Targeting **N**atural **R**esource **C**orruption

Harnessing knowledge, generating evidence, and supporting innovative policy and practice for more effective anti-corruption programming

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Understanding how corruption is accelerating illegal logging and deforestation during the COVID-19 pandemic

Dr. Louise Shelley

Director, Terrorism, Transnational Crime and Corruption Center
Professor, Schar School of Policy and Government, George Mason University

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CMI | U4 ANTI-CORRUPTION RESOURCE CENTRE

TraCCC

TRAFFIC the wildlife trade monitoring network

Understanding how corruption is accelerating illegal logging and deforestation during the COVID-19 pandemic

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Senior Fellow, Duke University Center for International Development and Senior Associate, Land and Security, CDA Collaborative Cambridge

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Coordinator - Climate and Security, Instituto Igarapé

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Peru Director, Environmental Investigation Agency (EIA)

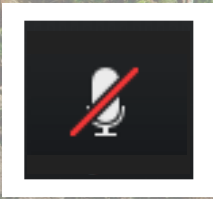**Debra LaPrevotte**
Senior Investigator, The Sentry (Moderator)

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Ground rules…

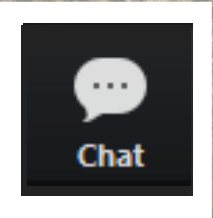Audio Settings ⌃ Chat Raise Hand Q&A Leave Meeting

1. All participants are muted
Given high attendance in this webinar, all lines will remain muted
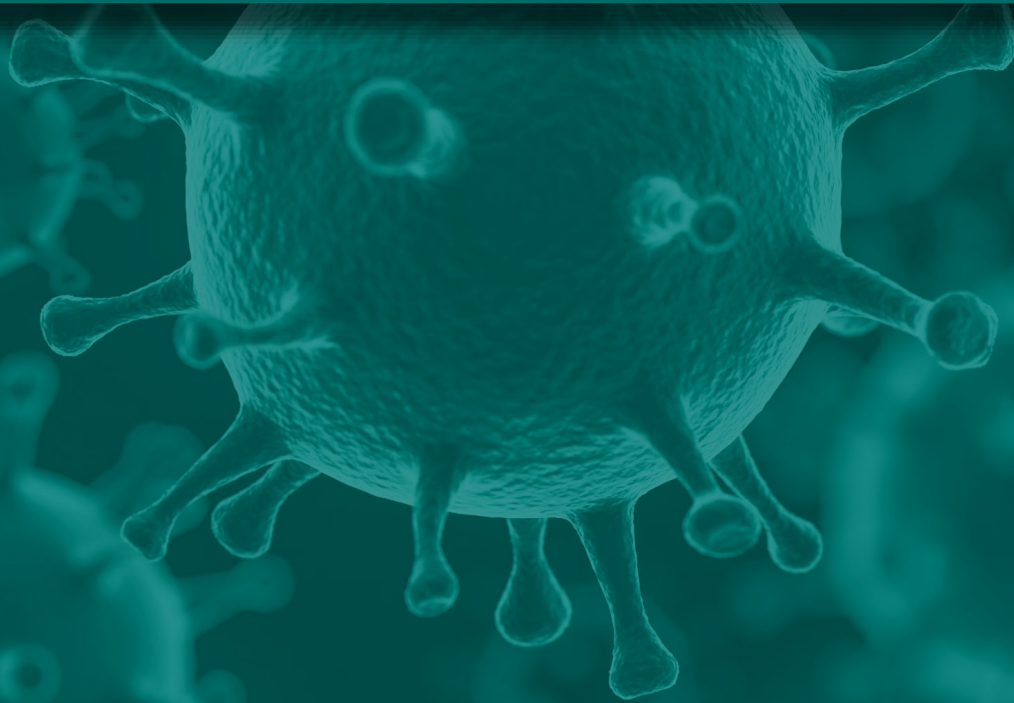
2. Exchange thoughts and pose questions
Introduce yourself and share your own insights and questions in the chat window

© Greg Armfield / WWF-UK

Dr. Maureen Moriarty-Lempke
And Estacio Valoi

Senior Fellow, Duke University Center for International Development

Senior Associate, Land and Security, CDA Collaborative Cambridge

Case Study On Illicit Harvesting Of Pterocarpus Tinctorius In Mozambique

- In Tete province, illicit timber exploitation thriving in context of corruption, weak governance, and poverty in a post-conflict state, enabling a range of activities that underpin both labor rights abuses and deforestation.

- Tete has the third largest forested area (3,827,883 ha) in Mozambique, ranks fourth in productive forest area (2,175,199 ha), fifth in total volume of commercial species.

- Next location in series of countries that have experienced a boom and bust cycle of "rosewood" species exploitation. Preceded by Zambia, Malawi.

- Illegally harvested Nkula (a rosewood lookalike species) travels to China through complex / disparate supply chains. *Hongmu furniture*

