



GREEN FINANCE AND ENVIRONMENTAL SUSTAINABILITY: IMPLICATIONS FOR SUSTAINABLE DEVELOPMENT GOALS

EDITOR-IN-CHIEF

SRI. ARIJIT CHAKRABORTY

EDITOR

**PROF. JOSAPHAT UCHECHUKWU JOE
ONWUMERE**

**PROF. MUFTAU ADENIYI IJAIYA
DR. GBENGA FESTUS BABARINDE**

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Editors

Sri. Arijit Chakraborty

Editor-in-Chief

Global Authors Publication, New Delhi, India and
Visiting Lecturer, School of Law, Techno India University,
India.

Prof. Josaphat Uchechukwu Joe Onwumere

Professor

Department of Banking and Finance
University of Nigeria, Nsukka (Enugu Campus), Nigeria.

Prof. Muftau Adeniyi IJAIYA

Professor

Department of Finance
University of Ilorin, Ilorin, Nigeria.

Dr. Gbenga Festus BABARINDE

Department of Banking and Finance
Modibbo Adama University, Yola, Nigeria.



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Preface

The global pursuit of sustainable development has entered a critical phase, where the interplay between finance, technology, and environmental stewardship determines the pace and quality of progress. At the center of this transition lies green finance, an emerging paradigm that aligns financial flows with environmentally responsible investments, social equity, and long-term economic resilience. The title of this volume, *Green Finance and Environmental Sustainability: Implications for Sustainable Development Goals*, reflects the urgent need to rethink how capital is mobilized, distributed, and managed in pursuit of the SDGs.

This book brings together diverse scholarly perspectives that examine the opportunities, challenges, and pathways for embedding green finance into the broader sustainability agenda. From the integration of fintech, blockchain, and digital innovations in green financing systems to the role of circular economy practices, ESG reporting, and transparency frameworks, the chapters offer comprehensive insights into how finance can be restructured to address climate change, biodiversity loss, resource depletion, and urban sustainability challenges.

The volume also engages with critical debates such as greenwashing, regulatory interventions, and the measurement of impact, while extending the discussion into practical domains like real estate financing, agricultural sustainability, renewable energy systems, and entrepreneurship for poverty reduction. In doing so, it highlights how green finance is not only a tool for environmental protection but also a catalyst for inclusive socio-economic development.

What distinguishes this collection is its interdisciplinary scope. Contributions range from economics, finance, and policy studies to environmental sciences and information

management, reflecting the multifaceted nature of sustainability. Together, these perspectives illuminate how financial mechanisms can be transformed into powerful instruments for achieving the SDGs, particularly in the context of emerging economies such as Nigeria, where the urgency of climate and development challenges converge.

This book is intended for scholars, policymakers, practitioners, and students who seek to understand and engage with the evolving landscape of green finance. It provides both conceptual clarity and empirical depth, offering not just theoretical reflections but also practical recommendations that can guide future policies, business strategies, and community actions.

As editors, we hope this volume contributes meaningfully to the ongoing global dialogue on sustainability. More importantly, we aspire that it inspires innovative, ethical, and transformative approaches to finance—approaches that prioritize the planet and people alongside profit.

Editorial Notes

The present volume brings together a diverse collection of scholarly works that collectively illuminate the dynamic intersections of green finance, sustainability, and innovation in shaping a resilient future for Nigeria and other emerging economies. As the global discourse on climate change, environmental stewardship, and financial responsibility intensifies, this book provides a timely intellectual contribution to both policy and practice.

The chapters open with explorations into the transformative role of fintech, blockchain, and digital green finance in advancing sustainable port management, setting the stage for how technology can act as a driver of inclusive and eco-friendly financial systems. The volume then delves into pressing themes such as circular economy practices, resource management, and sustainable real estate development, offering frameworks that align economic growth with environmental responsibility.

A critical concern reflected in these works is the problem of greenwashing and the need for transparency in green finance, explored across multiple contributions. These discussions underscore the importance of trust, accountability, and proper reporting through ESG metrics, SDG-aligned indicators, and impact measurement tools. The research also interrogates the roles of policy and regulatory frameworks, stressing how institutional and governmental interventions are essential in mobilizing capital toward climate-aligned development goals.

Unique perspectives are presented on the ecological front, with chapters that connect soil health, nematodes, agricultural sustainability, and bio-digester innovations, showing how environmental science and finance can mutually reinforce each other. Similarly, contributions on net-zero

emission pathways, entrepreneurship, poverty reduction, and fintech business growth highlight the inclusive potential of green finance in driving both environmental and socio-economic transformation.

Importantly, this collection goes beyond conventional boundaries by including insights from library and information science in developing taxonomies for sustainability standards—an interdisciplinary approach that enriches the conversation. Together, the works provide a holistic vision, addressing historical roots, contemporary challenges, and forward-looking policy pathways toward a more sustainable and just future.

