# Supplementary S1:

Table S1: Prisma checklist

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| **TITLE** | | | |
| Title | 1 | Identify the report as a systematic review. | Yes |
| **ABSTRACT** | | | |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | Yes |
| **INTRODUCTION** | | | |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | Yes – abstract and intro |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | Yes |
| **METHODS** | | | |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | Method step 3 |
| Information sources | 6 | 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. | Method step 2 |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Supplementary materials |
| 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. | Yes |
| 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. | N.a. |
| 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. | Method and result (thematic analysis) |
| | 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. | N.a. |
| 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. | Background and planning |
| 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. | N.a. |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| 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)). | **Figure 3 in main text** and Supplementary S2 |
| | 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | Yes |
| | 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | Yes |
| | 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. | N.a. |
| | 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | N.a. |
| | 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | N.a. |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | N.a. |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | N.a. |
| **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. | **Figure 3 in main text** and Supplementary S2 |
| | 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | Method step 2 |
| Study characteristics | 17 | Cite each included study and present its characteristics. | Focus #1: Applications of traceability in academic literature |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | N.a. |
| 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. | N.a. |
| Results of | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | N.a. |

| Section and Topic | Item # | Checklist item | Location where item is reported |
|---|---|---|---|
| syntheses | 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. | N.a. |
| | 20c | Present results of all investigations of possible causes of heterogeneity among study results. | N.a. |
| | 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | N.a. |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | N.a. |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | N.a. |
| **DISCUSSION** | | | |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | Yes |
| | 23b | Discuss any limitations of the evidence included in the review. | Yes |
| | 23c | Discuss any limitations of the review processes used. | N.a. |
| | 23d | Discuss implications of the results for practice, policy, and future research. | N.a. |
| **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. | |
| | 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | |
| | 24c | Describe and explain any amendments to information provided at registration or in the protocol. | |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Yes |
| Competing interests | 26 | Declare any competing interests of review authors. | Yes |
| 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. | Yes |

*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

# Supplementary S2

*Keyword determination*

This section will explain the rationale behind the selection of the keywords. The work involved iterative searches (#1, #2, #3) and this section also sets out how the search terms were used in those searches. The keywords chosen for the search were:

*Plastics* or *Polymers*.

*Waste or Recycled or Recycling.*

*Traceability or tracking or tracing*.

*Packaging*. This term was part of search #1 due to the review's focus; however, it brought few results as lots of research took place outside the specific packaging application. Search #2 took place to address this.

*Blockchain*. Blockchain is part of the traceability process, but *blockchain* and *traceability* may not appear together in the titles or abstracts of some publications. Using *blockchain* as search #3 enables the term to be specifically searched for.

Only English-language articles were search. The search period ran from the establishment of the databases selected to 31 December 2022 when the search was conducted. The main focus of the study was to analyse the traceability systems for recycled and waste plastic packaging. This focus was addressed by search equation #1. However, the intention was also to understand what kinds of solutions have been studied/used in the plastic recycling industry and try to apply those potential solutions to the packaging application. As a result, search equation #2 was set up.

A third search equation, #3 was needed because after completing a review of where the industry stands with traceability system, it became clear that blockchain technology was essentially the focus of the major stakeholder and others.

*Final search equations*

The final three search equations were:

#1 = Plastic* OR Poly* AND Waste OR Recycl* AND Packaging AND Traceability OR Tracking OR Tracing

#2 = Plastic* OR Poly* AND Waste OR Recycl* AND Traceability

#3 = Plastic* OR Poly* AND Recycl* AND Blockchain*

In Step 1, the keywords list was identified and used to write a Boolean search string. This string was the input in the most common databases in the field of waste management and environmental sustainability. In Step 2, the bibliographic data was then extracted into EndNote X9 and Excel v.2305, which allowed to eliminate any duplicates and to apply the exclusion criteria to form the shortlist of selected articles. On Sept 3, the articles were screened to create a shortlist of relevant references. In Step 4, the shortlist was divided into six main themes (Case study, conceptual framework, security, techno-economic study, digital system, and physical tracing system), which were analysed consistently with a thematic analysis approach (Braun & Clarke, 2006; Vaismoradi et al., 2013). The following sub-sections explain these steps more extensively, before focusing the attention to the detailed analysis of the result.