Environmental Consequences Of Illicit Logging In Tete
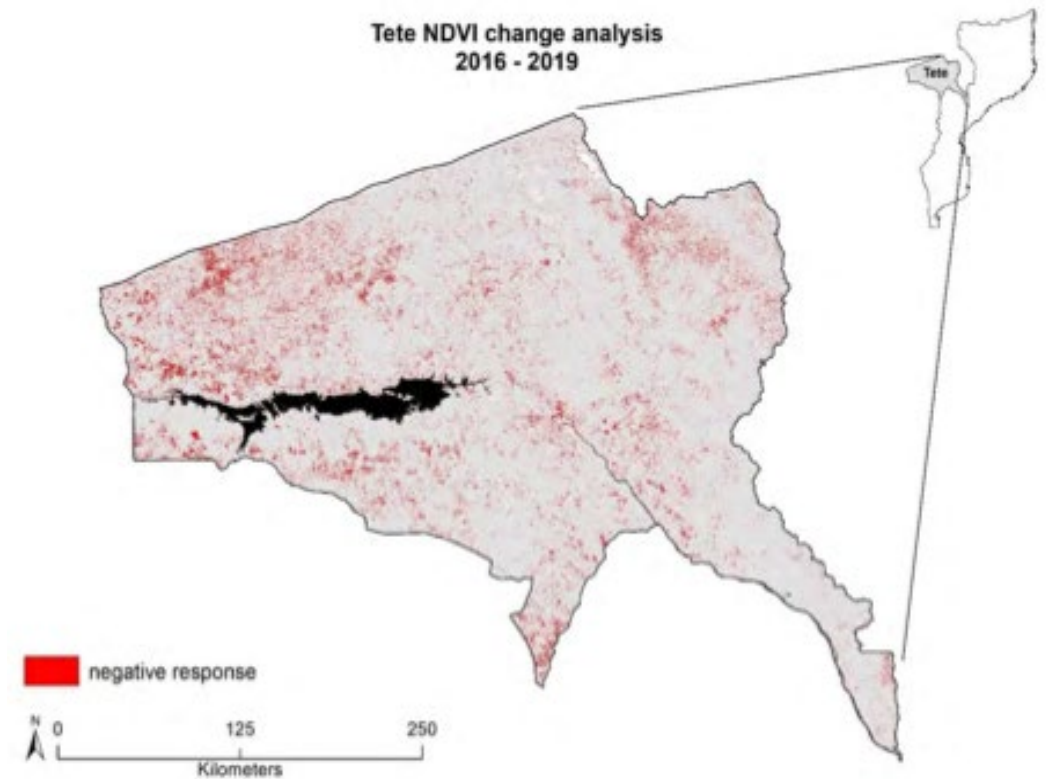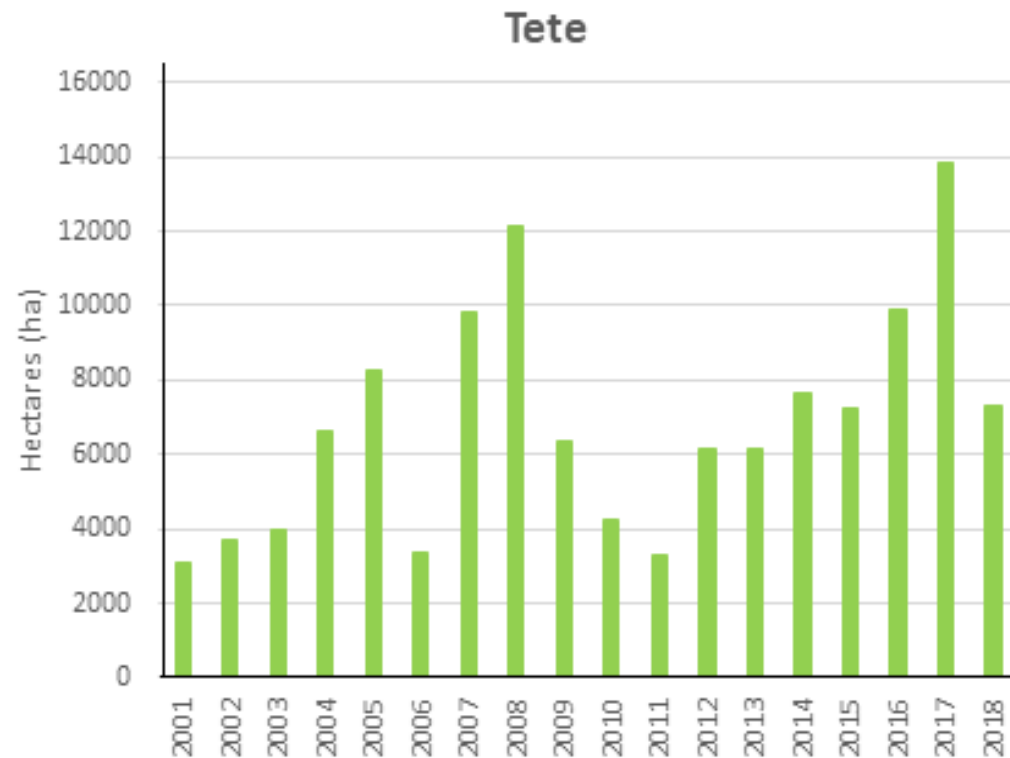
Business Actors and Structures- Sources of Corruption
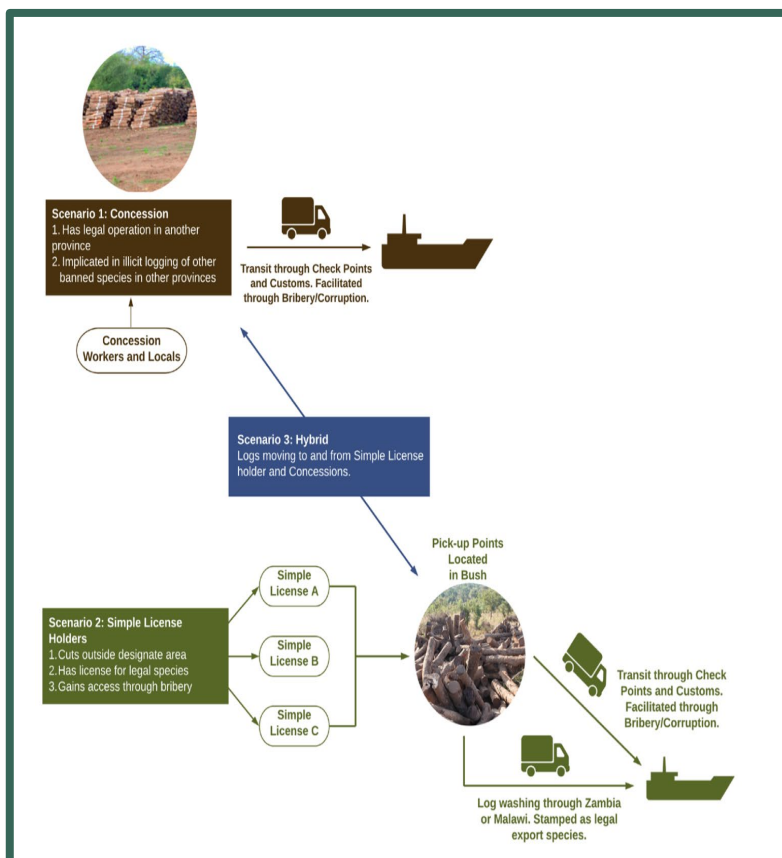
Type

- Self-dealing
- Patronage
- Misuse of information
- Nepotism, clientelism, and favoritism

Activities

- Controlling licensing/regulation/issuing of simple licenses
- Administrative (legal compliance, inspection, export)
- **CORRUPTION IN LABOR**

Sectors

- Forest
- Financial- IFF's/ Misinvoicing
- Transport
- Customs and Export

Places

- Logging Sites, Workplaces
- Tete
- Beira, Pemba Ports
- Regional Actors in Zambia, Malawi
- China

Labor Findings

Across various supply chain models, workers engaged in illicit logging are vulnerable to a number of labor rights abuses, including forced labor. Abuses present among illicit logging workers include:

- Deception about nature and conditions of work (including wages, hours, and sometimes the legality of the work)

- Work for low wages (temporal dimension to species exhaustion)

- Abusive overtime without consent

- Withholding of wages

- Abuse and harassment

- Work in hazardous conditions without previous consent;

- Threats of denunciation to authorities.

- Children also reportedly participate in some illicit logging activities, including hazardous activities

"The Police protected Chinese, not us workers. We stopped complaining to the police since it was known that they were on their side...."

–Log Peeler, Marávia District (Male, Age 43)

COVID- 19

- Emphasis on corruption in public procurement related to PPE and donor assistance

- The door of criminal opportunity is ajar because social distancing restrictions mean fewer patrols are policing the forests of the world preventing logging crime

- Abandoned wood phenomena. Pitsaw and collect Mozambican environmental authorities on Monday announced the seizure between 6 and 10 July of some 1,200 illegally logged trees

High Level Recommendation: Supply Chain Accountability

Companies should:

- Prioritize traceability and risk assessment for supply chains (timber/wood products as well as other "forest adjacent" supply chains such as palm oil, soy, cattle, rubber, cocoa, and other forms of plantation-based agriculture);

- Risk assessments include social and environmental risks related to the unique combination of sector and geography or production; and

- Continue to uphold and strengthen commitments to purchase only legally logged timber.

Illegal Logging, Corruption and Covid-19
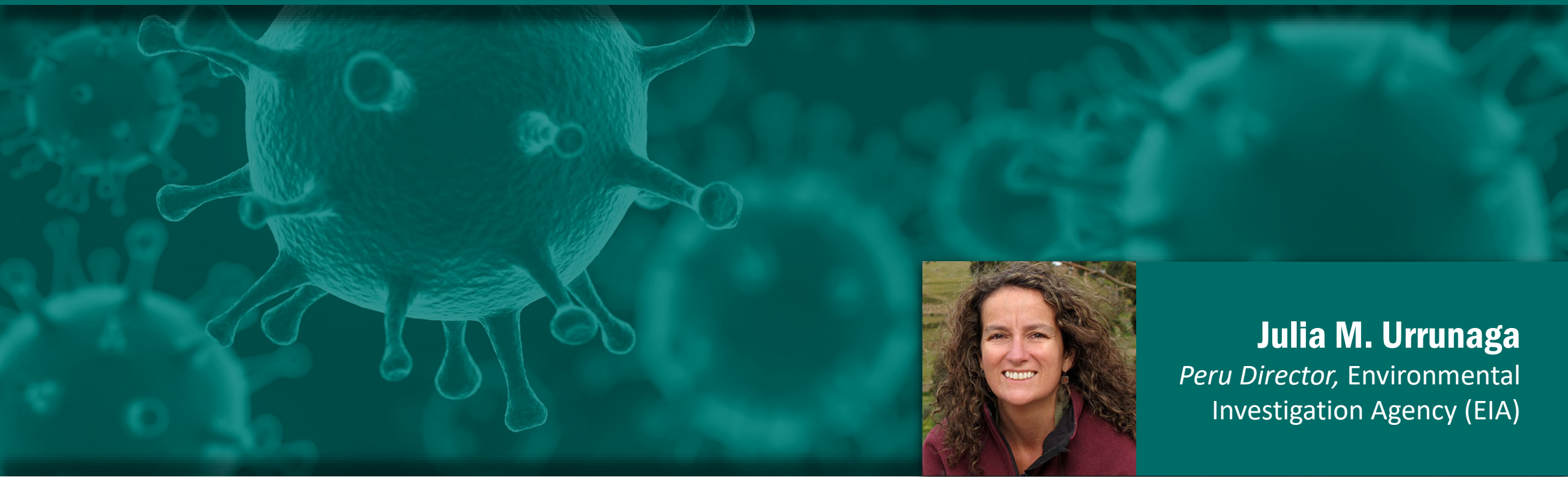
Julia M. Urrunaga
Environmental Investigation Agency – EIA

