Système financier et transition bas carbone dans le contexte post-Covid: contenu et fabrique d'un rapport pour le Fonds Vert Mondial

Jean Charles Hourcade, 16/10/2020

Aligning Finance with low emission, climate resilient development pathways: a call to action for financial decision-makers

Part 1: The Climate Finance Nexus

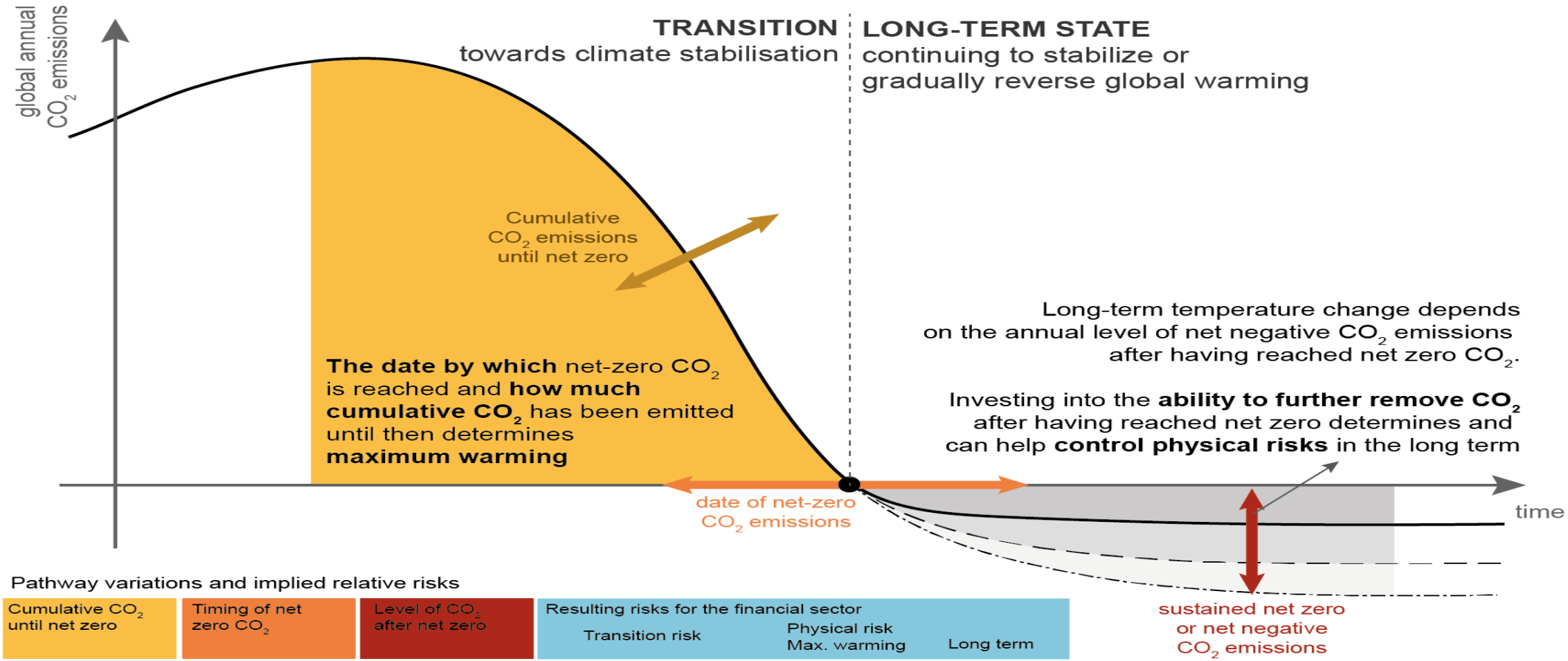
Part 2: Finance to Accelerate and Deepen Climate Action

Part 3: Climate finance in the post-covid context

- ***Table 1.1 Examples of physical and transition asset risks for the four systems transitions***
- ***required to limit warming to 1.5°C or higher levels.***

	Energy System	Industrial System	Land & Ecosystem	Urban & Infrastructure
Physical Risk	Revenue loss in hydro-electric plants due to changes in river flow	Damage to and/or need for relocation of industrial plants in low-lying areas, e.g. in harbours due to sea level rise and/or storm surges	Revenue and livelihood loss in agriculture due to changes in rainfall patterns and temperature extremes	Damage to and/or relocation of urban infrastructure due to sea level rise and/or storm surges
Transition Risk	Long-term investments in fossil-fuel infrastructure becoming stranded if emissions are strongly reduced and climate-friendly technologies gain traction.	Long-term investments in materials, installations and infrastructure (e.g. pipelines) for industry. Abundant availability of cheap low-carbon energy may become a key investment variable.	Value reduction of investments in meat-production companies and facilities if dietary change happens.	Urban infrastructure (houses, roads) in line with a high-carbon future.

CONCEPTUAL LOGIC
for CLIMATE CHANGE MITIGATION PATHWAYS



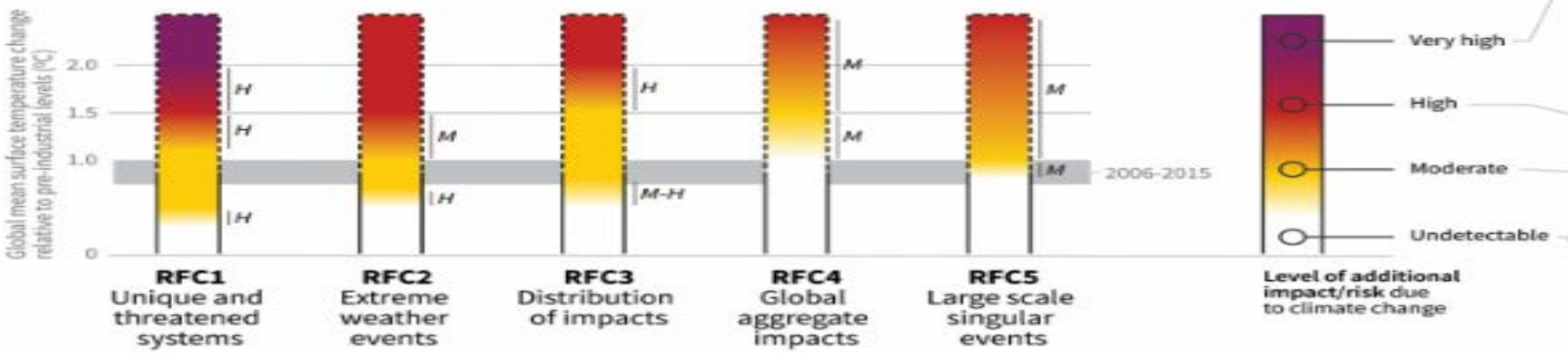
Pathway variations and implied relative risks