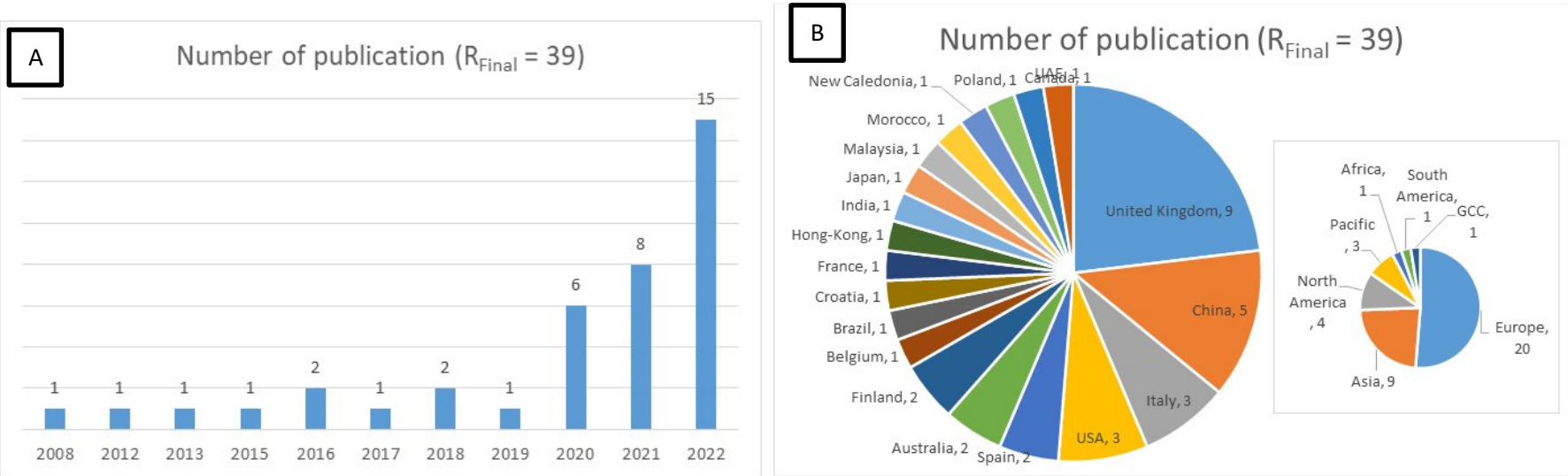
Step 1) keywords identification and research string determination. The keywords involved selecting relevant keywords related to the project scope and were incorporated into a Boolean search string to form a search sequence. Synonymous keywords are related to the Boolean string OR, while AND is used to narrow the scope of the search. Exclusion criteria were stipulated via the NOR Boolean operator. The search equation was entered into selected databases: Web of Science (WoS) and SCOPUS have been selected for this project, as described in Gusenbauer and Haddaway (2020). In their study, Gusenbauer and Haddaway (2020) assessed 28 different search systems using the efficiency of the Boolean operator as an assessment criterion. In 2008 Gavel and Iselid (2008) demonstrated that the coverage between the two databases was acceptable, with 83.52% of WoS indexed into SCOPUS, and 54.30% of SCOPUS indexed into WoS, leaving 45.70% of unique titles within SCOPUS and 16.48% of unique titles within WoS. This process yielded 206 sources across the two databases.

Step 2) data extraction and copies elimination. From the database results, data was imported into EndNote, where duplicates were identified and removed. It was then exported into Excel, where the first screening step was applied (Title and Abstract). Excel facilitated the collection of information for classification and the organization of the data. Copies were eliminated in Excel through the data analysis tool or manually. The elimination of the copies reduced the number of sources from 206 to 168 references.

Step 3) article exclusion and shortlist creation. For this work, two authors screened the shortlisted results separately, with each deciding whether the sources were to be included or excluded. This agreement level between two authors enables the Cohen's kappa to be calculated (Gwet, 2008; Kvalseth, 1991). The ratio in this work achieved a kappa of 0.90 demonstrating a high agreement rate between the two reviewers (Cohen, 1968). Reasons for exclusions while screening titles and abstracts were mainly that the papers were not relevant or related to the topic of traceability. Following the screening of titles and abstracts, papers were excluded if they mentioned traceability in passing but did not directly address the topic. Of the 168 references, 118 were excluded, leaving a shortlist of 50 relevant and focused sources.

