

## SUPPLEMENTARY MATERIAL

### 1. Details of the Bibliometric Analysis

This material provides support for the bibliometric analysis described in the Materials and Methods (Item 2) section of the Manuscript, by including graphs and tables that provide additional details on the analysis of data from the selected case studies and reviews.

In Figure S1 is shown all the papers, case studies and reviews, selected through the methodology explained in Section 2.2 of the Manuscript, between 2009 and 2021 (on February 24<sup>th</sup>). The year with the most publications that fit the selection criteria is 2019, while none of the articles selected were from 2012 or 2016. Additionally, in 2018 and 2019, the five review papers published exceeded the number of original papers.

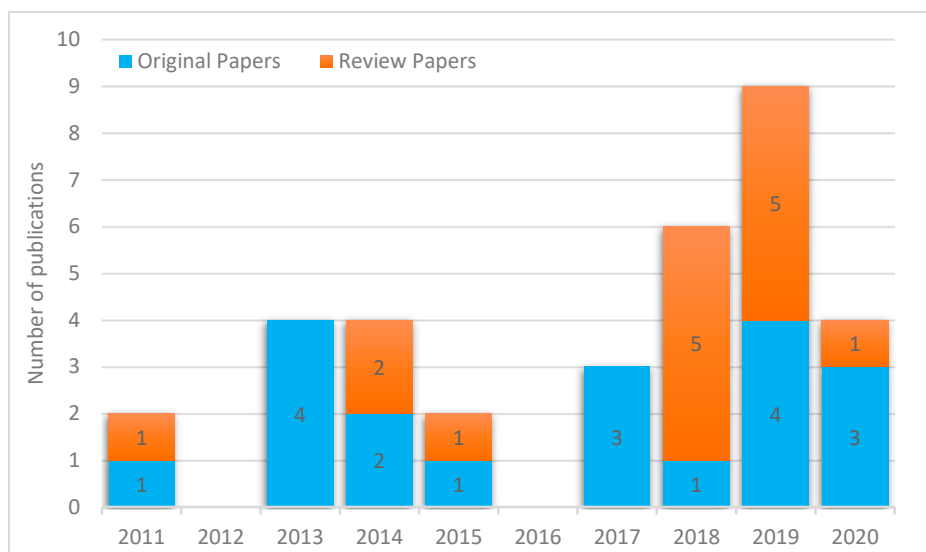


Figure S1 – Number of original and review papers in each year of the selected time period.

Figure S2a shows from the 19 articles with applied or methodological studies, the country with the most Social Life Cycle Assessments (S-LCA) conducted was Brazil with three papers, followed by Spain, Italy, Peru and Turkey with two. The other countries on the map had one research published each. As for the country of the main author (Figure S2b), of the 32 articles, Brazil and Italy had four papers each, Austria had three, followed by Germany, China, USA and Switzerland with two each. The other countries on the map had just one research per author/country.

In Tables S1 and S2 is presented a classification of certain characteristics of interest of the articles with studies that included social assessment and MSW. Aspects about the type and purpose of the study, inventory and characterization/methodology used were identified in the phases of the bibliometric analysis. This aimed to identify items of the S-LCA methodology according to ISO 14040 [20] and UNEP-SETAC [1].

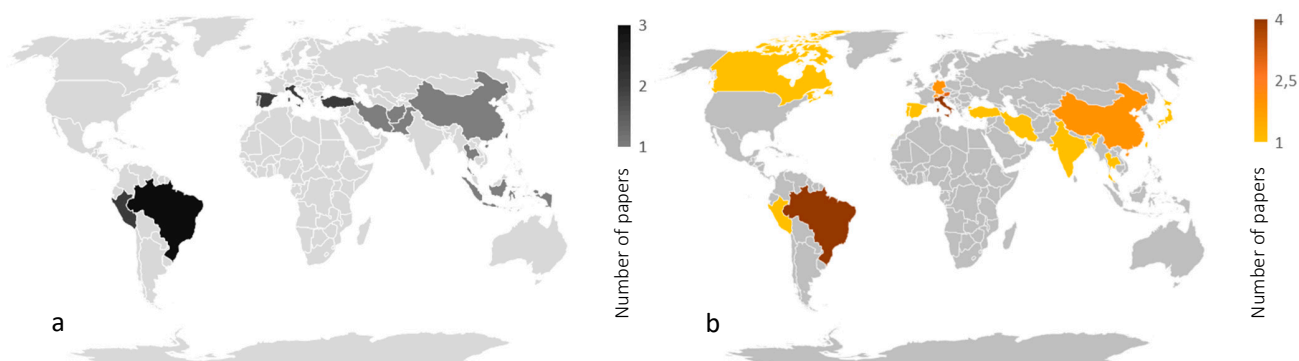


Figure S2 – Number of: a) S-LCA studies by country; b) papers by country of the main author.

