

Green Finance

Complete Landscape & Pillars

GREEN FINANCE Erasmus+ Kick-off Training T2.1

University of Twente (UT)

Day 2 — 10:00-10:30 — ULBS, Sibiu, Romania

What We'll Cover

1. Context & Scope
2. Definition of Green Finance
3. Why It Matters (Importance)
4. Green Finance Products
5. Regulatory Frameworks
6. Climate Risk Categories
7. ESG Integration

Learning Objectives

- Define green finance and its scope
- Understand market scale and growth
- Know key regulatory frameworks
- Identify main product categories
- Recognize climate risk types
- Understand ESG challenges

This session provides foundation for Day 2 workshops and discussions

The Global Challenge

- Paris Agreement: Limit warming to 1.5-2C
- Net zero by 2050 requires USD 4-5T/year
- Current investment: USD 1.3T/year
- **Gap: USD 3+ trillion annually**

Why Finance Matters

- Capital allocation drives transition
- Risk pricing signals change
- Markets can scale faster than policy

ASEAN Context

- 680 million people
- 3rd largest economy (combined)
- High climate vulnerability
- Rapid urbanization
- Energy demand growing 3%/year

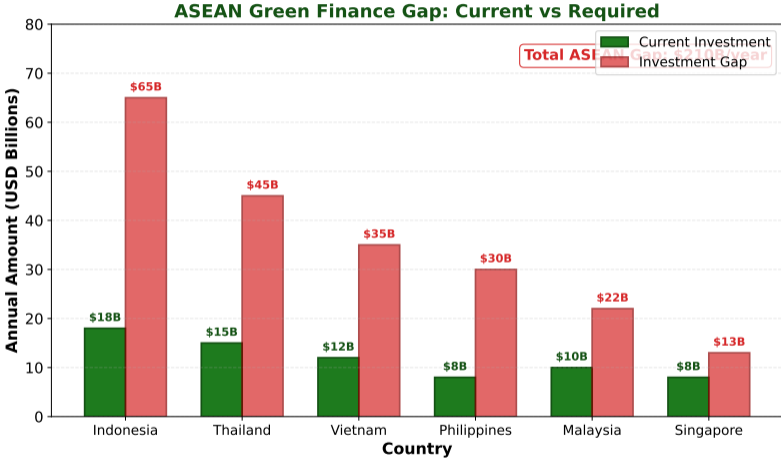
ASEAN Investment Gap

USD 210 billion/year needed for:

- Clean energy transition
- Climate adaptation
- Sustainable infrastructure

Sources: IEA World Energy Outlook 2024; ADB ACGF; ASEAN Secretariat

ASEAN Green Finance Gap by Country



Source: ADB ASEAN Catalytic Green Finance Facility estimates

UNEP Definition

“Financial flows that deliver positive environmental outcomes while meeting economic needs.”

Scope Includes

- Climate mitigation finance
- Climate adaptation finance
- Environmental protection
- Biodiversity conservation
- Circular economy transition

Key Characteristics

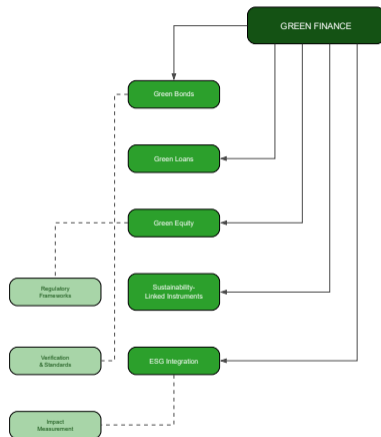
- **Intentionality:** Designed for environmental benefit
- **Additionality:** Beyond business-as-usual
- **Measurability:** Quantifiable impact
- **Transparency:** Disclosure and reporting

Related Concepts

- Sustainable finance (broader: E+S+G)
- Climate finance (narrower: climate only)
- Impact investing (intentional outcomes)

Green finance focuses specifically on environmental outcomes within broader sustainable finance

The Five Pillars of Green Finance



Debt: Green Bonds, Green Loans, SLBs — **Equity:** Green Equity, Impact — **Integration:** ESG

Five pillars provide the full spectrum of green financing instruments

Global Green Bond Market (2024)