Illegal logging and corruption

- Illegal timber must be LAUNDERED – doesn't fit in a suitcase

- Required: private corruption + active public corruption

- Harvest permit (forest inventories)
    - Private: produce fake forest inventories
    - Public: validate fake forest inventories

- Corruption continues through the Chain of Custody, buying "in good faith" – when over 80% of the production is illegal (National forest authority, financial intelligence unit, NGO's)

- Key: TRANSPARENCY & TRACEABILITY

THE LAUNDERING MACHINE
HOW FRAUD AND CORRUPTION IN PERU'S CONCESSION SYSTEM ARE DESTROYING THE FUTURE OF ITS FORESTS
EIA-GLOBAL.ORG

DEFORESTATION BY DEFINITION
THE PERUVIAN GOVERNMENT FAILS TO DEFINE FORESTS AS FORESTS, WHILE PALM OIL EXPANSION AND THE MALAYSIAN INFLUENCE THREATEN THE AMAZON

MOMENT OF TRUTH
PROMISE OR PERIL FOR THE AMAZON
AS PERU CONFRONTS ITS ILLEGAL TIMBER TRADE

2012

* Illegal timber laundering for CITES exports to the US
* Laundering mechanism applies to all species and destinations
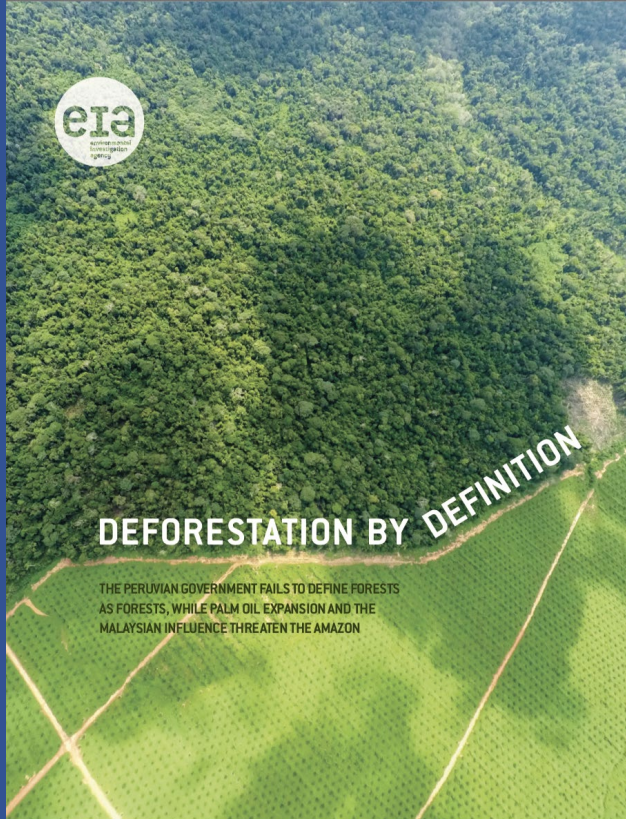
2015

* Illegal deforestation of Amazon natural forests for oil palm expansion
* +500,000 m3 illegally logged timber laundered

2018

* Illegal timber exports to all destinations
* Success by some govt offices
* Pushbacks by the industry

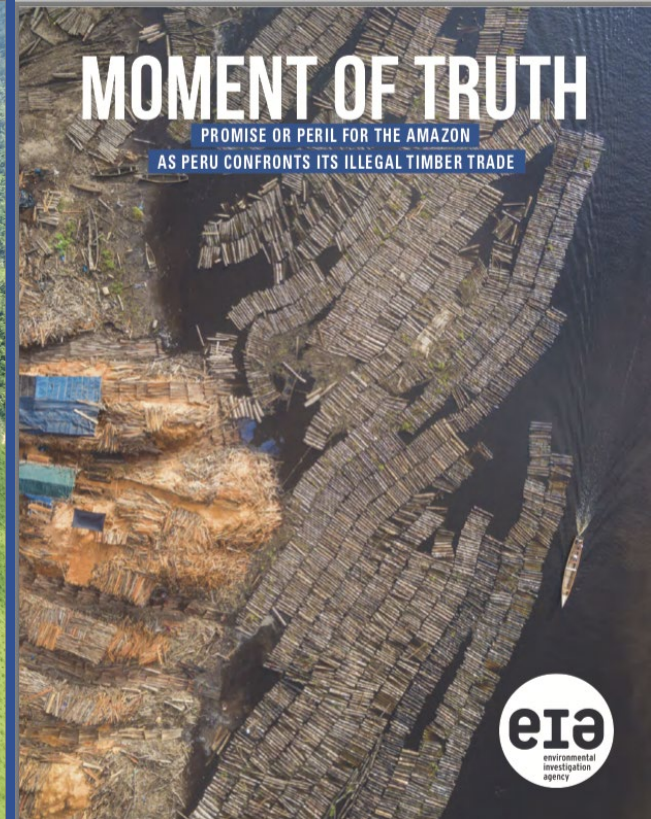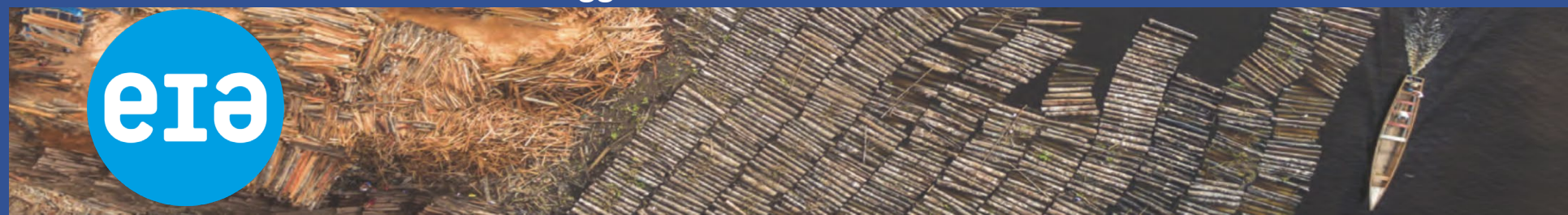|	Destination	# GTF	# Verified Red	# Verified Green	# Low Risk	# Mid Risk	# High Risk
1	China	1021	209	90	272	91	359
2	Dominican Republic	479	54	120	85	124	96
3	USA	251	30	71	50	31	69
4	Mexico	220	51	19	23	29	98
5	France	85	4	39	25		17
6	Holland	64			61	1	2
7	Cuba	39	13	5		11	10
8	South Korea	34	3	9	3	14	5
9	Belgium	33	2	8	19		4
10	Puerto Rico	28	7	3	3	6	9
11	Australia	27	9	3	3	1	11
12	Taiwan	20	4		9	2	5
13	North Korea	15		13	2		
14	Spain	14	3	1	4	2	4
15	United Kingdom	14			11	1	2
16	Chile	14	5	2	1	2	4
17	Ecuador	10	1		2	3	4
18	Philippines	9		2	2	1	4
19	Uruguay	9	2	1	1	1	4
20	Germany	6			6		
21	Costa Rica	5		3	2		
22	Canada	4	1				3
23	Denmark	4			4		

MOT. Table 10, p. 57 – Callao Data 2015 (total: 2,427 GTF: 400 R / 391 G)

