



PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	<p>Identify the report as a systematic review.</p> <p>This article is a qualitative study applying a systematic literature review approach to synthesize and expand the knowledge on what influences actors to participate in industrial symbiosis networks.</p>	Page 1
ABSTRACT			
Abstract	2	<p>See the PRISMA 2020 for Abstracts checklist.</p> <p>The PRISMA 2020 for Abstract checklist has been consulted and applied where relevant.</p>	Page 1
INTRODUCTION			
Rationale	3	<p>Describe the rationale for the review in the context of existing knowledge.</p> <p>From the literature, it is suggested that drivers, barriers, and enablers for industrial symbiosis (IS) collaborations differ between different contextual settings. Previous studies of IS literature have found that type of symbiosis network, sector affiliation, and urban (or geographical) context affect the drivers, barriers, and enablers of IS. However, these studies have not identified how these factors may impact differently at the individual actor level within IS networks.</p> <p>Walls and Paquin [12] find that there is insufficient research at the individual actor level in IS. They specifically point to the lack of research on decisions by individual firms to participate in symbiosis collaboration. Studying the individual actor level may contribute with important insights on the success of network implementation [12].</p>	Page 1-2
Objectives	4	<p>Provide an explicit statement of the objective(s) or question(s) the review addresses.</p> <p>The objectives of this paper are 1) to identify factors, i.e., drivers, barriers, and enablers, that influence decisions by actors to participate in symbiosis collaborations and 2) to explore, based on the current literature, <i>if</i> and <i>how</i> the perception and impact of these factors differ depending on individual actor characteristics and specific contextual aspects.</p>	Page 2
METHODS			
Eligibility criteria	5	<p>Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.</p> <p>The literature search was conducted in the databases Web of Science and Scopus and resulted in 326 publications. The results in Web of Science and Scopus overlapped to some extent and duplicates between the databases were excluded, rendering 160 publications for abstract review. To be included in the sample for full-text screening, a requirement was that the abstract include either “industrial symbiosis” OR “urban symbiosis” in combination with at least one of the search words mentioned in the methodology chapter. Publications not meeting these criteria were excluded from further analysis. The abstract review resulted in 65 publications eligible for full text assessment. In the full text assessment, the focus was on identifying the context in which the search words appear and whether the scope of the publication was relevant for the review. The relevance criterion was that one of the main contributions of the publication was to study influencing factors. As such, it needed to not be merely mentioned as a sidenote but rather be an essential part of the results and analysis. The studies were grouped according to the search strings used in the literature search.</p>	Page 3
Information sources	6	<p>Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.</p> <p>The literature search was conducted in the databases Web of Science and Scopus and resulted in 326 publications. The last search was conducted on August 24, 2021. The results in Web of Science and Scopus overlapped to some extent and duplicates between the databases were excluded, rendering 160 publications for abstract review. The abstract review resulted in 65 publications eligible for full text assessment. The full text assessment excluded another 24 publications, resulting in 39 publications for further analysis. While conducting the full text assessment, an additional 7 publications were identified as relevant for the review. Thus, 46 publications were included in the final sample for review and qualitative analysis.</p>	Page 3
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Appendix A



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		The search strings that were used are provided in Appendix A.	page 23
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. In the full text assessment, the focus was on identifying the context in which the search words appear and whether the scope of the publication was relevant for the review. The relevance criterion was that one of the main contributions of the publication was to study influencing factors. As such, it needed to not be merely mentioned as a sidenote but rather be an essential part of the results and analysis.	Page 3
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. A literature review matrix was created to systematically document the main contribution of each article and its relevance to this review. The final literature sample was coded and analyzed qualitatively using the QSR International software program Nvivo. The coding in Nvivo was conducted to organize different influencing factors into either drivers, barriers, or enablers.	Page 5
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. Nvivo was used to decide which results to collect. The literature review process is illustrated in a flow chart on page 6 (figure 2).	Page 5-6
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. To avoid missing information in terms of missed publications regarding drivers, barriers and enablers, the literature collection process also included a step where the full-text analysis was used to identify additional publications of relevance. Hence, the literature collected through the systematic search in Scopus and Web of Science was screened to identify citations of relevant literature. These publications were collected and analysed in full-text and included if relevant to the study.	Page 3-4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. The literature selection process is described in text on page 3 and illustrated in Figure 1 on page 4. A general discussion on the potential bias in the literature sample is found on page 26.	Page 3-4 and 21-22
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. No statistical analysis was conducted. Results were analysed qualitatively.	-
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). The final literature sample was coded and analyzed qualitatively using the QSR International software program Nvivo. The coding in Nvivo was conducted to organize different influencing factors into either drivers, barriers, or enablers.	Page 5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. No statistical analysis was conducted. Results were analysed qualitatively.	-
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses. Synthesized results of drivers, barriers and enablers are presented in Table 1, Table 2 and Table 3. The procedure of how these results were extracted from the literature is explained on page 5 and illustrated in figure 2, page 6.	Page 5-14



