Welcome

Please wait for the beginning of the training
Deforestation Risks for Banks

Module 2 / Part B
Overall Module Structure

Modules

01 Introduction to deforestation and business case
Learners should be able to:
❖ Understand global deforestation context, sustainability issues in commodity supply chains and why it matters to banks
❖ Understand risks associated with financing agricultural commodity production and trade

02 Risk Identification, Screening and Assessment
Learners should be able to:
❖ Describe how deforestation-related risks fits within the traditional risk management framework
❖ Understand where different deforestation-related assessment tools fall within risk management stage and how to use them.

03 Managing financial risk and exploring opportunities
Learners should be able to:
❖ Understand mitigation actions that banks can take to reduce their deforestation-related risks.
❖ Understand various opportunities and production innovation to support sustainable commodities production.

04 Nature-Based Solutions (NbS)
Learners should be able to:
❖ Understand how NbS can be used to mitigate land use risk
❖ Understand how NbS can be an investment opportunity for banks
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Presenters

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Module 2: Deforestation Risk Identification and Assessment

Part A: Preparatory Stage (29th Sep)
- Objective-setting and scoping
- Risk exposure
- Introduction to deforestation risk assessment

Part B: Assessing deforestation risks (4th Oct)
- Reputational Lens
- Legal lens
- Financial lens
Banks could examine their risk base through a **reputational**, **legal**, and/or **financial** lens. A lens view looks at the various threats in risk register that could be significantly amplified through additional reputational/legal/financial damage.

### REPUTATIONAL

Examining risks related to negative publicity and reputational damage in financing forest-risk companies targeted by NGOs, clients, media, and the wider public.

### LEGAL

Examining risks related to current and future regulations (which are likely to be more stringent) in financing forest-related activities.

### FINANCIAL

Examining risks that can ultimately affect portfolio companies revenue and profitability (e.g. default on debt obligation, declining equity value, and asset stranding).

Adapted from: *Tropical Forest Alliance, 2018*
Part B: Assessing deforestation risks

➢ Reputational Lens
➢ Legal lens
➢ Financial lens
Reputational Lens: Introduction

- Examine your risk base using a reputational lens. Ask:
  - which of the threats in your risk register could be significantly amplified through additional reputational damage?
  - In what ways might the bank be caught up in the fallout from incidents at competitors, suppliers or clients?
  - How might the reputational dimension of such risk crystallise, develop and affect the bank's financial performance?

Where to look

*Identify stakeholders and data sources for stakeholder information.*
- Consider internal and external stakeholders, including regulators, shareholders, employees and clients.
- Tap into varied data sources for a more complete perspective.

What to analyse

*Identify factors that indicate changes in stakeholder expectations and potential reputation risk.*
- Identify elements of your strategy and operating environment that could affect reputation.
- Design an analytical framework around the identified elements and develop automated tracking.
- Design key risk indicators to monitor potential reputation impacts.

Source: *Oliver Wyman, 2014, Reputation Risk* and *Deloitte, 2015, Survey on Reputation Risk*
Which risk driver(s) concerns you?

- Shifts in consumer preferences
- Stigmatization of sector in which your clients operate
- Negative media coverage related to financing of project/activities with negative impacts on forests
- Increased stakeholder concern or negative stakeholder feedback
- Lending that could create or contribute to systemic risk for the economy
- Local community opposition

Source: CDP, 2021
Using your sector/geography concentration results

Source: Forests and Finance
Analyse if the risks are high for a specific commodity/region

A potential source of data:

- **GMAP** (Global Map of Environmental & Social Risks in Agro-commodity Production)
- The criteria and indicators align with the IFC Performance Standards on Environmental and Social Sustainability.

Output: High risk geographies/high-risk commodities combination for aspects that are important from a reputation risks perspective.

