

Appendix A. List of 84 documents from step 6 in the screening process

No.	Author(s) and Year	Title	Selected for the Final Set?	Reasons for Inclusion/Exclusion
1	Short et al. (2012)	Embedding Sustainability in Business Modelling through Multi-stakeholder Value Innovation	No	Bocken et al. (2013) is the updated version of the tool
2	Bocken et al. (2013)	A value mapping tool for sustainable business modeling	Yes	Tool mentioned in the title; included as nr 1
3	Girotra and Netessine (2013)	OM Forum—Business Model Innovation for Sustainability	Yes	Framework mentioned in the abstract; included as nr 2
4	Valkokari et al. (2014)	Road-mapping the business potential of sustainability within the European manufacturing industry	No	Focuses on opportunities and challenges of sustainable business development
5	Shao et al. (2014)	A Conceptual Framework for Business Model Innovation: The Case of Electric Vehicles in China	No	Not a clear framework for BMiFS
6	Bocken et al. (2015)	Value mapping for sustainable business thinking	No	The original tool is presented in Bocken et al. (2013). There were no updates to the original tool
7	Angeli and Jaiswal (2016)	Business Model Innovation for Inclusive Health Care Delivery at the Bottom of the Pyramid	No	Not a clear framework for BMiFS
8	Ernst et al. (2016)	The art museum as a lab to re-calibrate values toward sustainable development	No	Not intended for businesses
9	Gautier and Watrinet (2016)	Business Sustainability Study of an Innovative Multi-Stakeholders Public Concept	No	Not a clear framework for BMiFS
10	Geissdoerfer et al. (2016)	Design thinking to enhance the sustainable business modeling process - A workshop based on a value mapping process	Yes	Process mentioned in the title; included as nr 3
11	Hora et al. (2016)	Designing business models for sustainable mass customization: A framework proposal	Yes	Framework mentioned in the title included as nr 4
12	Joyce and Paquin (2016)	The triple-layered BMC: A tool to design more sustainable business models	Yes	Tool mentioned in the title; included as nr 5
13	Krivorotov et al. (2016)	Optimisation model for industrial complex competitiveness: A path to sustainable innovation process	No	Lacks a precise tool or process to follow
14	Oderanti and Li (2016)	A holistic review and framework for sustainable business models for assisted living technologies and services	No	Oderanti & Li (2018) is the updated version of the framework
15	Pekmez (2016)	Key Success Factors for Sustainable Strategic Information Systems Planning and Information Technology Infrastructure	No	Lacks a precise tool or process to follow

16	Najmaei and Sadeghinejad (2016)	Designing business models for creating and capturing shared value: An activity system perspective	No	Lacks a precise tool or process to follow
17	Schaltegger et al. (2016)	Business Models for Sustainability: A Co-Evolutionary Analysis of Sustainable Entrepreneurship, Innovation, and Transformation	No	Not a clear framework for BMiFS
18	Baldassarre et al. (2017)	Bridging sustainable business model innovation and user-driven innovation: A process for sustainable value proposition design	Yes	Process mentioned in the title; included as nr 8
19	Barth et al. (2017)	Toward a Conceptual Framework of Sustainable Business Model Innovation in the Agri-Food Sector: A Systematic Literature Review	Yes	Framework mentioned in the title; included as nr 9
20	Broman and Robèrt (2017)	A framework for sustainable strategic development	No	Focuses on describing the framework for Strategic Sustainable Development (FSSD)
21	Demartini et al. (2017)	A Manufacturing Value Modeling Methodology (MVMM): A Value Mapping and Assessment Framework for Sustainable M	No	Not a clear framework for BMiFS
22	França et al. (2017)	An approach to business model innovation and design for sustainable strategic development	Yes	Tool mentioned in the abstract; included as nr 10
23	Geissdoerfer et al. (2017)	The Cambridge Business Model Innovation Process	Yes	Process mentioned in the title; included as nr 11
24	Inigo et al. (2017)	Business model innovation for sustainability: exploring evolutionary and radical approaches through dynamic capabilities	Yes	Framework mentioned in the abstract; included as nr 12
25	Kurucz et al. (2017)	Relational leadership for strategic sustainability: practices and capabilities to advance the design and assessment of sustainable business models	No	Not a clear framework for BMiFS
26	Prendeville et al. (2017)	Uncovering ecodesign dilemmas: A path to business model innovation	No	Not a clear framework for BMiFS
27	Wadin et al. (2017)	Joint business model innovation for sustainable transformation of industries - A large multinational utility in alliance with a small solar energy company	No	Focuses on alliances for BMI
28	Yang et al. (2017a)	Value uncaptured perspective for sustainable business model innovation	Yes	Framework mentioned in the abstract; included as nr 16
29	Yang et al. (2017b)	Creating and Capturing Value Through Sustainability: The Sustainable Value Analysis Tool	Yes	Tool mentioned in the title; included as nr 17
30	Yu-Chen and Cai-Xia (2017)	The Strategies of Integrating Green Management and Business Model Innovation	No	Not a clear framework for BMiFS
31	Barth and Melin (2018)	A Green Lean approach to global competition and climate change in the agricultural sector - A Swedish case study	No	Not a clear framework for BMiFS