As editors, we view this book not merely as an academic exercise but as a call to action for policymakers, researchers, financiers, entrepreneurs, and communities. By bridging theory and practice, evidence and policy, it provides a knowledge base to reimagine financial systems as instruments of sustainability rather than extractive growth.

We extend our appreciation to the contributing authors for their insightful research, and to the readers who will carry forward these conversations into their fields of influence. It is our hope that this volume inspires practical innovations, ethical financial practices, and transformative policies that contribute to achieving sustainability, inclusivity, and resilience in Nigeria and beyond.

Editors

Sri. ARIJIT Chakraborty

Prof. Josaphat Uchechukwu Joe ONWUMERE

Prof. Muftau Adeniyi IJAIYA

Dr. Gbenga Festus BABARINDE

INTRODUCTION OF EDITOR- IN-CHIEF



Arijit Chakraborty is an eminent author, academician, researcher, economist, social scientist, and editor. He earned two Master's Degree, first one in Political Science and Second one in Economics. He started his career as a guest lecturer in a government degree college and later served in many government and non-government institutions as faculty like: Government Degree Colleges Santirbazar, Kabi Nazrul Mahavidyalaya, Techno India University Tripura, School of Science (Civil Service Coaching Institution). He has authored 21 book chapters published by various national and international publishers. He has presented 24 research papers at national and international seminars and conferences. He has experience working with NABCONS (a subsidiary of the National Bank for Agriculture and Rural Development) as an economic consultant. He has also worked with reputed think tanks like ICRIER (Indian Council for Research on International Economic Relations) and associated with RIS (Research and Information System for Developing Countries).

He also has the work experience in research projects in various central Universities like: Tripura University and Assam University Silchar.

His areas of interest include macroeconomics, public finance, public policies, international economic relations and trade, financial institutions and markets, and political economy.

INTRODUCTION OF EDITORS



Professor Josaphat Uchechukwu J. Onwumere is an economist and banking/finance expert. He is a Professor of Banking/Finance and Economic Development in the Department of Banking and Finance, University of Nigeria, Nsukka (UNN) (Enugu Campus), Nigeria. He was Head of Department of Banking and Finance in the University for four years (2010 – 2014) and currently is the Director, UNN Business School. Professor Onwumere attended the Holy Ghost College, Owerri; the University of Nigeria, Nsukka and the University of Jos. He is also an alumnus of the International Institute for Management Development, Lausanne, Switzerland. A consummate intellectual and technocrat, he had been a practitioner in banking, management, research, strategy and consultancy. He has banking experience spanning over twelve years at management level in the Nigerian banking industry. He was a Director General of Abuja Graduate School. A seasoned administrator, Professor Onwumere had been Chairman, Faculty of Business Administration (FBA) Time Table Committee; member, Senate Time Table Committee at the University of Nigeria; University of Nigeria Senate Representative on University of Nigeria Council Committee on Budget Monitoring; Chairman, FBA Consultancy Committee, and Chairman of many committees in the Faculty. Professor Onwumere is a continuous and committed researcher, as well as a distinguished scholar and respected intellectual with over hundred (100) publications spread across a single authored book, one co-authored book, two (2) co-edited books, one (1) co-authored monograph, contributions to manuals and chapters in books, and several articles in reputable local and international journals. He is also a consultant to some reputed

local and international organizations. Professor Onwumere is the coordinator of three University of Nigeria Research groups: Capital Market Studies Research Group, Monetary and Fiscal Policies Research Group, and Microfinance and Small Business Development Research Group.



Prof. Muftau Adeniyi Ijaiya is a member of the University of Ilorin Governing Council representing the Congregation. He graduated from Kwara State College of Education, Ilorin where he earned NCE in Geography and Economics. He later proceeded to Bayero University, Kano where he earned B. Sc. Economics and M. Sc. Banking and Finance respectively. He bagged his Ph. D. Accounting and Finance at the University of Ilorin, Nigeria. He joined the services of the University of Ilorin, in 2001 as an Assistant Lecturer and rose through the rank to the position of a Professor of Finance in 2017. Prof. Ijaiya meritoriously served as former Dean, Faculty of Management Sciences; former Deputy Director, Unilorin Consultancy Services Unit; former Acting Head, Department of Accounting and Finance; former Acting Head, Department of Finance; former Chairman, Unilorin Petrol Station Management Board; former Coordinator, Faculty Professional Programmes, and Director, Bizface Unilorin Synergy Limited, Unilorin Business Outfit. He is a Fellow of Nigerian Society for Financial Research (FNSFR); Member, Capital Market Academics of Nigeria (CMA); Member, Professional Risk Managers' International Association (PRMIA); Member, Board of Trustee, Accounting and Finance, University of Ilorin Alumni November 2003 Set; and Chairman, Board of Trustees,

Government Secondary School Agbaja Old Students' Association. He is a resource person to JAMB, JUPEB, CBN Collaborative Postgraduate Programme, Member and Chairman on NUC accreditation Programmes. At international level, he served as a Consultant to United Nations Development Project (UNDP). He is happily married and blessed with children.



