

GENERATIVE AI FOR SUSTAINABILITY REPORTING

DUSAN DOKIC

IRONHACK RAG PROJECT

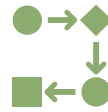


MOTIVATION



Growing Demand for Transparency:

Regulatory bodies and stakeholders are increasingly demanding transparent sustainability practices and disclosures.



Complex and Evolving Compliance Requirements

Navigating the numerous sustainability standards is challenging and time-consuming.



Efficiency in Data Retrieval and Reporting

Manual searching through extensive reports is inefficient and prone to errors.



Enhanced Decision-Making for Sustainability Initiatives

Quick access to sustainability information empowers decision-makers to develop informed strategies.



Competitive Advantage through Streamlined Reporting

Companies that can easily demonstrate compliance and sustainability commitment stand out in the marketplace.

PROJECT OVERVIEW:

Objective: Develop a Sustainability Reporting Assistant using Retrieval-Augmented Generation (RAG) to aid companies in sustainability reporting, specifically aligning with ESRS, GRI, SASB, and TCFD standards.



End Goal: Enable users to quickly retrieve and understand relevant sustainability information, enhancing compliance and transparency.

KEY FUNCTIONAL COMPONENTS



Document Ingestion and Storage: Processes multiple document formats (PDF, JSON) from the European Sustainability Reporting Standards (ESRS). Utilizes a ChromaDB database to store document embeddings for efficient retrieval.

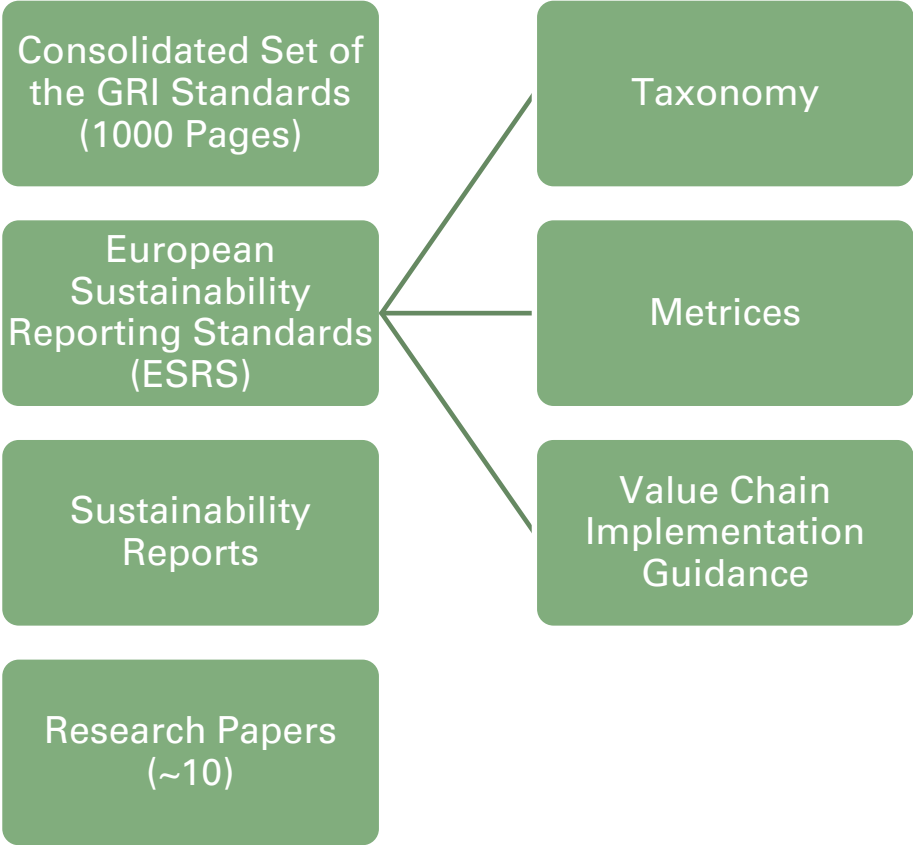


Text Embedding and Vector Storage: Embeds document content with SentenceTransformer (all-MiniLM-L6-v2 model) for optimized text representation. Stores embeddings in a VectorDB (ChromaDB) for fast and relevant document retrieval.