32	Bocken et al. (2018)	Experimenting with a circular business model: Lessons from eight cases	No	Focuses on circular business experimentation
33	Brenner (2018)	Transformative Sustainable Business Models in the Light of the Digital Imperative —A Global Business Economics Perspective	Yes	Framework mentioned in the abstract; included as nr 19
34	Calabrese et al. (2018)	Fostering sustainability-oriented service innovation (SOSI) through business model renewal: The SOSI tool	Yes	Tool mentioned in the title; included as nr 20
35	Oderanti and Li (2018)	Commercialization of eHealth innovations in the market of the UK healthcare sector: A framework for a sustainable business model	Yes	Framework mentioned in the title; included as nr 23
36	Pigosso et al. (2018)	Measuring the Readiness of SMEs for Eco-Innovation and Industrial Symbiosis: Development of a Screening Tool	No	A screening tool for eco-innovation
37	Rambow-Hoeschele et al. (2018)	Creation of a Digital Business Model Builder A Concept to Simulate a Digital Twin of a Business Model and Its Imperative Nature	No	Not a clear framework for BMiFS
38	Rezaee (2018)	Supply Chain Management and Business Sustainability Synergy: A Theoretical and Integrated Perspective	No	Does not focus on the BMiFS process
39	Bocken et al. (2019)	Sustainable business model experimentation by understanding ecologies of business models	Yes	Framework mentioned in the abstract; included as the nr 24
40	Dressler and Paunović (2019)	Toward a conceptual framework for sustainable business models in the food and beverage industry The case of German wineries	No	Introduces multiple SBMs, but not a type of support for BMiFS
41	Giourka et al. (2019)	The Smart City Business Model Canvas- A Smart City Business Modeling Framework and Practical Tool	No	Not intended for businesses
42	Zhang et al. (2019)	Developing Evaluation Frameworks for Business Models in China's Rural Markets	No	Focuses on an appraisal of BMs
43	Ali Shah et al. (2020)	Transformation toward Sustainable Business Models in Production: A Case Study of a 3D Printer Manufacturer	No	Not a clear framework for BMiFS
44	Alkire et al. (2020)	Transformative service research, service design, and social entrepreneurship: An interdisciplinary framework advancing wellbeing and social impact	No	Not a clear framework for BMiFS
45	Baldassarre et al. (2020a)	Implementing sustainable design theory in business practice: A call to action	Yes	Framework mentioned in the abstract; included as nr 25
46	Baldassarre et al. (2020b)	Addressing the design-implementation gap of sustainable business models by prototyping: A tool for planning and executing small-scale pilots	Yes	Tool mentioned in the title; included as nr 26
47	Bican and Brem (2020)	Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is There A Sustainable Digital?	No	Not a clear framework for BMiFS