Table S1 - Bibliometric analysis of Social Life Cycle Assessment phases.

Authors	Study type	Geographic space	Goal	Inventory	Indicator	Characterization/methodology			
			System/Product analysed	Process phases	Inventory data type	Indicator type	Aggregation type	Characterization model	Weighting
ALEISA and AL-JARALLAH 2018 [22]	Sustainability	Country	MSWM	T/D	Primary	Specific	Numeric	Other	Yes
APARCANA and SALHOFER, 2013 [17]	S-LCA	City	MSW Recycling	C/R	Primary	UNEP/SETAC (2009)	Scales	Type I	n.a.
AZIMI; DENTE; HASHIMOTO, 2020 [30]	S-LCA	City	MSW Recycling	C/R	Primary	Spec.+UNEP/SETAC	Mixed	Type I	No
DE OLIVEIRA et al, 2020 [55]	Sustainability	City	MSW Recycling	T/D	Primary	Specific	n.s.	Other	n.a.
DI MARIA et al, 2020 [31]	Sustainability	Country	MSWM	C/R/T/D	Primary+Secondary	UNEP/SETAC (2009)	Numeric	Mixed	n.a.
FALCONE et al, 2019 [56]	Sustainability	Continent	MSWM	n.a.	n.a.	Spec.+UNEP/SETAC	n.s.	Other	n.a.
FERRÃO et al, 2014 [57]	Sustainability	Country	MSW Recycling	C/R/T/D	Primary	Specific	n.s.	Other	n.a.
FOOLMAUN and RAMJEEAWON, 2013 [8]	S-LCA+LCA	Country	MSW Recycling	C/R/T/D	Primary	UNEP/SETAC (2009)	Scales	Type I	No
HARIJANI et al, 2017 [32]	Sustainability	City	MSWM	C/R/T/D	Primary	UNEP/SETAC (2009)	n.s.	Approx. Type I	Yes
IBANEZ-FORES et al, 2019 [6]	S-LCA	City	MSW Recycling	C/R/T/D	Primary	UNEP/SETAC (2009)	Scales	Type I	No
LEHMANN et al, 2011 [34]	S-LCA	Countries	MSWM	C/R/T/D	Primary	UNEP/SETAC (2009)	n.s.	Type I	n.a.
LU; LEE; HONG, 2017 [58]	S-LCA+E-LCA	Country	MSWM	T	Secondary	Spec.+UNEP/SETAC	n.s.	Other	n.a.
MENIKPURA et al, 2013 [57]	Sustainability	City	MSWM	C/R/T/D	Secondary	Specific	Mixed	Mixed	n.a.
REICHERT and MENDES, 2014 [3]	Sustainability	City	MSWM	C/R/T/D	Primary	Specific	Numeric	Approx. Type I	No
UMAIR; BJORKLUND; PETERSEN, 2015 [29]	S-LCA	Country	MSW Recycling	C/R	Primary	UNEP/SETAC (2009)	Scales	Type I	No

YILDIZ-GEYHAN; AL-TUN-CIFTCIOGLU; KADIRGAN, 2017 [19]	S-LCA	City	MSW Recycling	C/R	Primary	Spec.+UNEP/SETAC	Numeric	Type I	No
YILDIZ-GEYHAN et al, 2019 [7]	S-LCA+LCA.	City	MSW Recycling	C/R	Primary	Spec.+UNEP/SETAC	Numeric	Type I	Yes
ZHOU et al, 2019 [33]	Sustainability	City	MSWM	T	Primary	Spec.+UNEP/SETAC	Numeric	Approx. Type I	Yes

**Notes:**

**Study types:** S-LCA – Social Life Cycle Assessment, LCA – (Environmental) Life Cycle Assessment, Sustainability – Social, Environmental and Economic Life Cycle Assessment;

**System/Product:** MSW – Municipal Solid Waste (product), MSWM – MSW management system;

**Processes:** C – collection, T – treatment, R – recycling, D –final disposal, n.a. –not applicable;

**Aggregation type:** Numeric – predominant use of formulas to compute the result (quantitative data); Scales – coding of the subcategories/indicators through scales or tables (qualitative data); Mixed – use of more than one valuing method in the characterization process, n.s. – unspecified/other characterization methods;

**Characterization model:** Approx. Type I – model that is close to Type I, Mixed – uses more than one model, Other – uses a model besides Type I or II;

**Weighting:** Yes – used different weights, No – Used the same weight for all (sub)categories, n.a. – not applicable for the type of data or calculations made.

