



Forest & land degradation

Thematic & Impact Investing | Natural Capital

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Integrating landscape into investments

What's it all about?

Alarming trends in global land use have been highlighted by a string of recent environmental disasters, such as Indonesia's forest fires on palm oil plantations. This has added weight to the growing consensus that more should be done to rein in investment risks related to natural capital degradation. Sustainable management of landscapes could help align the economy with the 1.5-2°C goal heralded at the landmark COP21 summit, while alleviating threats fuelled by deforestation, food insecurity, biodiversity loss and water scarcity. We lay out a framework to navigate the underlying challenges for companies in the most sensitive sectors (consumer, extractives, etc.), which leads us to spot value-creation opportunities for over 40 stocks and new impact investing vehicles.

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360

in 1 minute

Spotlight on a neglected trillion-dollar time bomb: land use

About 33% of the world's arable land is jeopardised by land degradation, triggering economic losses of USD6.3-10.6trn each year. Unsustainable trends in land use amid a deadly recent string of land-related catastrophes (BHP Billiton/Vale's dam burst in Brazil's worst-ever environmental disaster, Indonesia's most severe forest fires on palm oil plantations) have led to an unprecedented recognition that the time has come to step up efforts to rein in investment risks related to natural capital degradation.

Policymakers have woken up: COP21 and SDGs bolster case

Against this backdrop, a series of complementary international initiatives has gathered momentum to prop up the case for both curbing the degradation of land and rehabilitating land. More importantly, sustainable management of landscapes is a pivotal cross-cutting objective to jointly tackle deforestation, water scarcity, food insecurity, biodiversity loss and soil issues using a 'landscape approach'. Its landmark inclusion among the UN Sustainable Development Goals (SDGs) in September 2015 and landscape's all-time-high role as part of the Paris Climate Agreement (COP21) signed in December 2015 marked major steps to galvanise bolder actions.

Demystifying links with value drivers across high-risk sectors

Momentum in land and forestry policy is opening up new opportunities for companies while they face mounting scrutiny on the back of natural-capital-oriented initiatives and heavily mediatised liability uncertainties. We provide a framework to map land risks and opportunities across most sensitive sectors' value chains clustered into three groups: 1) agricultural commodities (e.g. consumer sectors); 2) land operators (e.g. construction, utilities); and 3) end-market exposure (e.g. chemicals, capital goods).

Companies spearheading natural resource valuation

Our thorough review of over 40 companies leads us to pinpoint cases to watch and innovative best practices paving the way for an alignment between natural resource protection and sector value drivers, through funding (e.g. Danone), restoration (e.g. April Group, SCA, Stora Enso, Suzano), state-of-the-art reporting tools (e.g. Kering), and evidence of support for sustainable land management (e.g. Iberdrola, Nestlé, Syngenta).

When impact investing meets forest and landscape restoration

While USD2bn is needed every year to support land restoration activities, a wave of pioneering impact investing vehicles is ramping up to foster bankable projects at the landscape scale. We highlight the most important synergy sources for companies, e.g. enhanced supply chain management.

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Foreword

Monique Barbut, Executive Secretary, United Nations Convention to Combat Desertification (UNCCD)

With an expected 9.5bn people living on Earth by 2050, population pressure, higher consumer expectations and climate change will tax and degrade our natural resource base, especially land. The vast capacity to transform the natural environment and the services it provides, has already had untold repercussions for the entire planet. Faced with the challenges of land degradation and drought that is set to leave millions hungry, homeless, destitute and defenseless, this report has laid out some of the challenges for businesses in the most sensitive sectors.

Our societies need us to find the will and secure the financial resources to restore degraded land. From the local to the global level, efforts to create healthy and resilient landscapes are being increasingly recognised as crucial for economic growth and prosperity. With an increasing awareness of the potential of land to meet public and private development goals, investments that restore and maintain the productive capacity of land in the framework of the Land Degradation Neutrality (LDN) target recently adopted by the UN General Assembly, become ever more attractive.

Sustainable land management can be profitable at all scales, while generating considerable environmental and social benefits. However, to realise their full and true value, land-based investments have to become smarter and more effective; integrated and inclusive. By 2030, we can have a world where we no longer degrade land. Instead, we can restore more land than we use annually. It is the simplest response to our pressing global challenges. It is a recipe for sustainable growth.

I invite our private sector partners to join us in this journey.




Contributors

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Front page photo credit: Photo: Yann Arthus-Bertrand

This report is part of a series on investment impacts on the SDGs and climate challenges, focusing on Sustainable Development Goal 15.

Table 1: Sustainable development goals (SDGs)

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalise the global partnership for sustainable development

Source: UN

Previous report on the SDGs overall and SDG 13 (climate change)



Reporting on Impact: moving forward ([click here](#))

Previous report on 'Goal 4' (education)



Investing in education: What are your kids up to? ([click here](#))

Executive summary

In this report, we seek to reinstate the importance for capital markets of a largely neglected root cause of many top economic concerns, not least climate change and migration flows: forest and land degradation. About one-third of the world's arable land has been wiped out by land degradation, triggering economic losses of USD6.3-10.6trn every year (c. 10–17% of the world's GDP). In our view, unsustainable trends in land use amid a deadly recent string of land-related catastrophes (BHP Billiton/Vale's dam burst in Brazil's worst-ever environmental disaster, Indonesia's massive forest fire on palm oil & timber plantations) clearly point to ever-greater investment risks.

While sustainable landscapes take centre stage in the new climate and development agenda (COP21 and the Sustainable Development Goals or SDGs), we lay out a framework to map the core underlying challenges for businesses across the value chains of high-risk sectors (food & beverages, construction, utilities, chemicals, extractives, etc.). This leads us to pinpoint stocks to watch, value-creation opportunities and how innovation in financing through impact investing private equity funds dedicated to land restoration offer powerful points of synergy with companies' best practices.

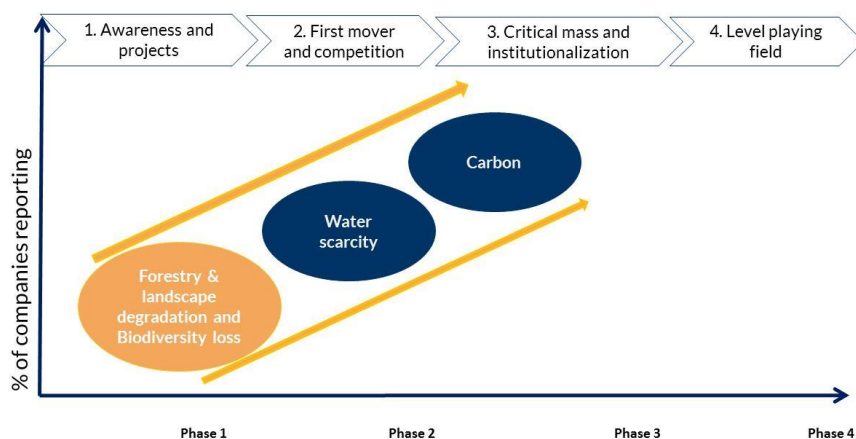
Land & forestry degradation: a trillion-dollar time bomb

Numerous large-scale environmental catastrophes affecting various big companies amid increased competition for land have fuelled a growing sense that stepping up efforts to curb land degradation is crucial to advance the most pressing interrelated economic challenges: climate change, energy & food security, biodiversity & ecosystem services loss, migration flows, and water scarcity and deforestation. While we think so far forestry and landscape degradation have broadly benefitted from lesser attention from companies and investors compared to other environment-related risks, our view is that a change is fundamentally underway.

Economic losses of USD6.3-10.6trn are generated every year by forestry and landscape degradation...

...which stand out as a prominent and overlooked cause and consequence of top economic challenges: climate change, food security, water scarcity, migration flows, etc.

Chart 1: Companies' environmental reporting: land degradation rising and cross-cutting



Source: Kepler Cheuvreux, Adapted from ©NewForesight

Policy makers have woken up: COP21 and SDGs bolster case

A series of complementary international initiatives (e.g. New York Declaration on forests¹) has been gathering momentum to prop up the case for “Land Degradation neutrality”, which refers to: 1) curbing the degradation of land; and 2) restoring and rehabilitating land. More importantly, scaling up sustainable landscape management would help materially advance two of the prime international policy priorities set last year: 1) a temperature rise confined to less than 1.5-2°C pre-industrial levels, as agreed at the landmark Paris climate conference in December (COP21), while fostering climate change adaptation; and 2) the UN Sustainable Development Goals or SDGs, in particular the SDG 15 on ecosystem services protection².

Demystifying the business case across high-risk sectors

In this report, we show that the policy momentum for sustainable land use opens up new opportunities for companies. Accordingly, we have clustered the most sensitive sectors into three groups according to the most manifest financial impact of land degradation in their value chain: 1) agricultural commodities in the supply chain (e.g. consumer sectors, pulp & paper); 2) land operators (e.g. construction, utilities, metals & mining); and 3) end-market exposure (e.g. chemicals, capital goods). Our thorough review of over 40 companies leads us to pinpoint cases to watch and innovative best practices, paving the way for an alignment between natural capital protection and sector value drivers.

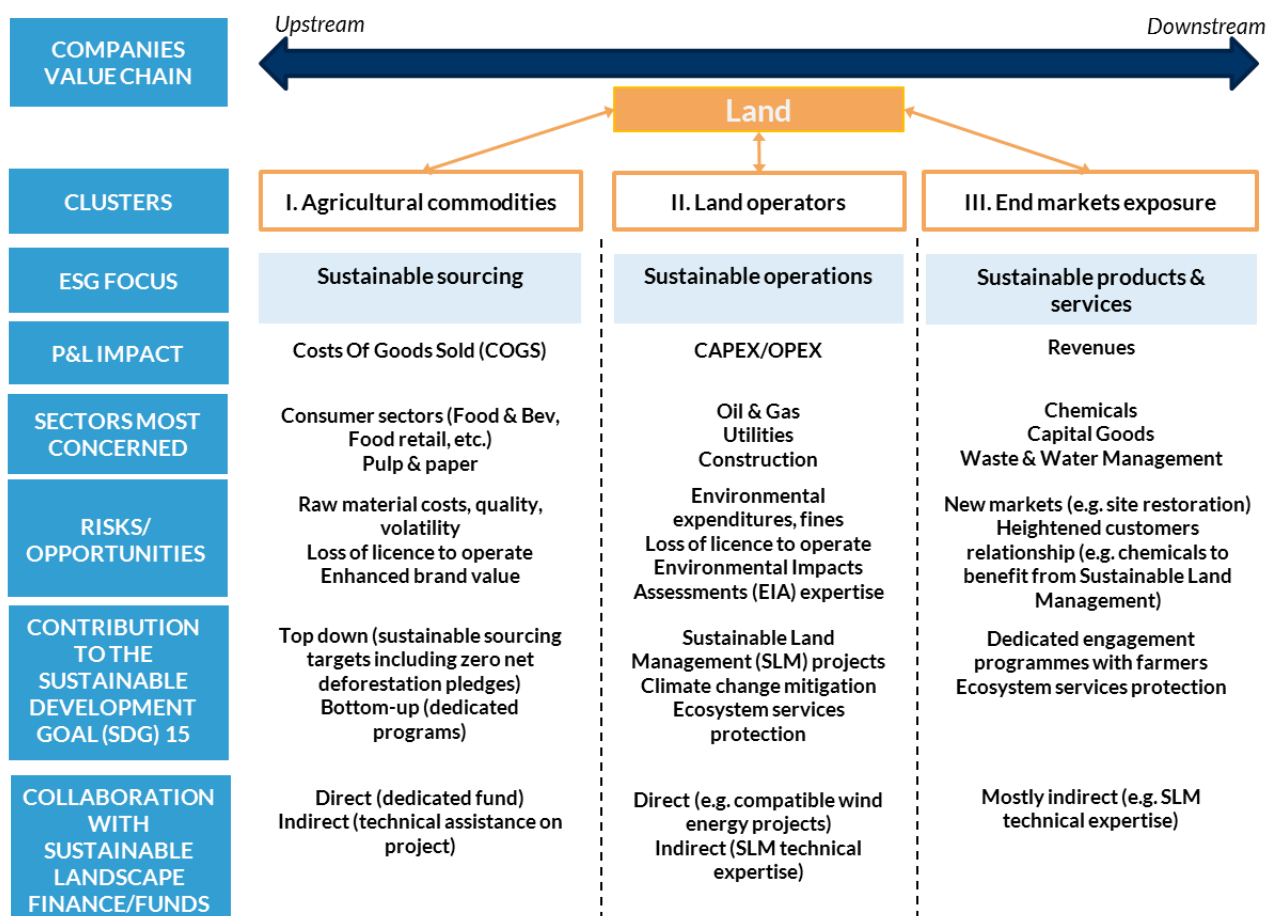
The fight against land degradation became a global target in September 2015 as part of the UN Sustainable Development Goals and occupies an unprecedented place in the landmark Paris Climate Accord adopted in December 2015 (COP21)...