#	Exporter	#GTF	Red GTF	Green GTF	# Low risk	# Mid risk	# High risk	China Red	China Green	Mexico Red	Mexico Green	DR Red	DR Green	U.S. Red	U.S. Green	E.U. Red	E.U. Green	Others Red	Others Green
1	Maderera Bozovich SAC	419	62	76	94	88	99	50%	50%	67%	33%	30%	70%	33%	67%			71%	29%
2	Inversiones La Oroza SRL	271	57	38	39	52	85	100%		96%	4%	45%	55%					14%	86%
3	Peruvian Flooring SAC	219	5	26	159	15	14	16%	84%										
4	Inversiones Tecnicas Maderables SAC	112	4	46	34	10	18							8%	92%				
5	Consorcio Maderero SAC	97	17	3	2	5	70	89%	11%	50%	50%								
6	Maderera Rio Acre SAC	90			88		2												
7	Negociación Maderera Travi Satipo SRL	71		40	2	29							100%	100%					100%
8	Maderera Pacifico International SRL	68	36	16	3	5	8	69%	31%										
9	Maderera Diaisi EIRL	67	8		4	5	50	100%											
10	Maderera Cinco Estrellas SAC	65	34	2		7	22	94%	6%										
11	JR Muye Investment SAC	63	16	7		3	37	70%	30%										
12	Industria Forestal Huayruro SAC	51	4	40	1		6		100%							12%	88%		100%
13	Hermanos Forestal SAC	45	20				25	100%											
14	E & J Matthei Maderas del Peru SA	45	11	3	17	2	12									100%		75%	25%
15	Logistica Maderera Selva SCRL	45	7	1	2	4	31	88%	12%										
16	Lumat Maderas SAC	41	2	9	4	2	24			14%	86%			33%	67%				100%
17	Maderap SAC	40	12	3	2	13	10	80%	20%										
18	Industrias Madex EIRL	39	13	5		11	10											72%	28%
19	Arbe Lumber SAC	38	2	3	15	6	12	40%	60%										
20	Aserradero Espinoza SA	37			37														
21	Grupo Vargas Negocios Amazonicos SAC	31	1	3	9		18	100%							100%				100%
22	SUTAY Company SRL	30	13	2	3		12	87%	13%										
23	Corporacion Maderera Loreto SAC	27	7	3	4	4	9						100%	63%	37%				
24	Peruvian Woods Company EIRL	27	2	8	7	4	6					100%		25%	75%				100%
25	Olinda Shuña Perez	23	5	6		5	7	45%	55%										
26	Corporacion Industrial Forestal SAC	25	11			10	4							100%					

MOT. Table 11, p. 58 - Callao Data 2015 (total: 2,427 GTF: 400 R / 391 G)
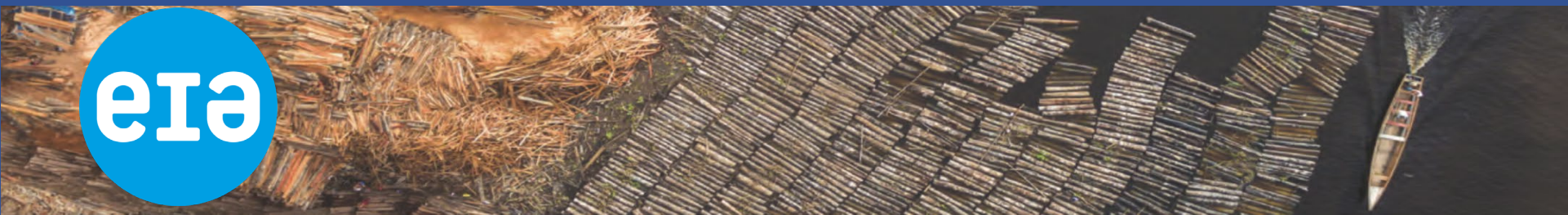
The Yacu Kallpa

Peru exporter	Volume (m³) of illegal timber on ship			Total timber verified illegal (m³)	Total timber not verified (m³)	Total timber verified or presumed legal (m³)	Grand Total (verified illegal or legal + not verified) (m³)	% verified illegal of total	% verified illegal of verified
	YK-2	YK-4	YK-5						
INVERSIONES LA OROZA S.R.L.	3,282.78	4,102.02	2,745.70	10,130.50	1123.362	375.794	11,629.66	87.1%	96.4%
INVERSIONES WCA E.I.R.L.	884.93	2,826.86	2,735.14	6,446.92	177.155	591.907	7,215.98	89.3%	91.6%
CORPORACION INDUSTRIAL FORESTAL S.A.C.	719.95	1,428.16	142.63	2,290.74	880.793	257.489	3,429.02	66.8%	89.9%
SICO MADERAS S.A.C.	350.32	459.24	683.08	1,492.64	12.434	229.44	1,734.52	86.1%	86.7%
CORPORACIÓN MADERERA LORETO S.A.C.	21.84	747.25	357.17	1,126.25	482.45		1,608.70	70.0%	100.0%
TRIPLAY IQUITOS S.A.C.	96.51	358.02	685.23	1,139.76	114.019	233.471	1,487.25	76.6%	83.0%
CORPORACION INFOREST MC S.A.C.				1,277.72			1,277.72	100.0%	100.0%
SCAVINO MADERAS E.I.R.L.		556.05	507.57	1,063.62	82.2		1,145.82	92.8%	100.0%
LAMINADOS Y MANUFACTURAS DE MADERA	336.00	90.00		426.00	200	270	896.00	47.5%	61.2%
GREEN GOLD FORESTRY PERU SAC		45.30		45.30		477.907	523.21	8.7%	8.7%
EXIMVAL E.I.R.L.	352.08			352.08	35.677		387.76	90.8%	100.0%
INDUSTRIAS MADEX E.I.R.L.	45.86	135.18	96.10	277.14			277.14	100.0%	100.0%
MADERAS DE LA SELVA PERUANA S.A.C.		148.43		148.43	36.632		185.07	80.2%	100.0%
INDUSTRIAL MADERERA ZAPOTE S.A.		99.81		99.81		79.783	179.59	55.6%	55.6%
MADERAS IMPREGNADAS TROPICALES S.A.C.			38.16	38.16			38.16	100.0%	100.0%
Totals	6,090.26	10,996.31	7,990.78	26,355.06	3,144.72	2,515.79	32,015.58	82.3%	91.3%

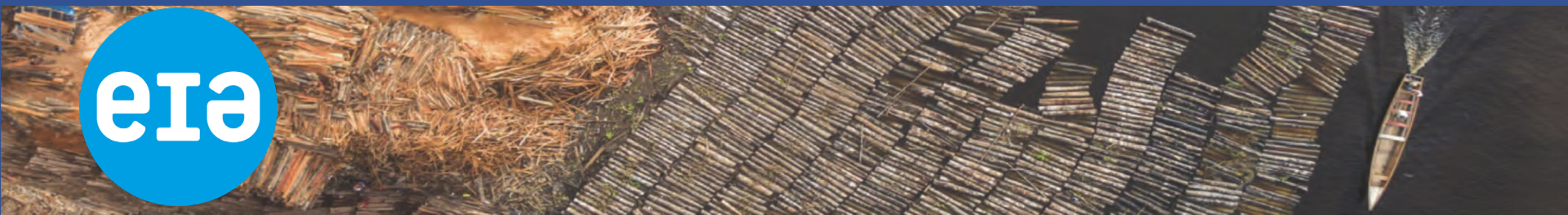MOT. Table 5, p. 36 – Yacu Kallpa Data 2015

Successful Peruvian Govt actions

- Operation Amazonas:
  - SUNAT (Peruvian taxes and customs national authority) reviewed EIA's The Laundering Machine and noticed that they were paying cash incentives for illegal timber exports
  - SUNAT takes the lead, replicating / improving TLM methodology
  - Coordinating with OSINFOR + FEMA (prosecutors) + INTERPOL + WCO + authorities in country of destination
  - Millions of dollars of illegal timber were identified and stopped / + 70 containers of illegal timber stopped by US authorities in Houston and destroyed
- Pushback from Industry:
  - To eliminate requirements and data collected in forms
  - To try to blur traceability and transparency
  - Effective enforcement brings lobbies to push for weaker standards
 - Authorities who effectively do their job get fired (Osinfor 2015, Serfor 2020)

Covid-19

- Regional authorities are trying to "re/activate" the timber sector with special incentives and regulatory exemptions, increasing the risk of spreading the virus in indigenous communities and uncontacted tribes, as well as of illegal logging
  - "Re/activation" launch ceremony hosted at Inversiones La Oroza, under legal investigation for +10,000 m3 of illegal timber and banned by the US government.
  - Exacerbated vulnerability of Amazon indigenous communities & forests
    - No efficient govt strategy to deal with the sanitary emergency in indigenous communities
    - Attacks on environmental defenders (at least 4 leaders killed / many more under threat)
  - Concessions illegally granted over territory of indigenous tribes in voluntary isolation (PIACI)
  - Industry demanding incentives and relaxation of standards (draft law proposal)
  - Arbitrary removal of director of National Forest Sector, who was pushing for reinforcing transparency and traceability
- In parallel
  - Peru's timber exports grew 25% in July (Lima Chamber of Commerce). But:
    - Peru had a mandatory national lock down for almost 3 months (exceptions: food & medicine)

