**Table S1.** Global vision of the 81 articles analysed.

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Valorisation of polylactic acid (PLA) waste: A comparative life cycle assessment of various solvent-based chemical recycling technologies [35] | Treatment of 1 t of PLA residue | NA | NA | NA | Cradle-to-gate | GaBi v.10 | NA | International; Reference Life Cycle Data System (ILCD); Product Environmental Footprint (PEF). |
| Ecological analysis of selected stages of the food packaging production process [49] | Bottle | NA | PET | NA | Cradle-to-gate | SimaPro | Ecoindicator 99 | Industrial data collected from producing company. |
| Application of LCA Method for Assessment of Environmental Impacts of a Polylactide (PLA) Bottle Shaping [36] | Bottle | Corn | PET | NA | Cradle-to-gate | SimaPro v. 8.4.1 | ReCiPe 2016 | Ecoinvent (version 3.3); Scientific literature. |
| Life Cycle Assessment of Two Alternative Plastics for Bottle Production [30] | Bottle | NA | PET | NA | Cradle-to-gate | SimaPro v.8.4.0 | CML 2; ReCiPe2016. | Data on individual process steps from company in Poland; Ecoinvent 3.2. |
| Using atmospheric plasma to design multilayer film | Packaging “clamshell” | Potato Starch | PET and PP | System Expansion | Cradle-to-grave | SimaPro v. 7.3.3 | Impact 2002+ ReCiPe | Ecoinvent; |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| from polylactic acid and thermoplastic starch: a screening Life Cycle Assessment [50] | | | | | | | | Data for plasma treatment from pilot plant. |
| Environmental performance of bioplastic packaging on fresh food produce: A consequential life cycle assessment [51] | Management of 1 t of residues | Corn | PP, HDPE, LPPE and PET | NA | Cradle-to-grave | Open LCATM v.1.10.2 | Environmental Footprint (EF) 2.0 | Environmental Footprint (EF) 2.0; Production of PLA packages – data from Ecoinvent 3.5 based on NatureWorks |
| Life cycle assessment (LCA) of bio-based packaging solutions for extended shelf life (ESL) milk [29] | Packaging for 1L of milk | Corn | PET and HDPE | NA | Cradle-to-grave | SimaPro v. 9 | ILCD 2011 | Ecoinvent 3 |
| Life cycle assessment of bioplastic production from whey protein obtained from dairy residues [11] | 1000 kg of bioplastics | Corn | PP, LPDE and HDPE | Allocation by substitution | Cradle-to-grave | SimaPro v.8.4.0.0 | CML baseline 2000 | Ecoinvent 3 |
| Assessment of the environmental break-even point for deposit return systems through an LCA | Cup | NA | PP and PET | NA | Cradle-to-grave | SimaPro v.8 | NA | Ecoinvent v3.3 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| analysis of single-use and reusable cups [25] | | | | | | | | |
| Using life cycle assessment to quantify the environmental benefit of upcycling vine shoots as fillers in biocomposite packaging materials [52] | Tray | Corn | PP and PHBV | NA | Cradle-to-grave | SimaPro v.8.5 | ReCiPe 2016 Midpoint Hierarchist (H) | Ecoinvent v.3.4; Scientific literature and industry data. |
| Life cycle assessment of wheat gluten powder and derived packaging film [53] | Film with $1m^2$ and 0.15mm | Wheat | LDPE | Mass Allocation | Cradle-to-factory gate | NA | ReCiPe endpoint (H); IMPACT 2002+ Ecoindicator 99 (H) | Ecoinvent 2.1; Data from scientific literature |
| Life cycle assessment (LCA) of PET and PLA bottles for the packaging of fresh pasteurised milk: The role of the manufacturing process and the disposal scenario [54] | Bottle | Sugar Cane | PET | NA | Cradle-to-cradle | SimaPro v. 9.0.0.48 | IMPACT 2002+ | Ecoinvent 3; Primary data; Scientific literature |
| Life Cycle Assessment of Polylactic Acid and Polyethylene Terephthalate (PET) Bottles for Drinking Water [37] | Bottle | Corn | PET | Mass Allocation | Cradle-to-gate and Cradle-to-grave | SimaPro v.7 | Ecoindicator 99 | Ecoindicator 99 and Ecoinvent v.2.0 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Environmental impacts of functional fillers in polylactide (PLA)-based bottles using life cycle assessment methodology [24] | Bottle | Potato Starch | PLA fibers and $CaCO_3$ | NA | Cradle-to-gate | eFootprint software system of IKE Environmental Technology Co., Ltd | NA | Data from Chinese production; CLCD-China-ECER0.8.1; Ecoinvents-Public 2.2.0; Ecoinvent 3.1.0; ELCD 3.0.0. |