Cumulative CO_2 until net zero	Timing of net zero CO_2	Level of CO_2 after net zero	Resulting risks for the financial sector		
			Transition risk	Physical risk Max. warming	Long term
low	early	staying at net zero CO_2	increased	lower	same as maximum warming
medium			increased	medium	
high	medium		delayed & increased	higher	
high	late		delayed	higher	
low	early	sustained net negative CO_2	increased	lower	further reduced
medium			increased	medium	reducing
high	medium		delayed & increased	higher	medium
high	late		delayed	higher	high

How the level of global warming affects impacts and/or risks associated with the Reasons for Concern (RFCs) and selected natural, managed and human systems

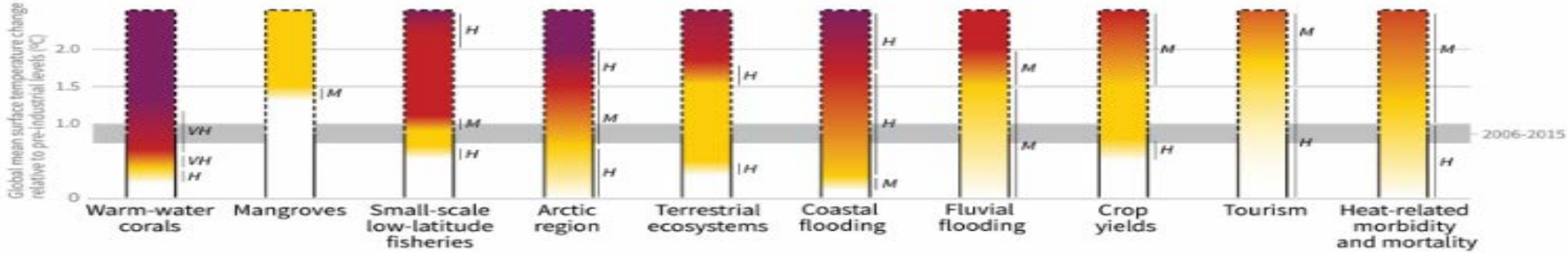
Five Reasons For Concern (RFCs) illustrate the impacts and risks of different levels of global warming for people, economies and ecosystems across sectors and regions.

Impacts and risks associated with the Reasons for Concern (RFCs)

