

Week 1: Green Finance Foundations

Session 1: Introduction to Green Finance

Green Finance Professional Certificate

What is Green Finance?

Definition

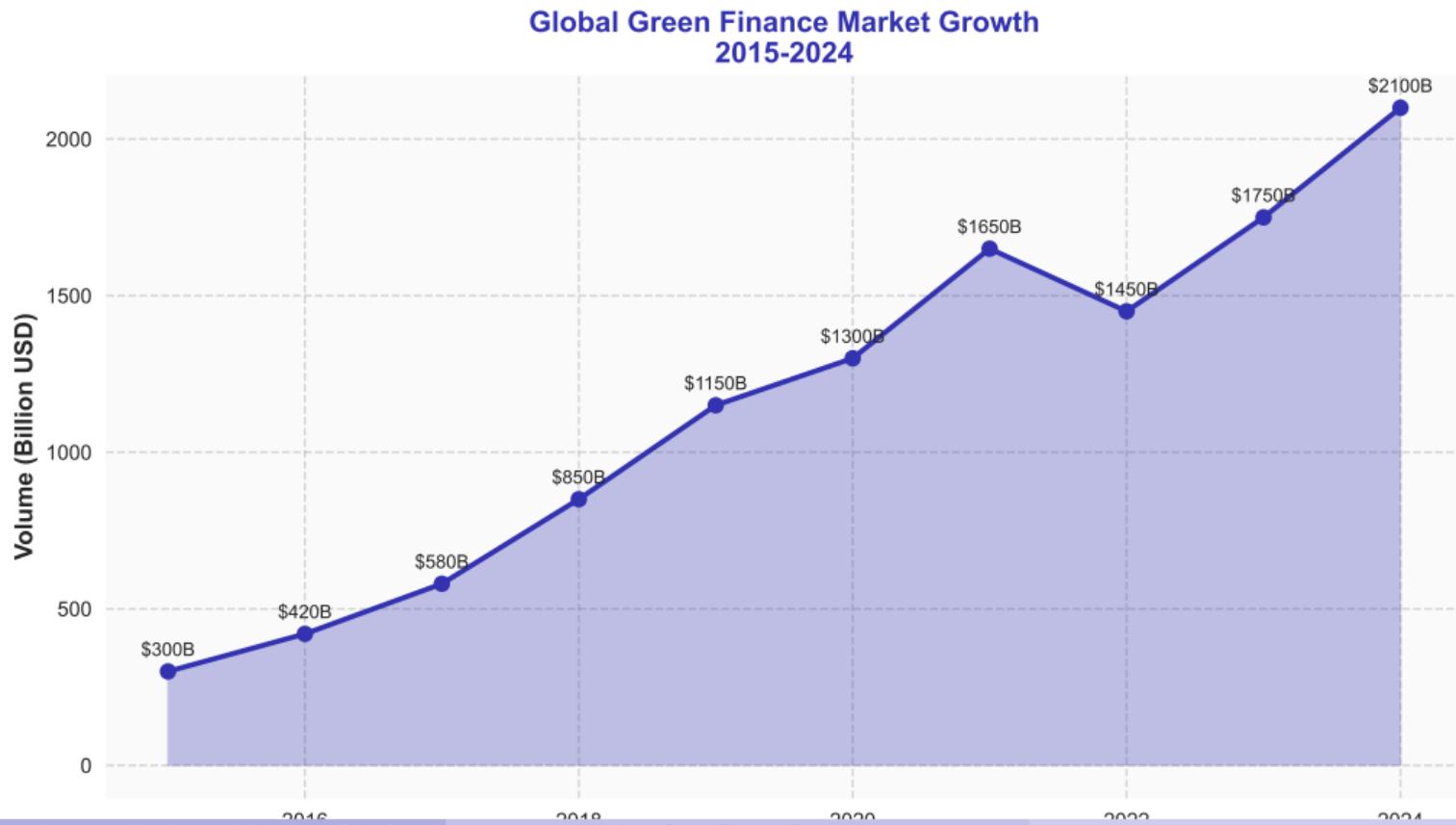
- Financial products and services supporting environmental sustainability
- Climate change mitigation and adaptation focus
- Measurable environmental impact requirements
- Integration with mainstream financial markets

Key Drivers

- Paris Agreement commitments (2015)
- Regulatory pressure: EU Taxonomy, SFDR
- Growing investor demand for ESG integration
- Climate risk awareness in financial sector