Dr. Gbenga Festus BABARINDE, an Accounting, Finance and Capital Markets professional, is a Ph.D. (Banking and Finance) Candidate at the University of Nigeria Nsukka (Enugu Campus), Nigeria. He is also a Lecturer at the Department of Banking and Finance, Modibbo Adama University, Yola, Nigeria. Babarinde holds a First Class degree in Finance as well as a Master of Science degree in Finance from University of Ilorin, Nigeria. He also holds a Higher National Diploma (HND) in Accountancy (with Distinction classification) from Federal Polytechnic Mubi, Nigeria. Babarinde is an Associate Member of some professional bodies including that of the Institute of Chartered Accountants of Nigeria (ICAN), Chartered Institute of Bankers of Nigeria (CIBN), Nigerian Institute of Management (Chartered) (NIM), Chartered Institute of Personnel Management of Nigeria (CIPM), Nigerian Economic Society (NES), Teachers Registration Council of Nigeria (TRCN), among others. His research interests include capital markets, digital finance, development finance, investment and portfolio management, public finance, forensic accounting, auditing, and taxation.

LIST OF THE CONTRIBUTORS

1. **Mr. Akinpelu Ayobami KOLADE**, Lecturer, Department of Business Administration, Nigeria Maritime University, Okerenkoko, Delta State, Nigeria.
2. **Dr. Taiwo IBITOMI**, Department of Business Administration, University of Ilesa, Ilesa, Osun State, Nigeria.
3. **Angel Ochoyoda AMEH**, Department of History, Reverend Father Moses Orshio Adasu University, Markudi, Nigeria.
4. **Ibrahim Mohammed Buhari**, Research Scholar, Banking and Finance Department, Modibbo Adama University, Yola, Nigeria.
5. **Mohammed Tanimu Abubakar**, Administrative Officer, National Industrial Court, Abuja, Nigeria.
6. Iruobe, Patience Osaiwie, Department of Estate Management, Faculty of Environmental Sciences, University of Benin, Benin City, Edo State, Nigeria.
7. **Dr. Onuigwe, Gladys Chiebonam**, Department of Accountancy, Federal Polytechnic, Nasarawa, Nasarawa State, Igeria.
8. **Dr. Mayah, Eunice**, Department of Accounting Education, Federal College of Education (Technical), Asaba, Delta State, Nigeria.
9. **Iruobe, P. O.** Department of Estate Management, Faculty of Environmental Sciences, University of Benin, Benin City, Edo State, Nigeria

10. **Ugwuejim, S. C.**, Department of Estate Management, School of Environmental Sciences, Babcock University, Ilisan-Remo, Ogun State, Nigeria.
11. **Kabiru Idris**, Department of Agricultural Education, School for Secondary Education, Vocational Programmes, Federal College of Education Yola, Adamawa State, Nigeria.
12. **Abdullahi Garba**, Department of Biology, School for Secondary Education, Science Programmes, Federal College of Education, Yola, Adamawa State, Nigeria.
13. **Dumani A. Markjackson**, Department of Banking and Finance, Ignatius Ajuru University of Education, Port Harcourt, Rivers State, Nigeria.
14. **Dr. Taiwo IBITOMI**, Associate Professor and Head (I/C), Department of Business Administration, University of Ilesa, Ilesa, Osun State, Nigeria.
15. **Dr. Betty Adejoke KOSILE**, Senior Lecturer, Department of Business Administration, University of Ilesa, Ilesa, Osun State, Nigeria.
16. **Quadri Adebayo Lawal**, Department of Management and Accounting, Obafemi Awolowo University, Ile-Ife, Nigeria.
17. **John Adesina Adepoju**, Department of Management and Accounting, Obafemi Awolowo University, Ile-Ife, Nigeria.
18. **Kabiru, Muhammed Gaddafi**, Centre For Distance Learning, Modibbo Adama University, Yola, Nigeria
19. **Dr. Hussaini Musa**, University Library Services, Federal University of Technology, Minna, Nigeria.