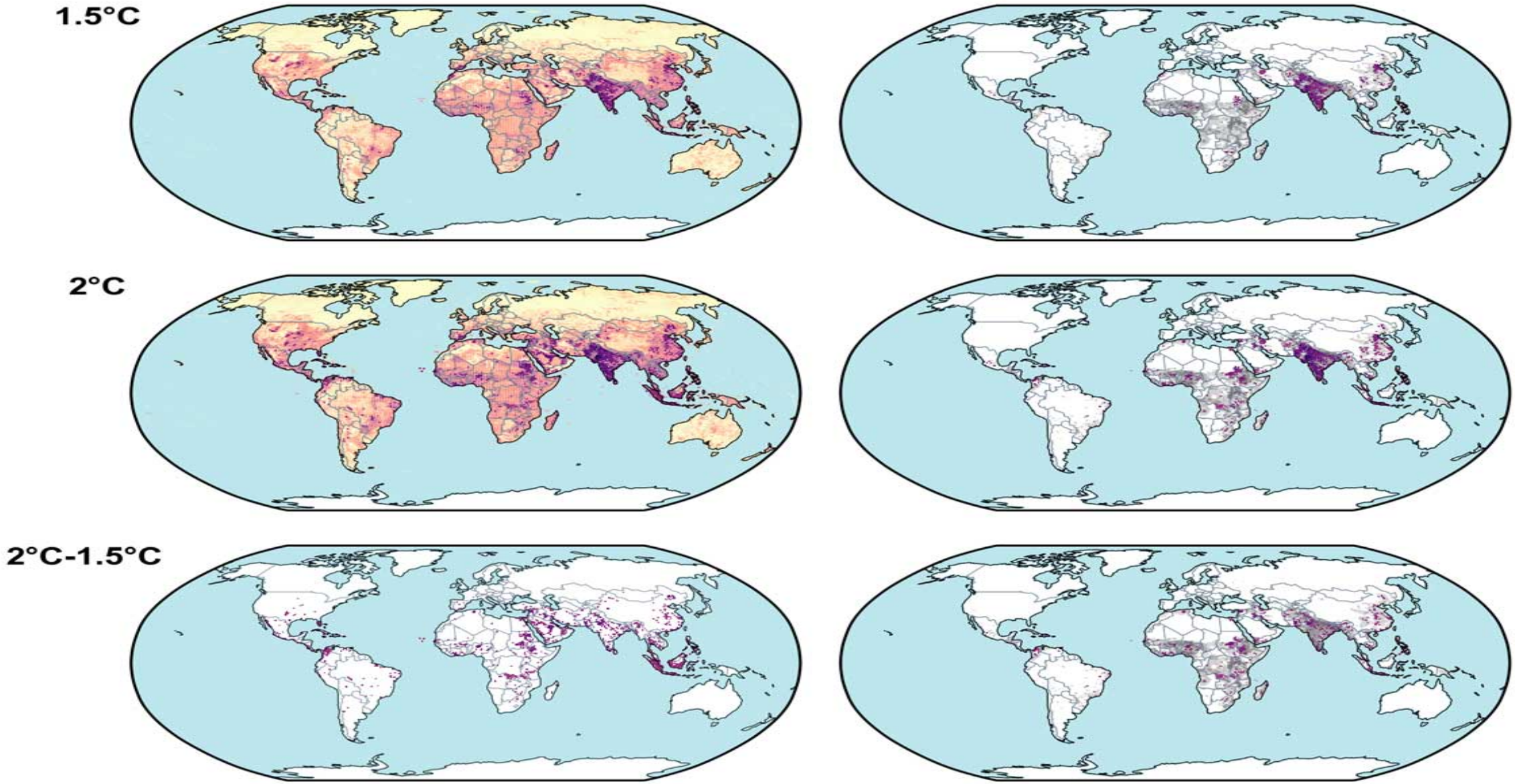


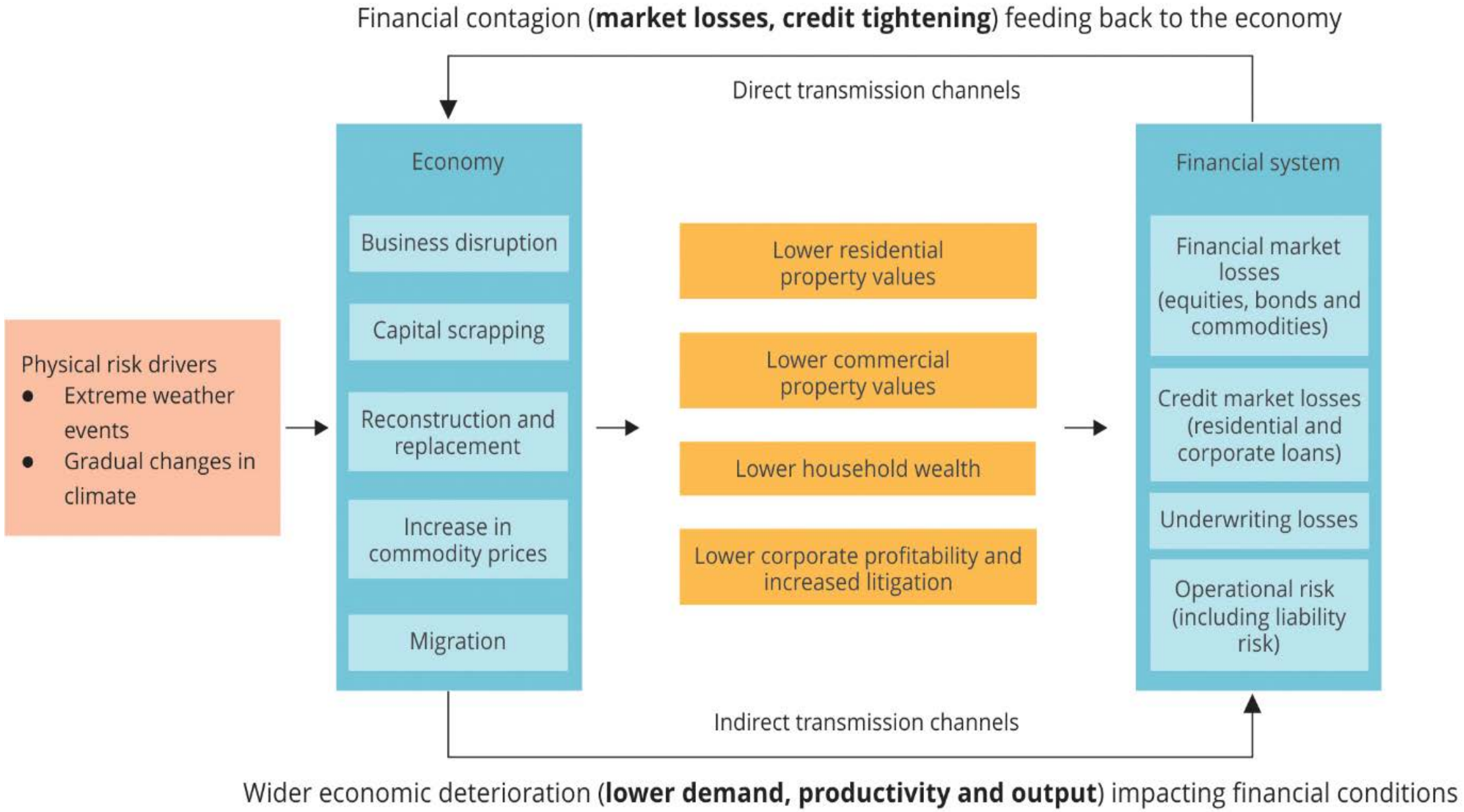
Purple indicates very high risks of severe impacts/risks and the presence of significant irreversibility or the persistence of climate-related hazards, combined with limited ability to adapt due to the nature of the hazard or impacts/risks.
Red indicates severe and widespread impacts/risks.
Yellow indicates that impacts/risks are detectable and attributable to climate change with at least medium confidence.
White indicates that no impacts are detectable and attributable to climate change.

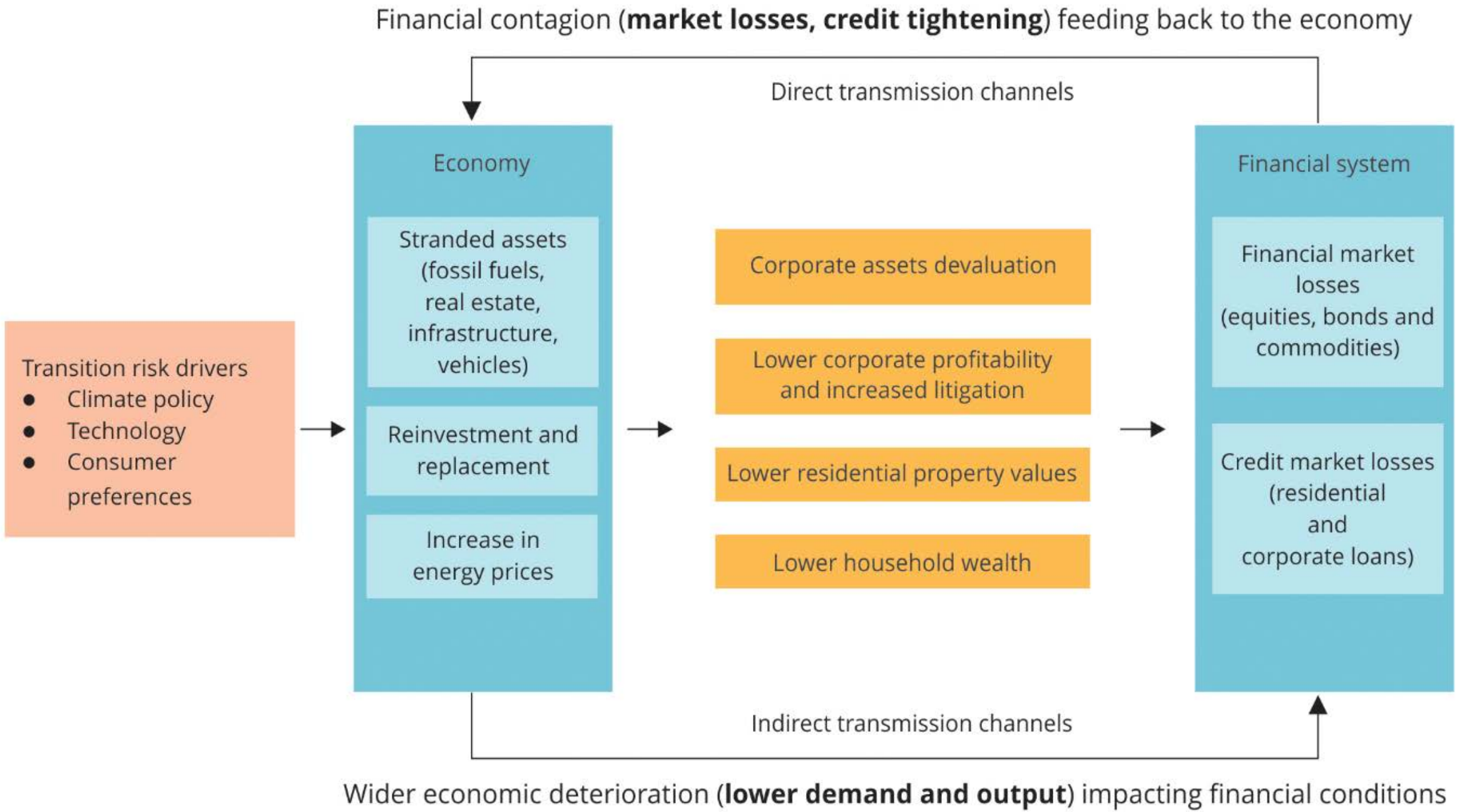
Impacts and risks for selected natural, managed and human systems