Green finance has evolved from niche to mainstream in less than two decades

Global Green Finance Market Growth 2015-2024



Historical Milestones

- 2007: First green bond issued by EIB
- 2014: Green Bond Principles established
- 2015: Paris Agreement catalyst
- 2020: EU Taxonomy regulation launched
- 2024: Mainstream institutional adoption

Current Landscape (2024)

- USD 2.1 trillion total market size
- 100+ countries with green issuances
- Institutional investors as major participants
- Expanding to emerging market economies

Green finance matured from experimental to essential in financial markets

Environmental Imperative

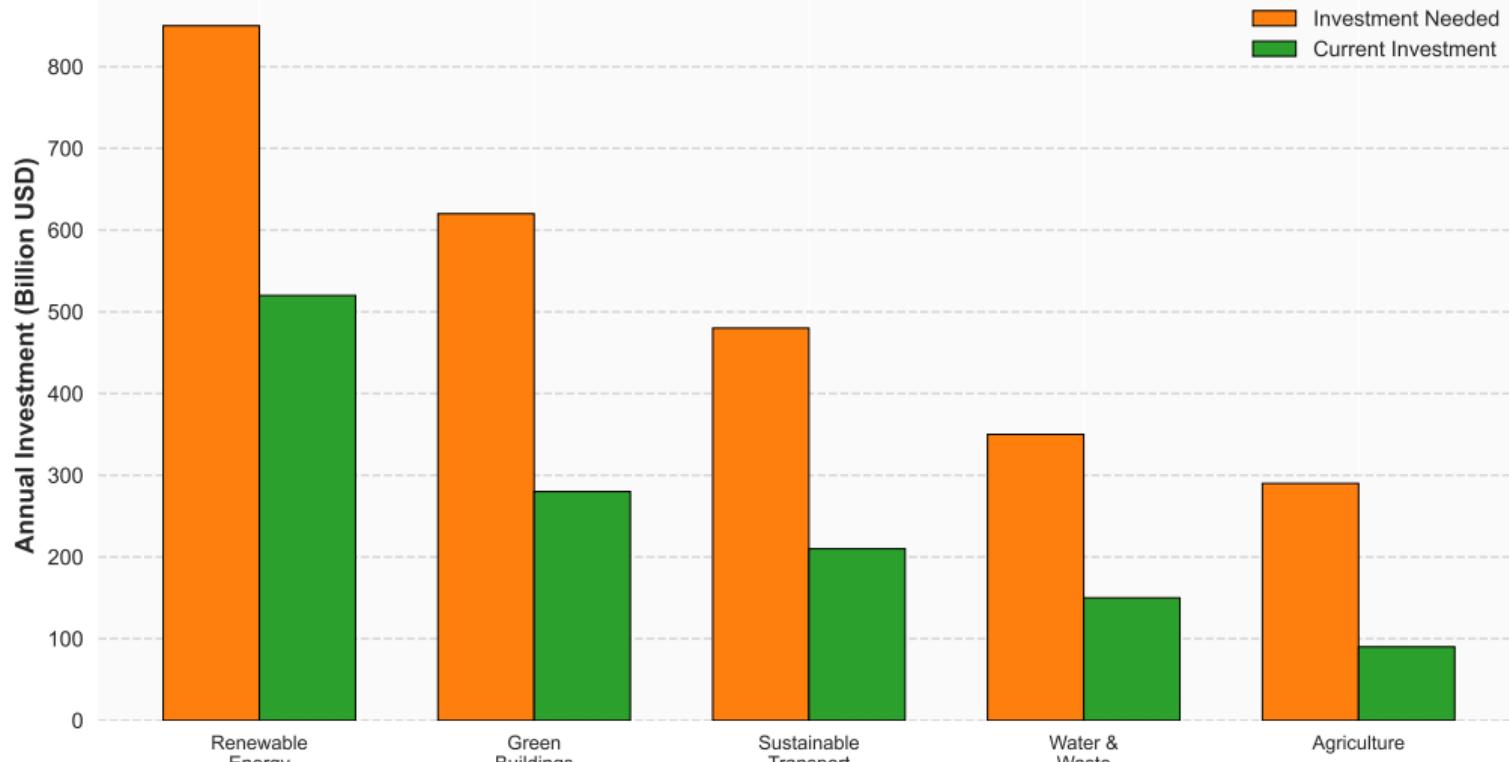
- USD 2.4T annual investment gap to meet Paris goals
- Climate change poses systemic financial risks
- Biodiversity loss threatens economic stability
- Transition requires massive capital reallocation