| Life Cycle Assessment of Bioplastics and Food Waste Disposal Methods [55] | 1 kg of effluent to treat bio-plastics and food waste | NA | NA | NA | Cradle-to-grave | SimaPro | ReCiPe Midpoint (H) | Ecoinvent and Easetech |
| Biopolymer production and end of life comparisons using life cycle assessment. [5] | 1 kg of polymer | Corn | PET, PE and TPS | Physical allocation | Cradle-to-grave | NA | TRACI v. 2.1. | Scientific literature and data collected. |
| Techno-economic risk assessment, life cycle analysis and life cycle costing for poly (butylene succinate) and poly (lactic acid) production using renewable resources [23] | 1 kg of PLA | Corn glucose syrup, maize straw and sugar beet pulp | PBS | Economic allocation | Cradle-to-gate | GaBi | ReCiPe 1.08 | GaBi; CML 2001; Scientific literature; UniSim. |
| Assessment of the environmental profile of | Packaging “clamshell” | Corn | PET and PS | NA | Cradle-to-cradle | SimaPro v. 7.18 | IMPACT 2002+ | Ecoinvent; Plastics Europe. |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| PLA, PET and PS clamshell containers using LCA methodology [21] | | | | | | | | |
| A Comparative Life Cycle Assessment of Meat Trays Made of Various Packaging Materials [32] | Tray | Corn | PS, PET and PP | NA | Cradle-to-gate (and end-of-life) | GaBi v.8 | ILCD; Recommendations from ILCD/PEF v.1.09 | Data from industry - GmbH & Co. KG (Troisdorf, Germany) e Sirap Gema SpA (Verolanuova (BS), Italy) |
| Life cycle assessment of recycling options for polylactic acid [22] | Treatment of 1 t of PLA residue | Corn, Beetroot and Sugar cane | NA | NA | Cradle-to-grave | GaBi 2017 | ILCD | Pilot plants; Scientific literature; GaBi and Ecoinvent. |
| A cradle-to-gate life cycle assessment of wood fibre-reinforced polylactic acid (PLA) and polylactic acid/thermoplastic starch (PLA/TPS) biocomposites [56] | Packaging "clamshell" | Cellulosic fibers from wood | PP | Economic allocation | Cradle-to-gate | NA | TRACI + CED | Data from laboratory research; LCI database from USA; US-EI |
| Life Cycle Impact Assessment of Polylactic | NA | Sugar cane | NA | Economic allocation | Cradle-to-gate | SimaPro v. 8.4.0 | ILCD 2011 Midpoint + | Data of PLA production from Total Corbion; |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Acid (PLA) Produced from Sugarcane in Thailand [34] | | | | | | | | Scientific literature. |
| Cradle-to-grave life cycle assessment of single-use cups made from PLA, PP and PET [3] | Cup | Corn and sugar cane | PET and PP | Physical allocation, replacement and expansion of the system | Cradle-to-grave | GaBi 2017 | ILCD | Primary data; Scientific literature; Ecoinvent |
| Life cycle assessment of biobased chemicals from different agricultural feedstocks [57] | 1 kg of PLA | Sugar cane, corn and sugar from beetroot | NA | NA | Cradle-to-gate | GaBi v.10.0.0.71 | CML 2001–2016 | Scientific literature |
| Comparative Study of a Life Cycle Assessment for Bio-Plastic Straws and Paper Straws: Malaysia's Perspective [58] | Straws | Corn | NA | NA | Cradle-to-grave | SuperPro Designer v.9.0 | NA | Scientific literature and industry data. |
| Life cycle and economic assessment of sugarcane bagasse valorization to lactic acid [26] | 1 kg of PLA | Sugar cane bagasse | NA | Economic allocation | Cradle-to-gate | OpenLCA v.1.9 | ReCiPe (H) midpoint 2016 | Ecoinvent; Research data; ASPEN Plus simulation. |