Dynamic Query Processing: User inputs sustainability-related questions via Streamlit UI. Retrieves relevant document chunks based on similarity to user queries, ensuring contextually accurate responses.

DATA SOURCES



Integrating AI's Carbon Footprint into Risk Management Frameworks: Strategies and Tools for Sustainable Compliance in Banking Sector

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Abstract

This paper examines the integration of AI's carbon footprint into the risk management frameworks (RMFs) of the banking sector, emphasising its importance in aligning with sustainability goals and regulatory requirements. As AI becomes increasingly central to banking operations, its energy-intensive processes contribute significantly to carbon emissions, posing environmental, regulatory, and reputational risks. Regulatory frameworks such as the EU AI Act, Corporate Sustainability Reporting Directive (CSRD), Corporate Sustainability Due Diligence Directive (CSDDD), and the Prudential Regulation Authority's SS1/23 are driving banks to incorporate environmental considerations into their AI model governance. Recent advancements in AI research, like the Open Mixture-of-Experts (OLMoE) framework and the Agentic RAG framework, offer more efficient and dynamic AI models, reducing their carbon footprint without compromising performance. Using these technological examples, the paper outlines a structured approach for banks to identify, assess, and mitigate AI's carbon footprint within their RMFs, including adopting energy-efficient models, utilising green cloud computing, and implementing lifecycle management. The paper also emphasises cross-departmental collaboration within banks and the use of respective enabling tools such as the GHG Protocol Toolkit for carbon accounting and Fairlearn for AI fairness assessment. Building on the experts' opinions, such as UNEP FI, we argue that targeting alignment with the global standards and directives like IFRS, ESRS, and GFANZ, banks can enhance their sustainability reporting and model governance, ensuring long-term resilience. By effectively integrating these practices into their RMFs, banks can navigate the regulatory landscape, mitigate environmental risks, and promote a sustainable future in banking, balancing innovation with environmental responsibility.

ADVANCED LANGUAGE MODEL INTEGRATION

Large Language Model (LLM)

Usage: Leverages OpenAI's GPT-4 through LangChain to answer complex queries. Carefully constructed prompts provide targeted responses that reference sustainability standards, offering accurate, reliable information.

Token Management and Optimization: Implements token count checks to manage LLM's token limitations, ensuring efficient usage and cost management.

USER INTERFACE AND EXPERIENCE

Sustainability Reporting Assistant

Ask questions about your company's sustainability reporting based on ESRS standards.

Enter your question:

Streamlit-based Frontend:

Simple, interactive UI allows business users to query reports seamlessly. Guided

Response Generation:

Responses emphasize relevance, section-specific references, and guidance if requested information is unavailable.

Sustainability Reporting Assistant

Ask questions about your company's sustainability reporting based on ESRS standards.

Enter your question:

I am working for a bank, what sustainability metrics do i have to include in my report?

Answer

Based on the sustainability reporting standards GRI (Global Reporting Initiative), SASB (Sustainability Accounting Standards Board), and TCFD (Task Force on Climate-related Financial Disclosures), a bank should consider including the following sustainability metrics in its report:

- 1. Environmental Impact:** This includes metrics related to energy use, emissions, waste, and water use. It also covers the bank's efforts to reduce its environmental footprint and promote sustainable practices.
- 2. Social Impact:** This includes metrics related to the bank's impact on the communities it serves. This might involve community development initiatives, financial inclusion efforts, and human rights considerations.
- 3. Governance:** This includes metrics related to the bank's governance structures, policies, and practices. It might involve board diversity, executive compensation, and risk management.
- 4. Risk Management:** This includes metrics related to how the bank manages environmental, social, and governance (ESG) risks. This might involve climate-related financial risk disclosures, as recommended by the TCFD.
- 5. Product Portfolio:** This includes metrics related to the sustainability of the bank's products and services. This might involve the proportion of lending to sustainable businesses or projects.

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