Financial Opportunity

- Growing asset class with strong performance
- Risk mitigation through ESG integration
- New market opportunities in clean tech
- Competitive advantage for early movers

Green finance bridges environmental necessity with financial opportunity

Green Investment Gap by Sector (Billions USD Annual)



Course Structure and Objectives

Week-by-Week Overview

- Week 1: Foundations and Ecosystem
- Week 2: Green Bonds and Debt Instruments
- Week 3: ESG Integration Strategies
- Week 4: Climate Risk Assessment (TCFD)

Continuing Through

- Week 5: Renewable Energy Finance
- Week 6: Regulatory Frameworks
- Week 7: Impact Measurement
- Week 8: Advanced Applications

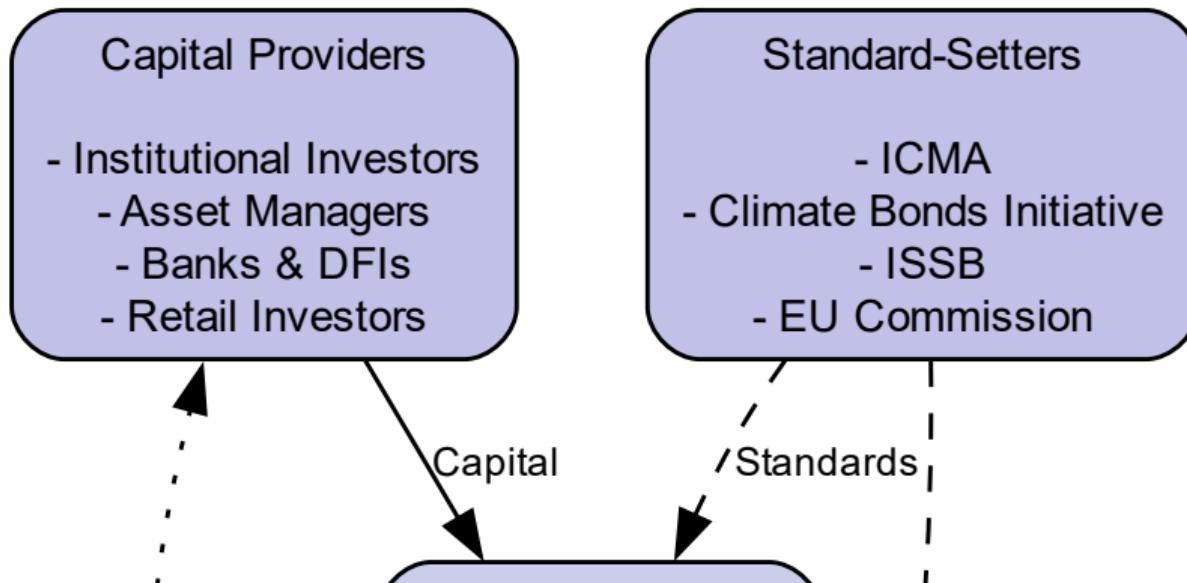
Progressive learning from fundamentals to advanced applications over 8 weeks

The Green Finance Ecosystem

Session 2: Participants and Flows

Understanding the interconnected network of green finance

Green Finance Ecosystem Map



Institutional Investors

- Pension funds (largest green allocators)
- Insurance companies (climate-aware)
- Sovereign wealth funds (ESG mandates)
- Asset managers (ESG product demand)

Motivations and Constraints

- Fiduciary duty to long-term returns
- Climate risk as financial risk
- Beneficiary pressure for sustainability
- Regulatory ESG disclosure requirements

Institutional investors control over USD 100 trillion in assets globally

Financial Intermediaries

- Investment banks: Structuring and underwriting
- Commercial banks: Green lending programs
- Exchanges: Green bond listings
- Index providers: Green indices creation

Verification and Standards

- Second-party opinion providers
- Credit rating agencies (ESG ratings)
- External verifiers and auditors
- Impact measurement specialists