Metric	Value
Cumulative Issuance	USD 3.4T+
Annual Issuance 2024	USD 620B
Outstanding	USD 2.8T
Active Issuers	1,500+

ESG Assets Under Management

- Global ESG AUM: USD 30+ trillion
- 25% of total AUM in major markets
- Growing 15%+ annually

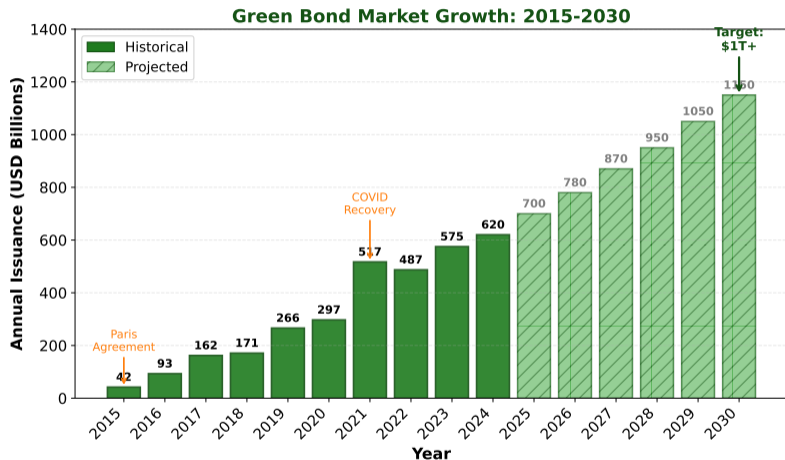
Growth Drivers

- Regulatory push (EU, ASEAN, US)
- Investor demand (institutional)
- Corporate net-zero commitments
- Risk management imperatives
- Technology improvements

Market Momentum

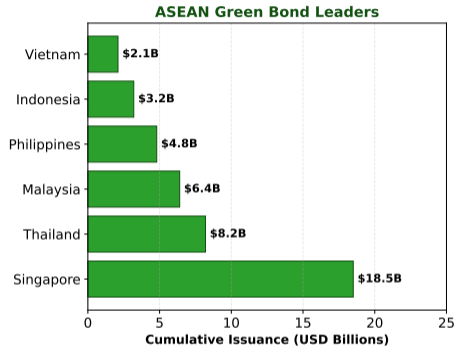
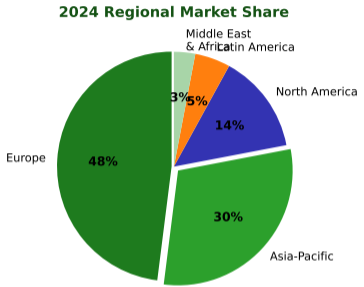
- 2015: USD 42B (Paris year)
- 2021: USD 517B (record)
- 2024: USD 620B
- 2030: USD 1T+ (projected)

Sources: Climate Bonds Initiative H1 2024; GSIA Global Report 2022



Source: Climate Bonds Initiative; projections based on current growth trajectory

Regional Market Distribution



Source: CBI 2024; ASEAN data from national reports and CBI country analyses

What is a Green Bond?

Fixed-income instrument where proceeds are exclusively used for eligible green projects.

Key Frameworks

- **ICMA GBP:** Voluntary, market-standard
- **CBI Standard:** Certification-based
- **EU GBS:** Regulatory alignment
- **ASEAN GBS:** Regional standard

Eligible Project Categories

- Renewable energy
- Energy efficiency
- Clean transportation
- Green buildings
- Sustainable water management
- Pollution prevention
- Biodiversity conservation

The “Greenium”

Green bonds often price 2-5 bps tighter than conventional bonds (investor demand premium)

Green bonds remain the largest segment of labelled sustainable debt

Green Loans

- Bank lending for green projects
- Follows LMA Green Loan Principles
- Often bilateral or syndicated
- Strong ASEAN growth

Market Size

USD 200B+ annually

Sustainability-Linked

- SLBs and SLLs
- Tied to KPIs (not use of proceeds)
- Coupon step-up/down mechanism
- Broader applicability

