Role of Environmental and Social Risk Management System: *Increasing use of Digital Platforms and Application of AI*

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Are these projects benign of any environmental and social risks?

Yes or No.

Solar Power Project

E&S Objective:

- Reduce greenhouse gas emissions.

Waste-to-Energy Plant

E&S Positive Impact:

- Promote circular economy principles
- Reduce methane emissions.

Affordable Housing Project

E&S Positive Impact:

- Provide safe, affordable housing

Are these projects benign of any environmental and social risks?

No.

Solar Power Project

E&S Objective:
- Reduce greenhouse gas emissions.

E&S Risks:
- Land acquisition impacts
- Disposal of spent solar panels
- Involuntary displacement
- Safety risks for workers

Waste-to-Energy Plant

E&S Positive Impact:
- Promote circular economy principles
- Reduce methane emissions.

E&S Risks:
- Contamination of groundwater
- Impact on informal waste pickers' livelihoods.

Affordable Housing Project

E&S Positive Impact:
- Provide safe, affordable housing

E&S Risks:
- Increased resource consumption
- Displacement of existing informal settlements.
- Management of C&D waste

Sustainable Finance and Risk

Funding sustainable projects is not enough; **risks such as environmental degradation or social harm must be addressed.**

Risk-managed projects are **more likely to meet sustainability targets** and **maintain investor trust.**

What is a ‘Risk’?

A risk is the chance, high or low, that will actually cause harm

LIKELIHOOD of an occurrence of a hazardous event

and

SEVERITY of injury or ill health that can be caused by the event or exposure

Likelihood and severity will guide the prioritization of risks and the associated mitigation measures

E&S Risks

Environment

- Waste Management
- Air Emission
- Use of Natural Resources
- Energy Conservation
- Climate Change
- Responsibly sourced material
- Hazardous Material & its Management
- Water Conservation
- Pollution Prevention & Control
- GHG Emissions
- Forest & Bio-diversity

Social

- Labour Practices
- Occupational Health & Safety
- Gender Equality
- Contractor Management
- Supply Chain Management
- Community Health & Wellness
- Human Rights
- Industrial relations
- Diversity & Equal Opportunity
- Payment of Wages & Social Security
- Product Safety

Typical E&S Risks for Banks' Clients

Understanding E&S risks for Banks' clients

Typical E&S Risks for Banks' Clients (1/3)

Air Pollution

Air Quality

Greenhouse Gas Emissions

Water Use and Conservation

Wastewater and Water Quality

Solid Wastes

Typical E&S Risks for Banks' Clients (2/3)

Child Labour

Worker Health and Safety

Forced Labour

Non-payment of minimum wages

Effects on native populations

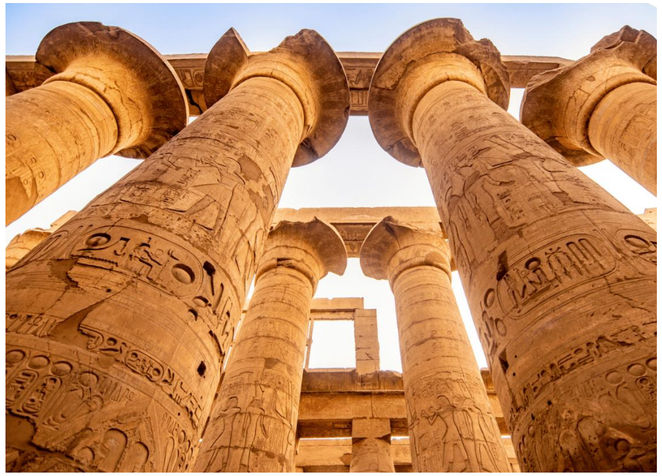
Community Health and Safety

Typical E&S Risks for Banks' Clients (3/3)