| Carbon and energy footprints of high-value food trays and lidding films made of common bio-based and conventional packaging materials [59] | Tray | Sugar cane, corn, wheat and sugar from beetroot | PET, PP and PE | NA | Cradle-to-grave | PAS 2050 | NA | Scientific literature |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Comparative assessment of the environmental profile of PLA and PET drinking water bottles from a life cycle perspective [60] | Bottle | Mandioca | PET | Physical allocation | Cradle-to-grave | SimaPro | CML 2 baseline 2000 | Association of Plastics Manufacturers of Europe (APME); Other data. |
| Sustainable bioplastics from amyloid fibril-biodegradable polymer blends [31] | 1 kg of PLA | Organic residue | HDPE and PBS | Economic allocation | Cradle-to-grave | NA | EF3.0 | Ecoinvent v.3.6 |
| Bioplastic Wastes: The Best Final Disposition for Energy Saving. [61] | Packaging "clamshell" | Corn | PS and PE | NA | Cradle-to-gate and Cradle-to-grave | SimaPro v. 7.2 | GWP100a | Ecoinvent v.2.2; NatureWorks and Mater-Bi |
| Comparative life cycle assessment of coffee jar lids made from biocomposites containing poly (lactic acid) and banana fiber [62] | Lid | Corn | HDPE | Economic allocation | Cradle-to-grave | SimaPro v.8.3 | ILCD ReCiPe midpoint 2016 | Data collected from producers, companies, laboratories, pilot plants and literature. |
| Banana fibre-biocomposite applied to bottle lid case - life-cycle engineering model for material selection [63] | Bottle | NA | PET | NA | Cradle-to-gate | SimaPro v.8.4.0 | CML 2; ReCiPe2016. | Ecoinvent 3.2; Data from Polish company. |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Influence of the source of starch and plasticizers on the environmental burden of starch-Brazil nut fiber biocomposite production: A life cycle assessment approach [28] | 1 kg of biocomposite reinforced with BSF | Sugar cane, corn, wheat and sugar from beetroot | TPA and PP | NA | Cradle-to-gate | SimaPro v.9.1.0.11 | ReCiPe endpoint | Ecoinvent 3.6; Scientific literature. |
| Evolution of drinking straws and their environmental, economic and societal implications [64] | 1 kg of PLA | Corn | PP | NA | Cradle-to-grave | SimaPro v.8.0.4.26 multi-user | NA | Ecoinvent 3 |
| Circular economy: Comparative life cycle assessment of fossil polyethylene terephthalate (PET) and its recycled and bio-based counterparts [33] | 1 metric t of plastic | Corn starch | PET | NA | Cradle-to-grave | SimaPro | ReCiPe Midpoint (H) | Ecoinvent and Easetech |
| Plastic recycling in a circular economy; determining environmental performance through an LCA matrix model approach [65] | 1 t of final product | NA | PP, PE and ABS | NA | Cradle-to-grave | SimaPro v.8 | ReCiPe 2008 | Ecoinvent 3.4 |
| Plastic (PET) vs bioplastic (PLA) or refillable | Bottle | Corn | PET | NA | Cradle-to-grave | Open LCATM v.1.8 | ReCiPe | Ecoinvent; Scientific |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| aluminium bottles – What is the most sustainable choice for drinking water? A life-cycle (LCA) analysis.[1] | | | | | | | | literature; Industry reports. |
| Carbon footprint of plastic from biomass and recycled feedstock: methodological insights [66] | 1 kg of PLA | Corn | PP | NA | Cradle-to-grave | SimaPro v.8.0.4.26 multi-user | NA | Ecoinvent 3 |
| Sustainability Analysis of Active Packaging for the Fresh Cut Vegetable Industry by Means of Attributional & Consequential Life Cycle Assessment [67] | Packaging "clamshell" | Corn starch | PP | End-of-life processes allocation | Cradle-to-grave | SimaPro v.8 | ReCiPe | Ecoinvent v3.2; Scientific literature. |
| Applications of life cycle assessment to NatureWorksTM polylactide (PLA) production [68] | NA | Corn | PET | NA | Cradle-to-gate | NA | NA | Association of Plastics Manufacturers of Europe (APME); Data of cultivation from Nebraska and Iowa; Data from Cargill Dow; Boustead Core database; |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Comparing two types of mainstream disposable lunch boxes by LCA and exploring the possibility of converting carbon dioxide into products [69] | 1 kg of tableware | Corn | NA | NA | Cradle-to-gate | SimaPro | Eco-indicator99 | Local information. Environmental Impact List of the Disposable Degradable Plastic Tableware Production Project of Wuhu Lvkang Environmental Protection Technology Co., Ltd |