Key KPIs

Emissions, renewables %, ratings

Green Equity

- Green IPOs
- Climate-focused funds
- Thematic ETFs
- VC/PE in cleantech

Growth Area

Transition finance instruments

Diverse instruments serve different issuer needs and investor preferences

Key Actors

- **Issuers:** Corporates, sovereigns, municipalities, development banks
- **Investors:** Asset managers, pension funds, insurance companies
- **Intermediaries:** Banks, underwriters, advisors
- **Verifiers:** SPO providers, auditors

Enabling Infrastructure

- Standards and taxonomies
- Rating agencies (ESG scores)
- Data providers
- Regulatory bodies
- Stock exchanges (green segments)

ASEAN Infrastructure

- SGX green listing rules
- SET sustainability index
- PSE ESG disclosure board

The ecosystem connects capital providers to sustainable projects through verified channels

Voluntary Market Standards

- **ICMA GBP (2014):** Use of proceeds, project evaluation, management, reporting
- **CBI Standard:** Sector-specific criteria, third-party certification
- **LMA GLP:** Green Loan Principles

Disclosure Frameworks

- **TCFD:** Climate risk disclosure
- **ISSB (2023):** IFRS S1 & S2
- **GRI:** Sustainability reporting

Standard Convergence

Standard	Status
ICMA GBP	De facto global
TCFD	Mandatory in 90+ juris.
ISSB	Adopted/adopting
GRI	10,000+ reporters

Key Trend

Moving from voluntary to mandatory disclosure across all major markets

Sources: ICMA; TCFD Status Report 2024; ISSB adoption tracker

EU Sustainable Finance Package

- **EU Taxonomy:** Classification system with 6 environmental objectives
- **SFDR:** Fund disclosure (Art. 6/8/9)
- **EU GBS:** Green bond standard
- **CSRD:** Corporate sustainability reporting

6 Environmental Objectives

1. Climate mitigation
2. Climate adaptation
3. Water & marine resources
4. Circular economy
5. Pollution prevention
6. Biodiversity

Technical Screening Criteria

Activities must:

- Substantially contribute to 1+ objective
- Do no significant harm to others
- Meet minimum social safeguards
- Comply with technical criteria

SFDR Fund Categories

Article	Description
Art. 6	No sustainability features
Art. 8	“Light green” promotion
Art. 9	“Dark green” objective

EU leads regulatory development; many jurisdictions adapting EU approach

ASEAN Taxonomy V3 (Dec 2024)

- Traffic light system (green/amber/red)
- Foundation Framework + Plus Standard
- Accommodates transition activities
- Phase-out pathways included

4 Environmental Objectives

1. Climate mitigation
2. Climate adaptation
3. Ecosystem protection
4. Transition to circular economy

National Taxonomies

<u>Country</u>	<u>Status</u>
Singapore	Green taxonomy
Malaysia	SRI Taxonomy V2
Thailand	Thailand Taxonomy
Indonesia	TKBI Phase 1-3
Philippines	Under development
Vietnam	Draft available

Key Difference

ASEAN allows “transition” category (amber) for fossil-to-clean pathways

Source: ASEAN Secretariat; national regulators; ASEAN Taxonomy V3 (December 2024)

Physical Risks

Acute Events

- Extreme weather (floods, storms)
- Wildfires
- Droughts

Chronic Changes

- Sea level rise
- Temperature increase
- Precipitation patterns

Transition Risks

Policy & Legal

- Carbon pricing, regulations
- Litigation risk

Technology

- Stranded assets
- Disruption risk

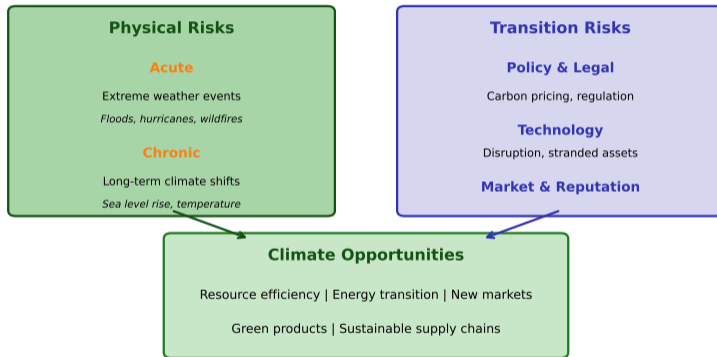
Market & Reputation

- Demand shifts
- Stakeholder pressure

Opportunities: Resource efficiency — Clean energy — New products — Green markets

TCFD framework adopted by 90+ jurisdictions; integrated into ISSB S2

Climate Risk Categories (TCFD Framework)