Confidence level for transition: *L*=Low, *M*=Medium, *H*=High and *VH*=Very high


1.5°C
2°C
2°C-1.5°C
MSR
0 1 2 3 4 5 6 7 8 9
Vuln. pop. / km^2
income < $10 /day
MSR > 5.0
10^2
10^3


Financial contagion (**market losses, credit tightening**) feeding back to the economy
Direct transmission channels
Physical risk drivers
Extreme weather events
Gradual changes in climate
Economy
Business disruption
Capital scrapping
Reconstruction and replacement
Increase in commodity prices
Migration
Lower residential property values
Lower commercial property values
Lower household wealth
Lower corporate profitability and increased litigation
Financial system
Financial market losses (equities, bonds and commodities)
Credit market losses (residential and corporate loans)
Underwriting losses
Operational risk (including liability risk)
Indirect transmission channels
Wider economic deterioration (**lower demand, productivity and output**) impacting financial conditions


Financial contagion (**market losses, credit tightening**) feeding back to the economy
Direct transmission channels
Economy
Stranded assets (fossil fuels, real estate, infrastructure, vehicles)
Reinvestment and replacement
Increase in energy prices
Transition risk drivers
Climate policy
Technology
Consumer preferences
Corporate assets devaluation
Lower corporate profitability and increased litigation
Lower residential property values
Lower household wealth
Financial system
Financial market losses (equities, bonds and commodities)
Credit market losses (residential and corporate loans)
Indirect transmission channels
Wider economic deterioration (**lower demand and output**) impacting financial conditions

What risks of systemic shock are we talking about?

- **Type of assets possibly impacted?**

- (i) real property : commercial and residential mortage-backed securities, real estate bank loans and investment trusts, credit risk transfer securities, residential mortgages
- (ii) infrastructure (debt and equity of power and water utilities and of transportation)
- (iii) business affected by climate-related risks and related abrupt downturn in revenues and equity valuations : agriculture, transportation sector, power generation, oil and gas, tourism, automobile, metal and mining, non-metallic material (cement, chemical plastics)
- (iv) coverage providers : insurance and and reinsurance companies debt and equities
- (v) municipal and sovereign bonds

Type of institutions possibly impacted

Credit Providing Institutions mostly concerned by ‘transition risks

Institutions holding Climate Impacted Assets that may be affected by physical risk because their assets are secured by commercial property, such as hotels, office and retail buildings, warehouses and bonds issued by municipalities.

What risks of systemic shock are we talking about?

- **A typical sequence of events :**
  - ***already-stressed balance sheets + high levels of corporate and municipal debts ->***highly destructive events affecting key economic hubs + drastic revision of expectations about important technological options (transitory drop in fossil fuel prices) -> sudden spike in risk aversion -> investors rushing out of certain bond funds -> liquidity shortages -> dry up futures and options markets already fragilized by a higher volatility in certain agricultural commodity prices and fossil fuels prices.
- **Two behavioral hypothesis**
  - Gradual revision of the statistics behind the calculation of the Value at Risk
    - Disengagement of **Institutions holding Climate Impacted Assets**
    - Higher risk-coefficient for **Credit Providing Institutions**
    - Protection of the financial system at cost of collective interest
  - Revision of statistics swamped, in the upward oriented phases of the financial cycles, but the debt driven momentum of permanently revalued assets -> systemic risks
- **Two major solutions**
  - Regulatory rules
  - TCFD + Taxonomies

Limits of the TCFD and Taxonomies approaches

- **Problems of definition and metrics**
  - Contradiction between the need for standardized and simple ‘marks’ and the difficulty of scientifically meaningfull
  - Problems for cement, glass, steel etc … that are needed in a low carbon world
  - Problems of avoiding a ‘carbon centric’ evaluation
- **Problems of efficiency for conducting the low carbon transition**
  - Reducing the carbon content of a financial portfolio can be made without investing in low carbon and climate resilient options
  - The ‘blame and shame’ dynamics might be difficult to control and freeze corporate decisions
- **Possible negative feedbacks with higher rents and self-financing of carbon based options**

NO GREENING OF FINANCIAL PORTFOLIOS WITHOUT SCALING-UP OF GREEN PROJECTS

Part II

Finance to Accelerate and Deepen Climate Action

1. **Scaling-up low carbon and climate resilient investments: the nature of the challenge**

2. **Financial System's Response to Climate Change in the Post 2008 crisis context**

3. **Barriers, ways and benefits to redirect global savings to scaled-up climate friendly investments**

Scaling-up low carbon and climate resilient investments: the nature of the challenge

1. **Bridging the infrastructure investment gap with low carbon options**

2. **Reducing the deficit in basic infrastructures to enhance the adaptive capacities**

3. **Reducing the mismatch between the geography of savings, of capital flows and of infrastructure investment needs**

4. **Facing structural ‘fault lines’ of the economic and financial system**

Scaling-up low carbon and climate resilient investments: the nature of the challenge