Step 4) *thematic analysis*. The final step was the analysis and synthesis of the selected publications. Specifically, for this paper, we applied a thematic analysis following established guidelines (Braun & Clarke, 2006; Vaismoradi et al., 2013). The shortlisted sources were initially read, with relevant ideas noted and transcribed. Second, the authors framed the ideas collected in the previous step and framed them into themes, barriers, and opportunities for recycling plastic. Then, these strategies were completed with additional concepts collected through cross-references within the same shortlist. Finally, the themes and strategies were transformed into the final remarks of this paper. Notably, the most important recurring theme that informed our observation was based on traceability technologies to improve the quality of recycled plastic.

Figure S1: Descriptive statistics of the articles identified during the searches: (A) temporal analysis; (B) geographical analysis




## Supplementary S3

Table S2: List of publications from the SLR search

| *Author* | *Year* | *Title* | *Journal* | *1st author* | *2nd Author* | *Exclusion criteria* |
|---|---|---|---|---|---|---|
| Humphreys, J. C. and W. L. McLauahlin | 1981 | Dye film dosimetry for radiation processing | IEEE TRANSACTIONS ON NUCLEAR SCIENCE | 0 | 0 | Not relevant |
| Saminathan, M., et al. | 1994 | Waste Minimization In Electronic Component Processing–A Systems Approach | IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY PART A | 0 | 0 | Not Packaging |

| | | | | | | |
|---|---|---|---|---|---|---|
| Dudney, C. S., et al. | 1995 | ON THE REDUCTION OF ERROR IN ALPHA-TRACK DETECTOR MEASUREMENTS OF INDOOR RN-222 | Health Physics | 0 | 0 | Not relevant |
| Hornberger, L., et al. | 1997 | Static properties of recycled EPS | POLYMER-PLASTICS TECHNOLOGY AND ENGINEERING | 0 | 1 | Not Traceability |
| Breslin, V. T. | 1998 | Degradation of starch calcium carbonate disposable packaging in a solid waste composting facility | JOURNAL OF ENVIRONMENTAL POLYMER DEGRADATION | 0 | 0 | Not Traceability |
| Nosker, T., et al. | 1999 | Developing a recycled plastic/composite railroad tie | PLASTICS ENGINEERING | 0 | 0 | Not Packaging |
| Nomura, D. H., et al. | 2000 | Characterization of inorganic components in plastic materials | Journal of Radioanalytical and Nuclear Chemistry | 0 | 0 | Not Traceability |
| Eneroth, A., et al. | 2000 | Contamination of milk with Gram-negative spoilage bacteria during filling of retail containers | International Journal of Food Microbiology | 0 | 0 | Not relevant |
| Valliant, J. G., et al. | 2000 | Instrument for on-line monitoring of surface roughness of machined surfaces | OPTICAL ENGINEERING | 0 | 0 | Not relevant |
| Parry, S. J. | 2001 | Neutron activation analysis of recycled paper and board in contact with food | Journal of Radioanalytical and Nuclear Chemistry | 0 | 0 | Not relevant |
| Andersson, T., et al. | 2002 | Degradation of low density polyethylene during extrusion. I. Volatile compounds in smoke from extruded films | JOURNAL OF APPLIED POLYMER SCIENCE | 0 | 0 | Not Traceability |
| Cruz, S. A. and M. Zanin | 2004 | Assessment of dielectric behavior of recycled/virgin high density polyethylene blends | IEEE TRANSACTIONS ON DIELECTRICS AND ELECTRICAL INSULATION | 0 | 0 | Not Traceability |
| Guerard, F., et al. | 2005 | Fish and shellfish upgrading, traceability | Book Section | 0 | 0 | Not relevant |
| Feigenbaum, A., et al. | 2005 | Functional barriers: Properties and evaluation | FOOD ADDITIVES AND CONTAMINANTS | 0 | 0 | Not relevant |