Table S2 – Bibliometric analysis of the phases of the S-LCA case study papers.

Authors	System limits	Scoring level	Aggregation level	Functional unit	Studied categories	Subcategories	Indicators	Survey used
ALEISA and AL-JARALLAH, 2018 [22]	GtC	n.a. (used AHP)	Indicator	1 metric ton of MSW	-	-	Employment, Quality of Life, Health and Safety, Land Use, Agriculture, Legislation	Yes
APARCANA e SALHOFER, 2013 [5]	GtG	2 levels (0/1)	Subcategory	60 kg/inhabitant/year of source-separated recyclables	Human rights Working conditions Socio-economic repercussions	Child labor, Discrimination, Freedom for association and collective bargaining, Working hours, Minimum/fair income, Recognized employment relationships and fulfilment of legal social benefits, Physical work conditions, Psychological work conditions, Education	One or more indicators per subcategory	Yes
AZIMI; DENTE; HASHIMOTO, 2020 [30]	GtG	2 levels (0/1)	Stakeholders category	-	Consumers, Local community, Workers, Society, Value chain actors	Community engagement, Feedback mechanism, Local employment, Health and safety, Child labor, Equal opportunities/discrimination, Fair income, Working hours, Contribution to economic development, Technological development, End of life responsibility	One or more indicators per subcategory	Yes
DI MARIA et al, 2020 [31]	GtG	Multilevel	Stakeholders category	1 metric ton of MSW	Consumers, Local community, Workers, Society, Value chain actors, "State-government Bodies"	Human rights, Working conditions, Health and safety, Cultural heritage, Governance, Socio-economic repercussions, "Transversal"	Human health, New jobs, Distance to recycling target	No
FERRÃO et al, 2014 [57]	GtG	n.a.	Indicator	Total amount of packaging waste managed in 2001	-	-	Job creation	n.a.
FOOLMAUN e RAMJEEAWON, 2013 [8]	GtC	Multilevel	Subcategory	1 metric ton of PET	Local community, Workers, Society	Child labor, Fair salary, Forced labor, Social benefit/social security, Discrimination, Contribution to economic development (Job creation), Community engagement	One or more indicators per subcategory	Yes
HARIJANI et al, 2017 [32]	GtG	n.a. (used AHP)	Subcategory	-	Consumers, Local community, Workers, Society, Value chain actors	Local development, Delocalization and migration, Healthy living conditions, Community engagement, Supplier relationships, Health and safety, Economic development	Creating job opportunities, Social acceptance, Damage to worker, Annual turnover, Quality of products	Yes, to specialists
IBANEZ-FORES et al, 2019 [6]	GtG	Multilevel	Subcategory (Estimated, as it presents the metrics for it.)	-	-	Working rights, Human rights, Working conditions, Equal opportunities/discrimination, Health and safety, Working benefits, Socio-economic conditions, Community satisfaction and participation, Value chain actors, Professional development, Local development, Governance	One or more indicators per subcategory	Yes
MENIKPURA et al, 2012 [57]	GtC	n.a.	Area of Protection	1 metric ton of MSW	n.a.	n.a.	n.a.	n.a.
UMAIR; BJORKLUND; PETERSEN, 2015 [29]	GtG	Multilevel	Subcategory	-	Local community, Workers, Society, Value chain actors	Working hours, Child labor, Health and Safety (work), Social security, Force labor, Wages, Equal opportunities/discrimination, Freedom of association, Health and Safety (living), Community engagement, Local employment, Contribution	One indicator per category	Yes (interviews and local visits)