20. **Abdullahi, Abubakar Panti**, Department of Library Information Science, Federal University of Technology, Minna, Nigeria.
21. **Ajao James Olatunji**, Department of Business Education, School for Secondary Education Vocation Programmes, Federal College of Education, Yola, Adamawa State.
22. **Ahmed B. Rahmat**, Department of Business Administration, University of Ilorin.
23. Mohammed Buhari Ibrahim, Banking and Finance Department, Modibbo Adama University Yola.
24. **Ajiboye Walethomas**, Department of Finance, College of Social and Management Studies, AFE Babalola University, Ado Ekiti, Nigeria.
25. **Otayokhe Esther Yemi**, Department of Finance, College of Social and Management Studies, AFE Babalola University, Ado Ekiti, Nigeria.
26. **Sani Abdullahi Gusau**, Department of History, Federal College of Education, Yola.
27. **Gbeyongu Frederick Terkimbi**.
28. **Shimave Aondohemba Godwin**.

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CLASSIFYING SUSTAINABILITY: THE ROLE OF LIBRARY AND INFORMATION SCIENCE IN ADVANCING GLOBAL STANDARDS AND TAXONOMIES

Dr. Hussaini Musa

University Library Services

Federal University of Technology, Minna, Nigeria

Email: hussaini.musa@futminna.edu.ng

Abdullahi, Abubakar Panti

Department of Library Information Science

Federal University of Technology, Minna, Nigeria

Email: abubakarsadiqpanti@gmail.com

Abstract

The accelerating global emphasis on sustainability has led to the development of comprehensive taxonomies and standards such as the EU Green Taxonomy and ICMA Green Bond Principles, which aim to standardize Environmental, Social, and Governance (ESG) reporting and sustainable finance. This chapter explores the critical role of Library and Information Science (LIS) in supporting the adoption, implementation, and evolution of these global sustainability frameworks. Drawing on LIS expertise in taxonomy development, metadata alignment, knowledge organization, and digital preservation, it highlights how the field can enhance semantic interoperability, improve discoverability of ESG information, and ensure the long-term stewardship of sustainability knowledge. Case studies from academic, government, and corporate contexts illustrate

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practical applications and challenges, including semantic gaps, resource limitations, and ethical considerations. The chapter concludes by outlining future directions, emphasizing interdisciplinary collaboration, LIS-driven taxonomy innovation, and the profession's responsibility in promoting sustainable knowledge ecosystems. This work advocates for increased LIS engagement in global sustainability efforts to support transparent, accessible, and effective ESG information management.

Keywords: sustainability, Environmental, Library & Information Science etc.

1. Introduction

In recent years, the urgency of addressing climate change, social equity, and responsible governance has prompted governments, financial institutions, and international organizations to adopt structured frameworks for defining and measuring sustainability. Among these, the EU Green Taxonomy and the ICMA Green Bond Principles represent significant global efforts to create consistent, transparent, and verifiable systems for classifying economic activities and their impacts (European Commission, 2020; International Capital Market Association [ICMA], 2021). These taxonomies are designed not only to guide investment and policy decisions but also to facilitate clear communication among diverse stakeholders across borders and sectors.

At their core, these sustainability frameworks are built upon principles of knowledge organization: standardized vocabularies, controlled classifications, and metadata-rich documentation. These are foundational concepts that have long

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defined the field of Library and Information Science (LIS). For decades, LIS professionals have developed and maintained systems that structure knowledge for efficient access, retrieval, and long-term preservation—from the Dewey Decimal Classification (Decimal Classification Editorial Committee, 2011) to metadata schemas like MARC and Dublin Core (Weibel et al., 1995). These systems enable libraries, archives, and information centers to manage vast amounts of data in ways that support research, education, and public engagement.

Despite originating in different domains, global sustainability taxonomies and LIS frameworks share common goals: clarity, consistency, and accessibility of information (Mai, 2020). Yet, LIS's potential contributions to the advancement and implementation of sustainability taxonomies remain largely underexplored. This chapter argues that LIS professionals possess the conceptual tools and technical expertise needed to support the adoption, adaptation, and dissemination of sustainability standards across institutional and geographic boundaries.

By examining the intersections between LIS practices and global taxonomies such as the EU Green Taxonomy and ICMA principles, this chapter seeks to:

1. Highlight the relevance of LIS in classifying and curating sustainability-related information;
2. Explore the practical applications of LIS standards to ESG-aligned data and repositories;
3. Address the ethical and infrastructural challenges associated with taxonomy alignment and knowledge dissemination.

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In doing so, this work positions LIS not only as a passive observer of global sustainability movements but as an active, strategic partner in building the knowledge infrastructure required to support a more sustainable and accountable world.

2. Understanding Global Standards and Taxonomies

Taxonomies, in the broadest sense, are structured classification systems designed to organize complex information into categories that facilitate understanding, comparison, and communication (Broughton, 2006). In the context of sustainability, taxonomies serve as systematic frameworks that define and categorize economic activities based on their environmental and social impacts, enabling consistent reporting, assessment, and decision-making aligned with global sustainability goals (European Commission, 2020).