Understanding risk categories is essential for climate disclosure and strategy

Physical Risk Exposure

- 4 of top 10 most climate-vulnerable countries (Philippines, Vietnam, Thailand, Myanmar)
- 60% of population in coastal zones
- USD 8.5T in assets at risk by 2100
- Agriculture: 20%+ GDP in some nations

Recent Events (2023-2024)

- Philippines: Super Typhoon costs
- Thailand: Severe flooding
- Indonesia: Forest fires

Transition Risk Exposure

- High fossil fuel dependence (70%+ in some countries)
- Coal phase-out commitments
- Export exposure (commodities)
- Just Transition challenges

Opportunities

- Solar/wind potential (high irradiance)
- Green jobs: 15.3M by 2045 (Indonesia)
- Regional supply chains
- Natural climate solutions

Sources: Germanwatch Global Climate Risk Index; World Bank CCDR reports

Environmental

- Carbon emissions & intensity
- Energy efficiency
- Water & waste management
- Biodiversity impact
- Climate strategy

Social

- Labor practices
- Human rights
- Community relations
- Product safety
- Supply chain

Governance

- Board structure & diversity
- Executive compensation
- Business ethics
- Transparency
- Risk management

Integration Approaches

- Negative screening
- Best-in-class selection
- ESG integration (all factors)
- Thematic investing
- Impact investing

ESG provides holistic view; “E” overlaps most with green finance

Major ESG Data Providers

Provider	Coverage
MSCI ESG	10,000+ companies
Sustainalytics	10,000+ companies
Bloomberg	11,000+ companies
Refinitiv	10,000+ companies
S&P Global	8,000+ companies

ASEAN Coverage

Growing but still limited; focus on large caps and listed companies

Key Challenges

- **Rating Divergence:** Correlation between major providers only 0.38-0.71 (Berg et al. 2022)
- **Methodology:** Different weights, scope, sources
- **Backward-Looking:** Based on historical data
- **Coverage Gaps:** SMEs, emerging markets

Implications

- Use multiple sources
- Understand methodology
- Supplement with direct engagement

Source: Berg, Kölbel, Rigobon (2022) Review of Finance. ESG rating divergence study.

For Issuers

- Identify eligible green projects
- Choose framework (GBP, CBI, EU GBS)
- Establish governance & reporting
- Obtain second-party opinion
- Disclose use of proceeds annually

For Investors

- Define sustainability mandate
- Integrate ESG into analysis
- Monitor climate risk exposure
- Engage with portfolio companies
- Report on sustainability outcomes

For HEIs (Our Role)

- Train next-generation professionals
- Research green finance innovations
- Partner with industry
- Develop micro-credentials
- Bridge theory and practice

GREEN FINANCE Project

- 8-week professional certificate
- Modular micro-credentials
- ASEAN-EU collaboration
- Industry-aligned competencies

Our project aims to build capacity across the green finance ecosystem

What We Covered

- ✓ Definition: Finance for environmental outcomes
- ✓ Scale: USD 3.4T+ cumulative, USD 620B/year
- ✓ Products: Bonds, loans, SLBs, equity
- ✓ Regulations: ICMA, EU, ASEAN frameworks
- ✓ Risk: Physical + transition (TCFD)
- ✓ ESG: Integration challenges

ASEAN Context

- USD 210B annual investment gap
- High climate vulnerability
- Growing but nascent markets

Discussion Questions

- Which green finance products are most relevant for your country?
- What are the main barriers to adoption?
- How do regulations compare to EU/ASEAN standards?

Up Next Today

- 10:30-10:45: Coffee break
- 10:45-11:45: Stakeholder Survey Workshop
- 12:15-13:30: MC Integration (UT)

Foundation established — now let's discuss localization for your contexts