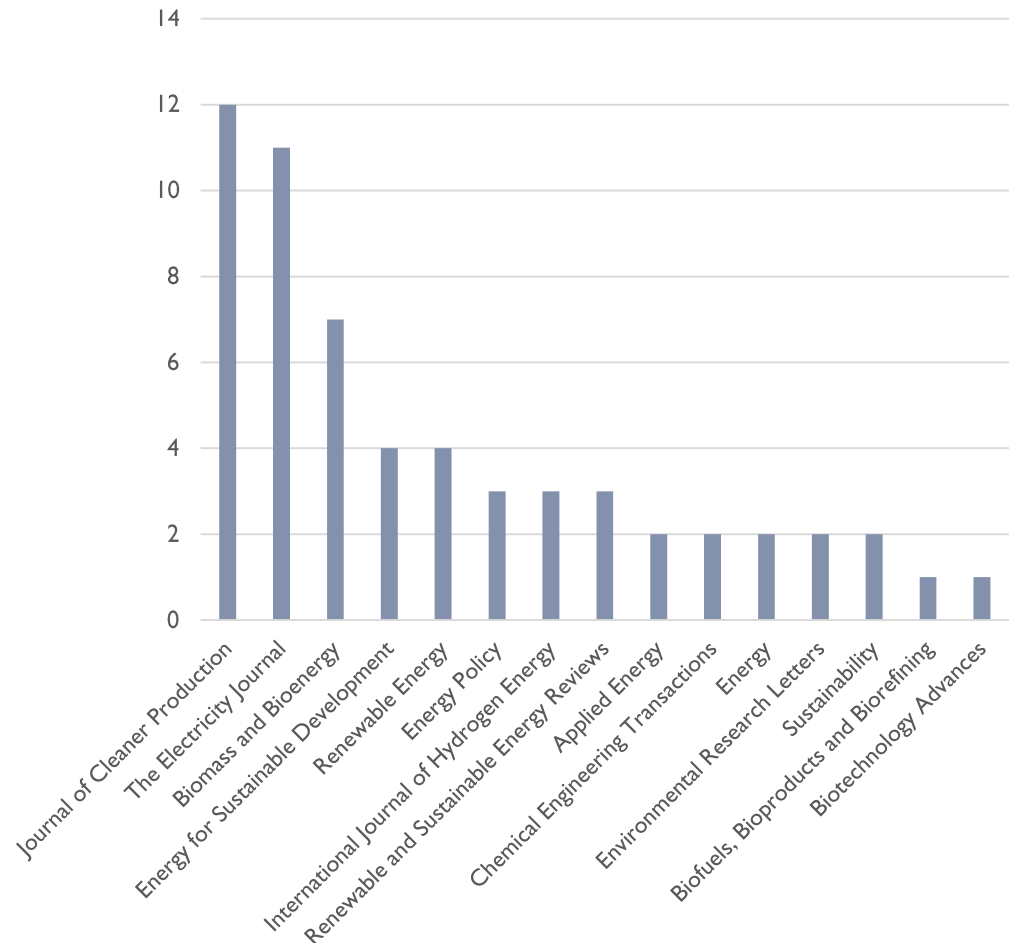
# Number of articles published from 1900 to 2019 on business models and Biomass

Year	Number of publication	Percentage
2019	11	12%
2018	17	18%
2017	12	13%
2016	8	9%
2015	4	4%
2014	10	11%
2013	5	5%
2012	8	9%
2011	6	7%
2010	4	4%
2007	3	3%
2006	2	2%
2005	1	1%
2004	1	1%
<b>Total</b>	<b>92</b>	<b>100%</b>



# The 15 journals that have published most articles on business models and Biomass

Journal Title	Number of publications
Journal of Cleaner Production	12
The Electricity Journal	11
Biomass and Bioenergy	7
Energy for Sustainable Development	4
Renewable Energy	4
Energy Policy	3
International Journal of Hydrogen Energy	3
Renewable and Sustainable Energy Reviews	3
Applied Energy	2
Chemical Engineering Transactions	2
Energy	2
Environmental Research Letters	2
Sustainability	2
Biofuels, Bioproducts and Biorefining	1
Biotechnology Advances	1