| 3D printing to enable the reuse of marine plastic waste with reduced with reduced environmental impacts [27] | 1 kg of 3D printed material | Corn | Bio-PA and PHB | NA | Cradle-to-grave | OpenLCA | ReCiPe | Ecoinvent v3.7 Gabi bioplastics 2019 |
| Comparative Assessment of the Greenhouse Gas Emission | NA | Corn and Sugarcane | PS | NA | Cradle-to-grave | NA | NA | Data from three regions of Thailand |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| and Land Use Capacity of Plastics Waste in Thailand [70] | | | | | | | | |
| Development and characterization of sustainable PLA-Olive wood waste composites for rehabilitation applications using Fused Filament Fabrication (FFF) [71] | 3D ornamental element printed by FFF technique with a volume of 8000 cm3 | Corn | NA | NA | Cradle-to-gate | SimaPro | CML | Ecoinvent v3.8 |
| Life Cycle Assessment of Biodegradable Polylactic Acid (PLA) Plastic Packaging Products—Taking Tianjin, China as a Case Study [72] | NA | Corn | NA | NA | NA | NA | NA | Data from MSW treatment facility<br>Data found in literature |
| Life cycle assessment of environmental impact of disposable drinking straws - A trade-off analysis with marine litter in the United States [73] | 500 million single-use straws | Corn | PP | NA | Cradle-to-grave | GaBi | CML | Data found in literature<br>GaBi<br>Ecoinvent |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | US Life Cycle Inventory |
| Life Cycle Assessment of Selected Single-Use Plastic Products towards Evidence-Based Policy Recommendations in Sri Lanka [74] | 1-time use of cutlery fork/spoon<br>1 cotton bud<br>1 Joss-Stick wrapper<br>1 cloth wick wrapper<br>1-time use of <750 mL pesticide bottle<br>1 grocery bag<br>1 straw<br>1-time use of 750 mL water bottle | Corn | PS, PP, LDPE, HDPE and PET | NA | Cradle-to-grave | SimaPro | ReCiPe<br>IPCC 2013 | Data found in literature<br>Data from unspecified LCI databases<br>Data from manufacturers<br>Ecoinvent v3.0 |
| Challenges for Sustainability in Packaging of Fresh Vegetables in Organic Farming [75] | packaging bag | Corn | LDPE and PCSB | NA | Cradle-to-grave | SimaPro | ReCiPe 2016<br>CED | Data found in literature<br>Ecoinvent v3.4 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Melt Extrusion of Environmentally Friendly Poly(L-lactic acid)-Sodium Metabisulfite Films for Antimicrobial Packaging Applications [76] | 1 kg of packaging film | Corn | NA | NA | Cradle-to-grave | OpenLCA | ILCD | Ecoinvent v3.3 |
| Application of LCA Method for Assessment of Environmental Impacts of a Polylactide (PLA) Bottle Shaping [36] | 1L PLA blottles | NA | NA | NA | NA | SimaPro | ReCiPe 2016 | Ecoinvent v.3.3 |
| Hybrid life cycle assessment of potato pulp valorisation in biocomposite production [38] | 1 kg biocomposite | Potato pulp | PHA | NA | NA | NA | NA | Data from literature<br>Ecoinvent v.3<br>Potato Council<br>EXIOBASE |
| Life cycle greenhouse gas emissions and energy use of polylactic acid, | one kg of waste plastics that ends up in the landfill or composting | Corn | Bio-PE, HDPE and LDPE | NA | Cradle-to-grave | NA | GREET<br>IPCC | Data found in literature<br>Data found in GREET model |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| bio-derived polyethylene, and fossil-derived polyethylene [77] | | | | | | | | |
| Eco-efficiency of Poly (lactic acid)-Starch-Cotton composite with high natural cotton fiber content: environmental and functional value [78] | production of 100 g of thermoplastic composites | Corn | NA | NA | Cradle-to-gate | BEST | Koellner model<br>EU PEF<br>BASF model | Data based on regional average Ecoinvent |