Source: GMAP, IFC
Sector/geography analysis (subnational)

Analyse whether the risks are high in the specific commodity/region

Potential source of data:

- **Global Forest Watch**: Historic land cover, forest change or fires data related to the region

Output: High risk geographies/high-risk commodities combination for specific reputationally relevant datapoints

Source: [Global Forest Watch Dashboard](#)
Client reputation

Example: Scoring companies based on performance ratings

Source: CDP, 2021 and Climate Advisers, 2021
Example: Using specific datapoints within performance ratings (e.g. policies, commitments, traceability)

Source: BNP Paribas, 2021
Client reputation

Example: Proportion of certified areas

Source: Barclays, 2021
# Reputational lens: risk datapoints

<table>
<thead>
<tr>
<th>Tool</th>
<th>Relevant Datapoint</th>
<th>Companies</th>
<th>Geography/ commodities</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP Forests</td>
<td>Policies, traceability, certification</td>
<td>+500 companies</td>
<td>Global, all</td>
<td>Company questionnaire</td>
</tr>
<tr>
<td>Forest 500</td>
<td>Policies, traceability, certification</td>
<td>350 companies plus 150 financial institutions</td>
<td>Global, all</td>
<td>Publicly available data</td>
</tr>
<tr>
<td>ZSL SPOTT</td>
<td>Policies, operations, commitments</td>
<td>211</td>
<td>Global, includes forestry, palm oil, rubber</td>
<td>Publicly available data and media coverage</td>
</tr>
<tr>
<td>WWF Palm Oil Buyers’, Soy &amp; Timber Scorecards</td>
<td>Policies, traceability, certification</td>
<td>Palm – 173</td>
<td>Retailers, manufacturers, food service, construction, paper, global (UK focus for timber)</td>
<td>RSPO ACOP, company questionnaire, publicly available information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soy – 133</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Timber - 122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RepRisk</td>
<td>ESG and business conduct risks (inc. impacts on landscapes, ecosystems, biodiversity)</td>
<td>141,000 companies</td>
<td>Global, all</td>
<td>Media and AI/big data</td>
</tr>
<tr>
<td>Supply-Change</td>
<td>Identifies at-risk companies, monitors commitments and progress</td>
<td>865</td>
<td>Global/all</td>
<td>Publicly available data</td>
</tr>
</tbody>
</table>

Source: Hindsight Consultancy, 2020, Deforestation tools assessment and gap analysis
Forest 500
An introduction to the Forest 500 data
Reputational lens: risk assessment

**Reputational risk**: risk to a company resulting from changes in perceptions by key stakeholders, including customers, investors and regulators. *(Oliver Wyman, 2017, Hidden Cost of Reputation Risk)*

In assessing the severity of reputational risks, the following datapoints could be considered:

- Severity of deforestation/tree cover loss in concession areas
- Use of fires
- Media coverage on the client

The chosen datapoint will depend on the banks priorities for reputational risks, for example:

A bank would like to see the percentage of certified clients after seeing that companies complying with RSPO guidelines have performed 40% better than those that have not. *(source: CRR, 2019, Deforestation-Driven Reputation Risk Could Become Material for FCMGs).*
Determine companies you wish you assess further (e.g. high risk companies, low performing companies)

Table 1  ESG flags top-5 clients of Chinese financial institutions (2016-2020 April)

<table>
<thead>
<tr>
<th>Group</th>
<th>Environmental issues</th>
<th>Social issues</th>
<th>Governance issues</th>
<th>Section</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deforestation</td>
<td>Fire</td>
<td>Community rights</td>
<td>Labour rights</td>
</tr>
<tr>
<td>China Forestry Group</td>
<td>X</td>
<td></td>
<td>X</td>
<td>S</td>
</tr>
<tr>
<td>COFCO</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>Royal Golden Eagle Group</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RGE – Pulp &amp; paper</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sinar Mas Group</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sinar Mas – Palm oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sinar Mas – Pulp &amp; paper</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Sinochem Group</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Source: Forests & Finance, 2021
Determine the area you wish to analyse (country/subnational level, taken from concession data, etc.)