...that opens up new risks and opportunities for companies, which we explore through three clusters of sectors

¹ The New York Declaration on forests is a voluntary and non-legally binding political declaration which aims “to cut natural forest loss in half by 2020, and strive to end it by 2030” and was notably endorsed by numerous companies and investors in September 2014.

² Throughout this report, we use the term **land degradation** to refer to financial risks caused by the reduction or loss of the productive capacity of land as well as growth opportunities to stop and reverse this trend through **land rehabilitation** and **sustainable land management practices**, which means in particular achieving the UN policy target called **Land Degradation neutrality (SDG 15.3)**. The term **landscape**, which has gained popularity recently, refers to a holistic approach to simultaneously and collaboratively tackle land, water, and forest resources. Investors using a landscape approach deploy **integrated landscape investments**.

Chart 2: Three sector clusters based on the core financial impact of land degradation in their value chain (P&L)



Source: Kepler Cheuvreux

Agricultural commodity prices rise: watch the horizon...

In our view, consumer sectors are particularly exposed in terms of financial risks, as land degradation typically drives up commodities prices and exacerbates volatility, while addressing land use issues helps meet customers' ever-rising demand for traceability and healthier products. Yet, the likely effects on companies' financials may vary substantially according to several factors, especially their ability to pass on costs to customers.

El Niño's effects (an extended period of warmer-than-average ocean temperatures that causes weather issues) could have for example benefitted food companies (especially Nestlé) in the short term. In the longer run, we emphasise that physical climate impacts (e.g. increase in extreme weather events, structural shortages), coupled with regulatory risks (e.g. national low-carbon policies) and economic factors (e.g. demographic) are likely to prompt more substantial uncertainties in companies' supply chains in relation to stranded assets risks in forestry & agriculture (estimated to be worth up to USD11trn globally, with a potential negative double-digit percentage-point impact on food & beverage companies' margins).

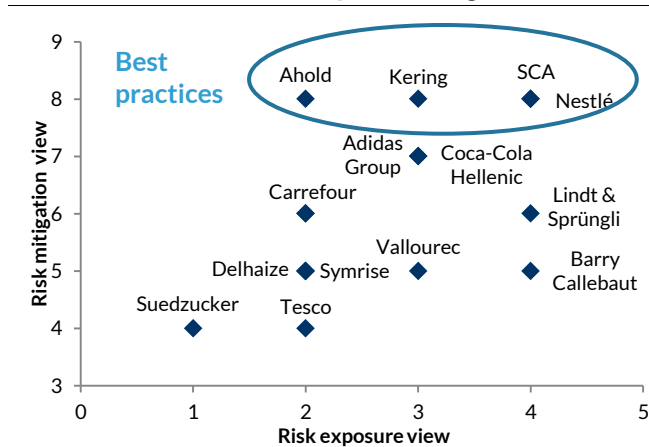
The financial impacts of agricultural commodities on consumer sectors, pulp & paper: food companies might benefit short-term but uncertainties are exacerbated long-term (potential stranded asset risks)

...and stocks moving in lock-step with ecosystem protection

Meanwhile, policy drivers against deforestation (e.g. Brazil forest & soy moratoriums) have somewhat helped improved sourcing risk mitigation policies among the largest European companies. Nonetheless, there are still many challenges unsettled to achieve faster improvements of industries' supply chains among the commodities that are most sensitive to land degradation. In particular, we highlight how experiences learned in responsible sourcing of wood and palm oil (main concerns presently) are gradually leading to a shift in focus to other commodities such as soy (subject to growing scrutiny), cattle, cocoa, and leather. We conclude that more robust evidence is needed of integrated landscape actions actually implemented, where coordinated action on financing land rehabilitation and Sustainable Land Management (SLM) plays an essential part. This has already been exemplified by Danone (Livelihood 3F fund), Nestlé (with a relatively comprehensive and effective policy) and several Pulp & Paper giants with material land ownership e.g. April Group, SCA, Stora Enso and Suzano.

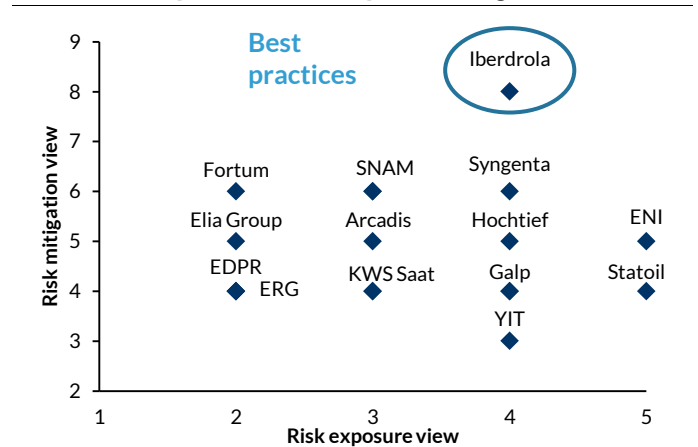
More robust evidence of action needed, where coordinated action on land rehabilitation/Sustainable Land Management (SLM) plays an essential part

Chart 3: Commodities – risk exposure/mitigation scores



Source: Kepler Cheuvreux

Chart 4: Land operators – risk exposure/mitigation scores



Source: Kepler Cheuvreux

Operations and product exposure: any impact on P&L?

Among sectors directly exposed to the land, our findings identify oil & gas, hydro and mining as particularly risky projects that may entail irreversible levels of land degradation (e.g. in the case of Statoil, Andritz and Hochtief, respectively). Yet the probable losses of biodiversity and ecosystem services still do not appear most often to be matched by substantial direct or "internalised" risks, while land rehabilitation is typically covered by licence to operate requirements and regulations are insufficient. The exceptions remain environment disasters and one-off liabilities, such as BHP Billiton/Vale's dam spill (at least c.USD2.6bn settlement).

Conversely, we pinpoint possible competitive edges that stem from more systematic integration of biodiversity issues in utilities projects (e.g. Iberdrola, Elia Group), or direct involvement in land restoration projects from an end-market exposure perspective (e.g. Arcadis' restoration business sales exceed EUR250m). Finally,

BHP Billiton/Vale's dam spill (at least c. USD2.6bn settlement) provided the latest example of financial losses prompted by large-scale environment catastrophes...

despite the ambivalent nature of their businesses, chemicals in the agro space may naturally leverage actions to support Sustainable Land Management (SLM) to strengthen relationships with farmers, as suggested by Syngenta's "Good growth plan".

Mounting investor scrutiny over natural capital: new tools

On the whole, obstacles to assess the materiality of land use for each company (e.g. persisting lack of reporting) arguably continue to benefit from growing investor scrutiny following a series of heavily mediated land-related cases involving institutional investors (e.g. SOCO's OECD Guidelines complaint³, palm oil divestments). Meanwhile, three natural capital-oriented initiatives, including the Natural Capital Protocol (a standardised framework for corporates reporting on environmental issues due to be released in July), are gradually driving a deeper change in both companies' and investors' assessments of their exposure to land degradation-related risks, and could help them spot how to make investment decisions accordingly. Such a shift is being pioneered by some innovative reporting tools (e.g. Kering's Environment P&L, UNEP's Soft Commodities Forest-risk Assessment Tool, which put the spotlight on actionable policies for investors to mitigate deforestation risks).

The way forward: key stumbling blocks to unlock land value

Solutions to resolve conflicting political and social issues, such as the lack of incentives to use degraded land, include: 1) bolder international and national low-carbon regulations better reflecting land use (which is part of the COP21's key follow-up challenges); 2) land governance empowering smallholders (loose tenure rights over natural resources constituting a major hurdle); and 3) commodity-related action on both supply and demand (e.g. the review of the EU's Action Plan to tackle illegal timber).

When Impact Investing meets restoration opportunities

We believe the ongoing adoption of tighter policies by various countries on sustainable land use in the framework of the UN Land Degradation Neutrality (LDN) target along with the parallel development of cutting-edge sustainable landscape financing vehicles (USD2bn is needed every year to support land restoration activities), especially Green bonds and private equity impact investing funds, are set to help overcome these barriers by delivering a range of benefits associated with ecosystem services protection, such as improved productivity and land value.

...while there is growing investor scrutiny on the back of natural capital-oriented initiatives and heavily mediated land-related controversies

The ongoing adoption of tighter policies on sustainable land use along with the blossoming of integrated landscapes financing vehicles is expected to help overcome key barriers

³ The SOCO complaint raised by the NGO WWF is based on oil exploration of British oil company Soco in a UNESCO protected site in the Democratic Republic of Congo (DRC) and was first filed in October 2013. It epitomises the OECD complaint mechanism through its guidelines for multinationals gaining momentum and media visibility.

Table 2: Land degradation sector clusters per key P&L impact (illustrative – not exhaustive)

Cluster	Key P&L impact	Materiality	Sectors most concerned	Main risks/opportunities	Contribution to Land Degradation Neutrality (LDN)	Upside for collaboration with integrated landscapes funds	Comments
1. Agricultural commodities	Costs Of Goods Sold (COGS)	Raw materials quality, price, availability	Consumer sectors, pulp & paper	Reduced productivity due to land use change, environmental pollution, soil erosion and nutrient loss leading to increased prices and decreased availability of raw materials; loss of license to operate; opportunities for differentiation (labels, sustainable sourcing).	Top down sustainable sourcing targets supporting Sustainable Land Management (SLM), bottom up dedicated programmes involving land rehabilitation (e.g. for palm oil)	Direct through dedicated funding (e.g. Danone), or indirect through e.g. technical assistance on projects (e.g. leveraging companies foundations, such as Lindt Cocoa foundation expertise in sustainable land management for particular commodities).	<i>Palm oil, timber, cocoa, soya and cattle are commodities whose long-term costs prospects are particularly closely related to land degradation and for which companies face a particularly strong pressure to provide more robust evidence that sustainability commitments are implemented on the field and enhance companies resilience to raw materials-related risks (e.g. extreme weather events)</i>
2. Land operators	Capex/opex	Externalities entailed by their operations, supply chain disruptions	Oil & gas, utilities, construction	Limited environmental expenditures and licence to operate risks for construction, extractives, utilities.	Sustainable land management (SLM) projects, systematic and proactive integration of biodiversity considerations across projects; comprehensive coverage of restoration efforts	Sustainable Land Management (SLM and land restoration technical expertise (e.g. utilities and extractives have internal capabilities to conduct restoration projects as part of their licence to operate). Some potential opportunities with renewables projects (e.g. wind) as they offer high suitability for Sustainable Land Management	<i>These sectors are primarily licence-to-operate-driven in their approach to tackle land degradation. The challenge is therefore for companies to demonstrate they take a step farther, which may involve ad hoc Sustainable Land Management (SLM) projects along with more systematic and ambitious support to ecosystem services protection. Evidence of efforts to prevent environmental disasters (e.g. Samarco-like) also takes centre stage.</i>
3. End-market exposure	Revenues	Companies whose specific product(s) and/or service(s) – and therefore growth opportunities – may help tackle land degradation.	Chemicals, capital goods, waste & water management	Positive top-line exposure for Arcadis (e.g. market of site Evaluation and Restoration) , Chemicals active in the agro space are also set to broadly benefit from Sustainable Land Management or SLM (e.g. Syngenta, KWS)	Promoting Sustainable Land Management (SLM) via dedicated engagement programmes with farmers (e.g. Syngenta's "Good Growth" plan)	Sustainable Land Management (e.g. Arcadis restoration business unit) and land restoration (e.g. breeding techniques, learning from training programmes such as the one undertaken by Syngenta) technical expertise	<i>Chemicals active in the agro space business interests revolve around securing long-term relationships with farmers (i.e. their customers) so credible support to Sustainable Land Management (SLM) is central to their business model.</i>

Source: Kepler Cheuvreux

Table 3: Companies' exposure to land degradation-related risks and opportunities (summary table)