48	Bradley et al. (2020)	A framework to explore the functioning and sustainability of business models	No	Focuses on the functionality and sustainability of BMs rather than BMiFS
49	Copani and Behnam (2020)	Remanufacturing with upgrade PSS for new sustainable business models	No	Not a clear framework for BMiFS
50	Cosenz et al. (2020)	Dynamic business modeling for sustainability: Exploring a system dynamics perspective to develop sustainable business models	Yes	Tool mentioned in the abstract; included as nr 27
51	Curtis and Mont (2020)	Sharing economy business models for sustainability	Yes	Tool mentioned in the abstract; included as nr 28
52	El Hilali et al. (2020)	Reaching sustainability during a digital transformation: a PLS approach	No	Not a clear framework for BMiFS
53	Fritz et al. (2020)	Framework conditions to design sustainable business models for decentralized water treatment technologies in Viet Nam for international technology providers	No	Not a clear framework for BMiFS
54	Gao and Li (2020)	Understanding sustainable business model: A framework and a case study of the bike-sharing industry	Yes	Framework mentioned in the title; included as nr 29
55	García-Muiña et al. (2020)	Sustainability Transition in Industry 4.0 and Smart Manufacturing with the Triple-Layered Business Model Canvas	Yes	Tool and process mentioned in the abstract; included as nr 30
56	Hanafizadeh and Mehrabioun (2020)	A Systemic Framework for Business Model Design and Development -Part B: Practical Perspective	No	Does not cover sustainability factors
57	Lamptey et al. (2020)	A framework for the adoption of green business models in the Ghanaian construction industry	No	Not a clear framework for BMiFS
58	Lardo et al. (2020)	The perspective of capability providers in creating a sustainable I4.0 environment	Yes	Framework mentioned in the abstract; included as nr 31
59	Lin et al. (2020)	How to innovate the service design of leisure farms: The innovation of sustainable business models	No	Lacks a clear tool or process to follow
60	Lüdeke-Freund (2020)	Sustainable entrepreneurship, innovation, and business models: Integrative framework and propositions for future research	Yes	Framework mentioned in the title; included as nr 32
61	Pardalis et al. (2020)	A triple-layered one-stop-shop business model canvas for sustainable house renovations	No	Use of existing tools

62	Reinhardt et al. (2020)	Sustainable business model archetypes for the electric vehicle battery second use industry: Toward a conceptual framework	Yes	Framework mentioned in the title; included as nr 33
63	Van der Merwe et al. (2020)	A Framework of Key Growth Factors for Small Enterprises Operating at the Base of the Pyramid	No	Not a clear framework for BMiFS
64	Sanchez-Planelles et al. (2021)	Building a theoretical framework for corporate sustainability	No	Focuses on sustainability-related concepts
65	Faria et al. (2021)	The business model innovation and lean startup process supporting startup sustainability	No	Not a clear framework for BMiFS
66	López-Nicolás, C. et al. (2021)	Towards Sustainable Innovative Business Models	Yes	Framework mentioned in the abstract; included as nr 34
67	Rehn, J. (2021)	Design Guidelines and Canvas for More Sustainable Leather Products - The Role of Design as a Driver for Sustainable Leather Goods in the 21st Century	No	No type of support offered
68	Armstrong and Grobbelaar (2022)	Sustainable business models for social enterprises in developing countries: a conceptual framework	No	Not a clear framework for BMiFS
69	Borges de Oliveira and de Oliveira (2022)	Making Hospitals Sustainable: Towards Greener, Fairer and More Prosperous Services	No	Not a clear framework for BMiFS
70	Cardeal et al. (2022)	Designing Sustainable Business Models to Reduce Spare Part Inventory	No	Not a clear framework for BMiFS
71	Ferlito and Faraci (2022)	Business model innovation for sustainability: a new framework	Yes	Framework mentioned in the title; included as nr 35
72	Gasparin et al. (2022)	Stories of value: Business model innovation adding value propositions articulated by Slow Storytelling	No	Not a clear framework for BMiFS
73	Hajiheydari et al. (2022)	Digital sustainable business model innovation: applying dynamic capabilities approach (DSBMI-DC)	Yes	Framework mentioned in the abstract; included as nr 36
74	Morioka et al. (2022)	Two-Lenses Model to Unfold Sustainability Innovations: A Tool Proposal from Sustainable Business Model and Performance Constructs	Yes	Tool mentioned in the title; included as nr 37
75	Moro et a. (2022)	Adding sustainable value in product-service systems business models design: A conceptual review towards a framework proposal	Yes	Framework mentioned in the title; included as nr 38
76	Obel and Kallehave (2022)	Designing a sustainable organization: the four I's framework	No	Not a clear framework for BMiFS
77	Oliveira-Dias et al. (2022)	Fostering business model innovation for sustainability: a dynamic capabilities perspective	Yes	Framework mentioned in the abstract; included as nr 39
78	Pedersen et al. (2022)	Navigating value networks to co-create sustainable business models: An actionable staging approach	No	Not a clear framework for BMiFS