Authors	System limits	Scoring level	Aggregation level	Functional unit	Studied categories	Subcategories	Indicators	Survey used
YILDIZ-GEYHAN; ALTUN- CIFTCIOGLU; KADIRGAN, 2017 [19]	GtG	Multilevel	Impact category	-	Human rights Working conditions Socio-economic repercussions Health and Safety/Security	to economic development, Promote social responsibility, Fair competition Health and safety (work), Health and safety (living), Secure living conditions, Job satisfaction/engagement, Working hours, Wage, Social benefits/security, Forced labor, Child labor, Freedom for association and collective bargaining, Discrimination, Employment, Social acceptability, Service satisfaction, Contribution to economic development	One or more indicators per subcategory	Yes (interviews, etc.)
YILDIZ-GEYHAN et al, 2019 [7]	GtG	Multilevel	Impact category	Total amount of MSW collected by the municipality of Istanbul and pickers	Human rights Working conditions Socio-economic repercussions Health and Safety/Security	Health and safety (work), Health and safety (living), Secure living conditions, Job satisfaction/engagement, Working hours, Wage, Social benefits/security, Forced labor, Child labor, Freedom for association and collective bargaining, Discrimination, Employment, Social acceptability, Service satisfaction, Contribution to economic development	One or more indicators per subcategory	Yes (interviews, etc.)
ZHOU et al, 2019 [33]	GtG	Multilevel	Stakeholders category	1 metric ton of MSW	Local community, Workers, Society	Working conditions, Health and safety (work), Access to material resources, Delocalization and migration, Health and safety (living), Local employment, Secure living conditions, Public commitments to sustainability issues	One or more indicators per subcategory	n.a.

**Note: GtG** – The definition of Grave-to-Grave indicates that the material was collected from waste or through source-separated collection and will be used in recycling, incineration, etc. and the refuse is sent to final destination [25].

**GtC** – A system is called Grave-to-Cradle when the material is collected as in GtG and enters a recycling company and is then considered raw material again after being processing.

"-" shows no information or does not use such a parameter

## 2. Definitions

*Stakeholder category*: a group of people with similar interests regarding a process, product manufacture, or service that is being analyzed in an LCA [1].

*Classification*: the relationship between inventory data and certain stakeholder categories, subcategories, and impact categories [20].

*Municipal Solid Waste Management (MSWM)*: this management is defined in article 3<sup>rd</sup>, items X and XI, of the Brazilian Solid Waste Policy, Law 12,305 of 2010,

- X – solid waste management: set of actions carried out, either directly or indirectly, during collection, transport, transshipment, treatment and final environmentally-adequate destination of waste, in accordance with a municipal integrated-management plan or a solid waste management plan, as required herein;
- XI – solid waste integrated management: set of actions aimed at finding solutions for solid waste, considering political, economic, environmental, cultural and social dimensions, with social control and under the premise of sustainable development (BRASIL [10], Art. 3<sup>rd</sup>).

*Life Cycle Inventory (LCI)*: the phase in which LCA data is collected, systems are modeled, and life cycle inventory results are obtained [1, 17, 15].

*System Boundaries*: are defined in the goal and scope phase, and use criteria to specify which unit processes are part of a product system, process, service, etc. [17, 15].

*Normalization*: the results of a previous step (e.g, the indicators of a category) are related to the magnitude of each impact category. This facilitates the analysis as they have the same reference.

*Performance Reference Point (PRP)*: standards used in characterization models (of Type I, for example), which can be limits, targets or goals defined by national policies, and national or international standards, according to conventions and best practices [1, 15].

*Weighting*: A process to convert or aggregate results from indicators, subcategories, or impact categories according to an assignment of importance. It can use of numerical processes, based on the choice of values by experts (e.g., use of AHP) [1, 15].

*Social Life Cycle Assessment (S-LCA)*: "A Social and Socioeconomic Life Cycle Assessment is a technique to assess, real or potential, positive or negative, impacts, for evaluating social and socioeconomic aspects of products/services throughout their life cycle, covering: raw material extraction and processing, manufacturing, distribution, use, reuse, maintenance, recycling, and final disposal..." (UNEP-SETAC, [1], page 36)

*Functional Unit*: a reference unit used to quantify the system performance when manufacturing a product or providing a service [20].