Company*	Sector	Main land risk/impact exposure	% of revenues or costs exposed	Land risks exposure view (1=Low exposure; 5= High exposure)	Our view	Land risk mitigation view (1=Minimum; 10= Maximum)	Our view
Agricultural & Forestry commodities							
Adidas Group	General retail	Cotton	Raw material costs : 60% of its costs of goods sold	3	Medium to low, as Adidas proved it could mitigate rising raw material costs (e.g. in 2011), like peers. Wage increase is more of a challenge for sports goods companies	7	Sustainability sourcing targets underpinned by evidence of undertakings focused on traceability and procurement standards. Innovation a positive e.g. new local production methods
AAK	Food retail	Palm oil	Raw materials costs : up to 70-75% of total costs	4	Mixed; Certified palm oil is more expensive but AAK is not too overly exposed to the palm oil price in the way that they pass on any price inflation/deflation to the customer (yet certified palm oil shortages may pose a burden)	7	RSPO certified volumes ramping up but far from the 2020 target; Struggling with low demand for certified palm oil to make more significant progress towards 2020, no update on traceability plantation
Ahold	Food retail	Palm oil, soya	n.a.	2	Low, like most Food retail companies (e.g. thanks to compensatory effects)	8	Appear as the most ambitious sustainable sourcing target among food retailers reviewed in the report (2015 for all commodities)
Barry Callebaut	Food	Cocoa beans	n.a.	4	Medium, as cost-plus business model but higher cocoa prices would hurt volumes	5	(+) Certified sales on the rise (13% of sales from products sold under one of the certification schemes), wealth of cocoa sustainability programmes including focus on training (-) Lack of precise quantitative commitment at the company level and integrated reporting
Carrefour	Food retail	Palm oil, soya	n.a.	2	Low, like most Food retail companies (e.g. thanks to compensatory effects)	6	Predominant focus on wood, paper, palm oil, but gradual broadening to other commodities underway
Coca-Cola Hellenic	Beverages	Water	0.2% for water (anchor bottler)	na (not covered)	na (stock not covered)	6	Range of relevant programmes e.g. the test phase of the Natural Capital Coalition
Danone	Food	Dairy	n.a.	n.a.	n.a. (no response to our questionnaire)	n.a.	Notable innovative Livelihood 3F fund that will allocate capital to sustainable agriculture projects featuring a landscape approach. Danone, Mars rely partly on foundation financing (PE impact fund)
Delhaize	Food retail	Palm oil, soya	n.a.	2	Medium (Delhaize's 20-55% of sales in private brands)	5	Broadly in line with industry standards
Hugo Boss	Home & Apparel	Cotton	n.a.	2	Low (higher end of the market)	6	Range of internal policies such as implementation guidelines, work with the Natural Capital Coalition and IUCN (a paper was recently) yet not clear commitment at the Group level
Jeronimo Martins	Food retail	Palm oil, soya	n.a.	2	Low, like most Food retail companies (e.g. thanks to compensatory effects)	5	Company-specific target whose ambition is hard to assess (no reference to certification)
Kering	Luxury goods & cosmetics	Leather, cotton	n.a.	3	Low (higher end of the market)	8	Level of evidence is above that of peers reviewed

Continued on next page

Companies' exposure to land degradation-related risks and opportunities (summary table)....continued

Company*	Sector	Main land risk/impact exposure	% of revenues or costs exposed	Land risks exposure view (1=Low exposure; 5= High exposure)	Our view	Land risk mitigation view (1=Minimum; 10= Maximum)	Our view
H&M	General retail	Cotton	Cotton's share of H&M COGS is c. 4-5%	4	Medium to high (there is generally a negative correlation between cotton prices and H&M's relative performance)	8	World's largest user of organic and sustainably sourced cotton (c. 21% of its total cotton use).
 Lenzing	Chemicals	Pulp	Material costs: 69-70% of total opex	4	Man-made cellulose fibres as an alternative to cotton (more Environmentally friendly)	8	Significant certification requirements; 100% of Lenzing's wood and pulp supply either certified or from controlled wood sources
Lindt & Sprüngli	Food	Cocoa beans	n.a.	4	Benefits from higher cocoa prices given strong pricing power although demand is more elastic	6	Lindt has set both cocoa and palm oil targets (2020 and 2015, respectively).13% of its Global cocoa supply chain is traceable and externally verified (100% RSPO segregated certification for all its production companies)
Nestlé	Food	Dairy, coffee, cocoa, sugar	Dairy (6%), Coffee (2%), Sugar (2%), Cocoa (2%), Cereals (2%), Other agri (11%)	4	Medium to High (Nestlé benefitting from commodity price rises given its broad agricultural basket)	8	Nestlé's policy is particularly thorough e.g. regarding procurement standards and traceability on soya, palm oil and reporting overall suggest positive momentum.
SCA	Forestry, paper and packaging	Timber	n.a.	3	Medium to low (core business but most supply originates from low risk regions)	8	Extensive conservation measures coupled with certification & traceability ambitions (no horizon set for these targets, however)
Suedzucker	Food	Sugar	Sugar beets (24%), Wheat/Cereal (10%), Fruit (6%)	2	Medium to low (core business but sourcing mainly from Europe)	4	No particular CR commitments nor targets (broad environmental impact objectives e.g. waste, climate; not sourcing specific)
Symrise	Chemicals	Onion, vanilla	n.a.	2	Low	5	Hard to compare with peers given raw materials considered (e.g. vanilla or onions)
Tesco	Food retail	Palm oil, soya	n.a.	2	Low as most Food retail companies (e.g. thanks to compensatory effects)	4	Less detailed reporting than Ahold, Delhaize; the company acknowledges it should broaden its coverage to other commodities
Vallourec	Oil services	Timber	Forests used for eucalyptus production (237,000 ha). Biological assets in the balance sheet amounted to EUR213m in 2014	3	Medium (land ownership in low risk areas of land degradation but exposure to indirect consequences such as rise in extreme weather events e.g. droughts)	5	Broad carbon policy unveiled in November 2015 does not include a quantitative GHG emissions reductions target; the forests net carbon balance is set to be further reported

Continued on next page

Companies' exposure to land degradation-related risks and opportunities (summary table)....continued

Company*	Sector	Main land risk/impact exposure	% of revenues or costs exposed	Land risks exposure view (1=Low exposure; 5= High exposure)	Our view	Land risk mitigation view (1=Minimum; 10= Maximum)	Our view
Land operator							
CRH	Construction & materials	Production of building materials, focusing in aggregates and ready mix concrete.	100%	4	Regulatory compliance (low exposure:EUR7m budget for restoration and biodiversity)	6	On track to reach the 1990-2020 specific net cement CO2 target for cement plants (25% reduction in scope 1 t CO2/t cementitious product) and air emission reduction from clinker production; no quantity target for alternative raw materials use; biodiversity plans for quarries.
EDP Renovaveis 	Utilities	Wind (positive off-site impact)	100% of sales	2		4	Wind strongly aligned with Sustainable Land Management (SLM)
Elia Group	Utilities	Electricity transmission system operators	100%	2	Exposure to Belgium. Cost reduction for corridor management is the main driver.	5	Interesting sustainable corridor management approach as part of a EU-backed pilot project
Enagas	Utilities	gas infrastructure	100%	4	Heavy regulatory compliance for natural gas infrastructures	4	Narrative could possibly be backed by a clear roadmap including more quantitative targets covering land use and biodiversity
ENI	Oil & gas	oil & gas	100% (exposure to the most controversial tar sands projects not material for now)	5	High impact & risk business; Exposure to controversial projects involving land degradation, such as Congo tar sands, including also investments to produce oil palm for food	5	Step up ambition on biodiversity welcome though time lag may be questioned. A move from case studies on biodiversity e.g. Ecuador's Amazon Villano field (some evidence of local efforts) to a group wide quantitative and time referenced reporting on the systematic integration of biodiversity management could indicate the level of commitments.
ERG 	Utilities	wind generation (strong off-site positive impact)	90% of EBIT	2	Limited provision for environmental risks (EUR 5m); main exposure to wind	4	Wind strongly aligned with Sustainable Land Management (SLM)
Fortum	Utilities	Biofuels	Limited biofuels exposure	2	More of an indirect impact/risk. Limited as major part of biofuels originate from Nordic countries and Russia	6	Quantitative targets for environmental impacts reduction. No particular commitment related to land use or biofuel.
Galp	Oil & gas	Exploration and production of oil and natural gas	n.a.	4	LDN not considered by the company as a direct material risk. However we see it connected indirectly with its high priorities e.g. hydrocarbon reserves and protection, process safety & spills	4	Qualitative and not time-referenced broad environmental impacts mitigation (CO2, etc.). No particular commitment related to land use nor biofuel
Hochtief	Construction & materials	Mainly contract mining; CIMIC	c. 75% of sales	4	Contract mining activities business (e.g. ores, coal) - CIMIC (c. 75% of sales),	5	Licence to operate driven; Green buildings dynamic a positive (23% of 2014 sales after nearly doubling in volume)

Continued on next page

Companies' exposure to land degradation-related risks and opportunities (summary table)....continued

Company*	Sector	Main land risk/impact exposure	% of revenues or costs exposed	Land risks exposure view (1=Low exposure; 5= High exposure)	Our view	Land risk mitigation view (1=Minimum; 10= Maximum)	Our view
 Iberdrola	Utilities	Renewables (largely positive off-site impact but possible externalities in particular for large hydro projects).	About 23% of EBITDA	4	Range of energy infrastructure (hydro, thermal, power, etc.); Limited use of biomass,	8	Policy and actions especially thorough, including through a dedicated biodiversity report, but that could potentially be made easier to track over time and apprehend with clearer links with financials.
 Nordex SE	Capital goods	wind (positive off-site impact)	100%	2	Wind	4	Wind strongly aligned with Sustainable Land Management (SLM)
Skanska	Construction & materials	construction	100%	3	As part of contracts and via supply chain e.g. buys timber	4	Broad statements, not even a carbon emissions reduction target, which could be underpinned by a detailed roadmap with targets.
SNAM	Utilities	Gas (gas transport (natural monopolist in Italy), gas distribution (the biggest Italian player) and gas storage)	100%	3	Claims land degradation not a risk based on its Enterprise Risk Management (natural gas business)	6	In network km: both restoration and plant care went down in the past few years while both reforestation and environmental monitoring increased. Details on spending and a roadmap would be welcome
Statoil	Oil & gas	Oil & Gas	100%	5	Primarily located offshore but strongly relevant in Canada (onshore oil sands activities)	4	Land not covered directly (the tar sands report doesn't include commitments on quantitative KPIs but provides a range of data). No breaches of regulation, including in the framework of the OECD complaints, were seen.
YIT	Construction	construction	100%	4	Medium to high risk	3	Lack of commitments to address these issues (not even carbon emissions reductions targets)

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Companies' exposure to land degradation-related risks and opportunities (summary table)....continued

Company*	Sector	Main land risk/impact exposure	% of revenues or costs exposed	Land risks exposure view (1=Low exposure; 5= High exposure)	Our view	Land risk mitigation view (1=Minimum; 10= Maximum)	Our view
End market exposure							
Arcadis 	Capital goods	Environment business line revenues and also water management including waste water treatment systems	Environment (c. 10-15% of total revenues) and water (14%)	3	Regulatory compliance (Environment, Water, and Infrastructure)	5	Environmental impact wise, no systematic/global policy underpinned by commitments on land use impact & sustainability. Business wise, the demand for more stringent energy/resource efficiency standards is generally an attractive opportunity. We estimate its Group exposure to positive environmental impact themes, largely closely intertwined with land degradation challenges both from an on-and-off site perspective, to represent c. 43% of its sales and 50% of its EBIT
KWS SAAT AG	Chemicals	Plant breeding	100%	3	Risks of reduced income for farmers	4	No systematic/global policy underpinned by commitments on land use impact & sustainability, some environmental KPIs suggest possible concerns in terms of trends (e.g. increase in the use of pesticides on seeds for sale by the company in Germany since 2010, waste water rise, pollution loads, total CO2 emissions driven by seed quantities transported.)
Syngenta	Chemicals	Agrochemicals and seeds	100%	4	Ambivalent: Risks of reduced income for farmers have to be balanced with the fact that long-term prospects, Syngenta is set to benefit from favourable trends: food security, also with the help of crop protection, and high-yielding stress-tolerant seeds will continue to be in high demand.	6	Ambitious targets set to support the company's core business objective of securing long-term relationships with farmers through an "integrated strategy" (integration of its own sales force from formerly separate seeds/agrochemicals channels under one roof)

Source: Kepler Cheuvreux (* Companies that are part of our Green Impact universe are labelled as such. This means they derive at least 20% of their revenues and/or earnings from our positive environmental impact themes (e.g. renewable energy, energy efficiency) and are best placed to benefit from the transition towards Land Degradation Neutrality (LDN) and a Green Economy more broadly

An investor guide to integrating sustainable landscape issues

Backbone: how to reconcile policymakers, investors and companies

The aim of this report is to reconcile the interests of three main groups (policymakers, companies and investors) to tackle a very challenging problem: land degradation. Accordingly, this report is divided into five sections that deal with the following questions in turn:

Table 4: Report's structure (sections, questions, asset class, sectors, companies addressed and links)