Biodiversity Loss

Flora and Fauna Impact

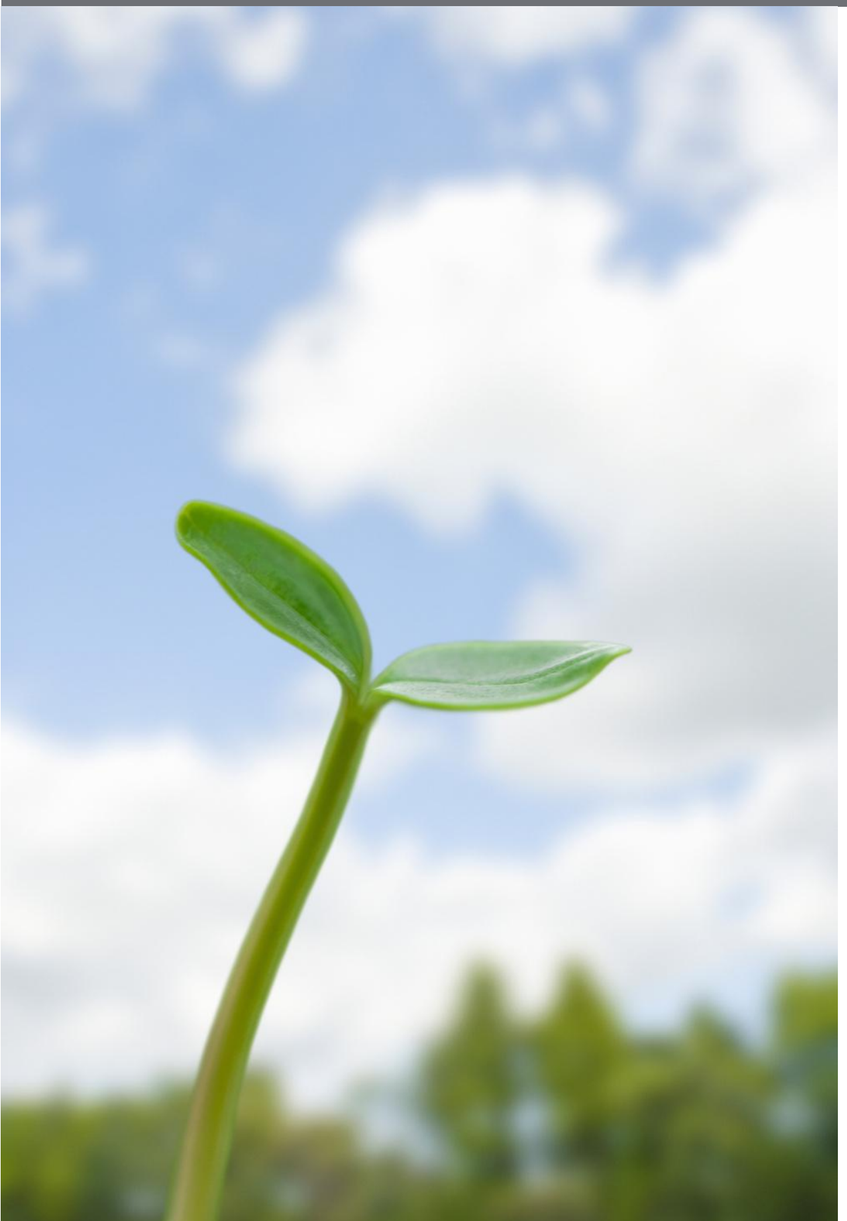
Climate risks



Cultural Heritage Loss

Land Acquisition

Involuntary Resettlement



What is an ESRMS?

Environmental and Social Risk Management System

- An **Environmental & Social Risk Management System (ESRMS)** provides the framework to assess, monitor, and mitigate risks in financed projects.
- A set of **policies, procedures, tools and internal capacity** to identify, monitor and manage a Bank's exposure to the E&S risks of its clients.
- Ensures that projects comply with relevant ESG standards and do not cause unintended harm to the environment or communities.

Overview of the ESRMS

Integrates **E&S considerations into overall credit risk assessments**, aligning financial decisions with sustainability objectives.

Provides guidance on how to screen transactions, categorize transactions based on their E&S risk, conduct E&S due diligence and monitor the client's E&S performance.

Defines the **decision-making process**, describes the **roles, responsibilities and capacity needs** of staff and states the **documentation and recordkeeping requirements**.

Components of an ESRMS

01

E&S Policy

The E&S Policy states a Bank's vision and mission with respect to the environment, society and contributions to sustainable development and guides the procedures for its implementation.