Urgent actions

- **Support Environmental Defenders**
- Shut down the laundering machine / strong sanctions
  - For the private actors producing fake forest inventories and
  - For the public officers validating them.
  - For the traders and exporters profiting from it (directly or indirectly)
- Eliminate the no-questions-asked markets, national and international
  - Enforce and/or Expand Demand side laws
  - Legal consequences for not conducting due diligence / due care
  - Supporting efforts / training / alliances with local stakeholders
  - Educating / involving consumers
- Transparency and traceability
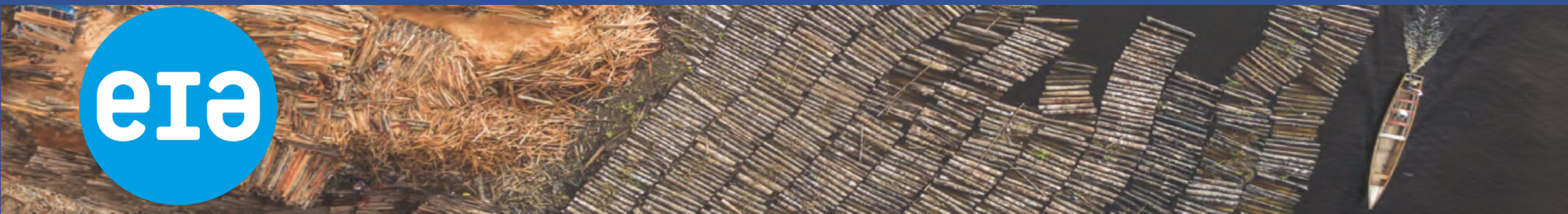
Antamiki (EIA - 2018)

Indigenous Community Boca Pariamanu
(Madre de Dios)
Indigenous leaders from
ORDEPIAA (Loreto) and Saweto (Ucayali)

James Valentine (Maroon 5)
Stefan Lessard (Dave Matthews Band)
Adam Gardner (Guster)
KT Tunstall
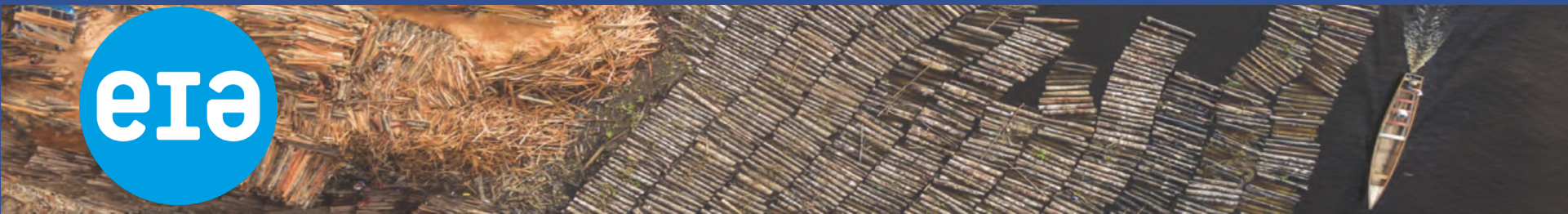Nico Saba (Kanaku y El Tigre)
REVERB

More information:

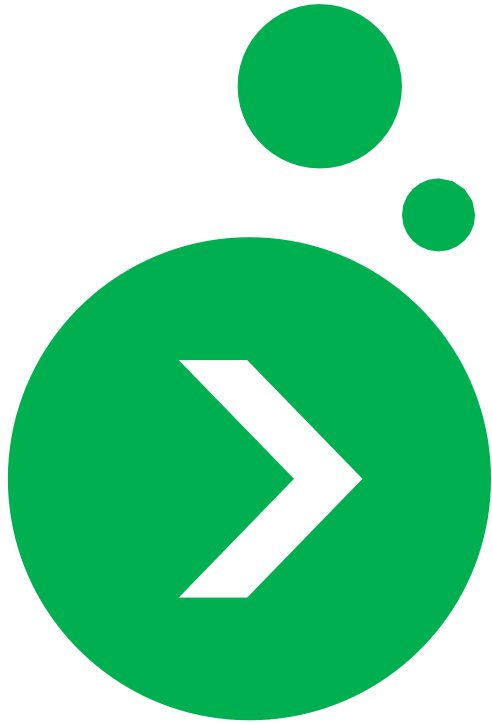*www.eia-global.org*

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julia@eia-global.org

Technology Solutions for Environmental Crime & Traceability in the Brazilian Amazon

B Ferguson, J Sekula, I Szabó

August 2020

IGARAPÉ INSTITUTE
a think and do tank

About Igarapé Institute

The Igarapé Institute is an award-winning *think and do tank* founded in 2011 and committed to delivering data-driven and evidence-based solutions for security, climate and development challenges. The Institute achieves impact through applied research, the design and testing of new technologies, shaping debate, public policies, and empowerment through partnership networks.
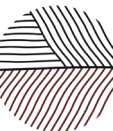
Climate & Security

Over the past few years, the Igarape Institute has increased its capacities in analysing data relating to climate threats and environmental crime.
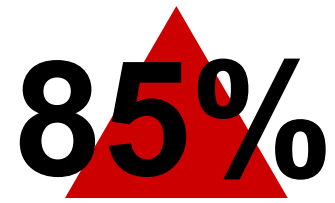
Climate & Security

Over the past few years, the Igarape Institute has increased its capacities in analysing data related to climate threats and environmental crime.

Negative externalities go beyond the protection of the forests...

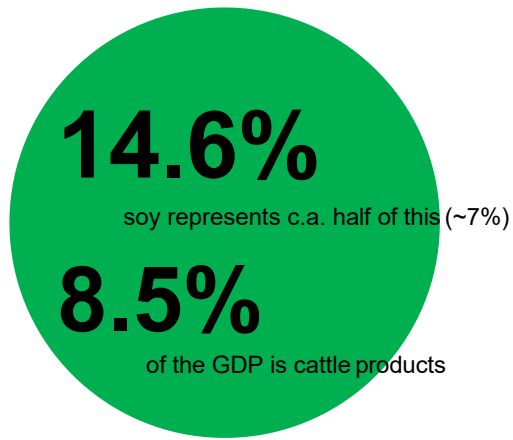**85%** **increase in deforestation** in the Amazon from 2018 to 2019

+251 global investors issued a demand for companies to meet their supply chain deforestation commitments

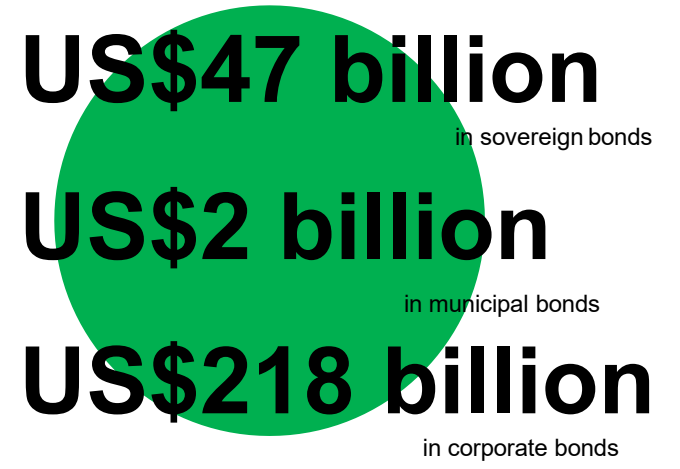**+US$17.7 trillion** in assets under management (AUM) called for more action on supply chain commitments

Brazilian GDP

14.6% soy represents c.a. half of this (~7%)