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	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. Nvivo was used to systematically and qualitatively extract results from the collected studies. Nvivo is a software program used to code and analyse qualitative data.	Page 5
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). No statistical analysis was conducted. Results were analysed qualitatively	-
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results. No statistical analysis was conducted. Results were analysed qualitatively	-
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). No statistical analysis was conducted. Results were analyzed qualitatively. However, to avoid missing information in terms of missed publications regarding drivers, barriers and enablers, the literature collection process also included a step where the full-text analysis was used to identify additional publications of relevance. Hence, the literature collected through the systematic search in Scopus and Web of Science was screened to identify citations of relevant literature. These publications were collected and analysed in full-text and included if relevant to the study.	Page 3-4
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. No statistical analysis was conducted. Results were analysed qualitatively	-
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. This is presented in text and in a flow chart that follows the PRISMA 2020 guidelines (Figure 1, page 4). The literature selection process is presented in the methodology section.	Page 3-4
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. In the full text assessment, the focus was on identifying the context in which the search words appear and whether the scope of the publication was relevant for the review. The relevance criterion was that one of the main contributions of the publication was to study influencing factors. As such, it needed to not be merely mentioned as a sidenote but rather be an essential part of the results and analysis. Studies where this criterion was not met were excluded.	Page 3
Study characteristics	17	Cite each included study and present its characteristics. All articles included in the qualitative analysis are cited and included in the bibliography, however, due to the qualitative nature of this review and the sample literature it has not been possible to present each study's characteristics.	-
Risk of bias in studies	18	Present assessments of risk of bias for each included study. The data and literature sample analyzed in this review is of a qualitative nature. Presenting assessment of risk of bias for each study is not feasible for a journal article since it would involve extensive semantic analysis.	-
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. No statistical analysis was conducted. Results were analysed qualitatively	-
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. No statistical analysis was conducted. Results were analysed qualitatively	-



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	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. No statistical analysis was conducted. Results were analysed qualitatively	-
	20c	Present results of all investigations of possible causes of heterogeneity among study results. No statistical analysis was conducted. Results were analysed qualitatively	-
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. No statistical analysis was conducted. Results were analysed qualitatively	-
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. No statistical analysis was conducted. Results were analysed qualitatively	-
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. No statistical analysis was conducted. Results were analysed qualitatively	-
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Page 20-22
	23b	Discuss any limitations of the evidence included in the review. The results in this review are based on qualitative analysis of case studies concerning industrial symbiosis. Limitations are discussed on page 26.	Page 21-22
	23c	Discuss any limitations of the review processes used The results in this review are based on qualitative analysis of case studies concerning industrial symbiosis. Limitations are discussed on page 26.	Page 21-22
	23d	Discuss implications of the results for practice, policy, and future research.	Page 20-22
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Not registered
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Not prepared
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Not applicable
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. This work was supported by the Graduate School in Energy Systems (FoES) funded by the Swedish Energy Agency (project number: P46016-1).	Page 22
Competing interests	26	Declare any competing interests of review authors. The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.	
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. Publicly available datasets were analyzed in this study from Scopus and Web of Science. Data can be retrieved using the same search	Page 3-4 and Appendix A



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		string provided in this study.	

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

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