→

02

Roles and Responsibilities

An ESRMS must clearly define roles and responsibilities for carrying out the necessary procedures and making decisions.

→

03

E&S Risk Management for transactions

An ESRMS describes procedures for proactive management of E&S risks that must be embedded in risk assessment and management processes across the Bank.

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E&S Risk Management of Transactions (1/2)

01 Exclusion List

Screening of the project against a list of excluded activities adopted by the Bank.

02 Applicability Matrix

Bank-specific Applicability Matrix to identify loan types and segments that require E&S risk assessment and management.

03 Preliminary ESDD

Checklist for project to generate risk rating of **High, Medium, or Low.**

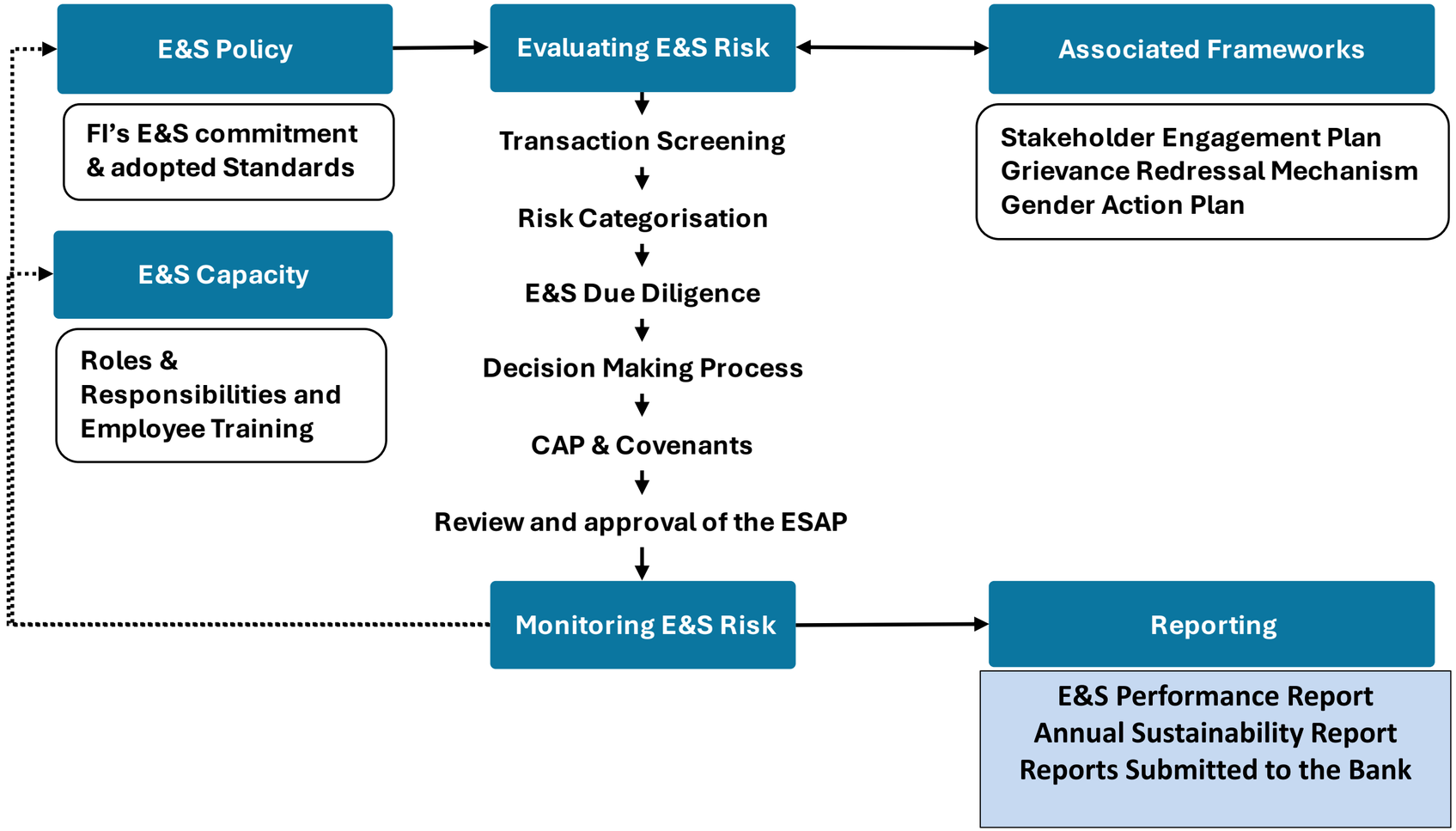
04 Categorisation

Categorisation of transactions to reflect the magnitude of risks and impacts.