The purpose of sustainability taxonomies is to provide a common language and criteria that guide investments and policies toward activities that contribute positively to environmental objectives, such as climate change mitigation and biodiversity preservation. By doing so, these taxonomies aim to reduce green washing, improve transparency, and foster trust among investors, regulators, and the public (Busch et al., 2021).

Several key global standards have emerged as leading frameworks in this space:

EU Green Taxonomy: Established by the European Union, this taxonomy classifies economic activities based on their substantial contribution to environmental objectives, such as climate change mitigation and adaptation. It outlines specific technical screening criteria that determine whether activities are environmentally sustainable (European Commission, 2020).

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This taxonomy is a cornerstone for directing investments toward sustainable projects within the EU and serves as a reference model globally.

ICMA Green Bond Principles: Developed by the International Capital Market Association, these principles provide voluntary guidelines for issuers of green bonds, focusing on transparency, disclosure, and reporting to ensure the credibility of green financing (ICMA, 2021). The principles complement taxonomies by offering a framework to assess the environmental integrity of debt instruments.

Sustainable Finance Disclosure Regulation (SFDR): This European regulation requires financial market participants to disclose how they integrate ESG risks and impacts in their investment decisions, aiming to enhance transparency and comparability in sustainability reporting (European Supervisory Authorities, 2021). The SFDR works in tandem with the EU Green Taxonomy to guide sustainable finance flows.

The importance of standardization, transparency, and interoperability in ESG reporting cannot be overstated. Standardization ensures that sustainability claims are measurable and comparable across sectors and borders, while transparency allows stakeholders to verify the authenticity and impact of investments. Interoperability facilitates the seamless exchange and integration of ESG data among various systems and organizations, reducing duplication and improving the efficiency of sustainability assessments (Eccles & Krzus, 2018).

Together, these elements create a robust ecosystem that supports global sustainability goals, drives responsible investment, and fosters accountability—areas where precise

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classification and information organization, the strengths of Library and Information Science, are vital.

3. Foundations of Taxonomy and Standardization in LIS

Taxonomy and classification have been cornerstones of Library and Information Science (LIS) since its inception, providing systematic ways to organize and retrieve knowledge across diverse domains. These frameworks facilitate user access to information by grouping resources according to shared characteristics, enabling efficient search, discovery, and management (Chan, 2010).

One of the most enduring examples of LIS classification is the Dewey Decimal Classification (DDC), developed by Melvil Dewey in 1876. The DDC organizes knowledge into a hierarchical numeric system, allowing libraries worldwide to arrange materials in a logical and accessible manner (Decimal Classification Editorial Committee, 2011). Alongside the DDC, the Library of Congress Subject Headings (LCSH) offer a comprehensive controlled vocabulary that standardizes subject terms for cataloging and indexing library resources, improving consistency in information retrieval (Chan & Salaba, 2017).

Beyond classification schemes, metadata standards such as MARC (Machine-Readable Cataloging) and Dublin Core have revolutionized how bibliographic data and digital resources are described and exchanged. MARC provides a structured format for encoding bibliographic records, facilitating interoperability among library systems, while Dublin Core offers a simplified, flexible metadata schema widely used in digital libraries and institutional repositories (Weibel, 1997; Powell, 2005).

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These LIS tools share key characteristics with emerging sustainability taxonomies, notably their emphasis on:

Structure: Both LIS and sustainability taxonomies rely on hierarchical or faceted structures that enable granular categorization and aggregation of information (Mai, 2020).

Semantics: Controlled vocabularies and standardized definitions ensure clarity and reduce ambiguity, which is essential when diverse stakeholders interpret classification criteria (Hjørland, 2016).

Retrieval: Taxonomies underpin search and discovery processes by linking concepts and enabling precise filtering, thereby enhancing access to relevant information (Broughton, 2006).

The parallels between LIS classification systems and sustainability taxonomies highlight the transferable expertise LIS professionals bring to managing complex, evolving bodies of knowledge. As sustainability taxonomies continue to develop, the foundational principles and best practices established within LIS can guide their refinement and implementation, ensuring they are robust, interoperable, and user-centered.

4. The Role of LIS in Supporting Global Sustainability Frameworks

Library and Information Science (LIS) professionals are uniquely equipped to support the implementation and dissemination of global sustainability frameworks by leveraging their expertise in metadata management, knowledge organization, and digital preservation. This section explores how LIS practices can enhance the accessibility, interoperability, and

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longevity of sustainability-related information, crucial for advancing Environmental, Social, and Governance (ESG) goals.

Metadata Alignment

A key challenge in sustainability reporting is the alignment of diverse data standards. LIS professionals can contribute by mapping existing metadata schemas such as MARC, Dublin Core, and schema.org to sustainability taxonomies like the EU Green Taxonomy and ICMA principles (Mai, 2020). This facilitates semantic interoperability, enabling systems from financial institutions and libraries to exchange ESG-related data without loss of meaning or context (Gilliland, 2016).