Section	Section	Question	Asset class (if specific)	Sector (if specific)	Companies (if specific)	Page & link
A.	Top-down perspective					
1	Economic case	How significant is the economic case of land degradation?				22
2	Policy drive	How strong is the policy momentum to mitigate land degradation and achieve Land Degradation Neutrality (LDN)?				34
B	Impact on investors across asset classes					
3	Investors options in non-listed markets	How to finance land rehabilitation and grow sustainable landscape finance?	Non-listed			43
4	A framework to map risks & opportunities for companies under our coverage	What's the business case for Land Degradation Neutrality (LDN) for companies under our coverage?	Listed equities		APRIL Group, Holcim, IOI Corporation, companies that have been subject to significant environmental fines (BP, Duke Energy, Royal Dutch Shell, etc.), Land owners (KWS, YIT, Vallourec, SCA, and Enagas)	55
C	Bottom-up perspective: sector focus (moving along the value chain)					
5	Agriculture & Forestry commodities (sustainable sourcing)	What's the impact on consumer sectors, Pulp & Paper, and the riskiest commodities (focusing on timber, palm oil, cocoa, soya, and cotton)?	Listed equities	Food & Beverages, Food Retail, General Retail, Home & Apparel, Pulp & Paper	AAK, Adidas Group, APRIL Group, Ahold, Asian Pulp & Paper, Barry Callebaut, Carrefour, Coca-Cola Hellenic, Danone, Delhaize, Ferrero, Golden Agri-Resources, Hugo Boss, IOI Corporations, Jeronimo Martins, Kering, Lenzing, Lindt & Sprüngli, Marks & Spencer, Mars, Nestlé, Olam, SCA, Stora Enso, Suedzucker, Suzano, Symrise, Tesco, Unilever, Vallourec, and Wilmar	76
6	Land operators & End markets exposure (operations and products)	What's the impact on Construction & infrastructure, utilities, extractives, chemicals?	Listed equities	Land operators: Construction & Materials, Oil & Gas, Metals & Mining, Utilities; End market exposure: Capital goods, Chemicals	Land operators: Andritz, BHP Billiton, BP, CRH, EDP Renovaveis, EDP, Elia Group, Enagas, Endesa, ENI, Engie, ERG, Fortum, Galp Energia, Gecina, Hochtief, Iberdrola, Nordex Shell, Skanska, SNAM, Statoil, Total, Trevi Group, Vale, YIT; End market exposure: Arcadis, KWS Saat, Trevi Group, and Syngenta	121
D.	Forward looking perspective on enabling factors					
7	Regulatory limitations	What are the remaining gaps in regulations?				142
8	Investors natural capital tools	Can investors use natural capital risks portfolio assessment (including an input from the Natural Capital Declaration initiative)?				147
9	Corporates natural capital headways	What are the next steps in corporates reporting?				148
E	Stocks profiles					
10	Company profiles	What's our takeaway on companies and champions?	Listed equities			155
11	Engagement questions for investors	What are the key issues to raise with corporates and KPIs to look out for?	Listed equities			197

Source: Kepler Cheuvreux

The land degradation time bomb

The adverse economic consequences of forestry and landscape degradation have accentuated sharply in recent decades and the worst seems yet to come. About one-third of the world's arable land is now deemed to be affected by degradation and desertification, resulting in a state whereby 60% of the ecosystem services are jeopardised and economic losses of USD6.3-10.6trn (c. 10-17% of the world's GDP) are generated every year (source: ELD).

Such alarming trends have fuelled mounting recognition that stepping up efforts across sectors to curb land degradation is inevitable to advance the most pressing and closely interrelated economic challenges, namely climate change, energy and food security, migration flows, water scarcity and deforestation - land degradation being both a prominent cause and consequence of those.

Encouragingly, the 2bn hectares of total degraded land globally deemed suitable for rehabilitation offer a unique opportunity to simultaneously tackle these issues, thereby helping to kill two birds with one stone: 1) align the economy with the 1.5-2°C global temperature rise scenario adopted by policymakers at Paris COP21 in December 2015, by unlocking soil potential to sequester over 10% of GHG emissions by 2030; and 2) mitigate the associated risks of stranded assets in agriculture and forestry, estimated to be worth up to USD11trn.

Land degradation: an underrated trillion-dollar issue

Like any economic asset, land may be understood as a stock delivering a flow of benefits and ecosystems services that can be valued.

Table 5: Ecosystem services typology

Provisioning services	Regulating services
Food	Local climate and air quality
Raw materials	Carbon sequestration and storage
Freshwater	Moderation of extreme events
Medicinal resources	Waste-water treatment
	Erosion prevention and maintenance of soil fertility
	Pollination
	Biological control
Habitat or supporting services	Cultural services
Habitat for species	Recreation and physical health
Maintenance of genetic diversity	Tourism
	Aesthetic appreciation and inspiration for culture, art and design
	Spiritual experience and sense of place

Source: ELD, TEEB

USD6.3-10.6trn wiped out by ecosystem services loss every year...

An unprecedented level of evidence warns that this value is increasingly at risk of being wiped out. *The Value of Land* report released by The Economics of Land Degradation (ELD) Initiative last September 2015 marked the latest wake-up call by

Economic losses of USD6.3-10.6trn (c. 10-17% of the world's GDP) are generated every year by the loss of ecosystem services

As for any economic asset, land can be understood as a stock delivering a flow of benefits and services that can be valued

Deforestation and land degradation entail economic losses of USD6.3-10.6trn...

warning that economic losses of USD6.3-10.6trn (representing 10-17% of the world's GDP) are sparked by the global loss of ecosystem services every year⁴.

...as a result of direct and indirect drivers...

Both land availability and quality are adversely affected by an array of secular trends (population growth, urbanisation, etc.) coupled with natural factors such as the rise in extreme weather events. The key human-caused direct drivers to land degradation typically encompass land cover changes, unsustainable land management (e.g. excessive use of fertilisers, over-exploitation amid growing competition for arable land) and infrastructure development.

...as a result of an array of human drivers amplified by natural factors

Table 6: Direct & indirect drivers of land availability and quality (illustrative- not exhaustive)

Direct drivers	Indirect drivers
Land occupation and land use change	Climate change
Pollution (nitrogen, phosphorus, pesticides, other)	Water depletion
Invasive species	Nitrogen deposition
Overexploitation	Poverty

Source: Kepler Cheuvreux, adapted from UNCCD, Lindsay Stringer, MEA

Those, in turn, generate a flurry of detrimental impacts such as soil erosion, air, land and water pollution, deforestation of habitats and species reduction.

Table 7: Trends in causes and consequences of global land degradation (rates of change per minute)

Causes	Consequences and compounding effects
Population increase: 150 people	Food insecurity
CO2 increase: 6,150 tonnes	Deaths from hunger: 16 people (including 12 children)
Tropical deforestation (total dryland and non-dryland): 25 ha	Political instability
Soil degradation: 10 ha	Civil strife
Desertification: 23 ha	
Urban encroachment: 5.5 ha	

Source: UNCCD, adapted from Lal, 2011

Consequently, it is feared that 12m hectares of arable land are degraded annually by human activities (23 hectares a minute).

...which create self-reinforcing feedback effects...

Most importantly, land degradation compounds with water-energy-food security-climate challenges, affecting at various degrees most sectors (consumers, chemicals, utilities, etc.), as land use is both a prominent cause and a consequence of:

- Soil degradation.
- Nutrient pollution

Land use is both a prominent cause and a consequence of the most pressing sustainability challenges

⁴ Estimates using 2008 data (TEEB Interim Report 2008) indicate that deforestation and land degradation entail economic losses of USD4.4-5.2trn, which represents 3.3-7.5% of the world's GDP. Other estimates are even higher, with leading scholar Dr. Robert Costanza estimating the loss to be between USD4.3trn and 20.2trn per year between 1997 and 2011. 60% of these ecosystem services assessed by the UN-led Millennium Ecosystem Assessment (MEA) are degraded or used unsustainably.

- **Biodiversity loss**, e.g. land use is one of the main drivers of the decline in pollinators, whose impact on annual global food production is estimated at USD265-577bn (source: IPBES).
- **GHG emissions and climate change.**
- **Deforestation.**
- **Human rights (e.g. child labour) and wellbeing issues**, e.g. in a context where merely 20% of common land in developing countries is currently protected from land-grabbing by governments (source: Oxfam).
- **Conflicts and migrations.**
- **Poverty and food security**, from the perspective food availability (access to food), quality (healthy soils are the foundation for healthy food production) as well as from a land tenure (access to land) perspective (source: EC).
- **Animal welfare.**

...such as climate change and deforestation...

In particular, the numerous likely impacts of climate change are set to fuel overall land degradation and agriculture shifts into new areas, despite significant gaps between regions and uncertainties. Globally, in the most pessimistic scenarios, the highest temperature increases (a 4°C temperature rise by 2100 vs. 1850-1900 levels) are expected to materialise on land (a 4-10°C increase).

Conversely, tackling land degradation is crucial to both adaptation and mitigation agendas, as land has tremendous potential to store carbon in biomass and soil. Curbing deforestation specifically will be decisive, as it makes up 15% of global GHG emissions, while 12.5% of human-induced GHG emissions were caused by the net loss of carbon from soils and forests in 1990-2010.

Deforestation is contributing to 15% of global GHG emissions

Table 8: Illustration of some interdependencies between climate change, deforestation and land degradation

Land degradation impact on climate change	Climate change impact on land degradation
Ever-increasing land degradation and the associated loss in the carbon sequestration and storage service is reflected in trends in GHG emissions from Agriculture, Forestry and Other Land Uses (AFOLU) sectors that almost doubled over the last 50 years and are currently responsible for c. 20-24% (c.10-12GtCO ₂ e/year) of net anthropogenic GHG emissions.	Various studies have assessed the relationship between the increased global mean temperature and mean species abundance, an indicator of biodiversity.
Land degradation impact on deforestation	Deforestation impact on land degradation
The effects of soil erosion go beyond the loss of fertile land and have much wider consequences on the livelihood of the population affected. It leads to increased pollution and sedimentation in streams and rivers, clogging these waterways and causing declines in the number of fish and other species. Moreover, degraded lands are also often less able to hold onto water, which can worsen flooding. Land degradation generally may prompt forest clearing, as people look for other areas to grow commodities.	Locally, trees play multiple vital functions in linking the soil to the land. Forestry helps stabilise soil structure and protect it from various types of environmental damage such as those caused by water run-off and wind impact. As a result, deforestation and tree clearing drive erosion, and thereby affect soil fertility and endanger local biodiversity. Moreover, changes to the local climate can threaten agricultural yields and lead to increased poverty, which may subsequently result in more land degradation and deforestation.

Source: IPCC, UNCCD, WWF, GLOBIO, Kepler Cheuvreux

...and lingering poverty and food security

Around 168 countries are affected by desertification worldwide. Of the 1.5bn people who suffer the negative consequences (e.g. lower income or food security), an overwhelming majority are in developing countries or at the bottom of the economic pyramid (BoP) and largely depend on degraded areas (two-thirds of

The hardest-hit populations are overwhelmingly found at the base of the economic pyramid (BoP)

people in the Middle East and North Africa live in areas suffering from land degradation).

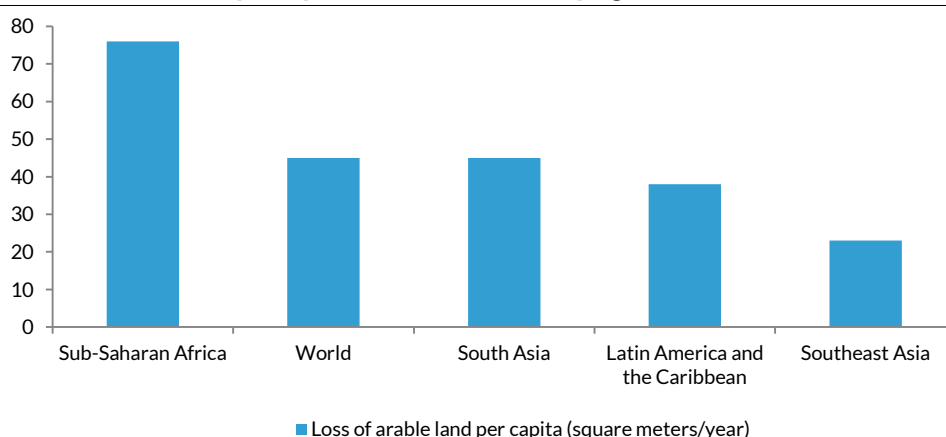
Table 9: Number of people residing in degrading areas by region - numbers in millions/shares in percentages

Regions	Visible degradation	Degradation masked by rainfall and atmospheric fertilisation	Degradation masked by chemical fertilisation	Total population in degrading areas	Total population in 2010	Share of population in degrading areas, %	Share of population in degrading areas, excluding areas with masking effect of chemical fertilisation, %
Asia	434	834	1 055	2 324	4 184	56%	30%
Europe	11	48	143	203	575	35%	10%
Latin America and Caribbean	45	98	57	200	583	34%	25%
Middle East and North Africa	48	133	22	202	272	74%	66%
North America and Australasia	22	55	29	107	372	29%	21%
Sub-Saharan Africa	64	113	4	180	800	22%	22%
World	624	1 282	1 310	3 216	6 787	47%	28%

Source: ZEF-Discussion Papers on Development Policy No. 193

The pressure will continue to grow, given that agricultural production will need to increase by 60% from 2006 levels to feed a world population that is expected to reach 9bn by 2050 (source: FAO). In the context of this challenge, geographical disparities are further illustrated by data on the annual loss of arable land per capita in emerging markets, showing Sub-Saharan Africa as the most exposed by some distance.