E&S Risk Management of Transactions (2/2)

05	Detailed ESDD	Systematic identification, quantification and assessment/evaluation of E&S risks
06	EIA and EMP	Review of the Environmental Impact Assessment (EIA) report, Environmental Management Plan (EMP), and Corrective Action Plan, if applicable
07	ESAP and Covenants	Time-bound E&S Action Plan (ESAP) and relevant covenants to address the identified risks
08	Monitoring	Systematic monitoring on a periodic basis, such as by implementing procedures for verifying compliance with E&S requirements including implementation of ESAP to resolve non-compliances.
09	Reporting	Report both internally to senior management and externally to the Bank shareholders on their sustainability performance.

Components of an ESRMS



The procedures in the ESRMS need to be **applied to each transaction** as part of **overall risk management framework** of a Bank and appropriate documentation will need to be created and maintained if ESRMS is to be audited.

Sustainable Finance Framework

- A set of policies, principles and guidelines to facilitate the raising of finance in the form of sustainable financing instruments.

- Assists banks in **making informed decisions**, guiding the **categorization of sustainable financial products** to support environmentally and socially responsible investment.

- Integrates **tracking and disclosing Banks' performance against the E&S Commitments**.

Elements of a Sustainable Finance Framework (SFF)

01

Sustainable Finance Policy

The Sustainable Finance Policy states a Bank's intention to to promote environmentally and socially responsible investment and financing practices.

02

Principles and Guidelines

An SFF must align with national and international principles and guidelines for E&S risk management.

03

Sustainable Financing-Related Procedures

An SFF includes a structured set of procedures designed to integrate sustainability aspects into its financing practices.

Commonly SFF follows the ICMA Principles

The ICMA suggest these four components of a sustainable finance framework:

1. Use of Proceeds

The utilisation of the proceeds of the bond for eligible projects should be appropriately described in the security legal documentation.

- **Exclusion List**: A negative list that ensures that the bank does not finance activities not aligned with its long-term sustainability goals.
- **Eligibility Criteria**: A positive list of the types of projects which are eligible for sustainable financing for tracking and disclosing performance against Banks' sustainability targets.

2. Process for Project Evaluation and Selection

Banks must communicate the **sustainability objectives** of eligible projects and processes to determine how the projects fit within the eligible Project categories listed in the eligibility criteria

They must also disclose any other information on **how they identify and manage perceived social and environmental risks associated with the Projects.**

3. Management of Proceeds

Banks must describe its internal formal processes to **track the lending and investment operations** for all eligible projects.

4. Reporting

Issuers should keep readily available up-to-date **information on the allocation and impact of proceeds** to be renewed annually and on a timely basis in case of material developments.

External Review

ICMA provides key recommendations for external review of SFF:

Second Party Opinion

An independent assessment provided by a specialized external agency to evaluate the alignment of the SFF with recognized principles, such as the ICMA Principles and guidelines

Verification

An independent audit to confirm that the allocation of funds and reported impacts under a sustainable finance instrument align with the issuer's commitments and stated objectives.

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Process flow of SFF

Second Party Opinion of SFF

Why do we need ESRMS in Sustainable Finance?

Strong risk management is essential to align the Bank's credit portfolio with sustainable finance principles. By maintaining and implementing an effective ESRMS, Banks can **proactively manage E&S risks throughout the entire lifecycle of a transaction**.

This ensures that robust risk management practices underpin any efforts to mobilize sustainable finance.

Let’s take a case

Project to finance the development of a solar energy project using a green bond.

- A solar power project aims to establish a 50 MW solar power plant to supply clean energy .

- The project is financed through **green bonds** amounting to USD **75 million**, issued under a Sustainable Finance Framework.