Possible risk assessment indicators

❖ Percent of Primary Forest Loss
❖ Trend in Rate of Annual Average Primary Forest Loss
❖ Average Observed Fire Density
❖ Percent of Overlap with Concession to Key Protected Areas

Source: WWF, 2017
Reputational lens: risk assessment (fires)

<table>
<thead>
<tr>
<th>Company</th>
<th>Number of fire alerts in 2019</th>
<th>Number of fire alerts in 2020</th>
<th>Variance year over year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Jul'19 Aug'19 Sep'19 Jul-Sep'19</td>
<td>Jul'20 Aug'20 Sep'20 Jul-Sep'20</td>
<td>V% (Jul) V% (Aug) V% (Sep) V% (Jul-Sep)</td>
</tr>
<tr>
<td>JBS</td>
<td>22,707 132,721 121,824 227,252</td>
<td>20,892 107,404 221,934 350,230</td>
<td>-8% -19% 82% 26%</td>
</tr>
<tr>
<td>Murtrig Global Foods</td>
<td>7,005 34,292 47,014 88,311</td>
<td>8,065 40,602 95,449 144,116</td>
<td>15% 18% 103% 63%</td>
</tr>
<tr>
<td>Minerva</td>
<td>6,719 37,563 42,751 87,033</td>
<td>8,319 33,454 98,066 139,839</td>
<td>24% -11% 12% 61%</td>
</tr>
<tr>
<td>Mercurio Alimentos</td>
<td>3,910 22,562 23,422 40,903</td>
<td>7,695 21,347 52,887 81,920</td>
<td>96% -5% 126% 64%</td>
</tr>
<tr>
<td>Vale Grande Industria e Comercio de Alimentos</td>
<td>8,199 29,717 24,081 61,927</td>
<td>4,838 24,886 49,591 78,860</td>
<td>-46% -16% 106% 27%</td>
</tr>
<tr>
<td>Amazonbio</td>
<td>7,166 39,012 16,008 62,186</td>
<td>9,176 37,329 25,003 71,508</td>
<td>28% -4% 56% 15%</td>
</tr>
<tr>
<td>Masterbio</td>
<td>3,710 14,131 10,882 37,723</td>
<td>4,808 10,804 47,461 63,073</td>
<td>30% -24% 139% 67%</td>
</tr>
<tr>
<td>Matoboi Alimentos</td>
<td>1,717 6,153 18,350 26,720</td>
<td>2,237 15,288 43,097 60,622</td>
<td>30% 1.6% 135% 13%</td>
</tr>
<tr>
<td>Frigel</td>
<td>2,011 15,312 15,474 32,797</td>
<td>2,718 13,780 40,880 57,378</td>
<td>35% -10% 164% 75%</td>
</tr>
<tr>
<td>Irmao Goncalves Comercio e Industria</td>
<td>2,571 27,319 14,089 43,979</td>
<td>1,244 12,650 16,833 30,727</td>
<td>-52% -5% 19% 30%</td>
</tr>
<tr>
<td>Total fire alerts in major slaughterhouse sourcing regions</td>
<td>65,654 358,782 342,895 767,331</td>
<td>69,537 317,544 69,120 1,078,282</td>
<td>6% -11% 102% 41%</td>
</tr>
</tbody>
</table>

Source: Chain Reaction Research visual based on NASA VIIRS data
Reputational lens: risk assessment (combined)

Global Forest Watch Pro

- **Scenario:** measuring past deforestation in the area linked to the loan to identify potential liabilities.
- **Information needed from client:** clients points/polygon locations
- **Result:** users can view data on recent and historic deforestation in their supply chain area, as well as active fires and protected areas. The information can be used to assess forest risk and prioritize, develop environmental plans to mitigate risks and monitor performance.

Source: Global Forest Watch Pro
Use of geospatial data for your risk assessment

- Geospatial information is powerful to support deforestation-related risk assessment
- Costs should be weighed against your objectives and scope of your risk assessment.
- There are several options of service providers and applications available in the market, some of which are free.
- Building in-house capacity to work with geospatial data is also an option.