Chart 5: Annual loss of per capita arable land in developing countries



Source: IFPRI

Mounting risks of stranded assets in forestry and agriculture

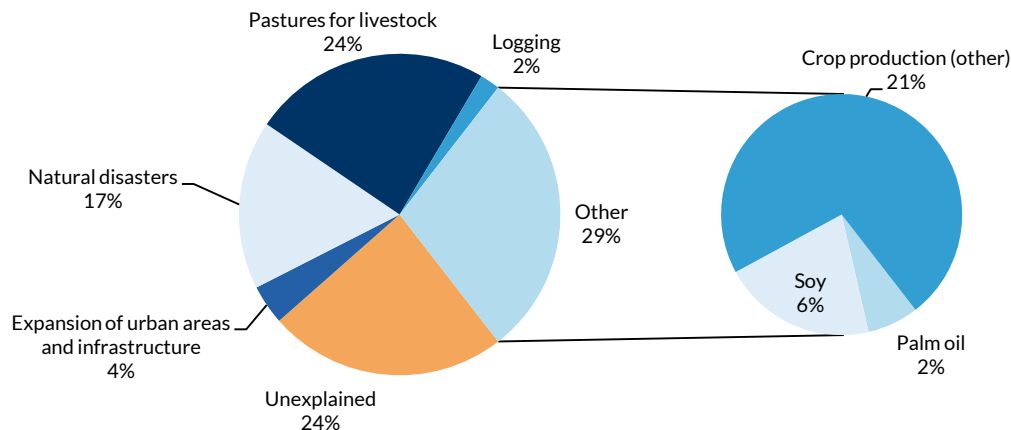
Most worryingly, trends in land degradation are set to worsen on the back of both demand (land use change) and production pressures (changes in land management).

Global growth in demand for commodities threatens further land use...

The rising threat to land and forestry assets is the result of fast-growing global demand for agriculture and forestry commodities (e.g. beef, palm oil, paper/pulp and soy) that drive the conversion of forests into croplands and grazing lands.

Threats to land and forestry assets set to continue to rise due to fast-growing global demand for agriculture and forestry commodities

Chart 6: Global deforestation drivers 1990-2008



Source: Natural capital declaration

...while the deforestation crisis is not improving materially...

While forests account for around one-third of total land area, the rate of deforestation is decelerating overall, but remains stubbornly high, with 5.2m hectares lost annually (source: FAO) amid big disparities between regions. Tree cover loss increased in both Brazil and Indonesia in 2014, and concerns are mounting over new “hot spots”, such as those in Cambodia, the Gran Chaco region, West Africa and Madagascar. A recent Greenpeace campaign (February 2016), for example, expressed concerns over tropical agro-industry company Socfin’s contribution to deforestation through its palm oil and rubber business in Africa and south-east Asia (e.g. due to a policy that does not factor in High Carbon Stock forestry areas).

...raising concerns about potential risks of stranded assets

What is the risk of “stranded assets” in the forestry and agriculture sectors? These “hot spots” are countries with especially alarming trends in terms of deforestation and are also particularly vulnerable to “stranded asset” risk i.e. forestry and agriculture assets suffering from “unanticipated or premature writedowns, devaluations, or conversions to liabilities due to a variety of risks⁵”. Stranding in the context of the forestry and agriculture sectors may be the result of several country-specific factors, such as direct climate impacts (physical stranding) or low carbon development plans (regulatory and/or economic stranding). For example, changes in water and land-use management rules may rein in the price of regulated land, thereby impacting countries and companies that rely on it.

What regions and sectors are most at risk of stranding?

Agricultural commodities, on the whole, and production regions where there may be a particularly high risk of stranding include those that have direct impacts on global

The rate of deforestation is on the whole decelerating but remains stubbornly elevated

What risk of “stranded assets” in forestry and agriculture sectors?

Other sectors may also be affected e.g. infrastructure...

⁵ According to the Smith School of Enterprise and the Environment’s definition (Caldecott, *Stranded Assets in Agriculture: Protecting Value from Environment-Related Risks*, 2013). Carbon Tracker Initiative introduced the concept of stranded assets in the energy sector that they define as “fossil fuel energy and generation resources which, at some time prior to the end of their economic life (as assumed at the investment decision point), are no longer able to earn an economic return (i.e. meet the company’s internal rate of return), as a result of changes in the market and regulatory environment associated with the transition to a low-carbon economy”.

carbon storage by converting natural forests into agricultural plantations or livestock ranches. Besides forestry and agriculture, other sectors may be affected, such as infrastructure or utilities (e.g. large hydro projects).

Energy challenges: demand for non-food biomass adds pressure

Lastly, mounting demand for non-food biomass adds pressure, as the IEA predicts biofuel use could grow from 1.3m barrels of oil equivalent per day (mboe/d) in 2012 to 4.6m boe/d in 2040 (c. 8% of road-transport fuel demand⁶). The first generation of biofuel projects is the most exposed to stranded asset risk, as we gradually shift towards the second generation of biofuels (2G). Climate change also poses physical risks to underlying agricultural production, for example ethanol in Brazil.

The case for land rehabilitation: a powerful climate lever

This sheds light on the unprecedented need for greater action from corporates to support land rehabilitation, thereby yielding multiple broader benefits.

...and energy, as demand for non-food biomass adds pressure

Land rehabilitation key for both climate change mitigation and adaptation

Table 10: Benefits from actions to tackle land degradation through land rehabilitation and restoration

Action	Benefit
Adoption of Sustainable Land Management (SLM)	Up to USD1.4trn in increased global crop production
Restoring even just 12% of degraded agricultural land	Smallholders' incomes boosted by USD35-40bn and 200m people fed annually within 15 years
USD1 invested in watershed protection	USD7.5 to USD200 of cost savings for new water treatment facilities
Restoring the 12m hectares being degraded each year	Cost-efficient sequestration of 10% of global CO2 emissions by 2030

Source: Kepler Cheuvreux, UNCCD

Massive carbon sink potential...

Soil carbon sequestration is set to play a central role in terms of climate impact, as land-use conversions and drainage of organic soils for cultivation make up c. 10% of all GHG emissions, and interestingly (coming on the back of the landmark Paris climate agreement (COP21) reached in December 2015), this has the potential to sequester up to 10% of greenhouse gas emissions by 2030 (source: UNCCD).

...underscores land rehabilitation's role to meet the 1.5-2°C target

To what extent are forestry and landscape degradation factored into country pledges ahead of COP21 (INDCs)? The total targeted contributions of countries (the sum of Intended Nationally Determined Contributions, or INDCs) submitted last year are presumably consistent with a 2.7°C temperature rise by 2100 if fully implemented. While the land use sector is already part of many of the INDCs submitted (land use, land-use change and forestry, or LULUCF is covered by over 80% of communicated INDCs⁷), its contributions have not yet been quantified; nor is it clear that they are ambitious enough to significantly close the emissions gap. In particular, only a third of INDCs have targets to lower gross deforestation rates and few set zero deforestation commitments.

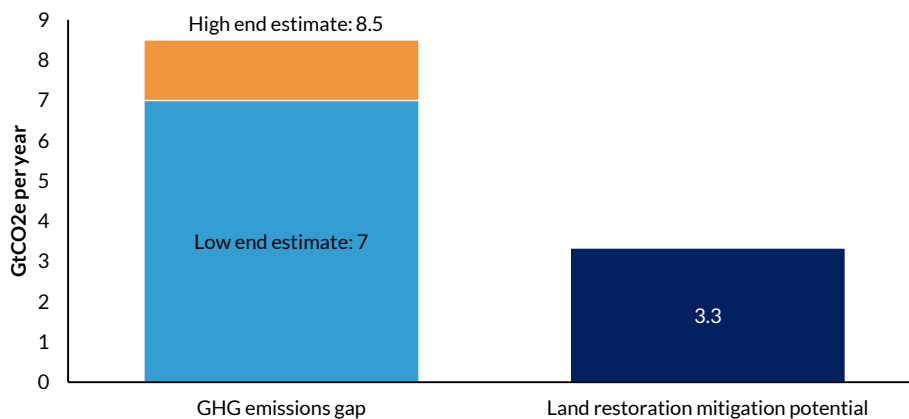
Soil has the potential to sequester over 10% of GHG emissions by 2030

⁶ IEA World Energy Outlook 2014 Factsheet

⁷ The UNFCCC (2015) *Synthesis report on the aggregate effect of INDCs* report states that: "Some of the INDCs contain information specific to LULUCF (Land use, land-use change and forestry) accounting. Many of them, however, do not include comprehensive information on the assumptions and methods to be used in the accounting of emissions and removals from LULUCF. This presents a major challenge in the assessment of the aggregate effect as it represents a major area of uncertainty".

It is therefore crucial to re-emphasise that land rehabilitation and restoration activities can help close the lingering emission gap of 7.0-8.5Gt, shown at COP21, by 3.3Gt, by restoring 12m ha of land annually over a period of ten years (2020-30), an annual mitigation potential of 3.3GtCO₂e could be achieved in 2030 (almost 50%).

Chart 7: GHG emissions gap for meeting the 2°C target (in 2030, in GtCO₂e, on annual basis)



Source: Kepler Cheuvreux, UNEP (GHG emissions gap estimates are based on the assumption that pending INDCs as of 3.7.2015 will have a similar or slightly higher level of ambition than INDCs submitted before this date).

Spotlight on the outlook for agriculture and forestry

Although these figures include all the sectors that drive land rehabilitation measures, GHG emission reductions in the Agriculture, Forestry and Other Land Use sectors (AFOLU) remain particularly critical, as the sector crystallises the synergies between climate mitigation and adaptation needs. Furthermore, agriculture accounts for 70% of biodiversity loss.

Lower deforestation rates drive a slowdown in AFOLU CO₂ fluxes

According to the IPCC Fifth Assessment Report (2014), some recent studies pointed to a reduction in AFOLU CO₂ fluxes driven by lowering deforestation rates. Deforestation, agricultural emissions from soil and nutrient management and livestock constitute the four main drivers of the rise in GHG emissions from the AFOLU sector.

The IPCC predicts a likely reduction in net annual baseline CO₂ emissions from AFOLU, while the underlying sectors could achieve carbon neutrality by 2100 on the back of technological innovation and slowing population growth.

A range of cost-effective climate mitigation levers...

Beyond the demand-side role to achieve AFOLU-related GHG emission reductions (e.g. changing diet, reducing food waste, shaping another kind of demand for wood and forestry products), the most cost-effective GHG mitigation levers by sub-sector are as follows:

- **Forestry:** afforestation, sustainable forest management and curbing deforestation.

Land rehabilitation and restoration activities can help close the lingering emission gap of 7.0-8.5Gt

Deforestation, agricultural emissions from soil and nutrient management and livestock constitute the four main drivers of the rise in GHG emissions from the AFOLU sector

What are the most cost-effective GHG mitigation levers for forestry and agriculture?

- **Agriculture:** cropland management, grazing land management and restoration of organic soils (source: IPCC).

...aligned with climate adaptation needs

Land use modifications that are required to mitigate climate change are by and large concomitant to the steps needed to address agricultural productivity and enhance system reliance (source: FAO). For example, water storage and infiltration can be enhanced via sustainable land management (SLM). Besides, they offer leeway for substantial mitigation at a fairly low cost.

Land use modifications required to mitigate climate change are by and large concomitant with adaptation needs

Table 11: Sectors and sample measures reported in INDCs offering synergies between adaptation and mitigation

Agriculture, forestry and other land-use, including livestock	Human settlements and infrastructure	Energy	Tourism
New crop varieties that allow for a reduction in the use of pesticides and are able to withstand water stress; sustainable land management practices; improved livestock production practices; protection and restoration of forests; afforestation, including of mangroves and drought-tolerant species	Climate-smart and resilient urban centres; waste and storm water management, including treatment	Renewable energy; energy efficiency	Ecotourism

Source: UNFCCC

However, there is less visibility regarding what is needed in relation to the energy sector, with substantial uncertainties largely explaining the lack of consensus regarding the most adequate level of biomass rollout within the energy system (electricity, liquid fuels, hydrogen, and/or heat).