Potential E&S Risks for a Solar Power Project

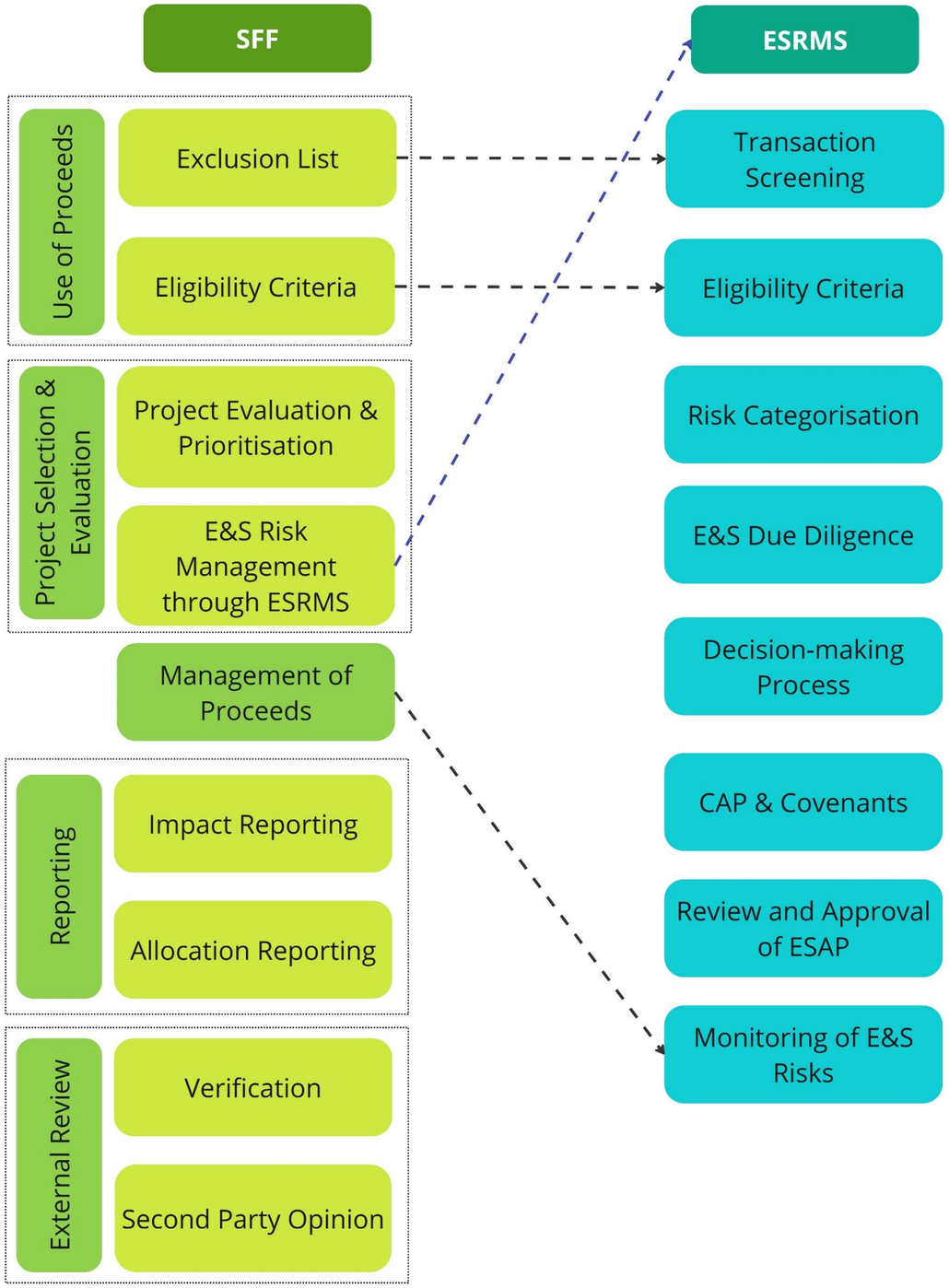
- Land acquisition
- Biodiversity loss
- Risk of displacement of vulnerable communities
- Soil degradation
- Labour working conditions
- High water usage
- Disposal of spent solar panels
- Vulnerability to extreme weather events
- Risks associated with sourcing materials (e.g., rare metals) for PV panels, potentially tied to unsustainable practices.

