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2.3 An integrated approach to environmental design

2.4 Environmental assessment: an essential component of environmental design; 2.5 Origins and historical perspective of environmental assessment; 2.6 Environmental assessment in the twenty-first century; 2.7 Approaches to environmental assessment; 2.7.1 Assessment tools; 2.7.2 Simulation tools; 2.7.3 Checklists and guidelines; 2.8 Summary; 3 Life cycle assessment; 3.1 What is life cycle assessment?; 3.1.1 Life cycle assessment framework; 3.1.2 An iterative approach; 3.2 Types of life cycle assessment; 3.2.1 Baseline life cycle assessment; 3.2.2 Comparative life cycle assessment; 3.2.3 Streamlined life cycle assessment; 3.3 The four phases of life cycle assessment; 3.3.1 Goal and scope definition; 3.3.1.1 Goals; 3.3.1.2 Scope; 3.3.1.3 Functional unit; 3.3.1.4 System boundaries; 3.3.1.5 Data quality and scope; 3.3.2 Life cycle inventory analysis; 3.3.2.1 Data types; 3.3.2.2 Quantifying inputs and outputs; 3.3.3 Life cycle impact assessment; 3.3.3.1 Selection and definition of impact categories; 3.3.3.2 Classification; 3.3.3.3 Characterization; 3.3.3.4 Normalization, grouping and weighting; 3.3.3.5 Data quality analysis; 3.3.4 Interpretation; 3.3.4.1 Identification of significant issues; 3.3.4.2 Evaluation of results - completeness, consistency and sensitivity; 3.3.4.3 Conclusions, limitations and recommendations; 3.4 How can life cycle assessment be used?; 3.4.1 Environmental improvement; 3.4.2 Strategic planning; 3.4.3 Public policy making; 3.4.4 Marketing and eco-labelling; 3.5 International LCA standard - ISO 14040 series; 3.6 Limitations of life cycle assessment; 3.6.1 Lack of knowledge and awareness; 3.6.2 Methodological gaps; 3.6.3 Geographic issues; 3.6.4 Availability and quality of life cycle inventory data

Sommario/riassunto

Life cycle assessment enables the identification of a broad range of potential environmental impacts occurring across the entire life of a product, from its design through to its eventual disposal or reuse. The need for life cycle assessment to inform environmental design within the built environment is critical, due to the complex range of materials and processes required to construct and manage our buildings and infrastructure systems. After outlining the framework for life cycle assessment, this book uses a range of case studies to demonstrate the innovative input-output-based hybrid