## References

1. UNEP/SETAC. Guidelines for Social Life Cycle Assessment of Products; United Nations Environment Programme: Paris, France, 2009.
2. Venkatesh, G. Critique of Selected Peer-Reviewed Publications on Applied Social Life Cycle Assessment: Focus on Cases from Developing Countries. *Clean Technol. Environ. Policy* 2019, 21, 413–430. <https://doi.org/10.1007/s10098-018-1644-x>.
3. Reichert, G.A.; Mendes CA, B. Avaliação Do Ciclo de Vida e Apoio à Decisão Em Gerenciamento Integrado e Sustentável de Resíduos Sólidos Urbanos. *Eng. Sanit. Ambient.* 2014, 19, 301–313. <https://doi.org/10.1590/S1413-41522014019000001145>.
4. Allesch, A.; Brunner, P.H. Assessment Methods for Solid Waste Management: A Literature Review. *Waste Manag. Res.* 2014, 32, 461–473. <https://doi.org/10.1177/0734242X14535653>.
5. Aparcana, S.; Salhofer, S. Development of a Social Impact Assessment Methodology for Recycling Systems in Low-Income Countries. *Int. J. Life Cycle Assess.* 2013, 18, 1106–1115. <https://doi.org/10.1007/s11367-013-0546-8>.
6. Ibáñez-Forés, V.; Bovea, M. D.; Coutinho-Nóbrega, C.; de Medeiros, H. R. Assessing the Social Performance of Municipal Solid Waste Management Systems in Developing Countries: Proposal of Indicators and a Case Study. *Ecol. Indic.* 2019, 98, 164–178. <https://doi.org/10.1016/j.ecolind.2018.10.031>.
7. Yıldız-Geyhan, E.; Yılan, G.; Altun-Çiftçioglu, G. A.; Kadirgan, M. A. N. Environmental and Social Life Cycle Sustainability Assessment of Different Packaging Waste Collection Systems. *Resour. Conserv. Recycl.* 2019, 143, 119–132. <https://doi.org/10.1016/j.resconrec.2018.12.028>.
8. Foolmaun, R.K.; Ramjeeawon, T. Comparative Life Cycle Assessment and Social Life Cycle Assessment of Used Polyethylene Terephthalate (PET) Bottles in Mauritius. *Int. J. Life Cycle Assess.* 2013, 18, 155–171. <https://doi.org/10.1007/s11367-012-0447-2>.
9. Gutberlet, J. Cooperative Urban Mining in Brazil: Collective Practices in Selective Household Waste Collection and Recycling. *Waste Manag.* 2015, 45, 22–31. <https://doi.org/10.1016/j.wasman.2015.06.023>.
10. Brazil. Federal Law No. 12,305—National Solid Waste Policy; Diário Oficial da União: Brasília, DF, Brazil, 2010.
11. Nogueira Zon, J.L.; Jacobsen Leopoldino, C.; Yamane, L.H.; Ribeiro Siman, R. Waste Pickers Organizations and Municipal Selective Waste Collection: Sustainability Indicators. *Waste Manag.* 2020, 118, 219–231. <https://doi.org/10.1016/j.wasman.2020.08.023>.
12. Scheinberg, A.; Spies, S.; Simpson, M. H.; Mol, A.P.J. Assessing Urban Recycling in Low- and Middle-Income Countries: Building on Modernised Mixtures. *Habitat Int.* 2011, 35, 188–198. <https://doi.org/10.1016/j.habitatint.2010.08.004>.
13. Neugebauer, S.; Emara, Y.; Hellerström, C.; Finkbeiner, M. Calculation of Fair Wage Potentials along Products' Life Cycle—Introduction of a New Midpoint Impact Category for Social Life Cycle Assessment. *J. Clean. Prod.* 2017, 143, 1221–1232. <https://doi.org/10.1016/j.jclepro.2016.11.172>.
14. Huertas-Valdivia, I.; Ferrari, A. M.; Settembre-Blundo, D.; García-Muiña, F. E. Social Life-Cycle Assessment: A Review by Bibliometric Analysis. *Sustainability* 2020, 12, 6211. <https://doi.org/10.3390/su12156211>.
15. Bonilla-Alicea, R. J.; Fu, K. Systematic Map of the Social Impact Assessment Field. *Sustain.* 2019, 11, 4106. <https://doi.org/10.3390/su11154106>.
16. Benoît, C.; Traverso, M.; Valdivia, S.; Vickery-Niederman, G.; Franze, J.; Azuero, L.; Citroth, A.; Mazijn, B.; Aulisio, D. The Methodological Sheets for Sub-Categories in Social Life Cycle Assessment (S-LCA); United Nations Environment Programme (UNEP) and Society of Environmental Toxicology and Chemistry (SETAC): Paris, France, 2013.
17. Aparcana, S.; Salhofer, S. Application of a Methodology for the Social Life Cycle Assessment of Recycling Systems in Low Income Countries: Three Peruvian Case Studies. *Int. J. Life Cycle Assess.* 2013, 18, 1116–1128. <https://doi.org/10.1007/s11367-013-0559-3>.
18. Menikpura, S. N. M.; Gheewala, S. H.; Bonnet, S.; Chiemchaisri, C. Evaluation of the Effect of Recycling on Sustainability of Municipal Solid Waste Management in Thailand. *Waste Biomass Valorization* 2013, 4, 237–257. <https://doi.org/10.1007/s12649-012-9119-5>.
19. Yıldız-Geyhan, E.; Altun-Çiftçioglu, G.A.; Kadirgan, M.A.N. Social Life Cycle Assessment of Different Packaging Waste Collection System. *Resour. Conserv. Recycl.* 2017, 124, 1–12. <https://doi.org/10.1016/j.resconrec.2017.04.003>.
20. ISO\_14040; Environmental Management—Life Cycle Assessment—Principles and Framework. International Organization for Standardization: Geneva, Switzerland, 2006.
21. UNEP. Guidelines for Social Life Cycle Assessment of Products and Organizations 2020; Benoît Norris, C., Traverso, M., Neugebauer, S., Ekener, E., Schaubroeck, T., Russo Garrido, S., Berger, M., Valdivia, S., Lehmann, A., Finkbeiner, M., Arcese, G.E., Ed.; United Nations Environment Programme (UNEP): Paris, France, 2020.
22. Aleisa, E.; Al-Jarallah, R. A Triple Bottom Line Evaluation of Solid Waste Management Strategie. A Triple Bottom Line Evaluation of Solid Waste Management Strategies: A Case Study for an Arid Gulf State, Kuwait. *Int. J. Life Cycle Assess.* 2018, 23, 1460–1475. <https://doi.org/10.1007/s11367-017-1410-z>.