Intermediaries ensure credibility through verification and standardization

Issuer Types

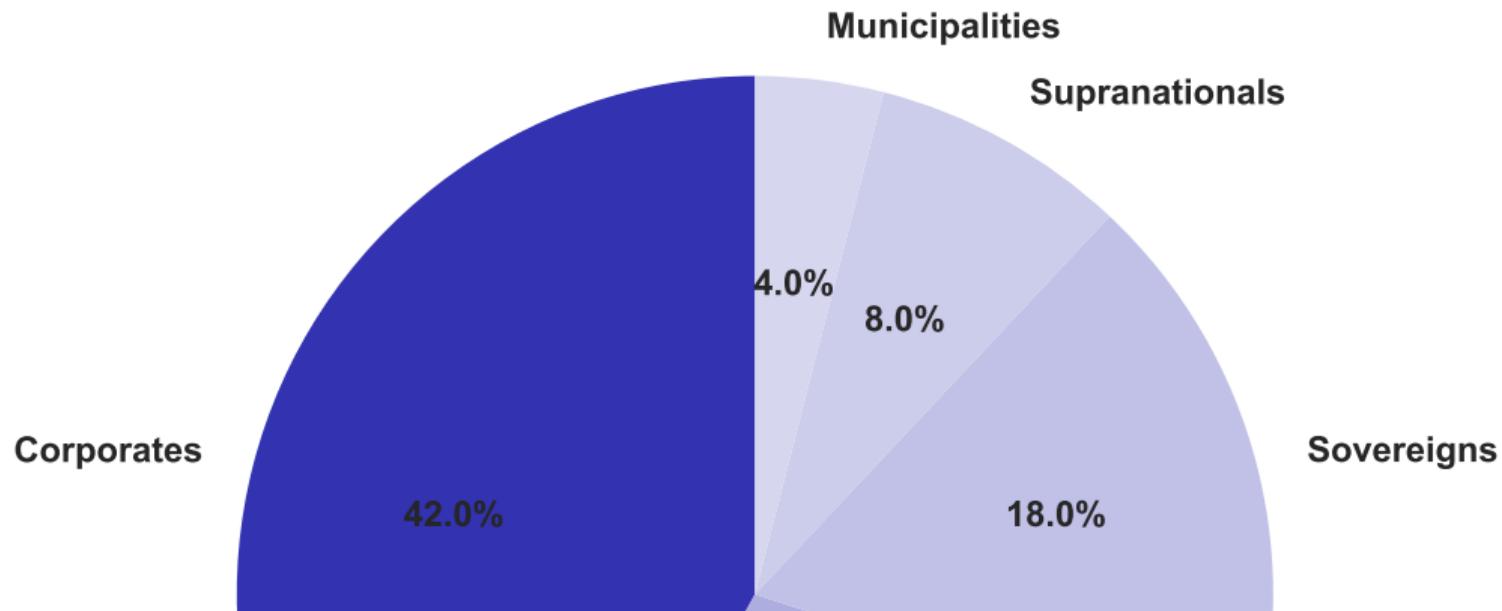
- Sovereigns: National climate programs
- Supranationals: Development finance
- Corporates: Green capex and projects
- Financial institutions: On-lending

Eligible Project Categories

- Renewable energy generation
- Energy efficiency improvements
- Clean transportation infrastructure
- Sustainable water and waste management

Use of proceeds must align with recognized green taxonomies and standards

Green Finance Market by Issuer Type 2024 (USD 2.1T)



Key Standard-Setting Bodies

- ICMA: Green Bond Principles (voluntary)
- Climate Bonds Initiative: Certification
- EU: Taxonomy Regulation (mandatory)
- ISSB: Sustainability disclosure standards

Role and Impact

- Define eligibility criteria for green labels
- Ensure consistency and comparability
- Prevent greenwashing through verification
- Enable market scalability and liquidity