1. Bridging the infrastructure investment gap with low carbon options

- ***The amounts of needed investments are dependent from a cascade of uncertainty***
- ***Need to redirect 2,5% of the world savings***
- ***The investment infrastructure gap:*** a cumulative value of $14.9 trillions by 2040, a deficit of 15,9% for the Global Infrastructure Hub (2017) and 32% for the Boston Consulting Group (2017)
- ***fulfilment of SDGs*** : investment in water supply, sanitation, flood protection and irrigation = 30 % of the mitigation investments in transportation; need to multiply by 1,24 to 2,36 compared with a scenario with poor fulfilment of SGDs. (Rozenberg & Fay, 2019)
- The real challenge thus lies less in how to fund the incremental financing needs due to higher capital costs of low carbon options than in ***reducing uncertainty for businesses and savers by indicating where savings should go so as to bridge the overall infrastructure investment gap in a consistent way with the 1°5C target and other SGDs***

Scaling-up low carbon and climate resilient investments: the nature of the challenge

1. **Bridging the infrastructure investment gap with low carbon options**

2. **Reducing the deficit in basic infrastructures to enhance the adaptive capacities**

the integration issue: 2,7 - > 1,5 trillion/year with policy integration

3 Reducing the mismatch between the geography of savings, of capital flows and of infrastructure investment needs

role of ***countries 'creditworthiness***: in 2018, this spread was **1.30 %** for a five years project and **2.5 %** for a ten years project in BBB rated countries: and it jumped up to **6%** and **9%** respectively in a B rated country and 18% for the 60 countries below BBB (before the COVID crisis) for projects no longer than two years).

Scaling-up low carbon and climate resilient investments: the nature of the challenge

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3 Reducing the mismatch between the geography of savings, of capital flows and of infrastructure investment needs

4. Facing structural 'fault lines' of the economic and financial system

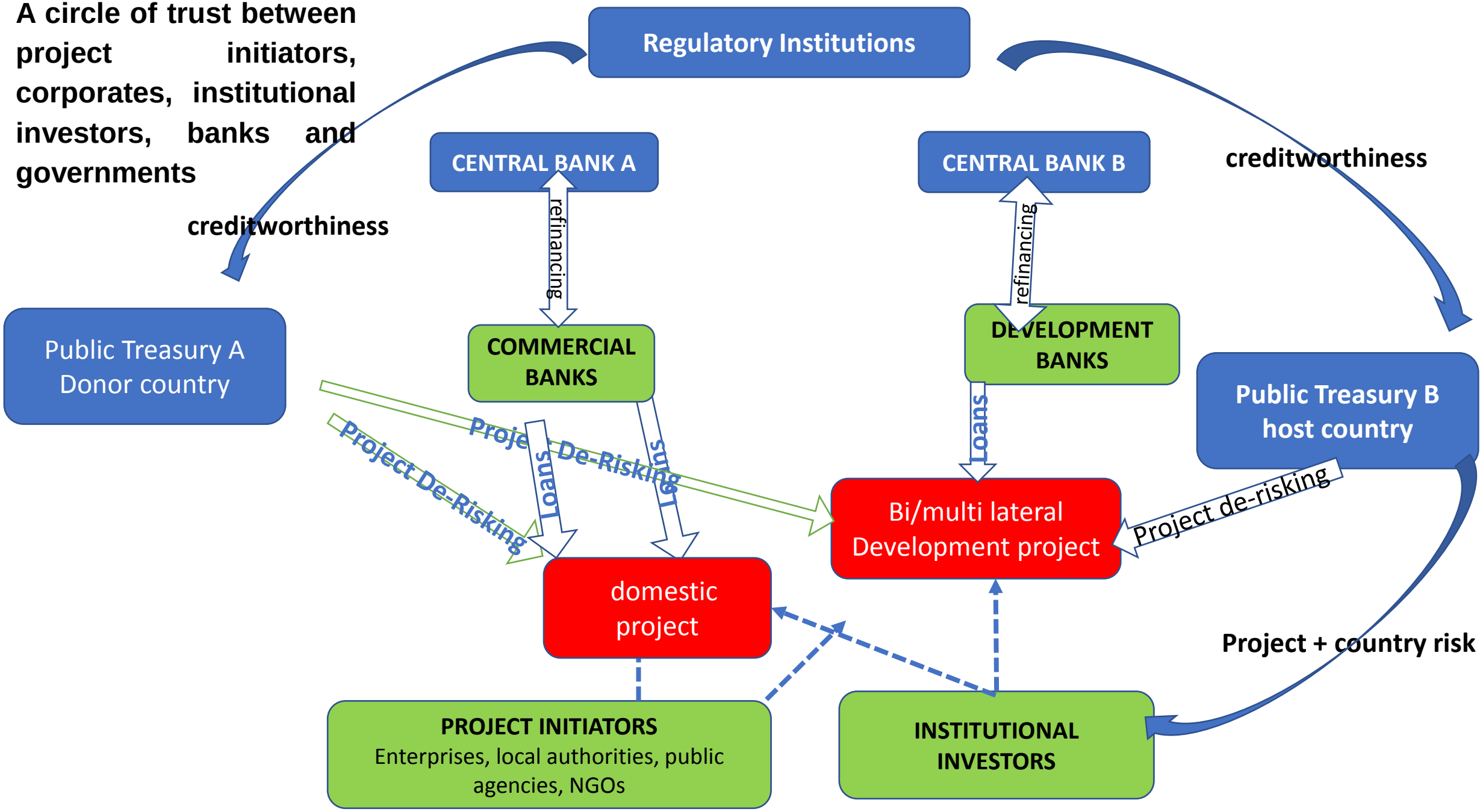
- gap between the ***'propensity to save' and the 'propensity to invest'*** and 'secular stagnation' (L. H. Summers,Krugman, 2014; Blanchard, 2019;
- 'business environment' under a ***'shareholder value business regime'*** (Roe, 1994) and ***risk-adverse financial players tending to direct more savings towards liquid financial products and real estate***.
- Financial cycles, business cycles and ***threats to stability of the contemporary financial system***: contrary to the rational anticipation and efficient markets hypothesis (Lucas, 1972) this system is fragilized by the ***absence mechanism that automatically returns capital markets to equilibrium*** (Borio, 2014)
- ***the 'tragedy of the horizons' (Marc Carney) might question not only the capacity of the financial system to tackle climate change but also its capacity to support robust growth pathways***.

Financial System's Response to Climate Change in the Post 2008 crisis context

- **The emergence of climate funding (MDBs, NDBs, Bond Markets)**
- **The search of hedges against systemic financial risks … TCDF, Taxonomy**
- **The climatic side-effects of the response to the 2008 crisis**
  - In response to the subprime crisis Central Banks resorted to huge liquidity injections
  - this resulted in ***increased corporate debt around the world*** not in a lower infrastructure investment gap.
  - The tighter bank regulations under Basel III, combined with an economic context with more business uncertainty and flatter yield-curve, have pushed banks to significantly retrench from risky and less profitable asset class (tended to limit loan maturity to 5 or 8 years.
- ***The recourse of the private sector to indebtedness to fund investments bypassed the banking system by taking the form of 'shadow banking' with bonds and equity involving institutional investors (mutual funds, asset managers, hedge funds, exchange-traded funds) that are not submitted to the same regulatory frameworks as banks***.