8.5% of the GDP is cattle products

Brazilian Export Revenue

US$26.1 billion of export revenue for soy in 2019

US$7.4 billion billion of export revenue for beef

US$2.9 billion of export revenue for timber

Brazilian USD denominated public debt

US$47 billion in sovereign bonds

US$2 billion in municipal bonds

US$218 billion in corporate bonds

Sources: MapBiomas 2019; PRODES, News pieces
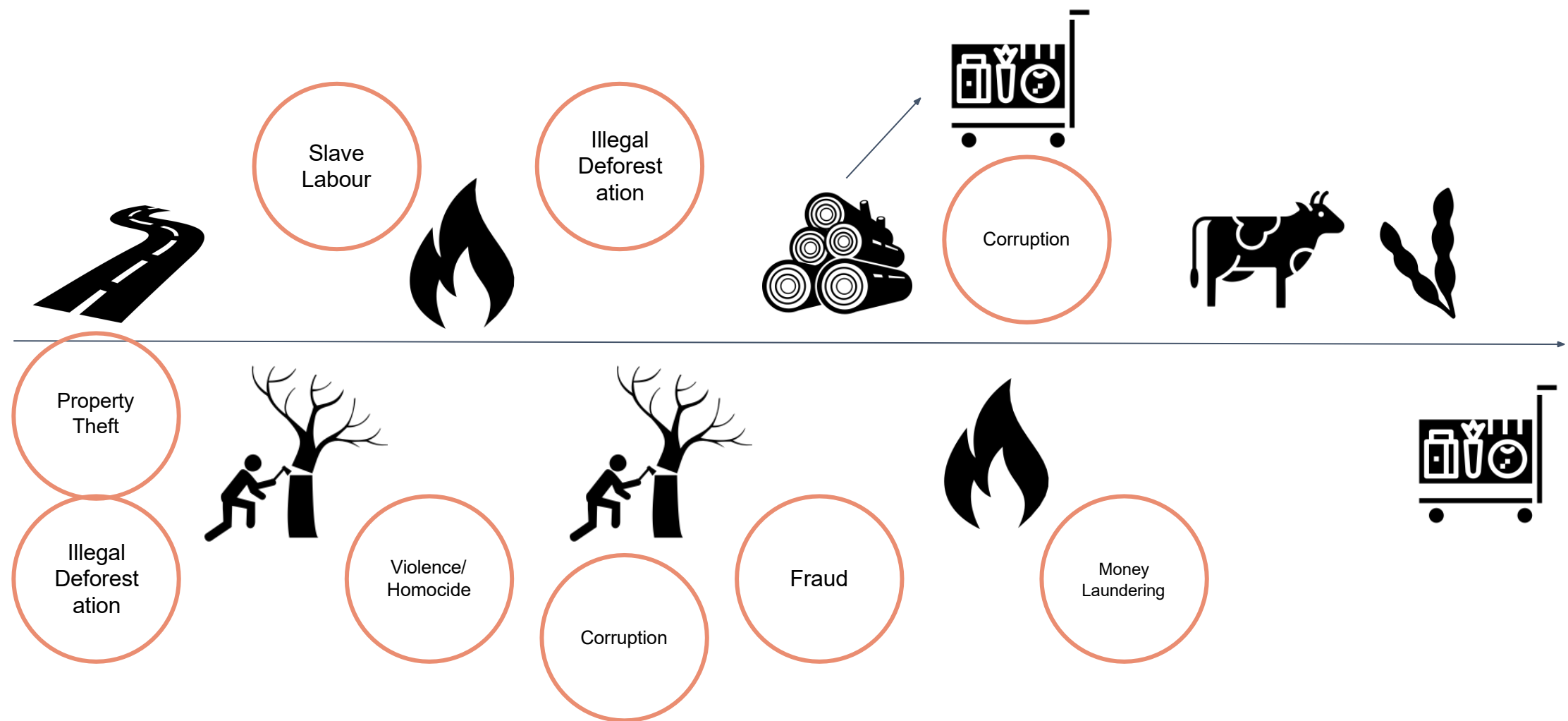
How are these three products related?
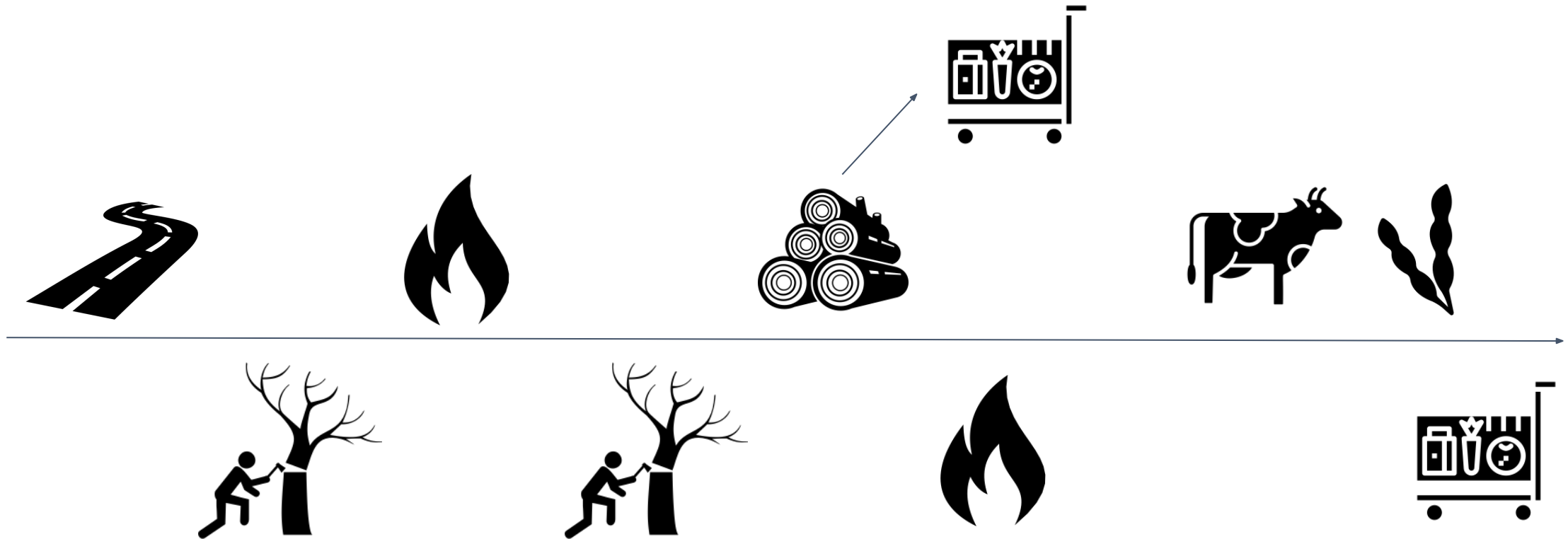
How are these three products related?

Igarapé's Typology of Environmental Crime

Category	Sector (NAICS/CNAE)	Economic Activity	Example(s) of Illegality	Actor(s)	Ecosystem Impacts (CICES)	Societal Impacts (SDGs)	Potential Indicator(s)
Rural Property	53.1 / 681	Land speculation	Illegitimately occupying or settling rural land in order to demonstrate tenure, acquire title, or secure other rights or benefits	Individual	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5	Number of new land title requests; number of new CAR registrations; number of overlapping or conflicting CAR registrations
Agriculture, Livestock and Forestry	11.3 / 022	Selective logging	Selective extraction of trees, including protected or endangered species, in prohibited areas and/or without proper permits	Individual; industrial; organized crime	Loss of biomass, genetic resources, climate regulation, water regulation	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5	Proportion of forested area harvested on protected areas; hectares of protected/ unauthorized area subjected to selective logging
	11.21 / 014	Cattle ranching	Cutting and burning of native vegetation for livestock farming beyond legal limits or within prohibited areas and/or lacking proper tenure	Individual; industrial	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5	Number of hectares dedicated to ranching; number of new hectares dedicated to ranching
	11.1 / 011	Industrial agriculture	Large-scale, intensive production of crops on areas beyond legal limits and/or using improper methods	Industrial	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5, SDG 3.9	Number of hectares dedicated to agriculture; number of new hectares dedicated to agriculture
	11.1 / 011	Small-scale agriculture	Small-scale cutting and burning of native vegetation for cultivation beyond legal limits or within prohibited areas and/or lacking proper tenure	Individual; organized crime	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5, SDG 3.9	Number of reported fire incidents; number of hectares of protected/ unauthorized area burned
	11.1 / 0128	Drug cultivation	Cultivation of plants like coca, marijuana, and other intoxicants or hallucinogens often classified as controlled substances	Individual; organized crime	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss, contamination of soil	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5, SDG 3.9	Number of new hectares cleared within protected areas; number of new hectares cleared on public lands; number of new hectares cleared on private lands