Standards provide credibility essential for market growth and integrity

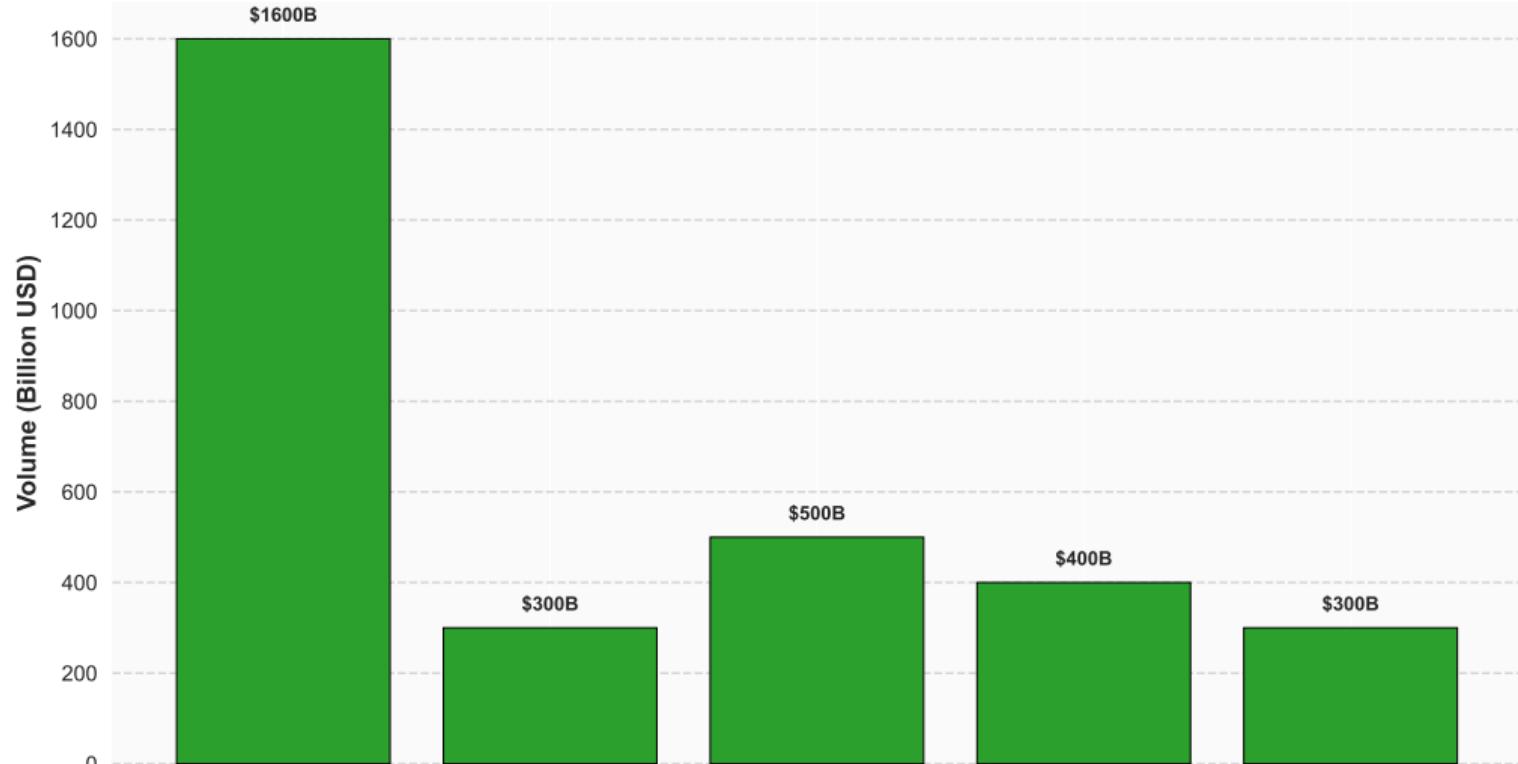
Green Financial Instruments

Session 3: Products and Structures

Comprehensive overview of green finance products

Green Finance Instruments Breakdown

Green Finance by Instrument Type
2024 Market Volume



Key Characteristics

- Use of proceeds earmarked for green projects
- Similar structure to conventional bonds
- Third-party verification recommended
- Reporting on environmental impact

Market Development

- USD 1.6T outstanding (2024)
- First issued 2007 by EIB
- Annual issuance exceeds USD 500B
- Greenium: 0-5 bps pricing advantage

Green bonds are the most established and liquid green finance instrument

Structure and Mechanics

- Coupon tied to sustainability KPIs
- Step-up if targets missed
- General corporate purpose (not use of proceeds)
- Forward-looking performance targets

Advantages and Challenges

- Flexibility: Any company can issue
- Incentivizes company-wide sustainability
- Complexity: Target setting critical
- Risk: Greenwashing if targets weak

SLBs complement green bonds by incentivizing holistic sustainability transformation

Green Loans

- Bank lending for specific green projects
- Similar to green bonds but bilateral
- Green Loan Principles (LMA/APLMA)
- Growing in infrastructure and real estate

Sustainability-Linked Loans

- Margin linked to sustainability KPIs
- Widely adopted by corporates
- Flexible: Applies to general purposes
- Lower documentation vs project finance

Green and SL loans total USD 300B, complementing bond markets

Green Equity

- Public equity in pure-play green companies
- Green indices and ETFs
- Venture capital and private equity
- USD 400B in dedicated green equity funds