23. Chhipi-Shrestha, G. K.; Hewage, K.; Sadiq, R. "Socializing" Sustainability: A Critical Review on Current Development Status of Social Life Cycle Impact Assessment Method. *Clean Technol. Environ. Policy* 2015, 17, 579–596. <https://doi.org/10.1007/s10098-014-0841-5>.
24. Wu, Y.; Su, D. Social Life Cycle Assessment. In *Sustainable Product Development*; Springer International Publishing: Cham, Switzerland, 2020; pp. 127–152. [https://doi.org/10.1007/978-3-030-39149-2\\_7](https://doi.org/10.1007/978-3-030-39149-2_7).
25. Wu, R.; Yang, D.; Chen, J. Social Life Cycle Assessment Revisited. *Sustain.* 2014, 6, 4200–4226. <https://doi.org/10.3390/su6074200>.
26. Aria, M.; Cuccurullo, C. Bibliometrix: An R-Tool for Comprehensive Science Mapping Analysis. *J. Informetr.* 2017, 11, 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>.
27. Pagani, R.N.; Kovaleski, J.L.; Resende, L.M. Methodi Ordinatio: A Proposed Methodology to Select and Rank Relevant Scientific Papers Encompassing the Impact Factor, Number of Citation, and Year of Publication. *Scientometrics* 2015, 105, 2109–2135. <https://doi.org/10.1007/s11192-015-1744-x>.
28. RStudio. R\_Studio Is a Free Software Integrated Development Environment for R, a Programming Language for Graphs and Statistical Calculations. Version 4.0.2. 2020. Available online: <https://rstudio.com> (accessed on 26 aug 2020).
29. Umair, S.; Björklund, A.; Petersen, E. E. Social Impact Assessment of Informal Recycling of Electronic ICT Waste in Pakistan Using UNEP SETAC Guidelines. *Resour. Conserv. Recycl.* 2015, 95, 46–57. <https://doi.org/10.1016/j.resconrec.2014.11.008>.
30. Azimi, A.N.; Dente, S.M.R.; Hashimoto, S. Social Life-Cycle Assessment of Household Waste Management System in Kabul City. *Sustain.* 2020, 12, 4200–4226. <https://doi.org/10.3390/SU12083217>.
31. Di Maria, F.; Sisani, F.; Contini, S.; Ghosh, S. K.; Mersky, R. L. Is the Policy of the European Union in Waste Management Sustainable? An Assessment of the Italian Context. *Waste Manag.* 2020, 103, 437–448. <https://doi.org/10.1016/j.wasman.2020.01.005>.
32. Mirdar Harijani, A.; Mansour, S.; Karimi, B.; Lee, C. G. Multi-Period Sustainable and Integrated Recycling Network for Municipal Solid Waste – A Case Study in Tehran. *J. Clean. Prod.* 2017, 151, 96–108. <https://doi.org/10.1016/j.jclepro.2017.03.030>.
33. Zhou, Z.; Chi, Y.; Dong, J.; Tang, Y.; Ni, M. Model Development of Sustainability Assessment from a Life Cycle Perspective: A Case Study on Waste Management Systems in China. *J. Clean. Prod.* 2019, 210, 1005–1014. <https://doi.org/10.1016/j.jclepro.2018.11.074>.
34. Lehmann, A.; Russi, D.; Bala, A.; Finkbeiner, M.; Fullana-i-Palmer, P. Integration of Social Aspects in Decision Support, Based on Life Cycle Thinking. *Sustainability* 2011, 3, 562–577. <https://doi.org/10.3390/su3040562>.
