



*The Latest in Sustainable Finance
Academic Research*

**Paris Europlace International Financial Forum
ILB Program on Green and Sustainable Finance**

Defining Sustainable Finance

Integrating sustainability issues to enhance risk & value assessment



Impact

Contributing to a sustainable economy

Challenges

- ***Resilient fossils : oil + coal counts for 60% of the world energy mix, gaz for 21 %***
- ***+ 50% Coal production between 2003 et 2018 (more for non-OCDE).***
- ***EUR 180 billions euros gap in Europe to support low carbon transition***
- ***USD 2 to 4 trillions financing gap globally***
- ***USD 2,5 trillions financing gap for SDGs***
- ***Green Energy financing stable at 300 billions vs 1.8 trillion Investment in Energy***
- ***World bank still financing +20 billions for fossil friendly projects vs 15 billions for climate friendly ones.***

Keys research topics

- **Financing gap measurement** : at domestic, EU and global levels
- **Understanding the green financing value chain** : global, regional and retails mechanisms
- **Green financial engineering** : beyond green bonds, new structures and blended finance
- **Climate and green risk measurement** : transition & physical risk assessment, modeling, green premium
- **Scenario analysis & production** : creating new scenarios and tools to enhance risk assessments
- **Extra-financial analysis integration** : beyond climate : ESG risks and intangibles value integration
- **Green accounting** : incorporating intangibles and natural capital in P&L and balance sheet
- **Impact assessment** : from 2degrees & SDGs alignment to positive impact measurement (portfolios & indices)
- **Liabilities & fiduciary issues** : from climate litigation risks to fiduciary duty's scope assessment
- **Data structuring** : crossing various sources of data, standardization and supporting analysis and taxonomy



Green and Sustainable Finance program of Louis Bachelier Institute

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ILB Program on Green and Sustainable Finance

A transversal program to improve synergies and visibility of French green finance research

- **Program goals :**
 - ***Develop*** a multi-disciplinary coordination dynamics among the existing French research programs with interest in Green Finance
 - ***Stimulate*** new research initiatives on highly relevant topics with potential of applicability in green finance.
 - ***Create*** a Green Data Lab, a reliable source of data related to green and sustainable finance for academic and professional community.

<https://sustainablefinanceprogram.org/>

Program activities since inception

- Coordination of green finance research through conferences and workshops :
 - Green Finance Research Advances (4th edition on November 25)
 - Series of technical workshops (Data, Scenarios)
 - Series of conferences on social/societal aspects (last one on June 18: Climate Change, Society and Responsibility; next one on Climate Change and Corporate Governance)
- Research articles, policy and opinion papers in green finance in preparation
- New research initiatives on green & sustainable finance topics

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Science and methodology for implementing TCFD recommendations: risks and scenarios

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- Quantifying alignment of company's strategy to the **sustainable development goals** and to **specific climate scenario**.
 - Modeling and quantifying **transition and physical risk**; propagation of physical risks along the supply chain
 - Systemic risk in case of massive realignment
 - Establishing **a framework for governance of scenarios**
 - Quantifying the associated **model uncertainty**; **classification of uncertainties**; **possibility of hedging**
 - Developing **climate stress tests** (micro/macro level)
 - Understanding short-term (10 years) effects of climate change
 - **Stranded assets**: when and how does an asset become stranded
 - Understanding **the impact of ESG factors** on asset pricing
 - Pros and cons of standardization

From assets to portfolios

- How to transpose the forward looking criteria **from assets to portfolios**
- Most studies focus on equity: **what about other asset classes** (e.g., Fixed Income), what is an ESG-compliant portfolio of sovereign bonds?
- How to develop **optimal investment strategies** incorporating ESG criteria or climate risks ?
- How do the **ESG investors affect the prices of assets** and accelerate the greening of the economy?
- **Exclusion rules** (do not exclude a brown company which wants to turn green)
- **Green accounting** and prudential regulation

Zoom on models & scenarios

- **Models vs. scénarios:**
 - the same model can produce many different scenarios (with different parameterizations or forcings);
 - one can use different models to explore the model uncertainty within the same scenario
- **Climate models** (general circulation): detailed description of the evolution of ocean & atmosphere in the long term, subject to forcings (radiative due to GHG emissions – RCP pathways - but also land use, aerosols etc.). Do not model the economy; CO2 levels is exogenous
- **Integrated assessment models** (e.g., DICE): joint modeling of climate & economy; but climate module is simplified and sometimes unrealistic
- **Limits of IAM:** ad hoc damage functions; no climate feedbacks; high sensitivity to unobservable parameters; absence of financial data & banking sector

Governance of scenarios

- It is crucial to dispose of a **universally accepted database** and of a **common language**, and to develop a **credible governance structure** for maintaining this database:
- Reliable, reproducible and transparent open-source methodologies
- Hierarchy (by country, by sector)
- Different families of scenarios by type of usage etc.
- Procedures for developing new scenarios and updating existing ones
- New constraints: adaptation, physical processes
- Many different models -> model uncertainty
- Back-testing approaches

Scenario-based climate risk analysis for energy transition

- A **new research initiative** in the framework of Green and Sustainable Finance program
- Project presented at the 1st call for projects “Climate Finance” of ADEME (subject to approval by ADEME)
- Goal: develop a framework for using scenarios to evaluate the **risk of energy transition projects**
- Ultimate objective: **redirect private funding to energy transition projects** in emerging countries, by reducing the risk premium and enabling precise targeted public support tools
- Main steps:
 - **Uncertainty quantification** of main energy transition technologies using a database of scenarios
 - Converting technology uncertainties into **project risk**
 - Relating the risk estimates to **funding instruments**

Transforming green data

Green data including scenarios is often proprietary, inhomogeneous (150+providers), not always reliable and difficult to access for the academic community

Our initiatives will be developed within the **ILB Green Data Lab**: a repository of reference data and methods available to academics and practitioners, which aims to include

- **Characterization** of green assets
- Environmental **impact** metrics
- Measures of **climate / environmental risks**
- Climate data for **physical risk measurement**
- Optimal **asset allocation** strategies
- **Alignment** with specific global warming **scenarios**
- Using models to make different sources of data (e.g. climate and economic scenarios) coherent among themselves