Operationalizing SFF for a Solar Project

- **Use of Proceeds**: Ensure funds are directed toward eligible green projects like solar energy systems.
- **Exclusion List and Eligibility Criteria**: Check compliance with predefined green finance criteria (e.g., renewable energy projects, emissions reduction).
- **Risk Management**: Identify credit risks & E&S risks of the project.
- **Management of Proceeds**: Track and monitor investment and lending operations.
- **Allocation Reporting**: Allocate funds for procurement, installation, and operational activities.
- **Impact Reporting**: Measure outcomes such as reduction in CO2 emissions, renewable energy capacity installed, and number of SMEs/households benefitting.
- **Verification**: Audits to validate alignment with SFF and Principles.

Operationalizing ESRMS for a Solar Project

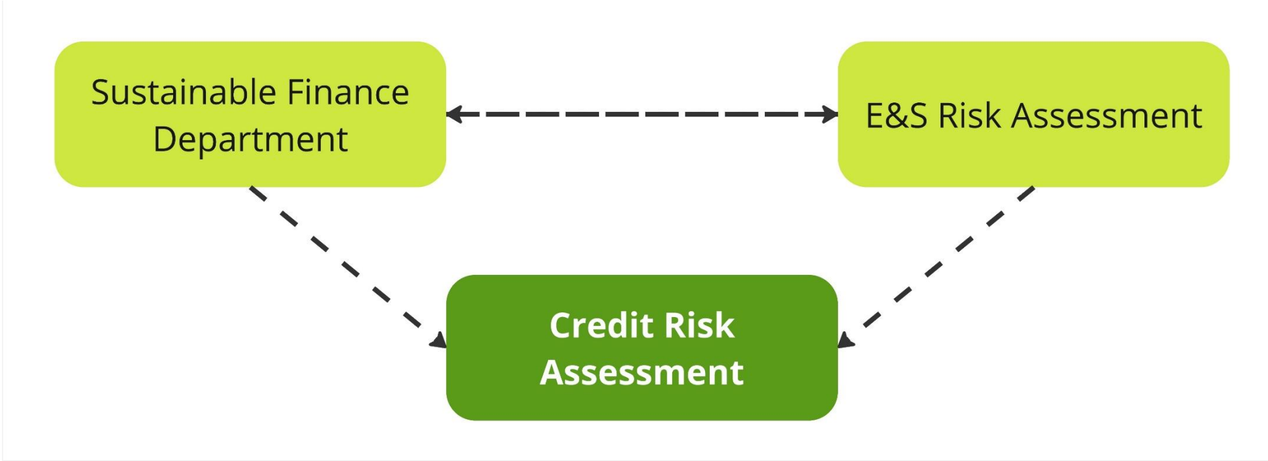
- **Objective**: Manage environmental and social risks associated with the solar project.
- **Transaction Screening:** Evaluate compliance with exclusion lists (e.g., avoiding environmentally sensitive areas).
- **Risk Categorization:** Categorize projects based on risks (e.g., land acquisition conflicts, waste disposal of spent solar panels, biodiversity impacts).
- **E&S Due Diligence**: Conduct site-specific assessments to identify potential environmental and community impacts. Assess end-of-life risks like recycling and disposal of panels.
- **Develop ESAP**: Develop mitigation plans through the ESAP addressing identified risks, such as circular recycling programs and fair compensation for land use.
- **Monitoring and Reporting**: Establish ongoing monitoring processes to ensure compliance with E&S safeguards and ESAP.



Synergies between SFF and ESRMS

- Streamlined processes can **reduce duplication** in project evaluation, monitoring, and reporting.
- Holistic integration can **strengthen the identification and mitigation** of financial, environmental, and social **risks**.
- **Unified frameworks for reporting** could ensure alignment with global sustainability standards, boosting investor confidence.
- Shared tasks across SFF and ESRMS would **lower administrative and operational expenses**.
- Overlapping elements create a foundation for **merging SFF and ESRMS within core credit risk processes.**

Can elements of SFF and ESRMS be integrated?