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|---|---|---|---|---|---|---|
| Welle, F. | 2005 | Post-consumer contamination in high-density polyethylene (HDPE) milk bottles and the design of a bottle-to-bottle recycling process | FOOD ADDITIVES AND CONTAMINANTS | 0 | 0 | Not relevant |
| Kale, G., et al. | 2006 | Degradation of commercial biodegradable packages under real composting and ambient exposure conditions | JOURNAL OF POLYMERS AND THE ENVIRONMENT | 0 | 0 | Not relevant |
| Andrades, R., et al. | 2016 | Origin of marine debris is related to disposable packs of ultra-processed food | MARINE POLLUTION BULLETIN | 1 | 1 | |
| Aizawa, H., et al. | 2008 | Current results and future perspectives for Japanese recycling of home electrical appliances | Resources, conservation and recycling | 0 | 1 | Not relevant |
| Benmoussa, O. | 2022 | Improving Replenishment Flows Using Simulation Results: A Case Study | LOGISTICS-BASEL | 1 | 1 | |
| Bhubalan, K., et al. | 2022 | Leveraging blockchain concepts as watermarkers of plastics for sustainable waste management in progressing circular economy | ENVIRONMENTAL RESEARCH | 1 | 1 | |
| Koivikko, R., et al. | 2010 | Rapid multi-analyte quantification of benzophenone, 4-methylbenzophenone and related derivatives from paperboard food packaging | FOOD ADDITIVES AND CONTAMINANTS PART A-CHEMISTRY ANALYSIS CONTROL EXPOSURE & RISK ASSESSMENT | 0 | 0 | Not relevant |
| Heres, L., et al. | 2010 | Tracing and analytical results of the dioxin contamination incident in 2008 originating from the Republic of Ireland | Food Additives and Contaminants - Part A | 0 | 0 | Not relevant |
| Ozer, E. T., et al. | 2011 | DETERMINATION OF CADMIUM, CHROMIUM, LEAD, AND MERCURY IN POLYETHYLENE AND POLYPROPYLENE AFTER XYLENE TREATMENT BY ENERGY DISPERSIVE X-RAY FLUORESCENCE SPECTROMETRY | INSTRUMENTATION SCIENCE & TECHNOLOGY | 0 | 0 | Not relevant |
| Muntean, M. V., et al. | 2022 | A Sustainable Approach for the Development of Innovative Products from Fruit and Vegetable By-Products | Sustainability (Switzerland) | 0 | 0 | Not relevant |

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|---|---|---|---|---|---|---|
| Mao, D. and W. H. Yang | 2013 | 2010: A RESTLESS YEAR FOR ENVIRONMENTAL POLICIES ON PACKAGING | Book Section | 0 | 0 | Not relevant |
| Cifrian, E., et al. | 2013 | Estimating Monitoring Indicators and the Carbon Footprint of Municipal Solid Waste Management in the Region of Cantabria, Northern Spain | WASTE AND BIOMASS VALORIZATION | 0 | 0 | Not relevant |
| Castillo-Díaz, F. J., et al. | 2022 | Impact of the new measures related to the circular economy on the management of agrochemical packaging in Spanish agriculture and the use of biodegradable plastics | Environmental Sciences Europe | 1 | 1 | |
| Whitt, M., et al. | 2013 | Survey of heavy metal contamination in recycled polyethylene terephthalate used for food packaging | Journal of Plastic Film & Sheeting | 0 | 0 | Not Traceability |
| Snedeker, S. M. | 2014 | Antimony in Food Contact Materials and Household Plastics: Uses, Exposure, and Health Risk Considerations | Book Section | 0 | 0 | Not relevant |
| al Sandouk-Lincke, N. A., et al. | 2015 | Off-line-pyrolysis-gas chromatography-mass spectrometry analyses of drilling fluids and drill cuttings - Identification of potential environmental marker substances | Organic Geochemistry | 0 | 0 | Not relevant |
| Silva, R. B., et al. | 2015 | Pyrolysis and Char Characterization of Refuse-Derived Fuel Components | ENERGY & FUELS | 0 | 0 | Not relevant |
| Chaudhuri, A., et al. | 2022 | Circular economy and digital capabilities of SMEs for providing value to customers: Combined resource-based view and ambidexterity perspective | JOURNAL OF BUSINESS RESEARCH | 1 | 1 | |
| Vounatsos, P., et al. | 2016 | Classification of Refuse Derived Fuel (RDF) and Model Development of a Novel Thermal Utilization Concept Through Air-Gasification | WASTE AND BIOMASS VALORIZATION | 0 | 0 | Not relevant |
| Dardouri, M., et al. | 2016 | Diazabenzo crowns grafted on the polystyrene and application of extraction of metal cations | DESALINATION AND WATER TREATMENT | 0 | 0 | Not relevant |
| Assaad, J. J. | 2016 | Disposing waste latex paints in cement-based materials - Effect on flow and rheological properties | JOURNAL OF BUILDING ENGINEERING | 0 | 0 | Not relevant |
| Li, W. B., et al. | 2016 | Error leakage and wasted time: sensitivity and effort analysis of a requirements consistency checking process | JOURNAL OF SOFTWARE-EVOLUTION AND PROCESS | 0 | 0 | Not relevant |