**SERVICE PROVIDERS**
- SATELLIGENCE
- FLINTPRO
- STARLING
- agrotools

**APPLICATIONS**
- UNEBiodiversity Lab
- FORESTWATCH PRO
- IBAT
Key messages: Reputational lens

- **Sector/geography analysis** allows you to see if there is a reputational risk associated with a particular FRC in a particular region (national or sub-national).
- You could consider **risk at a client level**, using various NGO tools which give companies performance ratings on deforestation or look at the proportion of your client's land which is under certification schemes.
- Depending on the priority of your analysis, various datapoints could be used (looking at policies, traceability, certification, historical fires, etc.).

Source: Forest500, 2020
Part B: Assessing deforestation risks

➢ Reputational Lens
➢ Legal lens
➢ Financial lens
**Legal lens: Introduction**

What do we mean by this?
- Assessment of applicable law and emerging legal risk associated with the commodity/region/client
- This assessment can look at present legal risk or going beyond what the law currently requires.
- Many certification systems require compliance with law and require companies to adopt best practices. As a result, certification system may help provide some assurance of legal compliance.

<table>
<thead>
<tr>
<th>Commodities certification examples:</th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Roundtable on Sustainable Palm Oil (RSPO)</td>
</tr>
<tr>
<td>❖ Forest Stewardship Council (FSC))</td>
</tr>
<tr>
<td>❖ Programme for the Endorsement of Forest Certification (PEFC)</td>
</tr>
<tr>
<td>❖ International Sustainability and Biomaterials Certification (RSB)</td>
</tr>
<tr>
<td>❖ International Sustainability and Carbon Certification (ISCC)</td>
</tr>
<tr>
<td>❖ Bonsucro</td>
</tr>
<tr>
<td>❖ Rainforest Alliance</td>
</tr>
<tr>
<td>❖ Round Table on Responsible Soy (RTRS)</td>
</tr>
<tr>
<td>Current/emerging Regulation</td>
</tr>
<tr>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>❖ Mandates on and regulation of existing products and services, including product standards</td>
</tr>
<tr>
<td>❖ Lack of mature certification and sustainability standards for FRC</td>
</tr>
<tr>
<td>❖ Land tenure regulation and uncertainty on land ownership and occupancy rights</td>
</tr>
<tr>
<td>❖ Moratorium and voluntary agreements</td>
</tr>
</tbody>
</table>
### Integration of sustainability criteria in financial regulation

**Figure 1:** Integration of sustainability criteria in financial regulations in five countries. Taken from *Financing Deforestation Increasingly Risky Due to Tightening Regulatory Frameworks*.

<table>
<thead>
<tr>
<th>Type of actors regulated</th>
<th>Criteria</th>
<th>Brazil</th>
<th>Colombia</th>
<th>Peru</th>
<th>Indonesia</th>
<th>Malaysia</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regulation has clear guidance on data sources to be consulted</td>
<td>Only for rural loans and not enough</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, for Islamic banks</td>
</tr>
<tr>
<td></td>
<td>Regulation defines types of loans to be assessed</td>
<td>No, except for rural loans</td>
<td>No</td>
<td>Yes: loans above USD 10 million</td>
<td>Yes</td>
<td>Yes, for Islamic banks</td>
</tr>
<tr>
<td></td>
<td>Regulation mentions that ESG risks can occur in the client’s supply chain</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes, for Islamic banks</td>
</tr>
<tr>
<td></td>
<td>Regulation defines green loans or investments</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes, for Islamic banks</td>
</tr>
</tbody>
</table>

Source: *Chain Reaction Research, 2020*
Example of internal bank screening for forest products

Step 1

- **Country risk**
  - Does the company buy from or operate solely in low-risk countries (EU 27, USA, Canada, Australia, New Zealand)?
    - Yes → Continue
    - No → Track record

- **Certification risk**
  - Is a satisfactory volume [% to be determined by the bank] of the company’s timber certified to an internationally recognised standard (including PEFC Avoidance of Controversial Sources and FSC Controlled Wood)?
    - Yes → Management risk
    - No → Indicates potential high risk

- **Management risk**
  - Is management demonstrably committed to producing or sourcing sustainable timber?
    - Yes → Indicates potential lower risk
    - No → Indicates potential high risk

- **Track record**
  - Does the company have the necessary organisational capacity to comply with sustainable forestry requirements?
    - Yes → Indicates potential lower risk
    - No → Indicates potential high risk

Indicates potential high risk

The presence of higher risk indicators should inform the client evaluation process. Note presence of potential higher risks in management interview template, and complete management interview (recording how client is managing this issue within relevant section).