| Carbon Footprint of Packaging Films Made from LDPE, PLA, and PLA/PBAT Blends in South Korea [79] | 400,000 pieces of film | Corn | LDPE | Three waste treatment scenarios | Cradle-to-grave | SimaPro | CML<br>IPCC | corn producers of 26 counties in the U.S<br>Ecoinvent 3.0 |
| Close-looped recycling of polylactic acid used in 3D printing - An experimental investigation and life cycle assessment [80] | 1 kg of 3D printable PLA | Corn | NA | NA | End-of-Life | GaBi | ReCiPe | Primary data<br>Data from GaBi database |
| Cradle-to-Grave Life Cycle Assessment and Techno- | NA | NA | NA | Economic allocation | Cradle-to-grave | NA | TRACI | MBase database |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Economic Analysis of Polylactic Acid Composites with Traditional and Bio-Based Fillers [81] | | | | | | | | |
| Eco-Efficiency Assessment of Bioplastics Production Systems and End-of-Life Options [82] | Boxes of 650 mL | Cassava and Sugarcane | PHAs, PBS and PP | Economic allocation | Cradle-to-grave | Excel | ReCiPe | Thai national life cycle inventory database Ecoinvent v 3.0 |
| Environmental Impact Assessment of Polylactide(PLA)/Chicken Feathers Biocomposite Materials [83] | Plate | Corn | NA | NA | Cradle-to-gate | NA | CML ReCiPe | primary data Data from manufacturer Ecoinvent v 3.0 |
| Life cycle assessment of bottled water: A case study of Green2O products [84] | Bottle | Corn | PET | NA | Cradle-to-grave | SimaPro | Impact 2002+ IPCC | Green2O Ecoinvent v3 |
| Systematic assessment of triticale-based biorefinery | Producing 100,000 tonnes of PLA | Triticale | NA | NA | Cradle-to-gate | NA | IMPACT 2002+ | Ecoinvet |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| strategies: environmental evaluation using life cycle assessment [85] | | | | | | | | |
| An attributional Life Cycle Assessment application experience to highlight environmental hotspots in the production of foamy polylactic acid trays for freshfood packaging usage[86] | 1kg of trays | corn | NA | NA | Manufacturing, delivering and disposal | SimaPro | Impact 2002+ | Company data Ecoinvent v2.2 |
| Degradability and Sustainability of Nanocomposites Based on Polylactic Acid and Chitin Nano Fibrils [87] | 1 kg of pellets | Corn | NA | NA | Cradle-to-grave | SimaPro | ILCD ReCiPe | Ecoinvent v.2 |
| Evaluation of physiochemical/microbial properties and life cycle assessment (LCA) of PLA-based nanocomposite active packaging [88] | Providing customers with 100 000 kg of fresh fruits during one year | Corn | PET | NA | Cradle-to-grave | SimaPro | IMPACT 2002+ EDIP 2003 | Primary data Ecoinvent v.3 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Greenhouse gas mitigation for U.S. plastics production: energy first, feedstocks later [89] | The set of services provided by the entire U.S. national production of commodity thermoplastics | Corn | NA | Economic allocation | Cradle-to-gate | NA | GREET IPCC | Data found in literature |
| Comparative assessment of global warming impact and eco-efficiency of PS, PET and PLA boxes [90] | boxes with the same carrying capacity of 100 grams | Corn | PS and PET | End-of-life processes allocation | Cradle-to-grave | NA | IPCC 2006 | Data found in literature Ecoinvent v2.2 |
| Life Cycle Assessment of Poly(Lactic Acid) (PLA): Comparison Between Chemical Recycling, Mechanical Recycling and Composting [91] | 1 kg of residual PLA | Corn | NA | End-of-life processes allocation | End-of-Life | SimaPro | ReCiPe | Data found in literature Primary data Data from computer simulaton Ecoinvent v2.2 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Corn-based Polylactide vs. PET Bottles - Cradle-to-gate LCA and Implications [92] | 500 ml water bottle | Corn | PET | NA | Cradle-to-gate | SimaPro | CED | Data from companies<br>BioGrace software<br>Ecoinvent v. 2.2 |
| Facility arrangements and the environmental performance of disposable and reusable cups [93] | Cup | Corn | PS | End-of-life processes allocation | Cradle-to-grave | SimaPro and Excel | CML<br>CED | Ecoinvent |