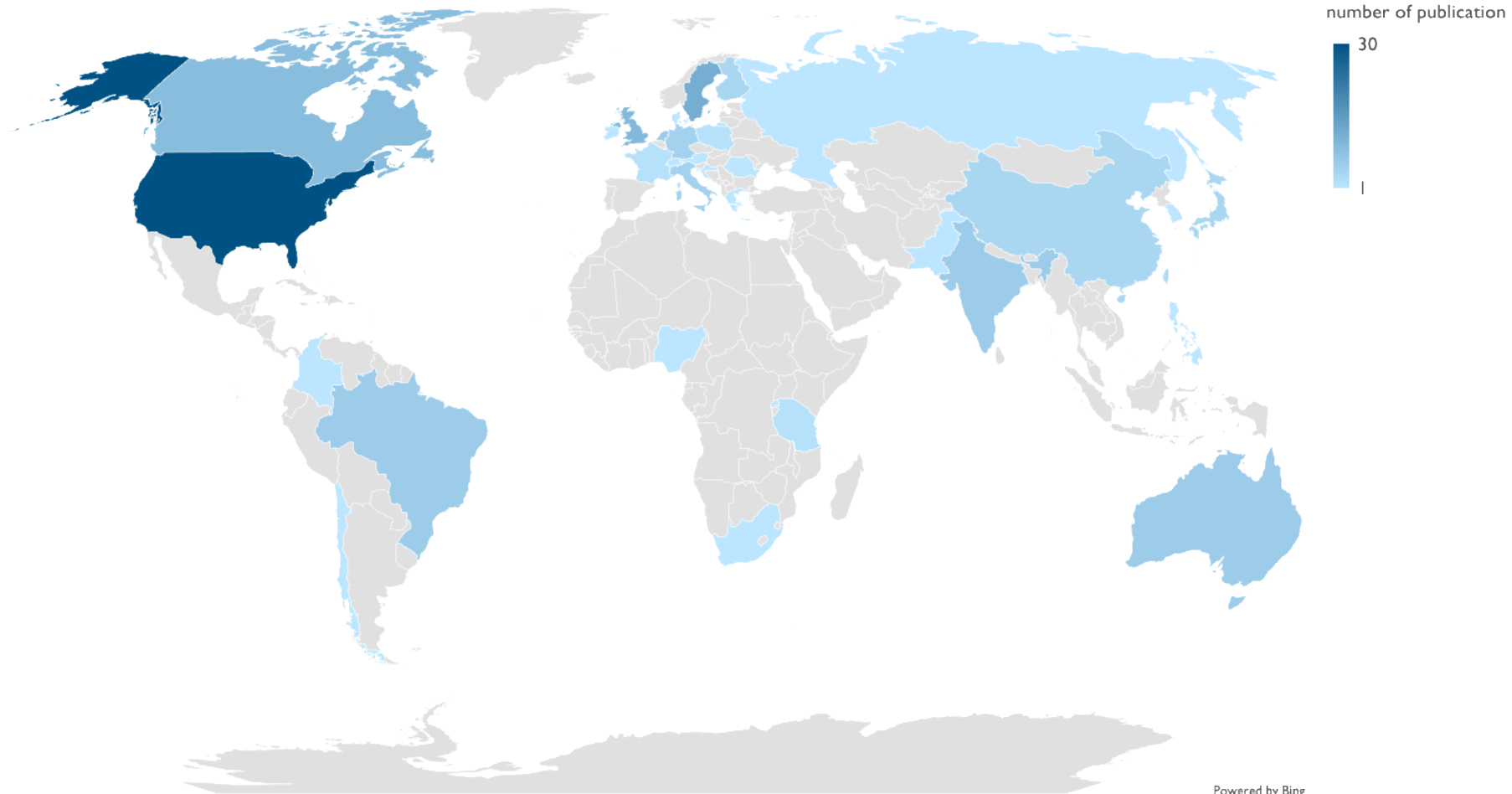




# Most cited articles

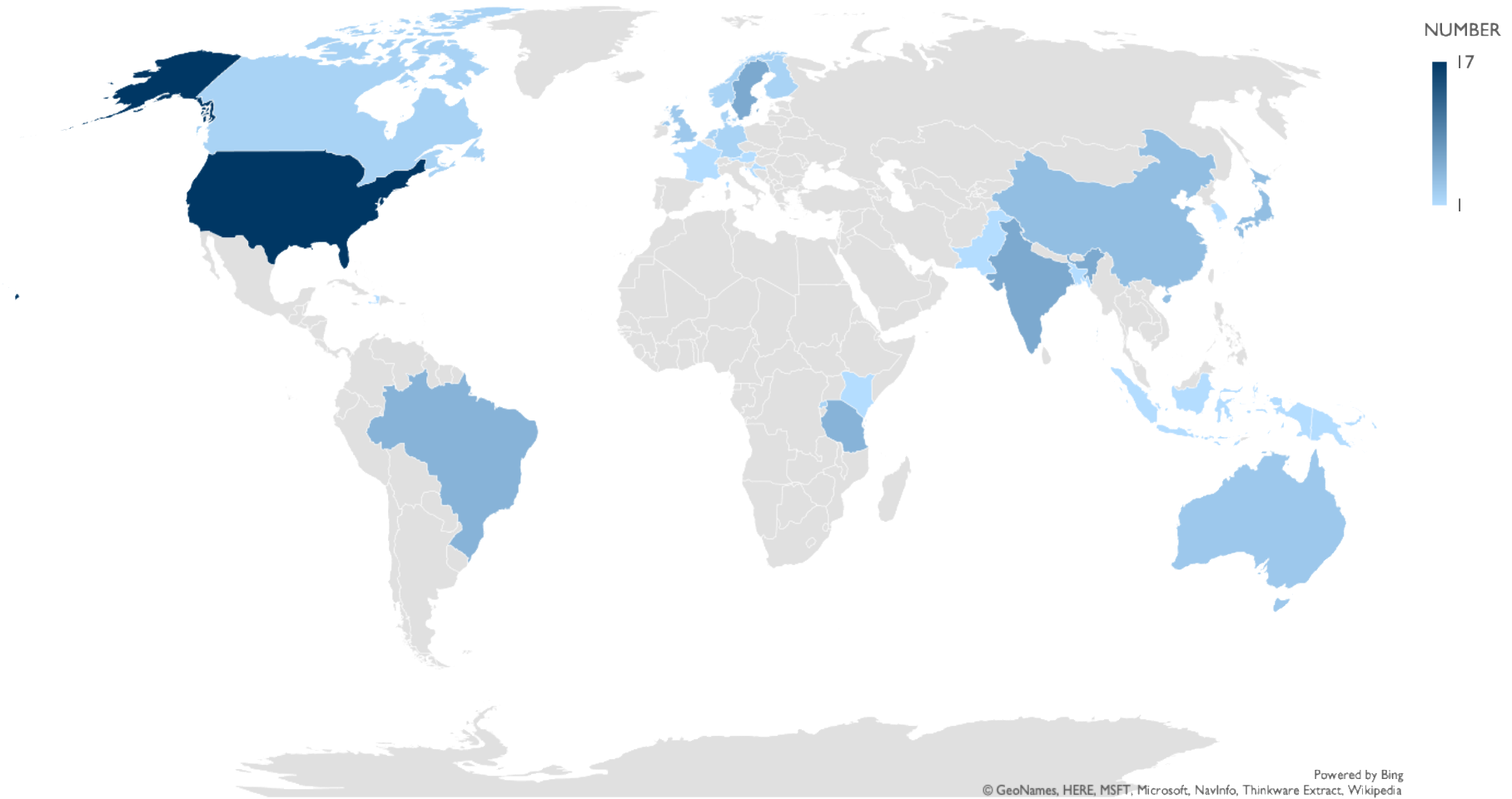
Authors	Year	Title	Journal Title	Impact factor of the journal	No of citations (Scopus citations)
C. K. Prahalad Di Benedetto, C. Anthony Nakata, Cheryl C.	2012	Bottom of the pyramid as a source of breakthrough innovations	Journal of Product Innovation Management	4,305	224
Tom L. Richard	2010	Challenges in Scaling Up Biofuels Infrastructure	Science	41,063	203
Peter Asmus	2010	Microgrids, Virtual Power Plants and Our Distributed Energy Future	The Electricity Journal	0,89	184
Mansoornejad, B. Chambost, V. Stuart, P.	2010	Integrating product portfolio design and supply chain design for the forest biorefinery	Computers and Chemical Engineering	3,334	73
Wesley Foell Shonali Pachauri Daniel Spreng Hisham Zerriffi	2011	Household cooking fuels and technologies in developing economies	Energy Policy	4,88	64
Gireesh Shrimali Xander Slaski Mark C. Thurber Hisham Zerriffi	2011	Improved stoves in India: A study of sustainable business models	Energy Policy	4,88	57
Xu, Dongmei Hao Liu	2018	Carbon Sequestration Capacity of The Forest	CHEMICAL ENGINEERING TRANSACTIONS	0,76	53
Pantaleo, A. Candelise, C. Bauen, A. Shah, N.	2014	ESCO business models for biomass heating and CHP: Profitability of ESCO operations in Italy and key factors assessment	Renewable and Sustainable Energy Reviews	10,556	52
Antonios D. Livieratos Panagiotis Lepeniotis	2017	Corporate venture capital programs of European electric utilities: Motives, trends, strategies and challenges	The Electricity Journal	0,819	49
Sari Hämäläinen Annukka Näyhä Hanna-Leena Pesonen	2011	Forest biorefineries – A business opportunity for the Finnish forest cluster	Journal of Cleaner Production	6,395	49