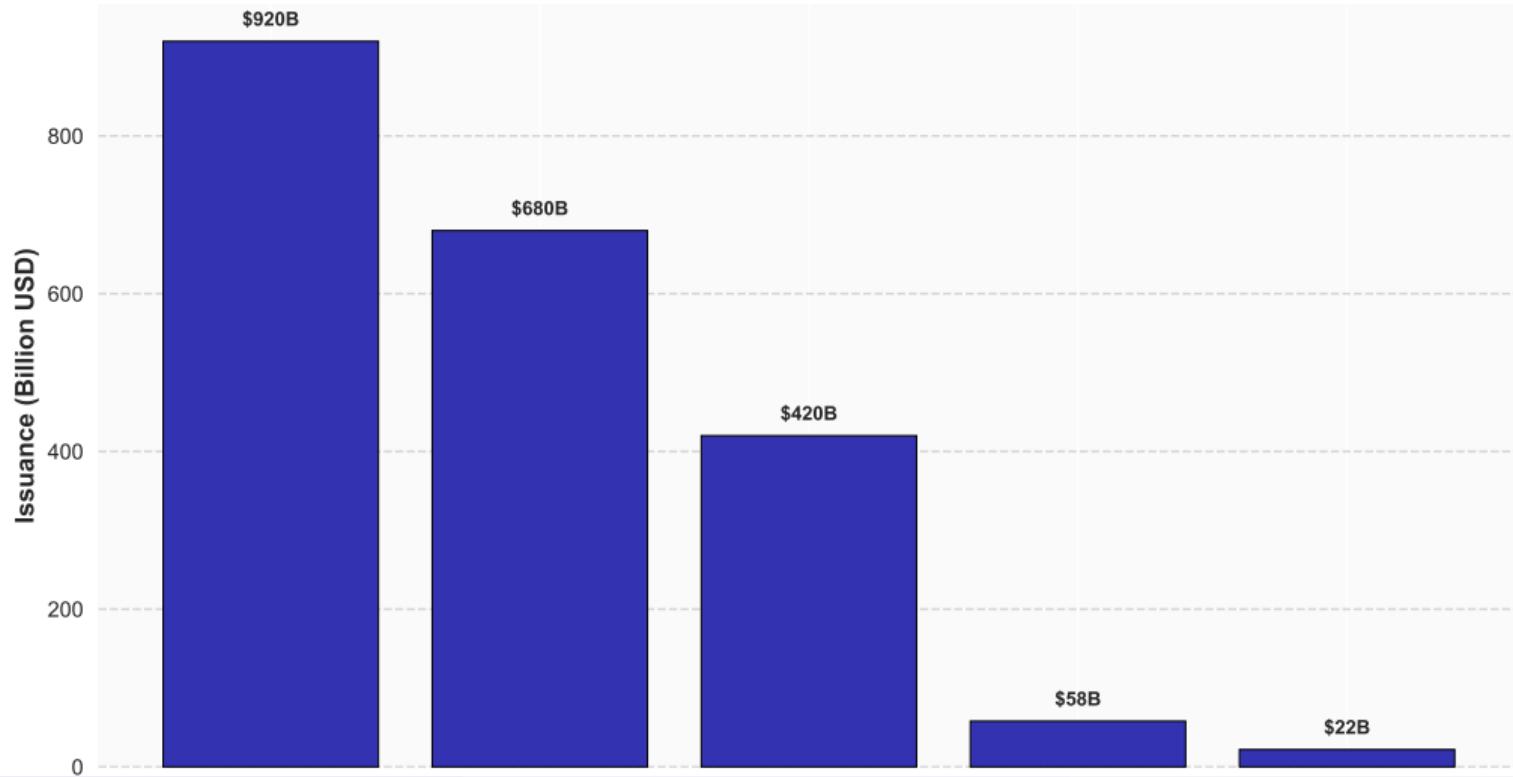
Carbon Markets

- Compliance markets (EU ETS, regional)
- Voluntary carbon credits
- Carbon derivatives and futures
- USD 300B traded annually (2024)

Diverse instruments enable capital allocation across asset classes and risk profiles

Regional Distribution of Green Finance

Green Finance Issuance by Region
2024 (Billions USD)