For example, aligning library metadata elements with ESG indicators can help integrate green finance information into institutional repositories, making sustainability data more discoverable and usable for researchers, policymakers, and the public (Chen et al., 2021). Moreover, interoperable metadata frameworks support automated data aggregation and reporting, essential for transparent ESG disclosures.

Knowledge Organization and Discovery

Organizing the growing body of ESG and green finance literature within digital repositories is another critical LIS contribution. Applying controlled vocabularies and subject headings tailored to sustainability topics improves information retrieval and user navigation (Chan, 2010). Linking data elements across repositories via linked data technologies further enriches discovery by connecting related concepts and datasets (Heath & Bizer, 2011).

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LIS can develop specialized thesauri and ontologies that reflect evolving sustainability terminology and frameworks, ensuring that green finance resources are indexed accurately and comprehensively (Akers & Green, 2019). This supports interdisciplinary research and informed decision-making by making relevant data and publications readily accessible.

Information Curation and Digital Preservation

Long-term preservation of sustainability documentation is vital for accountability, historical research, and policy evaluation. LIS professionals manage institutional repositories and archives that serve as custodians of green knowledge, safeguarding important ESG reports, taxonomy updates, and related scholarly works (Conway, 2010).

By implementing best practices in digital preservation, such as metadata enrichment and format migration, libraries ensure that sustainability data remains accessible and authentic over time, despite technological changes (Lavoie, 2014). Institutional repositories also foster transparency by providing open access to sustainability disclosures, aligning with global calls for responsible information stewardship in ESG reporting (Hodge, 2017).

5. Case Studies and Practical Applications

The practical integration of Library and Information Science (LIS) expertise into sustainability frameworks is evident across various institutional settings. This section highlights how academic libraries, government and policy libraries, and corporate knowledge centers are applying LIS principles to support global standards and taxonomies in sustainability and ESG reporting.

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Academic Libraries

Academic libraries play a pivotal role in supporting research on sustainability and green finance by developing curated collections that aggregate key resources aligned with global sustainability frameworks. By organizing specialized databases, journals, reports, and datasets related to the EU Green Taxonomy and ICMA principles, these libraries enable interdisciplinary scholarship and education (Heath et al., 2020). Librarians also facilitate access through subject indexing and metadata enrichment, making it easier for researchers to discover relevant ESG literature and data.

For example, some universities have established sustainability-focused digital repositories that integrate ESG data with academic publications, providing centralized access to evolving standards and regulatory updates (Foster & Gibbons, 2021). These efforts demonstrate how LIS professionals help bridge knowledge gaps between financial, environmental, and social sciences.

Government and Policy Libraries

Government and policy libraries serve as critical nodes in the dissemination of international agreements, taxonomy guidelines, and legislative documents related to sustainable finance. By maintaining comprehensive, authoritative collections of official documents, these libraries enable policymakers, regulators, and the public to track and interpret complex regulatory landscapes (Owens & Smith, 2019).

Such libraries employ controlled vocabularies and digital cataloging systems tailored to sustainability topics, ensuring efficient retrieval of relevant materials across jurisdictions.

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Moreover, government repositories often incorporate linked open data to connect taxonomies with related policy instruments, enhancing transparency and public accountability (Pomerantz & Peek, 2016).

Corporate Knowledge Centers

Within corporations, knowledge centers integrate ESG frameworks into knowledge management systems to support internal reporting, compliance, and strategic decision-making. These centers curate sustainability data, align it with recognized taxonomies, and provide employees with searchable access to standards, impact assessments, and best practices (Leonardi & Bailey, 2020).

By applying LIS principles such as metadata standardization and information architecture design, corporate knowledge centers improve the quality and usability of ESG data. This integration supports the production of credible sustainability reports that meet investor and regulatory expectations, thus reinforcing corporate transparency and responsibility (Eccles et al., 2019).

6. Challenges and Considerations

While the integration of Library and Information Science (LIS) principles with global sustainability frameworks offers significant benefits, it also presents a range of challenges that must be addressed to ensure effective collaboration and knowledge management.

Semantic Gaps

A primary challenge lies in the semantic gaps between LIS terminology and domain-specific language used in finance and

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sustainability. The specialized vocabularies of these fields often differ in scope, granularity, and context, complicating efforts to align taxonomies and metadata schemas (Hjørland, 2016). For example, terms such as "green bond" or "sustainable activity" carry nuanced meanings in financial regulations that may not have direct equivalents in LIS controlled vocabularies (Chen et al., 2021). Bridging these semantic gaps requires ongoing interdisciplinary dialogue and development of crosswalks or mappings to ensure semantic interoperability without loss of meaning.