Category	Sector (NAICS/CNAE)	Economic Activity	Example(s) of Illegality	Actor(s)	Ecosystem Impacts (CICES)	Societal Impacts (SDGs)	Potential Indicator(s)
	11.4 / 023	Wildlife trade	Trafficking in plants and animals taken from the natural environment or raised under controlled conditions in undesignated areas or without permits	Individual; organized crime	Loss of food, genetic resources, ornamental resources, cultural resources; biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5	Reported incidents of wildlife trafficking; number of convictions of wildlife trafficking; people's perception of the prevalence and impact of wildlife trade
Wildlife	11.4 / 017	Hunting	Overhunting, or hunting of protected or endangered species, in undesignated areas or above established limits	Individual; organized crime	Loss of food, genetic resources, biochemical and natural medicines, ornamental resources, cultural resources, biodiversity loss	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5	Reported incidents of hunting activity; number of convictions for illegal hunting; people's perception of the prevalence and impact of hunting activities
	11.4 / 031	Fishing	Overfishing, or fishing of protected or endangered species, in undesignated areas or above established limits	Individual; organized crime	Loss of food, genetic resources, ornamental resources, cultural resources, biodiversity loss	SDG 1.4, SDG 1.5	Reported incidents of fishing activity; number of convictions for illegal fishing; people's perception of the prevalence and impact of fishing activities

Corruption is one of __many__ environmental crimes when we talk about deforestation in the Amazon.

Understanding the links between these different types of environmental crime are key solving the issue.

Sources: Trase, 2020; Azavedo et al., 2015; Febraban, 2017; Gibbs et al., 2015; Trase 2020, PRODES

Igarapé's Typology of Environmental Crime

Category	Sector (NAICS/CNAE)	Economic Activity	Example(s) of Illegality	Actor(s)	Ecosystem Impacts (CICES)	Societal Impacts (SDGs)	Potential Indicator(s)
Energy and Mining	21.1 / 072	Small-scale mining	Small-scale extraction, processing and trading of minerals without appropriate permissions and/or mitigation measures	Individual; organized crime	Contamination of soil, air, water and food, loss of biomass, destruction of riverbeds	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5, SDG 3.9	Number of existing mines; number of new mines; hectares of existing and new mines; social and conventional media mentions; proximity to indigenous territories and vulnerable communities
	21.1 / 072	Industrial mining	Industrial extraction, processing and trading of minerals without appropriate permissions and/or mitigation measures	Industrial	Contamination of soil, air, water and food, loss of biomass, destruction of riverbeds	SDG 5.2, SDG 16.1, SDG 1.4, SDG 1.5, SDG 3.9	Number of existing permits; number of new permits requested or issued ; number of new mines detected; proximity to indigenous territories and vulnerable communities; volume of legal gold exports
	21.2 / 06	Oil and gas	Extraction, processing, and trade of oil and natural gas without appropriate permissions and/or mitigation measures	Industrial	Contamination of soil, air, water and food; loss of biomass	SDG 1.4, SDG 1.5, SDG 3.9	Number of existing oil & gas projects; number of new oil & gas projects; number of hectares converted for to oil & gas; proximity to indigenous territories and vulnerable communities; social and conventional media mentions
Utilities	22.1 / 35	Utilities	Development of energy infrastructure projects without appropriate permissions and/or mitigation measures	Industrial	Contamination of soil, air, water and food, loss of biomass	SDG 1.4, SDG 1.5, SDG 3.9	Number of existing renewable energy projects; number of new renewable energy projects; number of hectares dedicated to renewable energy; number of hectares converted; proximity to indigenous territories; social and conventional media mentions
Roads and Construction	23.7 / 421	Transportation infrastructure	Construction and maintenance of installations to facilitate the movement of people and goods throughout a territory	Industrial; organized crime	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 1.4, SDG 1.5, SDG 3.9	Number of existing hectares dedicated to transportation infrastructure; number of new hectares attributable to transportation infrastructure
	23.6 / 4121	Housing and urban growth	Unauthorized and/or unmitigated urban and rural construction to provide shelter and services to local or temporary populations	Individual; industrial	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 1.4, SDG 1.5, SDG 3.9	Number of existing hectares dedicated to residential use; number of new hectares attributable to residential use
	23.6 / 4122	Commercial and industrial development	Unauthorized and/or unmitigated real estate development to provide products or services for commerce or business	Industrial	Loss of biomass, climate regulation, air quality regulation, water regulation, biodiversity loss	SDG 1.4, SDG 1.5, SDG 3.9	Number of existing hectares dedicated to commercial/industrial use; number of new hectares attributable to commercial/industrial use

Environmental task forces are few and far between, and when they do exist, they tend to focus narrowly on one or two types of environmental crime, such as illegal logging and wildlife trafficking, at the expense of other activities. When cases are prosecuted -- which is rare -- convicted offenders are let off with small fines. This impunity helps to fuel the cycle of land invasions, forest clearing, and the establishment of activities that further pollute and contaminate the biome (Human Rights Watch 2019)

Financial Institutions have taken action on Climate, but not on Forests/Deforestation…

An example set of Financial Institutions demonstrates the varied levels of adoption of deforestation metrics as well as climate frameworks. Equally, exposure to industries like Soy and Beef are relevant.

|	Forest500 Score	ClimateAction 100+ Member	TCFD Supporter?	Signatory of Principles of Responsible Investment?	Soy Exposure	Beef Exposure
BNP Paribas	62%	Yes	Yes	Yes	Yes	Yes
Rabobank	59%	Yes	Yes	Yes	Yes	Yes
Credit Suisse	50%	No	Yes	Yes	Yes	Yes
UBS	49%	Yes	Yes	Yes	Yes	Yes
Citigroup	48%	No	Yes	No	Yes	Yes
J.P.Morgan Chase	47%	Yes	Yes	Yes	Yes	Yes
Santander	46%	No	Yes	Yes	Yes	Yes
Morgan Stanley	44%	No	Yes	Yes	Yes	Yes
Barclays	37%	No	Yes	Yes	Yes	Yes
BlackRock	4%	Yes	Yes	Yes	Yes	Yes
BNDES	39%	No	Yes	No	Yes	Yes
Banco do Brasil	29%	No	Yes	Yes	Yes	Yes
Itaú Unibanco	19%	No	Yes	Yes	Yes	Yes
BTG Pactual	12%	No	Yes	Yes	Yes	Yes
Bradesco	4%	No	Yes	Yes	Yes	Yes

Sector Considerations (Timber)

- The Brazilian tropical timber sector today is responsible for the extraction of more than 13 million cubic meters of hardwood logs from Amazonian forests (a little less than 10% of the global hardwood market)

- The sector generates at least US$3 billion in annual revenue and employs over 200,000 people.

- Findings identified three companies exporting timber to fourteen companies in Belgium, the Netherlands, Denmark, France, the United Kingdom, and the United States.

- These, in turn, are funded by international banks.

Sources: BVRio (2016)

Sector Considerations (Timber)

70%
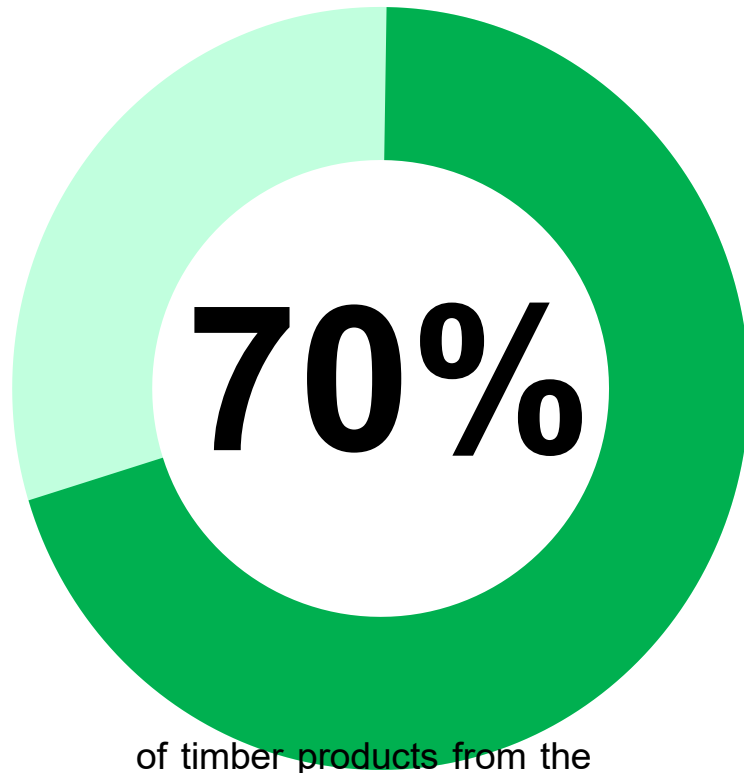
of timber products from the Amazon **come from illegal operations**

- **70%** of timber products from the Amazon **come from illegal operations,** which may involve theft of wood from conservation areas and indigenous reserves, use of slave labor, and laundering of stolen timber.