3. Barriers and ways to redirect global savings to scaled-up climate friendly investments

A circle of trust between project initiators, corporates, institutional investors, banks and governments

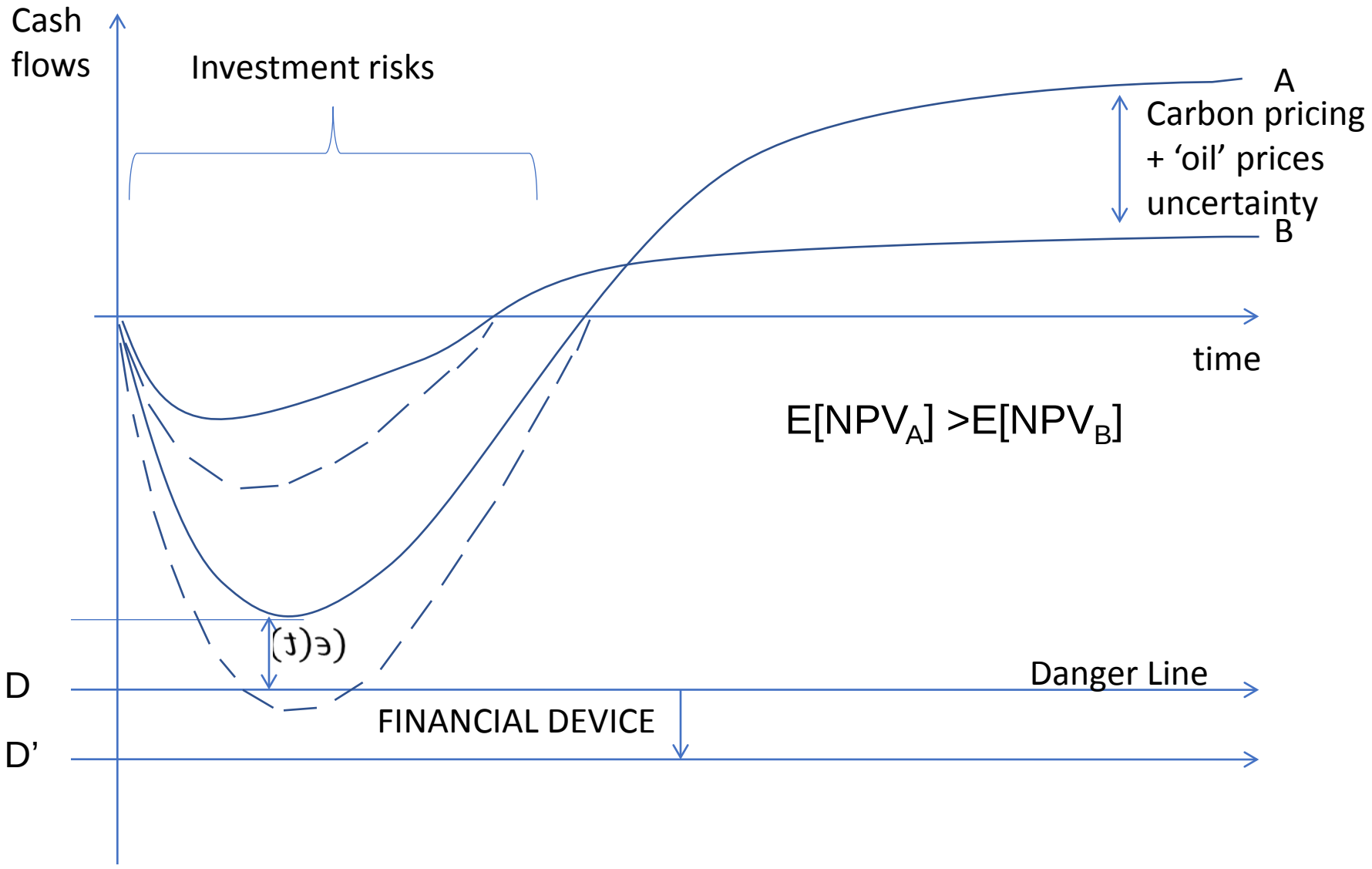


Barriers and ways to redirect global savings to scaled-up climate friendly investments

1. The priority: direct de-risking of climate friendly projects

- low leverage of private funds by public money for low carbon projects (1,1) compared with between 3 to 15
- low share of carbon saving potentials that is actually tapped by dedicated policies
- a ***chicken and egg problem*** that limits both the demand for funding low-carbon projects and the supply of funds to support them