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|---|---|---|---|---|---|---|
| Chen, R. J., et al. | 2020 | Rewritable and Sustainable 2D Barcode for Traceability Application in Smart IoT Based Fault-Tolerant Mechanism | SUSTAINABILITY | 1 | 1 | |
| Cheng, Y. J., et al. | 2021 | Traceability Management Strategy of the EV Power Battery Based on the Blockchain | SCIENTIFIC PROGRAMMING | 1 | 1 | |
| Andersson, H., et al. | 2016 | Soldering Surface Mount Components Onto Inkjet Printed Conductors on Paper Substrate Using Industrial Processes | IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY | 0 | 0 | Not relevant |
| de Smidt, O. | 2016 | The use of PCR-DGGE to determine bacterial fingerprints for poultry and red meat abattoir effluent | Letters in Applied Microbiology | 0 | 0 | Not relevant |
| Chidepatil, A., et al. | 2020 | From Trash to Cash: How Blockchain and Multi-Sensor-Driven Artificial Intelligence Can Transform Circular Economy of Plastic Waste? | ADMINISTRATIVE SCIENCES | 1 | 1 | |
| Strangl, M., et al. | 2017 | Characterization of odorous contaminants in post-consumer plastic packaging waste using multidimensional gas chromatographic separation coupled with olfactometric resolution | Journal of Separation Science | 0 | 0 | Not relevant |
| Tociu, M., et al. | 2017 | CLIMATE IMPACT ON FATTY ACID CONTENT OF GRAPE SEED OIL | UNIVERSITY POLITEHNICA OF BUCHAREST SCIENTIFIC BULLETIN SERIES B-CHEMISTRY AND MATERIALS SCIENCE | 0 | 0 | Not relevant |
| Gigliucci, F., et al. | 2017 | Comparative analysis of metagenomes of Italian top soil improvers | ENVIRONMENTAL RESEARCH | 0 | 0 | Not relevant |
| Yang, F., et al. | 2017 | Determination of Ultraviolet Absorbers and Light Stabilizers in Food Packaging Bags by Magnetic Solid Phase Extraction Followed by High-Performance Liquid Chromatography | FOOD ANALYTICAL METHODS | 0 | 0 | Not relevant |