79	Ringvold et al. (2022)	Developing Sustainable Business Models: A Microfoundational Perspective.	Yes	Proposes a type of support for BMiFS; included as nr 40
80	Sharma et al. (2022)	Business Model Innovation to Address Vegetable Supply Chain Issues: A Case Study of an Indian Startup	No	Not a clear framework for BMiFS
81	Schoormann et al. (2022)	Designing business model development tools for sustainability—a design science study	No	Not a clear framework for BMiFS
82	Venturelli et al. (2022)	A dynamic framework for sustainable open innovation in the food industry	No	Not a clear framework for BMiFS
83	Wadin and Bengtsson (2022)	The Evolution of Capabilities Underpinning Business Model Innovation for Sustainability in Large Incumbent Firms	No	Not a clear framework for BMiFS
84	Walsh et al. (2022)	A Systems Framework for Infrastructure Business Models for Resilient and Sustainable Urban Areas	No	Not a clear framework for BMiFS

Appendix B. Summary of selected types of support focusing on their testing and validation, generalization, and possible extension on previous ones.

No.	Tested*	Target User	Level of User Involvement	Theoretical / Experimental	Offers User Guidelines?	Applied Research Method	Domain
1	Yes	Businesses, academics, students	Series of 13 workshops	Experimental	No	Multiple-case studies	Generic
2	No	None mentioned	None	Theoretical	No	Conceptual approach	Generic
3	Yes	Businesses, researchers, students	Series of workshops	Experimental	No	A mix of literature review and practitioner input	Generic
4	Yes	Businesses	Series of workshops	Experimental	No	A mix of literature review and expert input	TV manufacturing industry
5	Yes	Businesses, students, entrepreneurs, industry professionals	Consulting engagements	Experimental	No	Action research	Generic
6	No	None mentioned	None	Experimental	No	Multiple-case study	Generic
7	Yes	None	None	Theoretical	No	Transdisciplinary literature review	Generic
8	Yes	Business Managers	Workshops	Experimental	No	Research through design	Generic
9	No	None mentioned	None	Theoretical	No	Literature review	Agri-food sector
10	Yes	Businesses	Workshops and meeting	Experimental	No	Single-case study	Generic
11	Yes	Start-ups	Series of workshops	Experimental	No	A mix of literature review, interviews with experts, and single-case study	Generic
12	No	None mentioned	None	Experimental	No	Multiple-case study	Generic
13	No	None mentioned	None	Experimental	No	Multiple-case study	Generic
14	No	None mentioned	None	Experimental	No	Explanatory research	Generic
15	Yes	Businesses	Workshops	Experimental	No	Multiple-case study	Clothing sector
16	Yes	Businesses	Workshops	Experimental	No	Multiple-case study	Manufacturing companies
17	Yes	Business	Series of facilitated workshops	Experimental	No	Multiple-case study	Generic
18	Yes	Businesses	None	Experimental	No	Literature review and single-case study	Industrial products
19	No	None mentioned	None	Theoretical	No	Literature review	Generic
20	Yes	Project	None	Experimental	No	Single-case study	Service-oriented
21	Yes	Businesses, consultants, students	Workshops	Experimental	No	Single-case study	Farm-based biogas industry
22	No	Business practitioners	Interviews	Theoretical	No	Literature review	Generic
23	Yes	Healthcare organizations	Facilitated workshops	Experimental	No	Exploratory investigation and workshops	eHealth