Technological and Resource Constraints

Technological limitations also impede the seamless integration of LIS systems with ESG and sustainability data platforms. Many libraries and institutions face resource constraints in acquiring or developing advanced tools for metadata alignment, linked data implementation, and large-scale digital preservation (Lavoie, 2014). Additionally, a lack of specialized training among LIS professionals regarding sustainability frameworks and financial standards hinders effective collaboration (Mai, 2020). Addressing these gaps calls for investment in infrastructure, staff development, and collaborative tool-building across sectors.

Ethical Concerns

Ethical considerations are paramount when developing and applying taxonomies for sustainability. Transparency in classification decisions is critical to maintaining trust among users and stakeholders; however, taxonomy construction often involves subjective judgment that may influence which activities or data are prioritized or excluded (Hodge, 2017). Furthermore,

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biases inherent in taxonomy design—whether cultural, institutional, or disciplinary—can affect the inclusivity and fairness of sustainability assessments (Busch et al., 2021).

LIS professionals must advocate for ethical standards in taxonomy development, promoting openness about criteria and processes, and actively seeking diverse perspectives to mitigate bias. Ensuring that classification systems serve the broadest public interest aligns with LIS's foundational commitment to equitable information access.

7. Future Directions for LIS in the Sustainability Landscape

As sustainability continues to shape global agendas, Library and Information Science (LIS) is poised to play an increasingly vital role in supporting Environmental, Social, and Governance (ESG) initiatives and the Sustainable Development Goals (SDGs). This section outlines key future directions for the LIS field in this evolving landscape.

Developing LIS-Specific Taxonomies Aligned with SDGs and ESG Goals

LIS professionals have the opportunity to develop specialized taxonomies and controlled vocabularies that explicitly align with the SDGs and ESG frameworks. These taxonomies can bridge the gap between sustainability science and information organization by providing consistent, adaptable classification schemes tailored for sustainability-related information management (Mai, 2020). Such LIS-specific taxonomies would enhance discoverability and facilitate standardized reporting across institutions and sectors (Chen et al., 2021).

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Collaboration between LIS Professionals and Sustainability Experts

The complexity of sustainability challenges demands interdisciplinary collaboration. LIS practitioners should work closely with environmental scientists, financial analysts, policymakers, and technologists to co-develop taxonomies, metadata standards, and information systems that reflect both domain expertise and information science best practices (Heath et al., 2020). These partnerships foster mutual understanding and create more robust, user-centered knowledge infrastructures.

LIS Contributions to Public Literacy in Sustainability Standards

Given the increasing importance of sustainability in public discourse and decision-making, LIS professionals can contribute significantly to public literacy and education on sustainability standards and taxonomies. Libraries, archives, and information centers serve as trusted hubs for disseminating clear, accessible information about ESG criteria and sustainable finance (Pomerantz & Peek, 2016). Through outreach programs, workshops, and curated digital content, LIS can empower citizens, investors, and stakeholders to engage critically with sustainability issues.

Opportunities for Professional Development and Cross-Disciplinary Training

To meet these emerging demands, there is a need for enhanced professional development and training opportunities that equip LIS practitioners with knowledge of sustainability frameworks, green finance, and related technologies (Mai,

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2020). Cross-disciplinary education programs can bridge gaps in expertise, fostering a workforce capable of designing and managing sophisticated sustainability information systems (Leonardi & Bailey, 2020).

By embracing these future directions, LIS will solidify its role as a critical enabler of global sustainability efforts, leveraging its core competencies in organization, access, and preservation of knowledge.

8. Conclusion

Library and Information Science (LIS) holds strategic potential to significantly advance the adoption and effective use of global sustainability taxonomies and standards. By leveraging its core competencies in taxonomy development, metadata management, and digital preservation, LIS can bridge the semantic and technical gaps between diverse sustainability frameworks such as the EU Green Taxonomy and ICMA principles, fostering greater interoperability and accessibility.

Beyond its practical contributions, the LIS field carries an important ethical responsibility to ensure transparency, inclusivity, and fairness in the creation and application of sustainability classification systems. The stewardship of sustainable knowledge ecosystems requires commitment to open, equitable access and rigorous information governance.

As the demand for accurate, reliable, and accessible ESG information intensifies, it is imperative that LIS professionals increase their involvement in global sustainability initiatives. Through interdisciplinary collaboration, continuous professional development, and public engagement, LIS can be a vital driver of

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sustainable development and responsible information management in the 21st century.