Indicates potential lower risk

Complete the management interview template to document achievement of client performance requirements. The interview should be conducted with sustainability or environment health and safety managers, forest manager or senior management in the forest business division. If significant gaps are identified or management cannot provide satisfactory answers go to the higher risk client approach.

Source: Sustainable Forest Finance Toolkit, PwC
Using your sector/geography concentration results

Output: Concentration of finance and clients across geographies and forest-risk sectors

Source: Forests and Finance
Geographic/sector risk identification
(risk of law being broken)

Analyze whether the country has a high legal risk for a specific type of commodity (country-level)

Potential source of data:

- **Preferred by Nature Sourcing Hub**: each country and corresponding agri-commodities is given a score. The score is a measure of the number of areas of law that are at risk of being broken. The lower the score the more widespread the risk of illegality in the country.

Output: High risk geographies/high-risk commodities combination on legality issues

Source: [Preferred by Nature, Sourcing Hub, n.d.](#)
Geographic/sector risk identification
(Using GMAP to assess legal risk)

GMAP (Global Map of Environmental & Social Risks in Agro-commodity Production) can be used to analyse whether the risks are high for the specific commodity/region (at a country-level)

❖ Provides an early and high-level country- and commodity-level evaluation of environmental and social risks associated with agro-commodity primary production.

❖ The criteria and indicators align with the IFC 2012 Performance Standards on Environmental and Social Sustainability.

Output: High risk geographies/high-risk commodities combination for specific legal/regulatory relevant datapoints

Source: GMAP, IFC
Geographic/sector risk identification (fires)

Useful when regulatory/legal compliance requires no use of fires

**Global Forest Watch Fires**: monitor historical fires data up to subnational level
Geographic risk identification

Analyze whether the tenure risk is high for the region

Tenure risk: Tenure risk is the risk that a real asset will face significant financial or operational problems because of local opposition.

Indicators:
- Protected Areas
- Conflict data
- Governance Indicators

Source: Landscope
Client-level analysis: exposure to low-performing companies
Design internal questionnaires and conduct desktop review to determine reputationally-relevant datapoints with clients:

- Deforestation policy applied along supply chain
- Deforestation-free target and traceability ambitions
- Enforcement of policies through contracts, codes of conduct and audit/verification systems

Source: Société Générale, 2020

Takeaway: Société Générale’s exposure is concentrated on players that are on the right track in terms of non-deforestation policies and practices. Yet, focus should be maintained on engaging with clients to reach a commitment to achieve 100% “deforestation and conversion free” supply chains.
Value chain risk identification
(exporter)

- Trase Finance enables financial institutions to identify direct and indirect exposure to deforestation risk.

Trase Finance Series:
What is Trase Finance?

Source: Trase Finance
Other legal risk identification data

Voluntary certification databases
National certification checks
Grievance and complaints database
Embargoes, fines
Environmental Impact Assessment check

Voluntary certification examples

- **RSPO**
  - prohibits conversion of primary forests but not of other forest types

- **RTRS**
  - prohibits the conversion of both primary and secondary forests, using a narrow definition of forests

- **FSC**
  - prohibits forest conversion in all but exceptional cases

- **PEFC**
  - endorses national standards that regulate forest conversion

- **PEFC**
  - calls for the protection of native forests but does not issue certificates