- A 2016 analysis by BVRio found that more than 40 percent of the forest management operations in the Brazilian states of Pará and Mato Grosso between 2007 and 2015 were at medium to high risk of having involved severe legal violations.

- Negligible progress in terms of the adoption of sustainability standards; Forest Stewardship Council (FSC) certified operations account for less than 3% of the total log production in the Brazilian Amazon

- Operations certified by the Programme for the Endorsement of Forest Certification (PEFC) such as the Brazilian Forest Certification Program (CERFLOR) account for even less

- The ability to conduct due diligence, however, is hindered by the fact that the state timber control systems (e.g., Mato Grosso and Pará) restrict the public availability of their data, making it difficult for third parties to conduct their own independent due diligence

Sources: BVRio (2016)

Existing registries force us to look at potential technology solutions in the Timber Sector... ●

- **Challenges with Timber Registries (DOFs, Invoicing..etc)**
- **Challenges with Land Registries (CAR)**
- **Challenges with Movement of Product**

Technology	Use Case(s)	Example(s)
Remote sensing	LiDAR-based assessment of forest degradation	Rainforest Connection (RFCx); MapBiomas alerts
Genomics	DNA fingerprinting	British Columbia Ministry of Forests microsatellite markers for red cedar
Big data and machine learning (AI)	Cross-validation and triangulation of georeferenced records	Xylotron identifies over 150 species of wood more accurately than trained law enforcement personnel
Blockchain	Highly-transparent, decentralized digital smart contracts to prevent fraud	BVRio's Timber Due Diligence System and Trading Platform
Devices (IoT)	Bar codes, computer chips, and RFID applied to timber shipments; GPS tracking of trucks	Greenpeace Brazil covert GPS surveillance of timber trucks

solution… (I)

- **Rainforest Connection:** RFCx installs devices high in the tree canopy where they are hidden. Each device continuously captures all ambient sound, and can detect the sounds of destructive activities—such as logging/chainsaws—up to 1 kilometer in the distance.

- **BVRio's Timber Due Diligence System:** BVRio Due Diligence and Risk Assessment system assists you to evaluate the supply chain of each timber consignment traded, facilitating compliance with the EU Timber Regulation and the US Lacey Act.

- **Picterras:** provides a geospatial cloud-based-platform specially designed for training deep learning based detectors.It automates the analysis of satellite and aerial imagery, enabling users to identify objects and patterns (cattle, road cracks, damaged roofs etc.) at scale, anywhere on Earth.
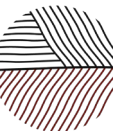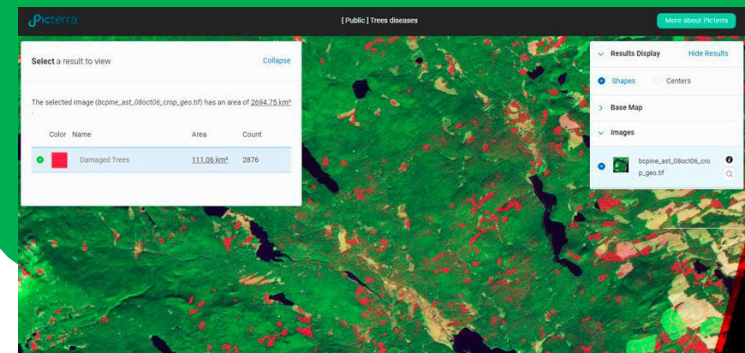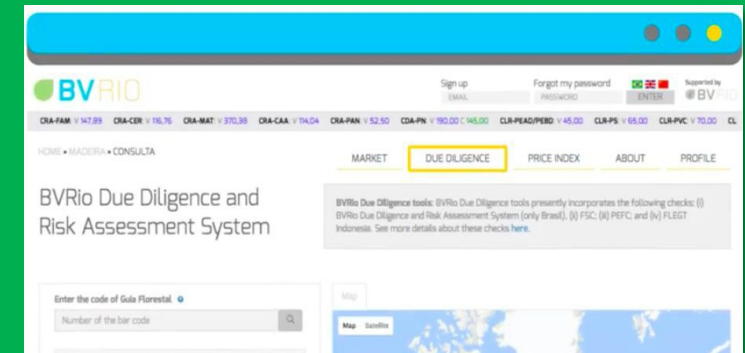
Technology is increasingly part of the solution… (I)

Coalitions and ESG reporting metrics can be greatly improved through the use of technologies

- **Mapbiomas:** Rabobank, the largest bank in the food and agribusiness sector and 2nd highest-ranked Forest 500 financial institution, has integrated the use of MapBiomas (cross-validating the CAR, embargo, and satellite data) into its credit approval process that is monitored on an annual basis

- **Agrosatelite:** Agrosatélite has swiftly built an extensive portfolio of solutions across four main product lines — SIMFaz (for monitoring of farms), MapS (for mapping territories through satellite images), GISDev (for developing custom-made geographic information software for clients) and Safras (for monitoring the development of crop harvests using geotechnologies). These products are tools that use technology and innovation to promote sustainable growth in agribusiness.

- **IBM Food Trust traceability system**: Built on IBM Blockchain, this solution connects participants through a permissioned, immutable and shared record of food provenance, transaction data, processing details, and more.
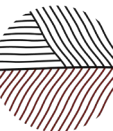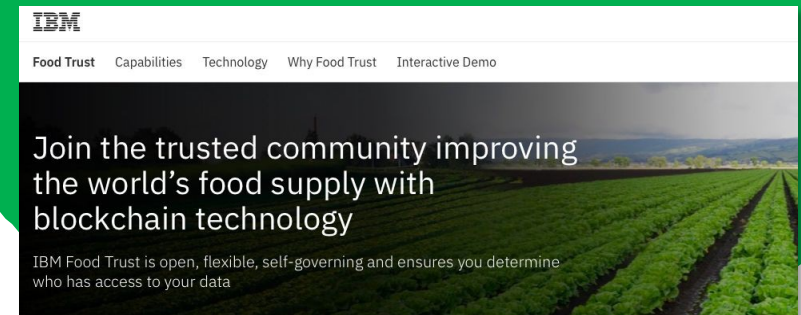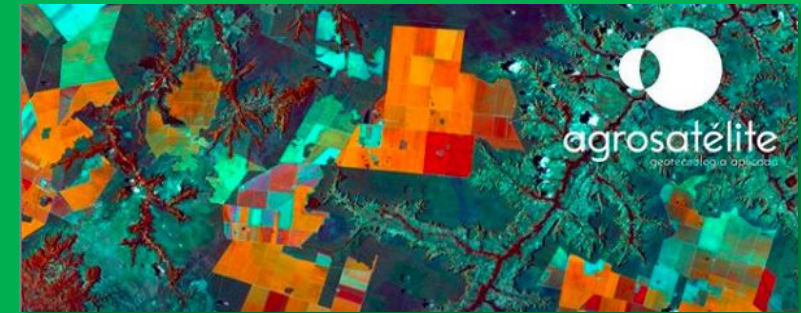
Sector can become an important ally:

1   **advocating** for greater market transparency through a public and audited registries;

2   conditioning **credit approval** on robust registry information (including DOF, CAR, SISBOV, and GTA information triangulated and verified by satellite data; and

3   **integrating deforestation and land-use indicators** into existing ESG metrics to more accurately measure physical and transitional risks throughout companies' supply chains.

Targeting Natural Resource Corruption

Harnessing knowledge, generating evidence, and supporting innovative policy and practice for more effective anti-corruption programming

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