# Countries of Authors



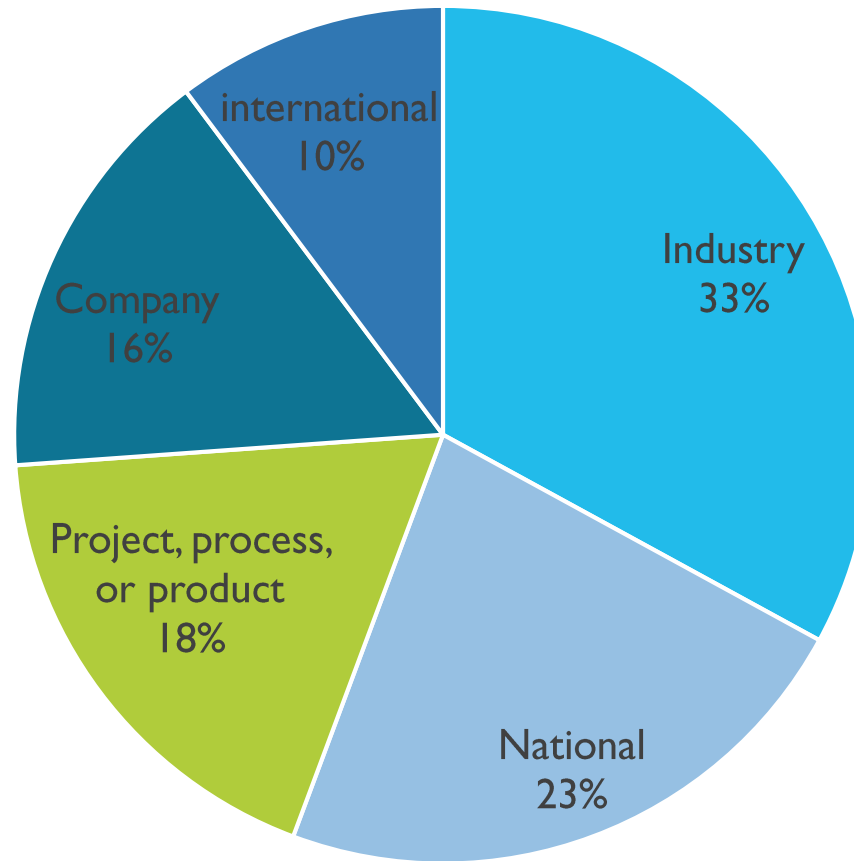
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# Countries of Empirics



# Unit of Analysis

Percent of publications

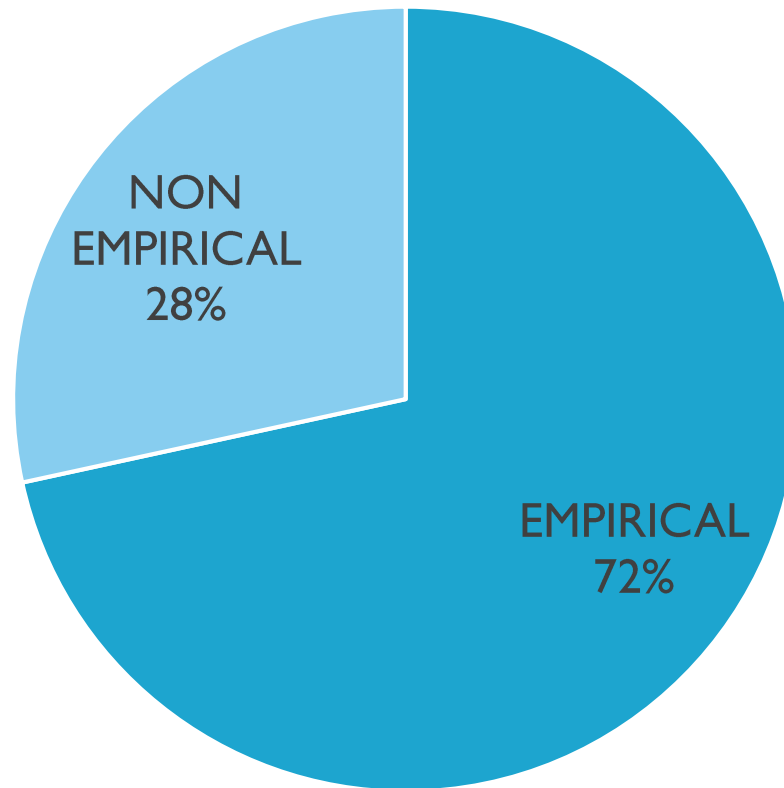






# Methodological approaches

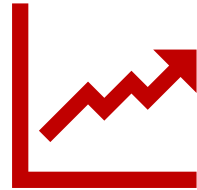
Method



# Main Areas of Discussion



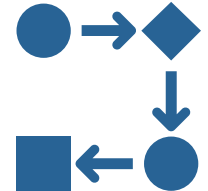
Policy



Long-term  
Viability



Environmental  
sustainability



Process Feasibility



***To be continued...***

***Thank you for your attention!***