Source: Société Générale, 2020
## Legal lens: risk datapoints

<table>
<thead>
<tr>
<th>Tool</th>
<th>Relevant Datapoint</th>
<th>Companies</th>
<th>Geography/ commodities</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDP Forests</td>
<td>Disclosure on legal compliance for specific commodities (Question F6.6), certification</td>
<td>1500 asked, 306 responded</td>
<td>Global, all</td>
<td>Company questionnaire</td>
</tr>
<tr>
<td>Forest 500</td>
<td>Scores on client’s policies for forest risk assessments, compliance with laws, and other social considerations</td>
<td>350 companies plus 150 financial institutions</td>
<td>Global, all</td>
<td>Publicly available data</td>
</tr>
<tr>
<td>ZSL SPOTT</td>
<td>Scores on sustainability policy, certification standards, community, land and labour rights</td>
<td>211</td>
<td>Global, includes forestry, palm oil, rubber</td>
<td>Publicly available data and media coverage</td>
</tr>
<tr>
<td>Supply-Change</td>
<td>Related sustainability activities (RSPO, GRI, etc.), compiled scores from Forest500 and SPOTT</td>
<td>865</td>
<td>Global/all</td>
<td>Publicly available data</td>
</tr>
<tr>
<td>BankTrack</td>
<td>Company track record on social and human rights</td>
<td>128</td>
<td>Global/all</td>
<td>Publicly available data and media coverage (news, reports, financing, etc.)</td>
</tr>
</tbody>
</table>

Source: Hindsight Consultancy, 2020, Deforestation tools assessment and gap analysis
Legal lens: risk datapoints (national case - Brazil)

Some countries will have relevant national-level tools and databases that can support assessment of risks from a legal lens. In the case of Brazil, for example, existing tools allow:

- Check environmental fines and embargoed areas linked to the client (IBAMA)
- Compliance with the Brazilian Forest Code requirements (SICAR)
- Reports and visualization of farm level deforestation and overlaps with protected areas (Mapbiomas)
- Other national databases
Legal lens: risk assessment
Determine the area you wish to analyse (country/subnational level, taken from concession data, etc.)

Possible risk assessment indicators

- Percent of Overlap with Concession to Key Forest Area
- Overlap with Legally Protected areas (UNEP-WCMC, Protected Planet)
- Overlapping legal classification of land (national database) with concession data
- Overlap or potential overlap with moratorium or peatlands
Key messages: Legal lens

- Assessment of applicable law and emerging legal risk associated with the commodity/region/client – either present risk, or going beyond current requirements of the law. Certification schemes give examples of best practise which may eventually be legislated for.
- Consider alignment with IFC Standards, fire, tenure risk.
- Consider individual clients as well as a portfolio level overview
- NGO tools, certification databases and internal questionnaires can all help with this analysis
- Not considering legal limitations can have serious consequences for the client and for the bank

Source: Forest500, 2020
Break Time
(10 min)
Part B: Assessing deforestation risks

➢ Reputational Lens
➢ Legal lens
➢ Financial lens
Financial lens

**Examining risks that can ultimately affect portfolio companies revenue and profitability (e.g. default on debt obligation, declining equity value, and asset stranding).**

**Structure**

- Risk Identification and transmission channels
- Risk assessment using scores and rating
- Risk assessment using backward and forward-looking modelling
Financial lens: Identification

Financial impacts of deforestation risks can include:

- Revenue loss and market access (revenue-at-risk);
- Loss of asset value (stranded asset risk);
- Impact on cost of capital due to non-ESG behaviour (cost-of-capital risk).

The valuation of the financial impact of deforestation risks is relatively straightforward for upstream companies (growers/plantations) and midstream actors (traders and refineries).

Although downstream/FMCG (Fast-Moving Consumer Goods) companies face similar risks, the financial impacts of stranded asset risk, market access risk, and cost-of-capital risk tend to be relatively small for this sector.

Source: Chain Reaction Research, 2019
Identifying risk transmission channels

Physical risk

**Biophysical risk** – negative feedback in environmental cycles - could also affect financial performance.

For example, forest conversion to pasture and croplands (forest loss) affects:

- moisture cycling and energy balance
- may change rainfall patterns

Regional climate could respond as much or even stronger to land use change than to global warming.

*All of this can effect financial value.*

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Source: NCFA, Natural Capital Credit Risk Assessment in Agricultural Lending, 2019
Identifying risk transmission channels

Transition risk

Transition risk – Similar transmission channels are found in the mechanisms propagating deforestation risk through the various transition risks.