| From “farm to fork” strawberry system: Current realities and potential innovative scenarios from life cycle assessment of non-renewable energy use and greenhouse gas emissions [94] | 250-gramme flow pack | NA | Mater-BI and PE | NA | Cradle-to-grave | SimaPro | IPCC | Data from local producers<br>Ecoinvent v. 2.2 |
| Multiple data sets and modelling choices in a comparative LCA of | Disposable beverage cup fit for serving 180 ml hot | Corn | PS | End-of-life processes allocation | Cradle-to-grave | SimaPro | CML<br>CED | Data found in literature<br>Data from |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| disposable beverage cups [95] | drinks by vending machines | | | | | | | companies<br>ELCD database<br>Ecoinvent<br>PlasticsEurope |
| Bio-production from Australian sugarcane: an environmental investigation of product diversification in an agro-industry [96] | NA | Sugarcane | NA | NA | NA | SimaPro | Impact 2002+ | Data found in literature |
| Life cycle assessment of bio-based products: a disposable diaper case study (Mirabella et al., 2013)[97] | Diaper | Corn | Mater-BI | NA | Cradle-to-gate | SimaPro | ReCiPe 2008<br>IMPACT 2002+<br>CED | Data from literature<br>Data from the company<br>Ecoinvent |
| Life cycle assessment of single use thermoform boxes made from polystyrene (PS), polylactic acid, (PLA), and PLA/starch: | Boxes | Cassava and Corn | PS | NA | Cradle-to-gate | NA | EDIP 2003 | Thailand energy database<br>Ecoinvent v1.01 and 2.2 |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| cradle to consumer gate [98] | | | | | | | | |
| Accounting for the constrained availability of land: a comparison of bio-based ethanol, polyethylene, and PLA with regard to non-renewable energy use and land use [99] | 1000 kg product | Corn, Wheat, Sugarbeet, Sugarcane and Miscanthus | NA | NA | Cradle-to-gate | NA | NREU | Data found in literature PlasticsEurope |
| To compost or not to compost: Carbon and energy footprints of biodegradable materials' waste treatment [100] | 1 kg of material | NA | Mater-BI, PBAT and PHA | End-of-life processes allocation | End-of-Life | NA | IPCC 2007 NREU | Data found in literature Data from unspecified LCI databases |
| Life Cycle Assessment of Polylactic Acid and Polyethylene Terephthalate Bottles for | 500-mL bottle | Corn | PET | NA | Cradle-to-grave | SimaPro | Ecoindicator 99 | Ecoinvent v.2.0 24 European production sites |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Drinking Water [37] | | | | | | | | |
| Bioplastics disposal: How to manage it [101] | Bottles of 1,5 litres | Corn | Mater-BI | End-of-life processes allocation | Cradle-to-gate | SimaPro | IPCC Ecoindicator 99 | Ecoinvent v.2.0 Eco-profiles of the European plastics industry |
| Twisting biomaterials around your little finger: environmental impacts of bio-based wrappings [102] | Packaging film | Corn | Bio-PE, PET and PP | NA | Cradle-to-grave | NA | CML | Data from companies Data from unspecified LCI databases |
| Life cycle assessment of the manufacture of lactide and PLA biopolymers from sugarcane in Thailand [103] | 1 tonne of material at the factory gate in Thailand | Sugarcane | NA | NA | Cradle-to-gate | NA | NA | European Plastics Association's database Data from literature GaBi database |

| Title and Authors | Product | Raw Material | Comparison with other polymers | Multifunctionality | System Boundaries | Software | LCIA Methodology | Databases |
|---|---|---|---|---|---|---|---|---|
| Environmental assessment of biodegradable multilayer film derived from carbohydrate polymers [104] | Multilayer film | Corn | PP | NA | Cradle-to-grave | SimaPro | NA | PlasticsEurope Data found in literature |
| Biodegradable Packaging Life-Cycle Assessment [105] | Yogurt package | Corn | PP | NA | Cradle-to-grave | NA | NA | NA |