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|---|---|---|---|---|---|---|
| Cifrian, E., et al. | 2012 | Material flow indicators and carbon footprint for MSW management systems: Analysis and application at regional level, Cantabria, Spain | Resources, conservation and recycling | 1 | 1 | |
| Hannon, J. C., et al. | 2017 | Kinetic desorption models for the release of nanosilver from an experimental nanosilver coating on polystyrene food packaging | INNOVATIVE FOOD SCIENCE & EMERGING TECHNOLOGIES | 0 | 0 | Not relevant |
| Ibrahim, S. F. and D. M. Essa | 2017 | Metrological Evaluation of Prepared Turbidity Working Standard Solutions to Achieve Traceability for Textile Waste Water Effluents | Egyptian Journal of Chemistry | 0 | 0 | Not relevant |
| Gros, M., et al. | 2017 | Screening and prioritization of micropollutants in wastewaters from on-site sewage treatment facilities | Journal of Hazardous Materials | 0 | 0 | Not relevant |
| Masmoudi, F., et al. | 2018 | Characterization and quality assessment of recycled post-consumption poly(ethylene terephthalate) (PET) | Environmental Science and Pollution Research | 0 | 1 | Not relevant |
| Colicchia, C., et al. | 2022 | Better sustainability in the food supply chain through technology: a consumer perspective | International Journal of Logistics-Research and Applications | 1 | 0 | Unsure |
| Giri, J. P., et al. | 2018 | Performance of Bituminous Mixes Containing Treated Recycled Concrete Aggregates and Modified by Waste Polyethylene | JOURNAL OF MATERIALS IN CIVIL ENGINEERING | 0 | 0 | Not relevant |
| Milios, L., et al. | 2018 | Plastic recycling in the Nordics: A value chain market analysis | WASTE MANAGEMENT RESOURCES | 0 | 0 | Not relevant |
| Das, P. and P. Tiwari | 2018 | Valorization of packaging plastic waste by slow pyrolysis | CONSERVATION AND RECYCLING | 0 | 0 | Not relevant |
| Chouhan, R. S., et al. | 2019 | A Unique Interactive Nanostructure Knitting based Passive Sampler Adsorbent for Monitoring of Hg2+ in Water | SENSORS | 0 | 0 | Not relevant |
| Ippolito, N. M., et al. | 2019 | Characterization of the residue of a commingled post-consumer plastic waste treatment plant: a thermal, spectroscopic and pyrolysis kinetic study | JOURNAL OF THERMAL ANALYSIS AND CALORIMETRY | 0 | 1 | Not relevant |
| Courtene-Jones, W., et al. | 2021 | Source, sea and sink—A holistic approach to understanding plastic pollution in the Southern Caribbean | Science of the Total Environment | 1 | 1 | |

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|---|---|---|---|---|---|---|
| Giri, J. P., et al. | 2019 | Development and evaluation of some bituminous mixes containing RCA | JOURNAL OF TESTING AND EVALUATION | 0 | 0 | Not relevant |
| Di, J. H., et al. | 2021 | United States plastics: Large flows, short lifetimes, and negligible recycling | RESOURCES CONSERVATION AND RECYCLING | 1 | 1 | |
| Tong, Y., et al. | 2019 | Green construction of Fe3O4@GC submicrocubes for highly sensitive magnetic dispersive solid-phase extraction of five phthalate esters in beverages and plastic bottles | Food Chemistry | 0 | 0 | Not relevant |
| Luchese, C. L. | 2019 | Intelligent packaging for monitoring food quality | CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources | 0 | 0 | Not relevant |
| Sukudom, N., et al. | 2019 | Mechanical, thermal, and biodegradation behaviors of poly(vinyl alcohol) biocomposite with reinforcement of oil palm frond fiber | Journal of Material Cycles and Waste Management | 0 | 0 | Not relevant |
| Garofalo, E., et al. | 2019 | Nanotechnology-Based Strategy to Upgrade the Performances of Plastic Flexible Film Waste | Polymers | 0 | 0 | Not relevant |
| Sola-Gutierrez, C., et al. | 2019 | PCDD/Fs traceability during triclosan electrochemical oxidation | Journal of Hazardous Materials | 0 | 0 | Not relevant |
| Oyama, T. K., et al. | 2019 | The ZOG Method: True Printed Circuit Boards | IEEE TRANSACTIONS ON COMPONENTS PACKAGING AND MANUFACTURING TECHNOLOGY | 0 | 0 | Not relevant |
| Weston, M., et al. | 2020 | A Polydiacetylene-Based Colorimetric Sensor as an Active Use-By Date for Plant-Based Milk Alternatives | MACROMOLECULAR RAPID COMMUNICATIONS | 0 | 0 | Not relevant |
| Ellsworth-Krebs, K., et al. | 2022 | Circular economy infrastructure: Why we need track and trace for reusable packaging | SUSTAINABLE PRODUCTION AND CONSUMPTION | 1 | 1 | |