Transition risk drivers arise as a result of transitioning economic conditions to a new context that recognises the importance of preserving forests and aims to punish acts of deforestation.

It can result from new policies or laws or through voluntary signals and actions directly taken by market actors as a result of their increased public commitments, such as no-deforestation, no-peat no exploitation commitments (NDPE).

Source: NCFA, Natural Capital Credit Risk Assessment in Agricultural Lending, 2019
Risk assessment approaches

Scoring and rating models

❖ Used aggregated indicators of risk
❖ Easy to use and in the case of scoring, can be easily incorporated in existing credit risk models to inform cost of capital and target interest rate
❖ Analysis can be outsourced to rating agencies and/or can be completed with various scoring tools developed by NGOs

Simulation models

❖ Simulation models are complex and require resources and capacity
❖ They rely on a detailed understanding of the risk transmission mechanism from deforestation to supply change to impact on creditworthiness
❖ They can be backward-looking or forward-looking depending on the objective and needs

Source: NCFA, Natural Capital Credit Risk Assessment in Agricultural Lending, 2019
Using company score on deforestation as parameter in credit scoring

Source: Climate Advisers, Deforestation Risk Index, 2020, SPOTT, ZSL and Global Canopy, Forest500
Using company score on deforestation as parameter in credit scoring

Using scorecard to assess deforestation risk as one dimension of credit scoring.

How?
Answering question 1-3, whereby 1 is the best score and 3 is the worst, the scorecard could provide information about the client’s risk exposure to deforestation.

Why?
Having a scorecard allows BANKS to include deforestation risk in their portfolios and in the credit/loan process.

Source: The Business of Society, 2021
Using ESG-adjusted ratings models to inform risk assessment
Calibrating and using vulnerability models to assess financial risks

1. Identify and list the risk factors that serve to inform the different risk scenarios
2. Ask experts to evaluate the scenarios’ relevance and refine the calibration (both for probabilities and impacts)

- Biophysical risks
  - Stranded Assets risks (climate change)
- Social risks
- Health risks
- Legal risks
- Commercial and Market risks (reputation)

Source: Canterbury Consulting, 2020

These results are based on our assumptions and need to be validated through a comprehensive review process.
Risk factors and transmission have to be individually defined and calibrated (palm oil example)

Stranded asset risk (legal risk from deforestation)

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Impact</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nothing Happens – Ball scenario</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia enforces a 26% CO2 emission reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>under current</td>
<td></td>
<td></td>
</tr>
<tr>
<td>laws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5% reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to stay below the 50% probability threshold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5% reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to stay below the 25% probability threshold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5% reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to stay below the 10% probability threshold</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Social risk

“Social disputes with local communities and workers typically disrupt operations through roadblocks, development delays, milling delays, demonstrations, or employee strikes. “ (WWF)
Creating 100 different scenarios with random draws of the calibrated risk factors, we start to see the impact of deforestation-related risks on the Net Present Value (NPV) of the plantation.

Based on the model, there is a 20% chance of having a negative NPV.

At the 95% risk threshold, the plantation has a negative NPV.

In average, the plantation might lose potential profits due to deforestation-related risks.

Baseline in absence of deforestation-related risks.

95% threshold.

Expected NPV.
Analysis of the overall risk exposure

Risk types are not uniform in terms of overall expected impacts and risk exposure. Based on the model's calibration, legal and climate change risks stand out as the two largest risk families, closely followed by social and commercial risks.

Model results

- Legal and stranded assets risks are the largest due to their direct influence on the share of concession available for production.
- Social risks, due to the inclusion of criminal fires, also share this characteristic.
- Commercial risks are significant, considering they do not directly impact the productive assets.
- Biophysical risks are more limited as a result of their lower volatility.
- Market risks are influencing cost of capital, which is an indirect, “second-order” impact that might explain the limited magnitude.
Individual contributions to the risk profile

While expectation is an important indicator of financial performance, risk volatility gives a sense of the resilience of the activity.
Individual contributions to the risk profile

While expectation is an important indicator of financial performance, risk volatility gives a sense of the resilience of the activity.