Need for a paradigm change that values all sorts of land uses

Despite the breadth of solutions, it strikes us that, to date, land-based mitigation debates and action have been chiefly focused on forests (e.g. REDD, CDM aff/reforestation, etc.) while the mitigation and sequestration potential of other kinds of land uses and the role of land rehabilitation across all economic sectors have been largely neglected (e.g. in tourism, extractives, infrastructure, utilities, etc.). In our view, a paradigm change is needed to fill this gap, in which land takes centre stage.

Two land-related levers: land footprint cut and land rehabilitation

First, these mitigation levers need to be put in the context of forecasts concerning the reduction of the land footprint (e.g. by de-growth, reducing waste and consumption patterns, etc.), i.e. action on the “demand-side”, which should be distinguished from land rehabilitation, i.e. action on the “supply-side” of the land market, although they are complementary options:

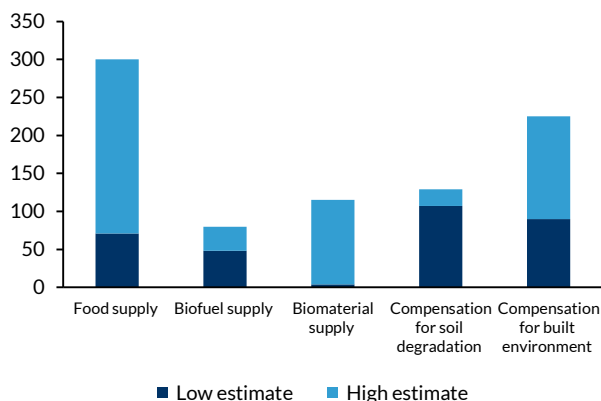
1. **What’s the potential to lower land use expansion?** While global cropland expansion (demand that cannot be offset by boosting yields) is set to be primarily driven by growing food supply, biomaterials and biofuels, note that the cumulated potential savings can only cap gross expansion at an additional 8-37% until 2050. In particular, investment programmes to regenerate degraded soils could drive a 30-47Mha reduction in savings.

Less visibility on what is needed in relation to the energy sector

The mitigation and sequestration potential of other sort of land uses and land rehabilitation role across all economic sectors has been largely neglected

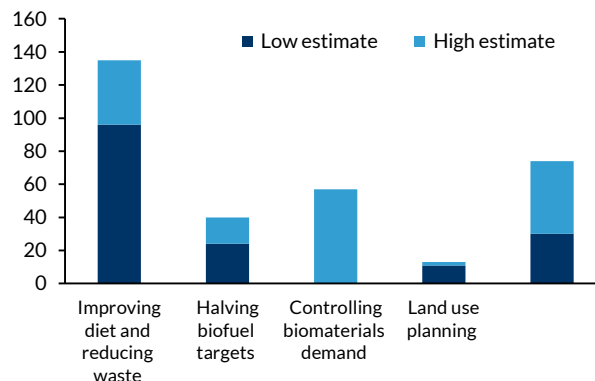
Cumulated potential savings can only cap gross land expansion to an additional 8-37% until 2050

Chart 8: 2005-50 BaU expansion of global cropland (Mha)



Source: UNEP, Kepler Cheuvreux

Chart 9: Improved consumption & land mgmt. savings (Mha)



Source: UNEP, Kepler Cheuvreux

- What's the value of land rehabilitation?** The UNEP stresses that investing in restoration of degraded land is a critical measure to save up to 319m ha of land by 2050. A growing wealth of evidence underpinned by in-depth case studies has emphasised that the cost of action (investing in Sustainable Land Management) considerably outweighs the cost of inaction, with the adoption of SLM enabling environment holding a potential USD75.6trn a year (source: ELD).

How to seize this global restoration potential?

In order to unlock this potential, at least 2bn ha of total degraded land globally is deemed suitable for rehabilitation⁸ (source: UNCCD, WRI), predominantly in developing markets (Charts 10 and 11).

How to break down the patchwork of areas

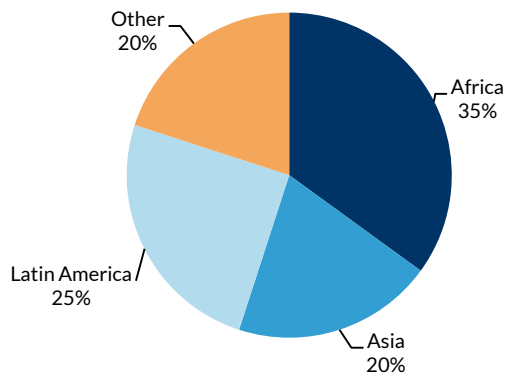
This number covers various types of areas and opportunities (wide-scale, mosaic or remote restoration, etc.). These conversions can also be expressed through a zoning approach, as developed by Commonland, which breaks them down into natural zones (restoring biodiversity, hydrology and topsoil); eco-agro mix zones (restoring ecology with productive species); and economic zones (agriculture and real estate).

A growing wealth of evidence suggests that the cost of action (investing in SLM) considerably outweighs the cost of inaction

2bn hectares of degraded land globally are deemed suitable for rehabilitation

⁸ Considerable discrepancies exist between global estimates of land degradation (see Mapping the world's degraded lands, Gibbs & Salmon, 2015). A study by Cai et al. in 2011 estimated that 1bn ha of land are degraded or abandoned. However, it excluded non-agriculture degradation. The 2bn ha figure first emerged in UNEP's Global Assessment of Soil Degradation (GLASOD) in 1990, as representing the total human-induced land degradation since 1945. Despite its methodological weaknesses and data limitations, it has been widely used. 2bn ha is consistent with the figure presented in the WRI paper on restoration opportunities ([link](#)).

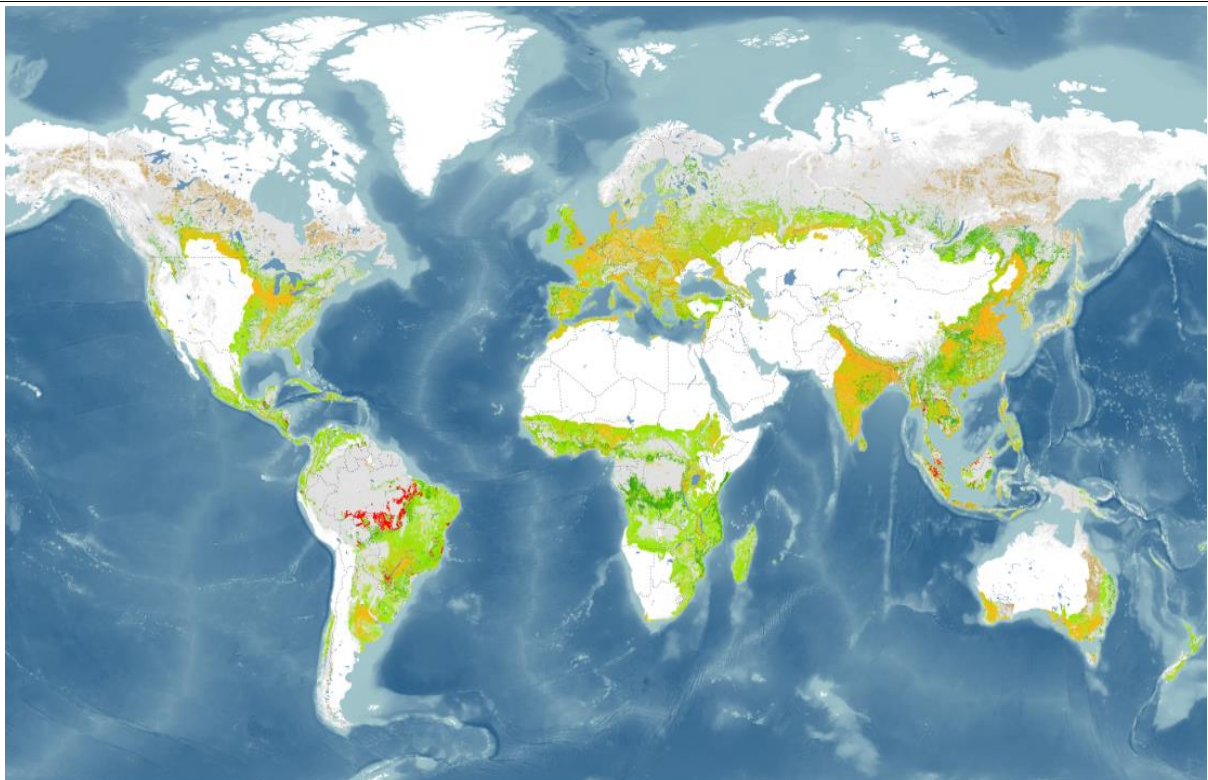
Chart 10: Landscape restoration opportunities



Source: WRI, IUCN, GPFLR

The WRI & IUCN mapping of opportunities for forest and landscape restoration illustrates the potential of technology to track and analyse impacts worldwide via satellite, maps, etc.

Chart 11: Opportunities for forest and landscape restoration



FOREST AND LANDSCAPE RESTORATION OPPORTUNITIES

- Wide-scale restoration
- Mosaic restoration
- Remote restoration

OTHER AREAS

- Agricultural lands
- Recent tropical deforestation
- Urban areas
- Forest without restoration needs



Source: IUCN, WRI (Restoration Assessment Methodology)

Various ways to counter the downward spiral of land degradation

We can group the restoration opportunities presented by deforested degraded lands into four broad categories.

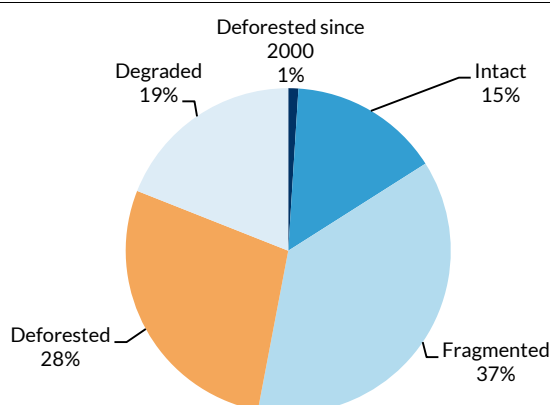
Table 12: Restoration opportunities

Categories	Description
Deforested and degraded forest lands	
Wide-scale restoration	Fewer than ten people per sq km and potential to support closed forests.
Mosaic restoration	Moderate human pressure (between 10 and 100 people per sq km)
Remote restoration	Very low human pressure (density of less than one person per sq km within a 500km radius)
Forests without restoration needs	Intact forests
Other former forest lands	
Agricultural land	Croplands with intensive usage for food production
Recent tropical deforestation	Loss of humid tropical forest between 2000 and 2005
Urban areas	Densely populated and industrialised areas

Source: WRI

“Degraded land” in particular (c. 19% of land restoration opportunities) is defined as “areas that have had their natural forest cover cleared or significantly diminished, and now contain low levels of biodiversity and low stocks of carbon (below 40 tonnes per ha)”.