Financial Fundamentals

Session 4: Valuation and Analysis

Applying traditional finance to green assets

Traditional Metrics Apply

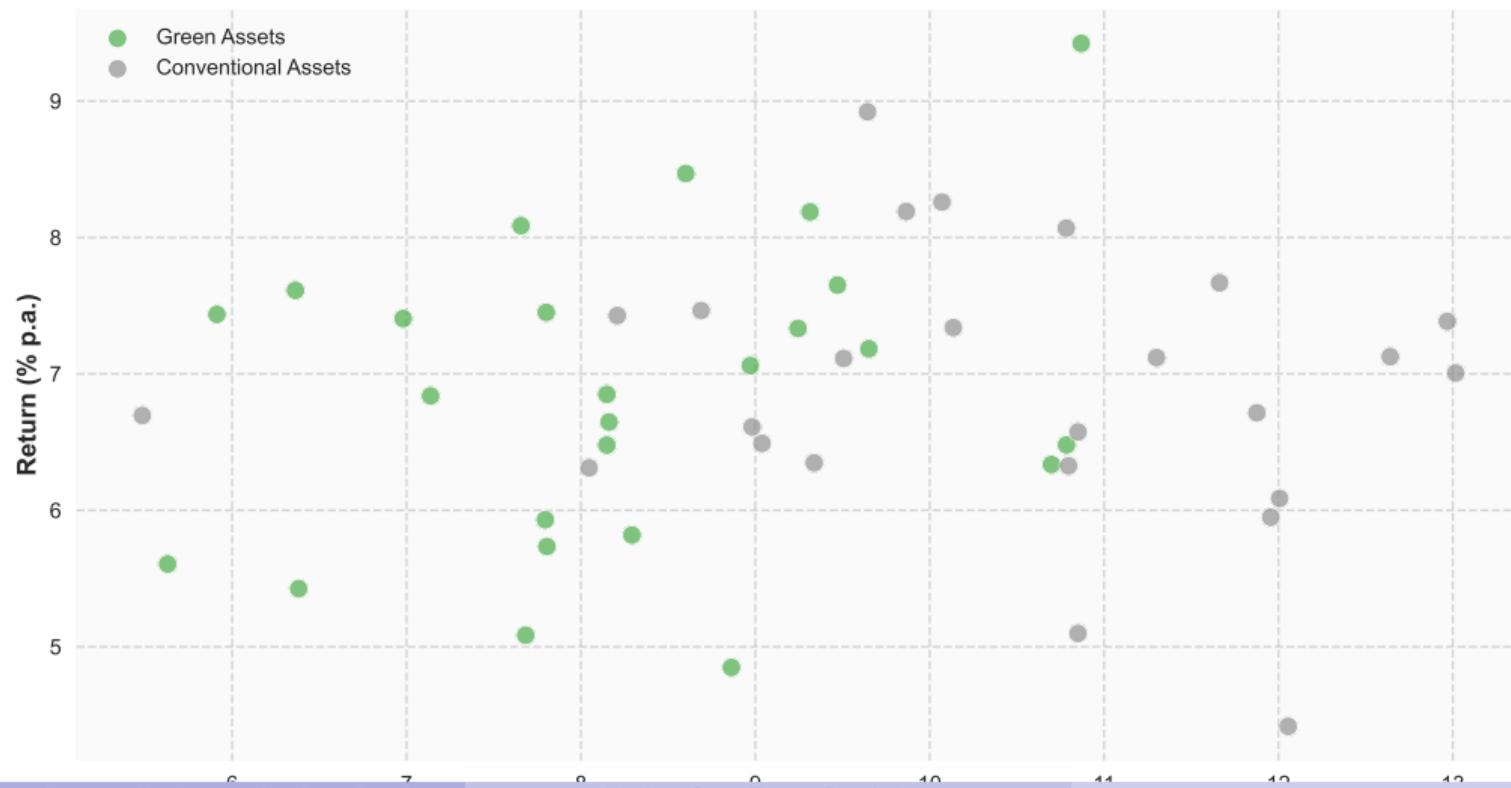
- NPV and IRR for project evaluation
- Credit analysis for bond issuers
- Equity valuation models (DCF, multiples)
- Risk-adjusted return frameworks

Green-Specific Adjustments

- Carbon pricing in cash flow projections
- Regulatory risk premium/discount
- Greenium in bond pricing
- Stranded asset risk assessment

Green finance applies traditional finance with adjustments for sustainability factors

Risk-Return Profile: Green vs Conventional Assets



Greenium Phenomenon

- Green bonds trade 0-5 bps tighter than conventional
- Driven by excess demand from ESG investors
- More pronounced in certain jurisdictions
- Evidence of market segmentation

Carbon Pricing Integration

- Explicit carbon price in project valuation
- Shadow carbon pricing by companies
- Impact on relative valuations
- Forward curve uncertainty

Pricing reflects both investor preference and regulatory policy expectations

Empirical Evidence

- No systematic underperformance vs conventional
- Lower downside risk in many studies
- Outperformance during ESG-favorable periods
- Performance varies by sector and geography

Risk Factors

- Policy and regulatory risk
- Technology and obsolescence risk
- Greenwashing and reputation risk
- Liquidity risk in some segments