<table>
<thead>
<tr>
<th>Exposure to risk (Volatility)</th>
<th>Average impact (Expectation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>high volatility</td>
<td>high impact</td>
</tr>
<tr>
<td>low volatility</td>
<td>low impact</td>
</tr>
</tbody>
</table>

- **The risk factor is a “black swan”: low expected impact but high volatility. It is potentially overlooked at the moment but might disrupt the entire business model and financial viability of the plantation.**
  - Priority risk to analyze and monitor

- **Major risk factor that is already affecting the plantation, with potential for an extreme event with major financial implications.**
  - Need to reinforce the mitigation/hedging strategies to limit the risk factor’s adverse impacts

- **Low intensity risk factor with limited risk exposure.**
  - Risk factor should be internalized as “quasi-cost” and reflected in best management practices

- **High intensity risk factor with limited risk exposure.**
  - Risk factor should be prioritized, internalized as “quasi-cost” and reflected in best management practices

Mitigation potential of low deforestation actions and measures on each risk family:
The smaller the bubble, the lesser the mitigating impact of low deforestation on the risk factor (based on model calibration)
Stress testing would use a similar approach, but calibrate it with forward-looking, low probability scenarios.

### Module 3 scenarios and risk dimensions

<table>
<thead>
<tr>
<th>Exposures</th>
<th>Scenario</th>
<th>Projections</th>
<th>Horizon</th>
<th>Credit risk</th>
<th>Market risk</th>
<th>Operational risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transition risk</td>
<td>Global</td>
<td>Short-term stress</td>
<td>Baseline</td>
<td>3 years (2022-2024)</td>
<td>Corporate loans (incl. SME, CRE) + mortgages</td>
<td>Bonds + stocks issued by NFCs² (incl. accounting and economic hedges)</td>
</tr>
<tr>
<td></td>
<td>Long-term paths</td>
<td>Orderly</td>
<td>30 years (2030, 2040, 2050)</td>
<td>Corporate loans (incl. SME, CRE) + mortgages</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Disorderly</td>
<td>30 years (2030, 2040, 2050)</td>
<td>Corporate loans (incl. SME, CRE) + mortgages</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hot house</td>
<td>30 years (2030, 2040, 2050)</td>
<td>Corporate loans (incl. SME, CRE) + mortgages</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical risk</td>
<td>EU countries</td>
<td>Drought &amp; heat risk</td>
<td>Baseline</td>
<td>1 year (2022)</td>
<td>Corporate loans (incl. SME)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stress</td>
<td>1 year (2022)</td>
<td>Corporate loans (incl. SME)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical risk</td>
<td>EU countries</td>
<td>Flood risk</td>
<td>Baseline</td>
<td>1 year (2022)</td>
<td>Mortgages + CRE loans</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Stress</td>
<td>1 year (2022)</td>
<td>Mortgages + CRE loans</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: CRE stands for commercial real estate; NFC stands for non-financial corporation; SMEs stands for small and medium-sized enterprises.
Key messages: Financial lens

- Financial risks = all of legal and reputational risks (as they have financial consequences) as well as biophysical risks
- This is an emerging research field, with few definitive answers and more work to be done
- Two families of approaches are dominating current implementations of financial risk: models based on scores and rating and models based on scenarios and simulations. They have both advantages and limitations
- Models based on scores and rating are easier to implement and their analysis can be outsourced. However, they tend to hide information on risk transmission that can be useful to the bank in its engagement with their client
- Simulation approaches are more advanced and require to invest more time and capacity in their development. Their main benefit is to provide a richer, more nuanced understanding of the various risk factors and how they impact the solvability of the client and their creditworthiness. These models are also useful for forward-looking stress-tests.
Next module: Managing risk and exploring opportunities

The next module will cover:

- Introduce mitigation actions that banks can take to reduce their deforestation-related risks.
- Explore various opportunities and production innovation to support sustainable commodities production.
Thank you

Next Session: Module 3/Part A, 11th October (Tuesday), 14:00-16:00 BST