Chart 12: Land restoration opportunities



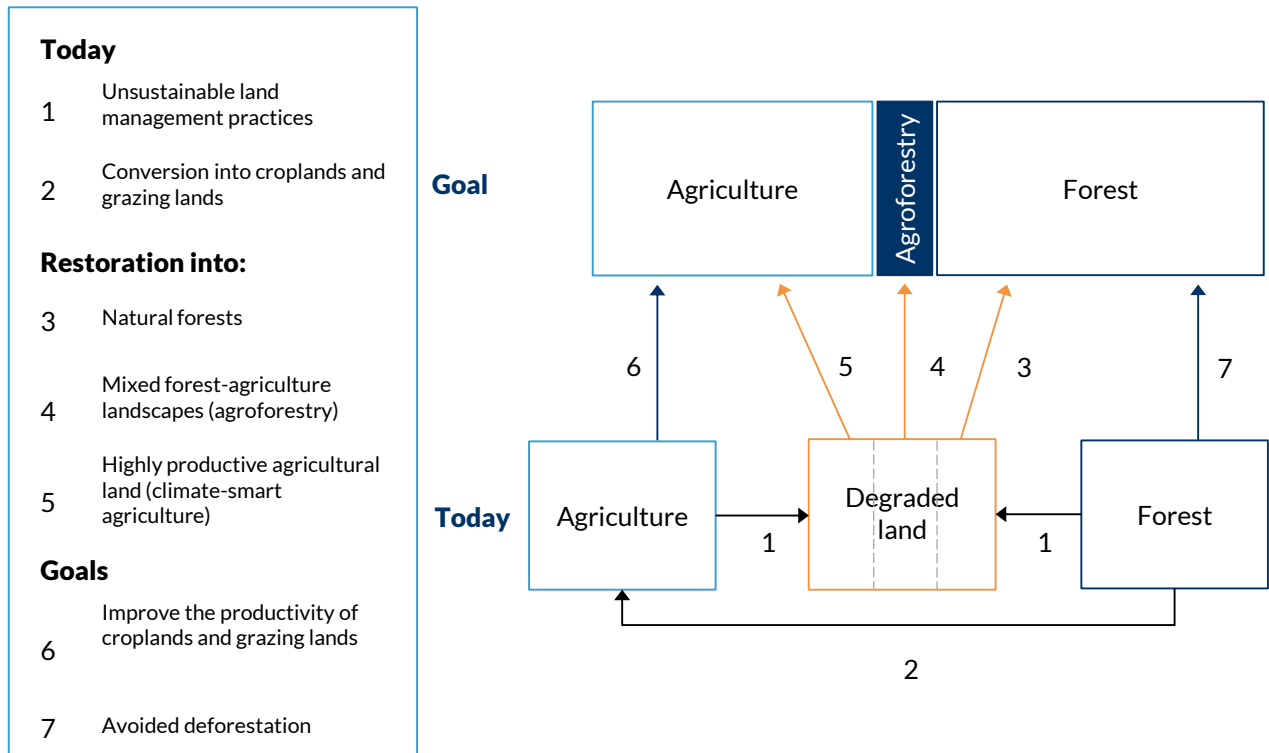
Source Laestadius et al. (forthcoming). The Carbon Potential of Forest Landscape Restoration. Washington DC: World Resources Institute

Land rehabilitation opportunities are spread across sectors

There is a range of mutually complementary land rehabilitation options that are relevant across these types of restoration opportunities, regions and multiple sectors, including, but not limited to, AFOLU, encompassing, among others, climate-smart agriculture, restoration and avoided deforestation. For instance, hybrid forest-agriculture (crops, livestock) is suitable for a certain share of degraded lands that can be restored into landscapes through agroforestry models (option 4 in the following chart, which focuses on agriculture and forestry).

A range of mutually complementary land degradation mitigation options, relevant across all sectors, including, but not limited to, AFOLU

Chart 13: Dynamics of land use change (illustration in agriculture and forestry)



Source: WRI; IUCN

Towards land degradation neutrality

Against this backdrop, an array of complementary international initiatives (e.g. Bonn Challenge, New York declaration on Forests, UNCCD) has gathered momentum to prop up the case for land degradation neutrality (LDN). LDN refers to an economy whereby the amount of healthy and productive land resources necessary to support ecosystem services remains stable or increases. It involves two complementary options: 1) curbing the degradation of land; 2) restoring and rehabilitating land that has been degraded.

More importantly, land degradation neutrality (LDN) is a crucial cross-cutting objective that aims to enhance actions to jointly tackle water, deforestation, biodiversity and soil issues through a 'landscape approach', reflecting the much-repeated need for a more systemic and holistic view encompassing all natural resources. Our tentative country risk mapping highlights that recent catastrophes in high-risk and impact markets (drought in Brazil and forest fires in Indonesia, respectively) have further reinforced the sense of emergency related to deforestation in particular.

Land Degradation Neutrality's (LDN) inclusion among the UN Sustainable Development Goals (SDGs) agreed by UN member states in September 2015 marked a clear milestone towards an international governing body and guidelines for coordinated action on land, which is in turn galvanising countries and businesses actions.

Strong policy momentum to unlock this opportunity

Introducing the Land Degradation Neutrality (LDN) vision

The UNCCD COP12 conference that took place on 12-23 October 2015 endorsed the following definition of Land Degradation Neutrality (LDN): "a state whereby the amount and quality of land resources necessary to support ecosystem functions and services and enhance food security remain stable or increase within specified temporal and spatial scales and ecosystems". To put it differently, the member states expressed their support to the objective of LDN which basically refers to accelerating two types of complementary actions: 1) curb the degradation of land; 2) restore and rehabilitate land that has been degraded.

Complementary international initiatives are piling up...

While it was initially framed during the UN Conference on Sustainable Development (Rio+20), a flurry of supportive international initiatives developed since then (in particular the Bonn Challenge, Initiative 20x20 and the New York declaration on forests - a political declaration that is not legally binding) have propelled the concept and ambition that prompted 52 companies and investors to step up their contribution to deforestation. They jointly target 350m ha of restored land by 2030.

This progress is also mirrored in the setting of ambitious regional targets, such as the EU's commitment to end natural forest loss by 2030.

The objective of LDN is to maintain or even improve the amount of healthy and productive land resources over time

The LDN vision has been propelled by a flurry of international initiatives, e.g. the Bonn Challenge, Initiative 20x20 and the New York declaration on forests

Table 13: International Initiatives to address deforestation and land degradation

Initiative	Launch	Description	Quantitative target	Timeframe	Cost (USDbn)	On track	Scope	Companies directly involved
4X1000	COP 21 in Paris December 1 2015	Voluntary action plan under the Lima-Paris Action Agenda (LPAA) aggregating multi-partner (state and non-state players) actions via an online platform and supporting an international research and scientific cooperation programme. A 4/1000 annual growth rate of the soil carbon stock intends to show that even a small increase in the soil carbon stock (agricultural soils, notably grasslands and pastures, and forest soils) is crucial to improve soil fertility and agricultural production and to contribute to achieving the long-term objective of limiting the global temperature increase to +1,5-2°C.	No	na	na	na	Global	Yes
AFR100 (African Forest Landscape Restoration Initiative)	COP 21 in Paris December 6 2015	Pan-African, country-led effort to boost land restoration	Restoration of 100m hectares		USD1bn (development finance) and >USD540m (private sector impact investment)	31.7 committed	Africa	n.a.
SDGs	UN summit on 25 - 27 September 2015	15.3 By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world"		2015-30	4780	na	Global	Somewhat
Initiative 20x20	COP 20 in Lima in December 2014	Country-led effort to support the Bonn Challenge.	Restoration of 20m hectares of land in Latin America and the Caribbean by 2020	2020	na	na	Latin America and the Caribbean	No
New York declaration on forests	Dec-14	Non-legally binding political declaration. The associated voluntary action agenda gives guidelines to achieve these goals.	Cut in half loss of natural forests globally by 2020 and end natural forest loss in 2030.	2014-30	837	Mixed	Global	Yes
UNFCCC REDD+ goal	COP 13, Bali, Indonesia, 2013	Vehicle to financially reward developing countries for their verified efforts to reduce emissions and enhance removals of greenhouse gases through a variety of forest management options. There are certain aspects that go beyond this basic philosophy but in essence REDD+ is no more than a set of guidelines on how to report on forest resources and forest management strategies and their results in terms of reducing emissions and enhancing removals of greenhouse gases		na	na		Global	No
Rio+20 land degradation neutrality goal	Rio+20, Rio, Brazil, 2012	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss		na	na		Global	No

Continued on next page

International Initiatives to address deforestation and land degradation....continued

Initiative	Launch	Description	Quantitative target	Timeframe	Cost (USDbn)	On track	Scope	Companies directly involved
Bonn Challenge	Government of Germany and IUCN in 2011	Aimed at facilitating the implementation of various international commitments including the UNFCCC REDD+ goal. This could also help to sequester an additional 1 GtCO ₂ e per year, reducing the current emissions gap by 11-17%.	Restoration of 150m hectares (m/ha) of deforested and degraded lands by 2020	2011-20	359	Yes: 42% of the target has been committed	Global	No
CBD Aichi Target 15	COP 10 in Nagoya, Aichi, 2010	The Convention on Biological Diversity (CBD), known informally as the Biodiversity Convention, is a multilateral treaty. The convention recognised for the first time in international law that the conservation of biological diversity is "a common concern of humankind" and is an integral part of the development process. It links traditional conservation efforts to the economic goal of using biological resources sustainably. Importantly, the Convention is legally binding; countries that join it ('Parties') are obliged to implement its provisions.	By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including the restoration of at least 15% of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	na	na	Low confidence of meeting target	Global	No
Atlantic Forest (Pacto Mata) Restoration Pact	2009	Multistakeholder ecological restoration programmes focused on Brazil's Atlantic Forest	Restoration of 15m hectares of the forest	2050	na	na	na	na

Source: UN, UNFCCC, Bonn Challenge, CBD, FAO, UNCCD

...catalysing business pledges, notably on supply chain improvements

Meanwhile, businesses pledges to help achieve zero net deforestation⁹ by 2020 were mulled in the context of industry-led initiatives such as The Consumer Goods Forum that encompass both producers & retailers.

Mainstreaming the 'landscape approach'

Upside of the landscape approach...

While current efforts are largely deemed insufficient, there is mounting consensus that a new approach is needed to take deforestation pledges to the next level and scale up existing local and scattered actions. This need is reflected in the LDN objective that follows fundamentally a landscape approach. That means it strives through a holistic approach to reconcile all possible responsible land use (agriculture, livestock management, agroforestry, etc.), i.e. sustainable land management, alongside services (biodiversity, food, water, etc.) derived from land.

The growing momentum for the adoption of landscape approaches comes from the recognition that biodiversity, soil and water have to be tackled simultaneously. For example, the impact of carbon sequestration related to eucalyptus plantations should not overlook the fact that these plantations require substantial amounts of water and may lead to conflict with communities during dry periods.

...and sustainable land management (SLM) as a cornerstone

LDN can be reached through: 1) sustainable land management (SLM); 2) land rehabilitation; and 3) land restoration. SLM (ways to manage land in a way that avoids degradation) supports both land restoration and rehabilitation, and its adoption could deliver up to USD1.4trn in increased crop production (source: ELD).

LDN results from mounting evidence that a new approach is needed to address holistically natural capital challenges

Adoption of sustainable land management (SLM) could deliver up to USD 1.4trn in increased crop production

Table 14: Key concepts: challenge, target and solutions

The challenge	
Land degradation	Any reduction or loss in the biological or economic productive capacity of the land caused by human activities, exacerbated by natural processes, and often magnified by the impacts of climate change and biodiversity loss
The targets	
Land degradation neutrality	State where the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or is increasing.
The solutions	
Sustainable Land Management (SLM)	Land-use practices that ensure that land, water, and vegetation adequately support land-based production systems for both current and future generations. SLM aims to enhance the economic and social wellbeing of affected communities, sustain ecosystem services and strengthen adaptive capacity to manage climate change. If SLM is not enough and land becomes degraded (or is degraded already), rehabilitation and restoration can be implemented.
Land restoration	Restoration is a process that initiates or accelerates the recovery of a degraded terrestrial ecosystem with respect to its health, integrity and sustainability. Land restoration aims to return an area of land to a close approximation of its condition prior to disturbance.
Land rehabilitation	Rehabilitation is a process aiming to regenerate the capacity of the land to provide a certain range of ecosystem goods and services. Land rehabilitation does not necessarily return the land to its pre-disturbance conditions. N.B. The difference between restoration and rehabilitation lies in the final outcome: it is only fully returned to its state prior to land degradation in the case of restoration.

Source: UNCCD, Kepler Cheuvreux

⁹ "Zero Net deforestation" can be distinguished from "zero deforestation", which means no deforestation anywhere. "Zero net deforestation" acknowledges that some forest loss could be offset by forest restoration (WWF, 2009). In practice, companies commitments tend to adopt a general agreement to address zero gross rather than zero net deforestation (CIFOR, 2015).

A pivotal role to advance international sustainability goals

Mounting pressure on the back of the SDGs and climate summits...

Most importantly, aside from elements included in the Paris Agreement (COP21), land degradation neutrality (LDN) has become a global target by joining the milestone list of the Sustainable Development Goals, or SDGs, at the conference in New York that took place on 25-27 September 2015. The related target on land degradation lays it out explicitly: “15.3: By 2020, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation-neutral world.”

Land degradation Neutrality (LDN) has become a global target by joining the list of the SDGs

Table 15: Sustainable development goals (SDGs)

Goal 1	End poverty in all its forms everywhere
Goal 2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3	Ensure healthy lives and promote well-being for all at all ages
Goal 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5	Achieve gender equality and empower all women and girls
Goal 6	Ensure availability and sustainable management of water and sanitation for all
Goal 7	Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9	Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
Goal 10	Reduce inequality within and among countries
Goal 11	Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12	Ensure sustainable consumption and production patterns
Goal 13	Take urgent action to combat climate change and its impacts
Goal 14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17	Strengthen the means of implementation and revitalise the global partnership for sustainable development

Source: UN

Fundamentally, LDN also supports and relates to a range of other SDGs, notably Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) and Goal 12 (Ensure sustainable consumption and production patterns).