Green investments demonstrate competitive financial performance with distinct risk profile

Green vs Conventional Bond Yields

Investment-Grade Bond Yields
Green vs Conventional (2019-2024)



Portfolio Construction

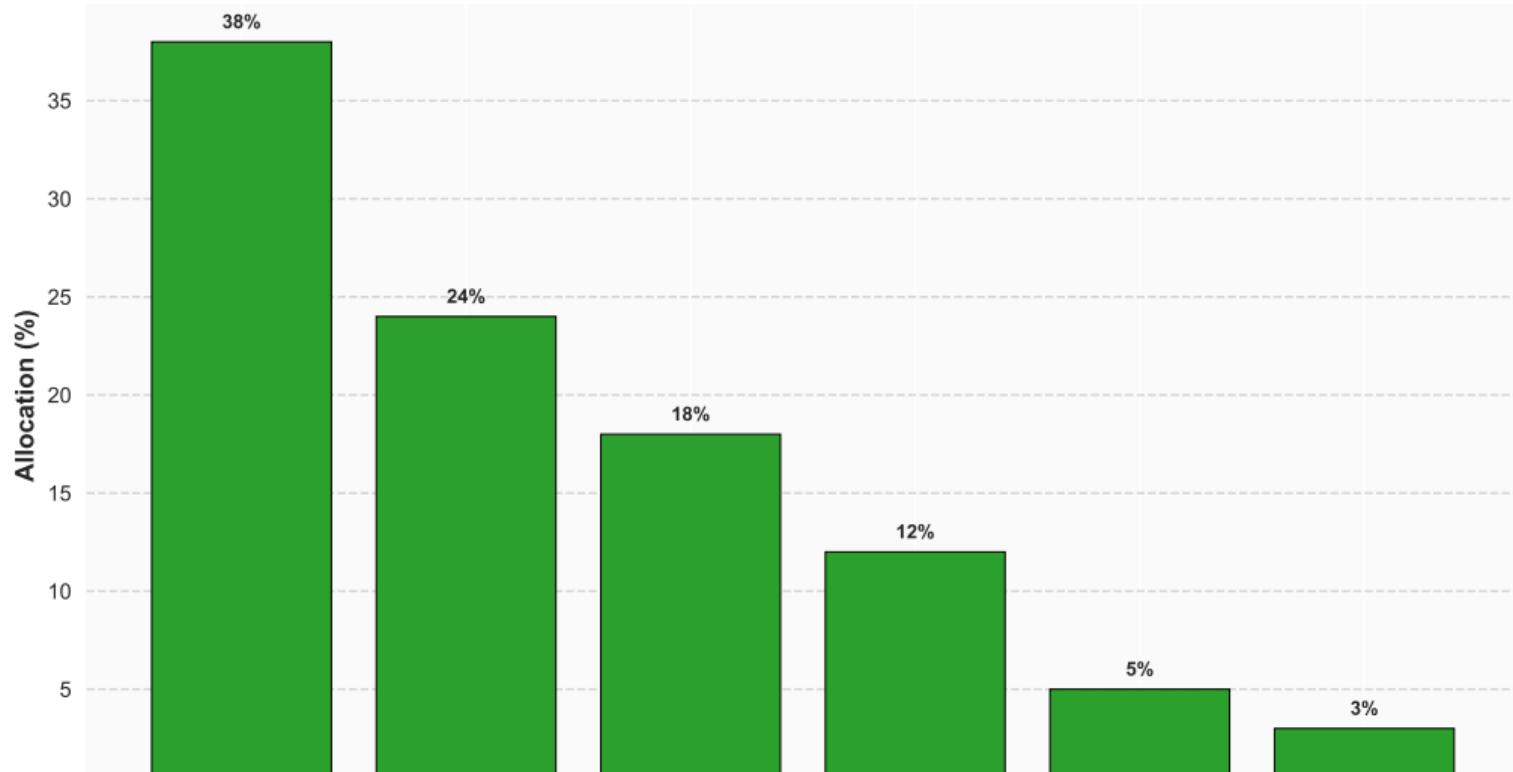
- Green allocation as strategic decision
- Diversification benefits assessment
- Factor exposure analysis
- Benchmark selection challenges

Risk Management

- ESG risk integration in VaR models
- Scenario analysis for climate policies
- Transition risk exposure measurement
- Physical risk assessment

Modern portfolio theory applies with additional sustainability dimensions

Green Finance by Economic Sector 2024 Allocation



Green Finance Foundations - Week 1 Summary