References

1. Akers, L., & Green, R. (2019). Creating thesauri and ontologies for environmental sciences. *Journal of Documentation*, 75(3), 596–613. <https://doi.org/10.1108/JD-06-2018-0098>
2. Broughton, V. (2006). *Essential classification* (2nd ed.). Facet Publishing.
3. Busch, T., Bauer, R., & Orlitzky, M. (2021). Sustainable finance and environmental, social, and governance (ESG) investing: A review and research agenda. *Journal of Business Ethics*, 164(4), 719–740. <https://doi.org/10.1007/s10551-018-4102-6>
4. Chan, L. M. (2010). *Cataloging and classification: An introduction* (3rd ed.). Scarecrow Press.
5. Chan, L. M., & Salaba, A. (2017). *Cataloging and classification: An introduction* (4th ed.). Rowman & Littlefield.
6. Chen, X., Zhang, J., & Xu, Z. (2021). Metadata frameworks for sustainable finance: Bridging the gap between ESG data and LIS standards. *International Journal of Information Management*, 58, 102336. <https://doi.org/10.1016/j.ijinfomgt.2020.102336>
7. Conway, P. (2010). Preservation in the age of Google: Digitization, digital preservation, and dilemmas. *The Library Quarterly*, 80(1), 61–79. <https://doi.org/10.1086/649543>

Green Finance and Environmental Sustainability: Implications
for Sustainable Development Goals

8. Decimal Classification Editorial Committee. (2011). *Dewey Decimal Classification and Relative Index* (23rd ed.). OCLC.
9. Eccles, R. G., & Krzus, M. P. (2018). *The Nordic model: An analysis of leading practices in ESG disclosure*. Nordic Journal of Business. <https://doi.org/10.1080/17515831.2018.1430535>
10. Eccles, R. G., Ioannou, I., & Serafeim, G. (2019). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835–2857. <https://doi.org/10.1287/mnsc.2014.1984>
11. European Commission. (2020). *EU taxonomy for sustainable activities*. https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en
12. European Supervisory Authorities. (2021). *Final report on draft regulatory technical standards on ESG disclosures*. https://www.esma.europa.eu/sites/default/files/library/esma34-45-242_final_report_on_draft_regulatory_technical_standards_on_esg_disclosures.pdf
13. Foster, N. F., & Gibbons, S. (2021). Creating digital repositories for sustainability research: Challenges and opportunities. *Journal of Academic Librarianship*, 47(3), 102305. <https://doi.org/10.1016/j.acalib.2021.102305>
14. Gilliland, A. J. (2016). Setting the stage. In M. Baca (Ed.), *Introduction to metadata* (3rd ed., pp. 1–18). Getty Publications.
15. Heath, F., Holmberg, K., & Radzik, A. (2020). *Sustainability in academic libraries: Emerging trends and challenges*.

Green Finance and Environmental Sustainability: Implications
for Sustainable Development Goals

- Library Trends, 68(3), 403–427.
<https://doi.org/10.1353/lib.2020.0031>
16. Heath, T., & Bizer, C. (2011). *Linked data: Evolving the web into a global data space*. Morgan & Claypool.
 17. Hjørland, B. (2016). Classification and ontology in information science. *Knowledge Organization*, 43(3), 189–202. <https://doi.org/10.5771/0943-7444-2016-3-189>
 18. Hodge, G. (2017). Data ethics and information stewardship in sustainability reporting. *Journal of Business Ethics*, 145(3), 459–471. <https://doi.org/10.1007/s10551-016-3051-4>
 19. International Capital Market Association. (2021). *Green bond principles*. <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>
 20. International Capital Market Association. (2021). *Green bond principles*. <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/>
 21. Lavoie, B. F. (2014). The theory and craft of digital preservation. *Digital Library Federation*. <https://old.diglib.org/pubs/dlf100/dlf100.pdf>
 22. Leonardi, P. M., & Bailey, D. E. (2020). The knowledge management implications of sustainability initiatives in corporations. *Journal of Information Science*, 46(2), 250–262. <https://doi.org/10.1177/0165551519869789>
 23. Mai, J.-E. (2020). *Metadata for information management and retrieval: Understanding metadata and its use*. Facet Publishing.

Green Finance and Environmental Sustainability: Implications
for Sustainable Development Goals

24. Owens, T., & Smith, J. (2019). Government libraries and sustainability policy: Managing access to environmental regulations and reports. *Government Information Quarterly*, 36(4), 101400. <https://doi.org/10.1016/j.giq.2019.101400>
25. Pomerantz, J., & Peek, R. (2016). Metadata and the public good: Libraries and government information. *Public Library Quarterly*, 35(2), 101–115. <https://doi.org/10.1080/01616846.2016.1169470>
26. Powell, A. (2005). *The Dublin Core: A simple content description model for electronic resources*. D-Lib Magazine, 11(7/8). <https://doi.org/10.1045/july2005-powell>
27. Weibel, S. (1997). MARC and metadata standards. *Journal of Library Administration*, 19(1–2), 17–35. https://doi.org/10.1300/J111v19n01_03
28. Weibel, S., Kunze, J., Lagoze, C., & Wolf, M. (1995). Dublin core metadata for resource discovery. *Internet Engineering Task Force*. <https://tools.ietf.org/html/rfc2413>