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|---|---|---|---|---|---|---|
| Wang, H., et al. | 2020 | Bisphenol analogues in Chinese bottled water: Quantification and potential risk analysis | Science of the Total Environment | 0 | 0 | Not relevant |
| Ilic, S., et al. | 2017 | Delphi expert elicitation to prioritize food safety management practices in greenhouse production of tomatoes in the United States | FOOD CONTROL | 1 | 0 | NO |
| Epps, T. H., et al. | 2022 | Sustainability of Synthetic Plastics: Considerations in Materials Life-Cycle Management | JACS AU | 1 | 1 | |
| Ferrari, F., et al. | 2019 | Durability analysis of formaldehyde/solid urban waste blends | Polymers | 1 | 1 | NO |
| Esmaeilian, B., et al. | 2020 | Blockchain for the future of sustainable supply chain management in Industry 4.0 | RESOURCES CONSERVATION AND RECYCLING | 1 | 1 | |
| Klejnowska, K., et al. | 2020 | Influence of Temperature on the Composition and Calorific Value of Gases Produced during the Pyrolysis of Waste Pharmaceutical Blisters | APPLIED SCIENCES-BASEL | 0 | 0 | Not relevant |
| Eriksen, M., et al. | 2020 | Mitigation strategies to reverse the rising trend of plastics in Polar Regions | Environment International | 0 | 1 | Not relevant |
| Velasquez, E., et al. | 2020 | Physical properties and safety of 100% post-consumer PET bottle-organoclay nanocomposites towards a circular economy | Sustainable Chemistry and Pharmacy | 0 | 0 | Not relevant |
| Bekiaris, G., et al. | 2020 | Pleurotus Mushrooms Content in Glucans and Ergosterol Assessed by ATR-FTIR Spectroscopy and Multivariate Analysis | FOODS | 0 | 0 | Not relevant |
| Pack, E. C., et al. | 2020 | Potential for short-term migration of mineral oil hydrocarbons from coated and uncoated food contact paper and board into a fatty food simulant | FOOD ADDITIVES AND CONTAMINANTS PART A-CHEMISTRY ANALYSIS CONTROL EXPOSURE & RISK ASSESSMENT | 0 | 0 | Not relevant |
| de Bruijn, T. A., et al. | 2020 | ROTORCRAFT ACCESS PANEL DOOR Design, Manufacturing & Testing of a Rotorcraft Access Panel Door from Recycled Carbon Fiber Reinforced Polyphenylenesulfide | SAMPE JOURNAL | 0 | 0 | Unavailable |

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|---|---|---|---|---|---|---|
| Foschi, E., et al. | 2021 | Plastic waste management: a comprehensive analysis of the current status to set up an after-use plastic strategy in Emilia-Romagna Region (Italy) | Environmental Science and Pollution Research | 1 | 1 | |
| Zhang, W., et al. | 2020 | The mechanism for adsorption of Cr(VI) ions by PE microplastics in ternary system of natural water environment | Environmental Pollution | 0 | 0 | Not relevant |
| Vallada, D. D., et al. | 2020 | Thermal Pyrolysis of LDPE and LLDPE Films in Post-Consumer Packaging | REVISTA ELETRONICA EM GESTAO EDUCACAO E TECNOLOGIA AMBIENTAL | 0 | 0 | Not relevant |
| Giri, J. P., et al. | 2020 | Use of waste polyethylene for modification of bituminous paving mixes containing recycled concrete aggregates | ROAD MATERIALS AND PAVEMENT DESIGN | 0 | 0 | Not relevant |
| Sun, X. P., et al. | 2021 | A Method Quickly to Measure the Size of the Confocal Volume of Confocal X-Ray Instrument | SPECTROSCOPY AND SPECTRAL ANALYSIS | 0 | 0 | Not relevant |
| Ananias, E., et al. | 2021 | Artificial Intelligence Decision Support System Based on Artificial Neural Networks to Predict the Commercialization Time by the Evolution of Peach Quality | ELECTRONICS | 0 | 0 | Not relevant |
| Naziruddin, M. A., et al. | 2021 | Assessment and detection of the potential contaminants from oil palm empty fruit bunch fiber-based biodegradable tray | FOOD PACKAGING AND SHELF LIFE | 0 | 0 | Not relevant |
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