35. Dubois-Iorgulescu, A.M.; Saraiva, A.K.E.B.; Valle, R.; Rodrigues, L.M. How to Define the System in Social Life Cycle Assessments? A Critical Review of the State of the Art and Identification of Needed Developments. *Int. J. Life Cycle Assess.* 2018, 23, 507–518. <https://doi.org/10.1007/s11367-016-1181-y>.
36. Di Cesare, S.; Silveri, F.; Sala, S.; Petti, L. Positive Impacts in Social Life Cycle Assessment: State of the Art and the Way Forward. *Int. J. Life Cycle Assess.* 2018, 23, 406–421. <https://doi.org/10.1007/s11367-016-1169-7>.
37. Petti, L.; Serrelli, M.; Di Cesare, S. Systematic Literature Review in Social Life Cycle Assessment. *Int. J. Life Cycle Assess.* 2018, 23, 422–431. <https://doi.org/10.1007/s11367-016-1135-4>.
38. Wulf, C.; Werker, J.; Ball, C.; Zapp, P.; Kuckshinrichs, W. Review of Sustainability Assessment Approaches Based on Life Cycles. *Sustainability* 2019, 11, 5717. <https://doi.org/10.3390/su11205717>.
39. Ramos Huarachi, D.A.; Piekarski, C.M.; Puglieri, F.N.; de Francisco, A.C. Past and Future of Social Life Cycle Assessment: Historical Evolution and Research Trends. *J. Clean. Prod.* 2020, 264, 121506. <https://doi.org/10.1016/j.jclepro.2020.121506>.
40. Subramanian, K.; Chau, C.K.; Yung, W.K.C. Relevance and Feasibility of the Existing Social LCA Methods and Case Studies from a Decision-Making Perspective. *J. Clean. Prod.* 2018, 171, 690–703. <https://doi.org/10.1016/j.jclepro.2017.10.006>.
41. Zhou, Z.; Tang, Y.; Chi, Y.; Ni, M.; Buekens, A. Waste-to-Energy: A Review of Life Cycle Assessment and Its Extension Methods. *Waste Manag. Res.* 2018, 36, 3–16. <https://doi.org/10.1177/0734242X17730137>.
42. Benoît-Norris, C.; Vickery-Niederman, G.; Valdivia, S.; Franze, J.; Traverso, M.; Ciroth, A.; Mazijn, B. Introducing the UNEP/SETAC Methodological Sheets for Subcategories of Social LCA. *Int. J. Life Cycle Assess.* 2011, 16, 682–690. <https://doi.org/10.1007/s11367-011-0301-y>.
43. Mathe, S. Integrating Participatory Approaches into Social Life Cycle Assessment: The SLCA Participatory Approach. *Int. J. Life Cycle Assess.* 2014, 19, 1506–1514. <https://doi.org/10.1007/s11367-014-0758-6>.
44. Iofrida, N.; De Luca, A.I.; Silveri, F.; Falcone, G.; Stillitano, T.; Gulisano, G.; Strano, A. Psychosocial Risk Factors' Impact Pathway for Social Life Cycle Assessment: An Application to Citrus Life Cycles in South Italy. *Int. J. Life Cycle Assess.* 2019, 24, 767–780. <https://doi.org/10.1007/s11367-018-1482-4>.
45. Kühnen, M.; Hahn, R. Indicators in Social Life Cycle Assessment: A Review of Frameworks, Theories, and Empirical Experience. *J. Ind. Ecol.* 2017, 21, 1547–1565. <https://doi.org/10.1111/jiec.12663>.