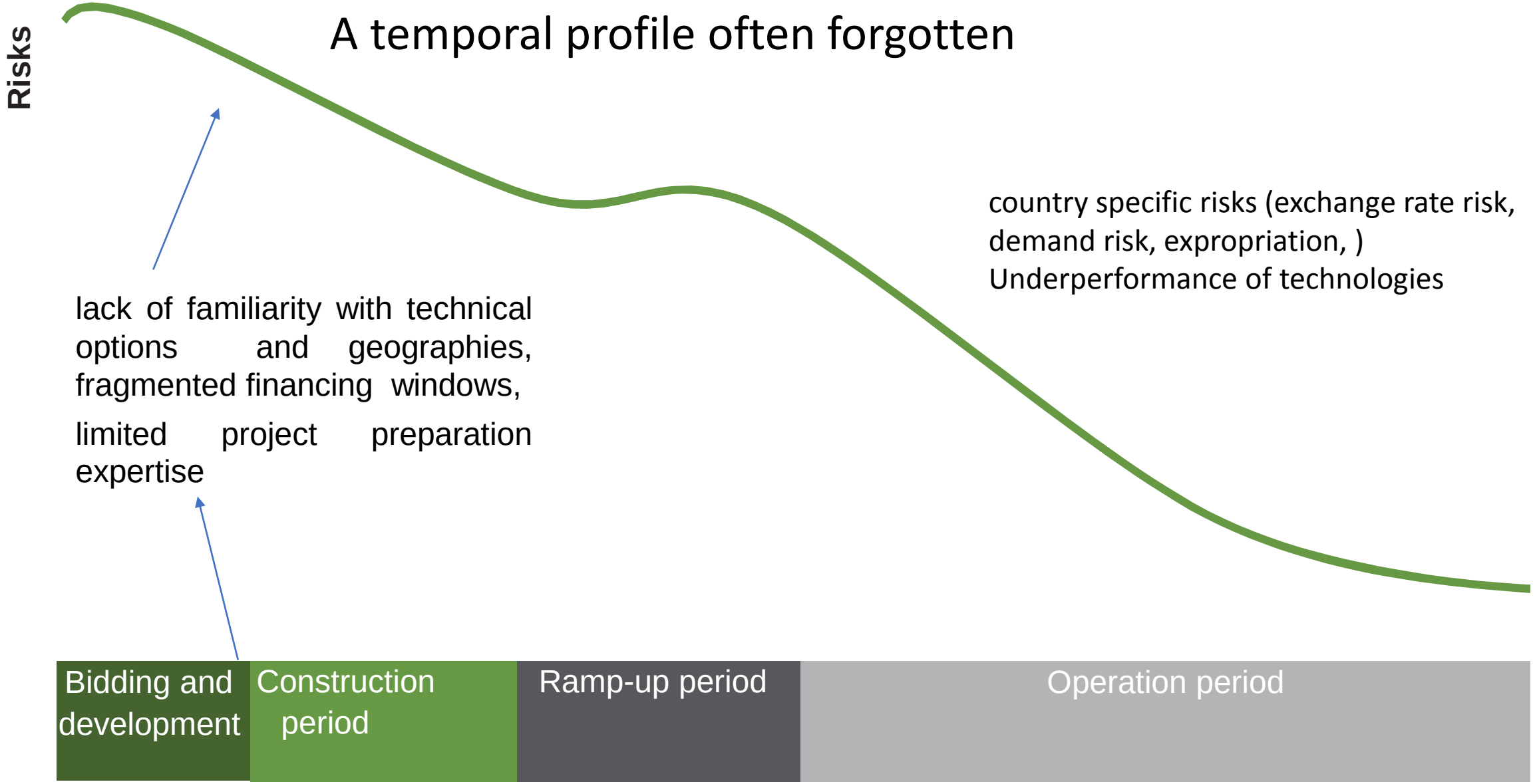
Vous avez dit ‘coût marginal?’, l’oubli paradoxal de la finance



Main risks along the lifetime of a project

<table>
<tr><th>Risk Categories</th><th>Development Phase</th><th>Construction Phase</th><th>Operation Phase</th><th>Termination Phase</th></tr>
<tr><td rowspan="8">Political and regulatory</td><td>Environmental review</td><td>Cancellation of permits</td><td rowspan="3">Change in tariff regulation</td><td>Contract duration</td></tr>
<tr><td rowspan="2">Rise in pre-construction costs (longer permitting process)</td><td rowspan="2">Contract renegotiation</td><td>Decommission</td></tr>
<tr><td>Asset transfer</td></tr>
<tr><td colspan="3">Currency convertibility</td></tr>
<tr><td colspan="4">Change in taxation</td></tr>
<tr><td colspan="4">Social acceptance</td></tr>
<tr><td colspan="4">Change in regulatory or legal environment</td></tr>
<tr><td colspan="4">Enforceability of contracts, collateral and security</td></tr>
<tr><td rowspan="6">Macroeconomic and business</td><td>Prefunding</td><td colspan="3">Default of counterparty</td></tr>
<tr><td colspan="2" rowspan="3">Financing availability</td><td colspan="2">Refinancing risk</td></tr>
<tr><td colspan="2">Liquidity</td></tr>
<tr><td colspan="2">Volatility of demand/market risk</td></tr>
<tr><td colspan="4">Inflation</td></tr>
<tr><td colspan="4">Real interest rates</td></tr>
<tr><td colspan="4">Exchange rate fluctuation</td></tr>
<tr><td rowspan="6">Technical</td><td colspan="3">Governance and management of the project</td><td rowspan="5">Termination value different from expected</td></tr>
<tr><td colspan="3">Environmental</td></tr>
<tr><td>Project feasibility</td><td rowspan="2">Construction delays and cost overruns</td><td rowspan="2">Qualitative deficit of the physical structure/ service</td></tr>
<tr><td>Archaeological</td></tr>
<tr><td colspan="3">Technology and obsolescence</td></tr>
<tr><td colspan="4">Force majeure</td></tr>
</table>

A temporal profile often forgotten



Up-front de-risking of low carbon projects

- ***Policy de-risking*** through streamlining the permitting process, clarifying the institutional responsibilities, reducing the number of process steps.
- ***Financial de-risking*** implies to transfer the investment risks to public institutions the lower risk-weighted capital costs, the lower indeed the 'switching' carbon prices
- ***guarantees*** > insurances -> power purchase agreements (PPA) -> carbon taxes
  - act upfront
  - a risk-sharing device that minimizes 'moral hazard'
  - a high leverage effect of public funds of private funds (up to 1 to 16)

- **Multilateral guarantees needed to break a glass ceiling:**

Guarantees still represent less than < 4% of MDBs and NDBs interventions (internal routines and disputes, conditional upon counter indemnity by host governments, full face value of provisions in the balance sheets of development banks,

Why Multilateral sovereign guarantees needed?

- Legitimacy of risk-sharing by sovereigns for the production of a public good

- risks provisions in function of the risks levels decreases within a very few years after projects coming on stream, neutral vis-à-vis the type of risk, ***maximise the leverage effect of public money on private funds***

- Facilitate the emergence of ***Third Party actors in new PPP*** and the involvement of ***local banks i***n order to speed-up the local financial sector's involvement and the ***access to loans in local currencies to lower the debt stress of the host country***

- ***Higher credibility*** and capacity to minimize the transaction costs by standardizing the selection and MRV processes, without weakening the projects' credibility, mobilisation of competences to lower implementation delays and secure the conformity of the works

Adaptation and basic infrastructure investments: a matter of public funding

- local public good nature : difficult to capture monetary revenues from beneficiaries
- less easy to standardize technically and in terms of transaction costs
- continue demanding public subsidies and development assistance
- Lesser role for bond markets
- the best synergy between mitigation, adaptation and the provision of basic services might come from ***crowding in private finance into mitigation investments via public de-risking in order to free up a higher portion of development assistance and of portfolios of NDBs and MDBs for the implementation of the SDGs.***