- **Unified Risk Assessment**: Integration of SFF and ESRMS elements into credit risk assessment would allow banks to prioritize both strong financial returns and positive E&S outcomes.
- **Streamlined Reporting:** Centralizing compliance and impact reporting across functions could reduce redundancy and enhances data consistency.
- **Collaborative Project Screening**: Joint evaluations by credit, E&S risk, and project selection teams can align sustainable and financial objectives.
- **Consolidated Monitoring and Auditing:** A unified approach to tracking fund use, impact, and risks would ensure efficient resource use and robust oversight.

Use of Digital Platforms and Application of AI

The Infrastructure of ESRMS and Sustainable Finance

Use of Digital Platforms and Application of AI

The Infrastructure of ESRMS and Sustainable Finance

Standardizing ESG data collection across disparate sources

Reducing verification costs and manual oversight

AI reduces human error in risk assessment and ensures consistent application of evaluation criteria.

Real-Time and continuous surveillance of environmental and social indicators with immediate alert systems.

Enhancing transparency in sustainable finance flows

Bridging information asymmetries for investors and regulators

Automated tracking and reporting ensure consistent compliance with evolving ESG regulations.

AI provides actionable insights from complex datasets, enabling more informed strategic decisions.

For example, AI can predict supply chain disruptions due to environmental changes or social unrest, allowing companies to proactively address these issues. Moreover, AI can assess governance risks by evaluating the likelihood of regulatory breaches or unethical behavior within the organization. By anticipating these risks, companies can implement mitigation strategies, thereby safeguarding their reputation and ensuring long-term sustainability.

Evolution of Digital ESRMS Platforms

ESRMS digital platforms integrate document management, workflow automation, stakeholder engagement tools, and regulatory compliance tracking in unified digital environments.

Cloud-Based Infrastructure- Scalable, accessible platforms enabling real-time collaboration and data sharing across global operations.

Integrated Dashboards
Centralized visualization of environmental and social metrics with customizable reporting capabilities.

Mobile Applications
Field-based data collection and incident reporting through smartphone and tablet interfaces.

Blockchain for supply chain transparency, Digital twins for environmental modeling, and Edge computing for real-time risk assessment

API Integration
Seamless connection with existing enterprise systems, regulatory databases, and third-party data sources.

Artificial Intelligence Applications in ESRMS

Artificial Intelligence (AI) is revolutionizing how organizations identify, assess, and manage E&S risks through automated analysis and predictive capabilities.

Natural Language Processing (NLP)

- **Document Analysis** :Automated extraction and analysis of ESG-related information from contracts, reports, and regulatory documents.
- **Stakeholder Sentiment Analysis**: Analysis of social media, news, and community feedback to gauge public sentiment and identify emerging social risks.

Remote Sensing

- **Satellite imagery analysis:** Monitoring deforestation, land use changes, and environmental degradation using AI-powered image recognition.
- **Drone-Based Monitoring:** Automated inspection of facilities, pipelines, and environmental assets with real-time anomaly detection.

Machine Learning (ML)

- **Predictive Risk Modeling:** ML algorithms analyze historical data, environmental factors, and social indicators to predict potential ESG risks before they materialize.
- **Automated Compliance Monitoring:** Continuous monitoring of regulatory requirements with automated alerts for potential non-compliance issues.

Predictive Analysis and Internet of Things (IoT)

- **Environmental Sensors:** AI analysis of IoT sensor data for air quality, water contamination, and noise pollution monitoring.
- **Social Impact Prediction:** Forecasting community impacts of business operations using demographic and socioeconomic data analysis.

Proprietary vs Plug-and-Play Platforms

Proprietary Platforms

Custom-built systems tailored to a company's internal architecture

- Highly specific to internal data flows
- Full control over logic and access
- Costly, slow to build, high maintenance
- Harder to adapt to new regulations quickly

Plug-and-Play Platforms

Off-the-shelf SaaS tools with configurable ESRMS modules

- Fast to deploy, often cloud-based
- Built-in regulatory and framework alignment (e.g. GRI, CSRD)
- Frequent updates from vendors
- May lack deep integration with legacy systems
- Limited custom logic or advanced workflows

Plug-and-play platforms accelerate compliance and reporting, while proprietary tools offer greater customization but slower agility.

Let us watch a short video on –

ESMS for Banks: An Opportunity

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Thank you!

Let’s Connect!

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