46. Rafiaani, P.; Kuppens, T.; Dael, M. Van; Azadi, H.; Lebailly, P.; Passel, S. Van. Social Sustainability Assessments in the Biobased Economy: Towards a Systemic Approach. *Renew. Sustain. Energy Rev.* 2018, 82, 1839–1853. <https://doi.org/10.1016/j.rser.2017.06.118>.
47. Siebert, A.; O’Keeffe, S.; Bezama, A.; Zeug, W.; Thrän, D. How Not to Compare Apples and Oranges: Generate Context-Specific Performance Reference Points for a Social Life Cycle Assessment Model. *J. Clean. Prod.* 2018, 198, 587–600. <https://doi.org/10.1016/j.jclepro.2018.06.298>.
48. Siebert, A.; Bezama, A.; O’Keeffe, S.; Thrän, D. Social Life Cycle Assessment Indices and Indicators to Monitor the Social Implications of Wood-Based Products. *J. Clean. Prod.* 2018, 172, 4074–4084. <https://doi.org/10.1016/j.jclepro.2017.02.146>.
49. Rafiaani, P.; Dikopoulou, Z.; Van Dael, M.; Kuppens, T.; Azadi, H.; Lebailly, P.; Van Passel, S. Identifying Social Indicators for Sustainability Assessment of CCU Technologies: A Modified Multi-Criteria Decision Making. *Soc. Indic. Res.* 2020, 147, 15–44. <https://doi.org/10.1007/s11205-019-02154-4>.
50. PSIA\_2020; Product Social Impact Assessment Handbook—2020. Available online: <https://product-social-impact-assessment.com> (accessed on 19 September 2021).
51. Norris, G.A. Social Impacts in Product Life Cycles—Towards Life Cycle Attribute Assessment. *Int. J. Life Cycle Assess.* 2006, 11, 97–104. <https://doi.org/10.1065/lca2006.04.017>.
52. Franze, J.; Ciroth, A. A Comparison of Cut Roses from Ecuador and the Netherlands. *Int. J. Life Cycle Assess.* 2011, 16, 366–379. <https://doi.org/10.1007/s11367-011-0266-x>.
53. Ciroth, A.; Franze, J. LCA of An Ecolabeled Notebook—Consideration of Social and Environmental Impacts Along the Entire Life Cycle; GreenDeltaTC: Berlin, Germany, 2011.
54. Cultri, C.N.; Saavedra, Y.M.B.; Ometto, A. Social Indicators as a Subsidy for Social Life Cycle Assessment: A Literature Review. In Proceedings of the XXX National Meeting of Production Engineering, São Carlos, SP, Brazil, 12–15 October 2010. Available online: [https://abepro.org.br/biblioteca/enegep2010\\_TN\\_STO\\_123\\_795\\_15951.pdf](https://abepro.org.br/biblioteca/enegep2010_TN_STO_123_795_15951.pdf) (accessed 04 March 2020)
55. De Oliveira, R. L.; Fagundes, L. D.; da Silva Lima, R.; Montañó, M. Discrete event simulation to aid decision-making and mitigation in solid waste management. *Mitigation and Adaptation Strategies for Global Change*, 2020, 25(1), 67–85.
56. Falcone, P. M.; González García, S.; Imbert, E.; Lijó, L.; Moreira, M. T.; Tani, A., ... Morone, P. Transitioning towards the bio-economy: Assessing the social dimension through a stakeholder lens. *Corporate Social Responsibility and Environmental Management*, 2019, 26(5), 1135–1153.
57. Ferrão, P.; Ribeiro, P.; Rodrigues, J.; Marques, A.; Preto, M.; Amaral, M.; ... Lopes, A. Environmental, economic and social costs and benefits of a packaging waste management system: A Portuguese case study. *Resources, Conservation and Recycling*, 2014, 85, 67–78.
58. Lu, Y.-T.; Lee, Y.-M.; Hong, C.-Y. Inventory Analysis and Social Life Cycle Assessment of Greenhouse Gas Emissions from Waste-to-Energy Incineration in Taiwan. *Sustainability* 2017, 9, 1959.