Securing the economic and environmental credibility of investments

- hedge against the ***arbitrariness*** of project's selection and minimize the 'hold-up' problems in PPPs
- without adding barriers to entrepreneurs' engagement
- ***Third Party Vehicles*** + multilateral arrangements + helping many $100 M funds to work synergistically.
- ***common assessment frameworks credible enough and standardized enough*** to minimize transaction costs
  - assessing the ***avoided tons of emissions*** by type of project and type of geography
  - ***Valuing the avoided tons***:*'social value of mitigation activities'* (Article 108 of the decision of the PA)
  - incorporating sustainable ***development co-benefits*** though the link with NDBs plus notional prices for assets other than the avoided carbon (water, forest, air quality, land).
- Innovative standardized assessment approaches within ***infrastructure platforms*** that will accelerate the emergence of new PPPs and the cooperation between governments, MDBs

Emergence of new asset classes

A multidimensionnal issue:

- ***Protecting the overall financing capacity of the economy***
- ***Mitigating transition risks and the implicit veto of :***

fossil fuel producing exporting countries and regions

economic actors of which value of capital will collapse (including some households!)

actors of the financial systems (pension funds, insurance companies and asset managers)

- Inciting institutional investors to extent to 15-20 years their actual preference of 5-8 yeard

- preventing creditworthiness risks of 'host' countries

- the 'technical conditions'

- repackaging in standardised and liquid forms, securitizations and bundling in investment platforms for institutional investors (EIB with REPIN)
- -> asset managers consider small projects whereas they call for investments over $ 100 million

Link with systemic evolutions of the financial system

- ***Assets*** incorporated in the balance sheets of actors and ***de facto recognized by central banks***

- ***circumvent the Basel III guidelines for liquidity*** and the EU's Solvency II directive in emerging economies (and others). The higher the value of the generated assets recognized *de facto* in swaps between central banks, the lower the creditworthiness risk for the host country

- Carbon Remediation Assets with a predetermined face value a tangible substitute to stranded assets and by used by Central Banks in their interpayment operations -> a ***carbon based reserve currency***

- ***taxonomy vs certification*** disclosure of the carbon footprint of individual projects (Article 173 in France) and supporting the TCFD approaches (actually

Part III:

The Finance-Climate Nexus in the Post Covid context unprecedented context; what way forward

An economic shock in Emerging Economies, the drivers of pre-Covid growth

Drop in domestic public revenues

- GDP: -2,5 % in emerging economies > - 5,2 % in the world on average
- Fiscal balance: - 9.1 % in middle income, - 5,1% in low income
- New ‘urgencies’ and priority to the **‘rescue**’ of economic activity and employment

Decline in private external balance

- 700 G$ in ODA eligible countries
- outflow of equity in March : 80G$
- decrease of foreign equity investments: - 35 %

Scissor effect and downgrades in sovereign credit ratings

- The G20 freezes 5 G$ of debt payments for 42 LDCs
- But increase in spreads: 90 countries below BBB instead of 60 today: spreads > 18% for 2 years projects

Solvency risks and liquidity crisis

- Affect primarily the SMEs: that have no financial buffer

Rescue and Recovery Packages: ultimaly, a monetary problem

- **Rescue phase:** ‘neutral’ injection of money (support entreprises, unemployed)

- **Recovery :**
  - Uncertainty about what are the key sectors to support a new growth cycle
  - Persisting ‘Buridan Donkey’ syndrome and saving/investment gap
  - The low carbon transition as a credible mobilizing horizon only if aligned with SDGs
  - The infrastructure sectors have a dominant share in the world gross capital formation. They can have a strong knock-on effect, will generate a more domestic-oriented growth pattern and are critical for social inclusion

- **Systematic quantitative easing -> overflow of national currencies;** increased country's indebtedness to its citizens national does not matter over the short term but can slow down the medium and long term growth

- **But lack of international currency :** increased country's indebtedness to non nationals matters;
  - recurse to the **DTS -> reinforced role of the US $ as the dominant reserve currency?** A role for the euro?
  - the cancellation of debts: always a political price to pay to the lender of last resort + increased spreads on new loans

The reciprocal gains of multilateral initiatives

- **Aim:**
  - **Leverage Nationally Determined Contributions (NDCs) and foster policy integration**
  - **Redirecting world savings (increased and 'more concentrated' because of rising inequalities in incomes net of basic expenditures) towards productive/labour intensive investments**
  - **Reduce the fragmentation of Climate Finance**
  - **Awake the 'Buridan Donkey' saver and say him where its money should go**
- **Tool:**
  - **Multilateral sovereign-backed guarantee fund** to de-risk low carbon investments, and join forces of highly rated (AAA-AA) countries to **drastically increase the leverage effect of public funds on private funds in low carbon projects**
  - Thus **freeing up the resources of the development banks** (MDBs and NDBs) for the **non marketable activities** necessary to fulfil the SDGs
  - **Third Party selection of projects** with common assessment principles including the ***calibration of the guarantees on an agreed upon 'social, economic and environmental value of mitigation activities'*** (art 108 of the decisions of the Paris agreement' to secure the economic efficiency of choices and the ***recognition of credible climate remediation assets***
  - ***Creation of projects pipelines and platform to bundle small size projects***
  - ***Political credibility of the commitments secured by reciprocal gains***: funds for the host countries and low public costs for the guarantor countries (risks provisions, a fraction of total guarantees easily equilibrated by the fiscal revenues of the induced exports

Remarques personnelles au-delà du rapport (en forme de liste à la Prévert

- **Application au Green Deal Européen: des garanties multilatérales gérées par la BEI comme dépassement/contournement de la dispute entre 'cigales et fourmis'**

- **Attention, pour 'verdir' la finance, à la 'complémentarité' entre**
  - **les approches 'taxonomies' et 'climate disclosure', qui vont poser des problèmes de 'métriques' dont la 'non solution' risque de créer des dynamiques de 'suspicion' et de surenchères (cf supra)**
  - **la certification de projets et leur reconnaissance en tant qu'actifs**

- **Discussion à ouvrir**
  - **sur les bases scientifiques des indicateurs 'simples' du degré de 'verdissement' des portfolios et leurs dangers potentiels**
  - **sur les bases d'évaluation des projets et les moyens techniques de la capitalisation des expériences (cf. les bases de données des banques de développement) pour augmenter progressivement la crédibilité des actifs**

- **Revenir, passer la phase de 'rescue' sur le potentiel d'un système puissant de garanties multilatérales en termes d'évolution du système financier et monétaire international, l'émergence de 'climate remediation assets' reconnus pas les Banques Centrales et leurs paiements interbancaires permettraient**
  - **de diversifier de facto les monnaies de réserve**
  - **de donner la boussole manquante aux marchés des capitaux et 'reduce the gap between what people value and what markets value' (Marc Carney)**