24	Yes	Businesses	Experiments	Experimental	No	Multiple-case study	Generic
25	No	None mentioned	None	Theoretical	No	A mix of literature review and expert interviews	Generic
26	Yes	Businesses	Plan and execute the tool	Experimental	No	Design science methodology	Generic
27	No	None mentioned	None	Theoretical	No	Literature review	Clothing sector
28	Yes	Researchers	Feedback sessions	Theoretical	No	Literature review	Sharing economy
29	No	None mentioned	None	Experimental	No	Embedded single-case study	Bike-sharing industry
30	No	None mentioned	None	Experimental	No	Single-case study	Ceramic tile industry
31	No	None mentioned	None	Experimental	No	Single-case study	Industry 4.0
32	No	None mentioned	None	Theoretical	No	Literature review	Generic
33	No	None mentioned	None	Experimental	No	Multiple-case study	EV industry
34	No	None mentioned	None	Theoretical	No	Literature Review	Generic
35	No	None mentioned	None	Theoretical	No	Literature Review	Generic
36	No	None mentioned	None	Experimental	No	Multiple-case study	Generic
37	No	None mentioned	None	Experimental	No	Mixed method	Generic
38	No	None mentioned	None	Experimental	No	Case study	Generic
39	No	None mentioned	None	Experimental	No	Case study	Generic
40	No	None mentioned	None	Experimental	No	Case study	Generic

*Applied research method indicate how support types were tested/validated.

Appendix C. Intended purposes of the selected types of support.

No.	Stated Purpose
1	Assist BMiFS by understanding the value proposition and stakeholder groups
2	Facilitate BMI for sustainability by focusing on What, When, Who, and Why attributes
3	Support BMiFS by combining it with design thinking
4	Assist in the integration of sustainable mass customization by offering generic SBM patterns
5	Help explore sustainability-oriented BMI
6	Facilitate the journey toward SBMs: organizational transformation
7	Assist BMiFS by offering a detailed ontology of a strongly SBM
8	Improve sustainable development of business practices with a sustainable value proposition design process
9	Help understand BMiFS in the agri-food sector
10	Support BMI and design for sustainable strategic development
11	Guide BMiFS process: phases, process, activities, challenges
12	Help understand social and environmental aspects of BMI via dynamic capabilities framework
13	Support BMiFS: from sustainability challenges to competitive advantage
14	Assist BMiFS through service design
15	Help SBM development through an experimentation approach
16	Offer a perspective on BMI for sustainability focusing on value uncaptured
17	Facilitate BMiFS by identifying value uncaptured via value analysis
18	Help design SBMs by focusing on value triangle (value proposition for and with multiple stakeholders)
19	Multifaceted framework for sustainable, transformative BMs
20	Help business practitioners understand how BM components can lead to sustainability innovation
21	Help transform BMs toward sustainability: focus on early stages of the process
22	Support discussion, reflection, and generation of SBM ideas
23	Support eHealth innovation commercialization through SBMs
24	SBM experimentation by understanding ecologies of BMs
25	Assist implementation of sustainable theory in business practice - help implement sustainable innovation ideas
26	Assist in bridging the design-implementation gap of SBM ideas - focus on small-scale pilots
27	Proposing a dynamic approach to business modeling for sustainability - DBMfS Canvas
28	Support design and implementation of sharing economy BMs for sustainability
29	Help analyze and design SBMs
30	Facilitate sustainability transition in light of Industry 4.0 and Smart Manufacturing
31	Facilitate implementation of sustainable Industry 4.0 BM transformation
32	Support entrepreneurs in using BMs to unlock and commercialize sustainability innovations
33	Help achieve more SBMs - focus on battery second use (B2U) market in electric vehicle (EV) industry
34	Assist BMiFS initiatives
35	Guide for organizations that aspire to increase the level of sustainability
36	Assist sustainable digital BMI
37	Assist in the process of exploring opportunities toward an SBM
38	Assist in developing SBMs through product-service systems
39	Guide achieve BMiFS
40	Facilitate established firms in adding a new SBM