Fundamentally LDN also supports and relates to a range of other SDGs

Chart 14: Roles and interlinkages of soils and land in the SDGs



Source: IASS

...that translates into country targets...

In October 2015, the UNCCD COP12 registered widespread support for LDN by many countries, who are now expected to work towards the identification of relevant national targets, policies, measures and roadmaps towards compliance with this international goal (several LDN Project country Reports have been released, showing how the LDN concept can be put into practice, e.g. Algeria, Chile, Turkey).

...and sizeable projects in the pipeline

Specifically, there are already numerous country-led projects with scaling potential (millions of hectares) and the likely adaptation of the LDN target by countries is set to foster many more.

Future land degradation metrics

A new set of progress indicators has been developed for the forthcoming reporting of the UNCCD. These indicators were approved by UNCCD COP12 and will be compiled by the Secretariat for all countries and published for validation in 2017.

Countries are expected to adopt it in their national agenda

A new set of progress indicators has been developed for the forthcoming reporting of the UNCCD

“Proportion of land that is degraded over total land area” is emerging as the key indicator. Three sub-indicators adopted by the UNCCD would help derive the indicator in the context of national reporting and data capacities:

- Tier 1: Trends in land use/cover.
- Tier 2a: Trends in land productivity.
- Tier 2b: Trends in soil organic carbon stocks.t

A technical guidance document with more details is expected to be released by this group of experts in mid-March. On the basis of these indicators, countries should be able to set LDN targets. These indicators relate to the state and consequences of land degradation. They may be complemented by data on the drivers, in order to inform targeted action. These could be nitrogen deposition, climate change, and land fragmentation.

Do countries’ pledges add up?

Globally, negative trends in one country cannot be offset by a positive one in another, as each country has a responsibility to be land-degradation neutral. This means each country will develop its own policies and reporting systems to measure base lines (e.g. using land degradation levels at the starting point) and the status and trends in their country.

Country land use profiles: a tentative mapping

How to rank countries’ Land Degradation Neutrality (LDN) profiles? Ultimately, a comprehensive perspective encompassing all sectors and LDN metrics is needed to appreciate the key characteristics of countries, yet data are currently particularly scarce when looking beyond forestry and climate change. Pending further data reported by countries on land degradation specifically, we have focused on the main trends reflected in existing metrics related to land-use change and forestry¹⁰.

What role for land-use change and forestry?

The following table displays data on GHG emission from land use change and forestry for a selection of countries, illustrating the spectrum of profiles. It focuses on the influence of Land-Use Change and Forestry on GHG emissions, and answers the following question: are Land-Use Change and Forestry positive or negative drivers for the countries’ GHG emissions?

Policies versus deforestation and unsustainable land use

We have used Global forests 500 findings that do cover a number of related country pledges and regulatory elements such as zero deforestation policies in its assessment of jurisdictions and help get a sense of leaders/laggards. This high-level ranking is for example based on countries that have endorsed the New York Declaration of Forests and demonstrated evidence of initiatives in the field.

¹⁰ Hence the approach developed here holds substantial caveats. Some of these gaps may be filled by complementing with other studies focused on related drivers of land degradation, such as the threats to natural habitats brought about by sector risks of land conversion e.g. urban expansion, agricultural expansion, extractives (Oakleaf, 2015). High risks regions (substantial shifts in land conversion) include among others Southern and Western South America, Central and Eastern Africa, and the Central Rocky Mountains of North America.

“Proportion of land that is degraded over total land area” is emerging as the key indicator.

Each country has a responsibility to be land-degradation neutral

How to rank countries’ Land Degradation Neutrality (LDN) profiles?

Flagging leaders and laggards

Globally, Land-Use Change and Forestry lifts global GHG emissions by 6.2%, which represents 2.8GtCO₂e per year.

At a local level, Land-Use Change and Forestry display various degrees of impacts on GHG emissions. Brazil (where annual deforestation rates have roughly stabilised at around 5-7ksqkm a year since 2010) and Indonesia constitute the two main contributors of Land-Use Change and Forestry-driven GHG emissions based on Global Forest Watch data. Both countries show high GHG emissions with a high proportion of emissions from Land-Use Change and Forestry.

This is reflected in the prominence of land management issues in their INDCs, yet we understand that their commitments with regards to land could be more ambitious: 1) Brazil, although generally praised for its action on deforestation, has only committed to eradicate “illegal deforestation”; 2) Indonesia is facing scrutiny on how it aims to tackle forest and peatland fires. In addition, natural catastrophes may trigger sharp hike in GHG emissions e.g. 1.6bnmtCO₂e as a result of this year’s fire in Indonesia.

Brazil and Indonesia are the two main contributors of Land-Use Change and Forestry-driven GHG emissions

Chart 15: Indonesia’s 2015 forest fires in peatlands



Source: Guardian (Photograph: Ardiles Rante/Greenpeace)

Chart 16: Deforestation for cattle ranching in Brazil



Source: The Nature conservancy (photo: Haroldo Palo JR)

The examples of Brazil and Indonesia contrast with the examples of China, Germany, India, Japan, Russia and the US, where Land-Use Change and Forestry appear to be significantly mitigating GHG emissions.

Table 16: Tree cover, GHG emissions from land-use change and forestry – by country

Data/Time Frame	2000	2001-13	2001-12	2011	2010	2012	2012						
	Tree cover, MHa	Tree cover loss, Ha	Tree cover gain, Ha	Economic value of the forestry sector, USDbn	Economic value of the forestry sector, %GDP	Carbon stocks in forest biomass, m tonnes	Total GHG Emissions Excluding Land-Use Change and Forestry (MtCO ₂ e)	Influence of Land-Use Change and Forestry on GHG Emissions (CAIT)	New York declaration on forests	CBD	UNFCCC	UNCCD	Forest 500 scoring
Australia	42	2,948,911	1,414,572	7.7	0.9%	na	648	5.7%	No	Ratification	Annex I/II Party	Ratification	-
Bhutan	3	12,366	2,159	0.07	3.8%	336	1	-994.5%	No	Ratification	Non-Annex 1 Party	Accession	-
Bolivia	65	3,156,983	173,608	0.43	2.2%	4,442	46	196.5%	No	Ratification	Non-Annex 1 Party	Ratification	3
Brazil	519	35,757,707	7,586,752	22.5	1.1%	62,607	1,013	80.1%	No	Ratification	Non-Annex 1 Party	Ratification	4
Cameroon	31	494,687	65,088	0.7	2.8%	2,696	81	135.7%	No	Ratification	Non-Annex 1 Party	Ratification	3
Canada	418	28,389,161	9,107,233	19.8	1.2%	13,908	714	19.9%	Endorser	Ratification	Annex I/II Party	Ratification	-
China	163	6,389,554	2,238,877	126	1.6%	6,203	10,975	-2.7%	No	Ratification	Non-Annex 1 Party	Ratification	-
Congo, Dem. Rep.	199	6,719,777	1,392,572	0.09	0.6%	19,639	36	455.0%	Endorser	Ratification	Non-Annex 1 Party	Ratification	3
Finland	22	2,093,856	1,084,872	9.6	4.3%	832	64	9.0%	No	Acceptance	Annex I/II Party	Ratification	-
France	17	773,824	506,164	14.6	0.6%	1,208	457	-5.5%	Endorser	Ratification	Annex I/II Party	Ratification	-
Germany	13	496,366	258,493	26.1	0.9%	1,405	887	-8.7%	Endorser	Ratification	Annex I/II Party	Ratification	4
India	39	893,721	255,029	31	1.7%	2,800	3,014	-4.2%	No	Ratification	Non-Annex 1 Party	Ratification	-
Indonesia	161	16,884,670	6,970,546	14	1.7%	13,017	761	160.4%	Endorser	Ratification	Non-Annex 1 Party	Ratification	3
Iran	2	3,394	1,136	1.2	0.2%	258	715	-0.4%	No	Ratification	Non-Annex 1 Party	Ratification	-
Japan	26	445,960	257,182	39	0.7%	na	1,345	-10.2%	Endorser	Acceptance	Annex I/II Party	Ratification	-
Korea, Rep. (South)	5	132,167	27,177	8.2	0.8%	268	693	-4.6%	Endorser	Ratification	Non-Annex 1 Party	Ratification	-
Liberia	9	579,691	108,378	0.16	15.2%	585	2	883.2%	Endorser	Ratification	Non-Annex 1 Party	Accession	-
Malaysia	29	5,109,081	2,579,982	5.7	2.0%	3,212	288	50.4%	No	Ratification	Non-Annex 1 Party	Ratification	3
Mexico	53	2,414,392	633,320	7	0.6%	2,043	724	3.5%	Endorser	Ratification	Non-Annex 1 Party	Ratification	3
Nigeria	10	375,619	60,316	1	0.4%	1,085	297	60.1%	No	Ratification	Non-Annex 1 Party	Ratification	2
Norway	12	382,784	172,935	2.4	0.6%	395	48	-50.1%	Endorser	Ratification	Annex I/II Party	Ratification	-
Papua New Guinea	43	684,803	230,722	0.36	2.8%	2,306	14	630.8%	No	Ratification	Non-Annex 1 Party	Ratification	2
Paraguay	24	4,130,658	51,023	0.57	2.4%	na	37	201.1%	No	Ratification	Non-Annex 1 Party	Ratification	3
Russian Federation	761	37,216,190	16,229,621	13.1	0.8%	32,500	2,322	-2.9%	No	Ratification	Annex I Party	Accession	-
Saudi Arabia	6	0	0	2.7	0.4%	6	527	0.0%	No	Accession	Non-Annex 1 Party	Accession	-
Serbia	3	27,896	35,578	0.4	1.1%	240	56	-133.8%	No	Ratification	Non-Annex 1 Party	Accession	-
Sweden	28	2,749,971	1,528,094	13	3.0%	1,255	54	-41.8%	No	Ratification	Annex I/II Party	Ratification	-
United Kingdom	4	293,639	211,126	9.5	0.4%	136	553	-0.5%	Endorser	Ratification	Annex I/II Party	Ratification	-
United States	279	27,307,052	13,807,357	95	0.6%	19,308	6,235	-6.6%	Endorser	Non-Party	Annex I/II Party	Ratification	-

Source: Global Forest Watch (N.B. Deforestation trends are hard to assess based on tree cover gain and loss data and there are material differences between FAO's Global Forest Resource Assessment and the Global Forest Watch results. Tree Cover Gain and loss

are not to be compared without caution, for different reasons. First, they are not calculated for the same time frame. Second, the natural tree cover representing a major part of the tree cover loss does not have the same characteristics as the artificial tree cover

gain which represents offsetting efforts and a significant part of the tree cover gain. Beyond that, there is still much debate around the most appropriate definition of forestry, with for example certification standards' definitions (e.g. RSPO for palm oil) often

deemed too generous

How to finance sustainable landscapes

Given that an estimated USD2bn is needed every year to support land restoration activities, it is manifest that existing scattered public funds are insufficient to cope with the challenge. Accordingly, a range of private equity impact investing funds focused on Sustainable Land Management (SLM) and land rehabilitation (e.g. Althelia, The Moringa Partnership, Permian Global, SLM Partners) have paved the way by providing an increasing wealth of evidence that there are numerous large-scale bankable projects available to make the transition to Land Degradation Neutrality (LDN).

Therefore, the UNCCD-led project to create a global Land Degradation Neutrality (LDN) impact investing fund is set against the backdrop of a growing consensus that a large-scale private investor-driven and multi-stakeholder initiative focused on a landscape approach is crucially needed to foster all existing actions.

In such a context, we see the deal reached at COP21 as significantly supportive to the role of forests and natural ecosystems in international, regional and national financial mechanisms. That said, as usual, the devil is in the details and we are still far from seeing carbon markets playing a pivotal role in the uptake of land restoration.

Seizing land rehabilitation impact investment opportunities

Massive financing needs to meet Land Degradation Neutrality (LDN)

In terms of public financing, initial support to achieve Land Degradation Neutrality (LDN) is provided by the Ankara Initiative, valued at USD5m together with USD3m to be sourced from the Global Environment Facility¹¹ (GEF), one of the numerous existing public financing mechanisms that are well-placed to back up the LDN target. In parallel, a range of public-led financial instruments (e.g. the EUR100-125m European Investment Bank Natural Capital Financing Facility) are making inroads.

***An estimated USD2bn
is needed every year
to support the actual
restoration activities***

¹¹ The Global Environment Facility (GEF) was established on the eve of the 1992 Rio Earth Summit, to help tackle the planet's most pressing environmental problems. Since then, the GEF has provided over USD14bn in grants and mobilized in excess of USD70bn in additional financing for more than 4,000 projects. The GEF has become an international partnership of 183 countries, international institutions, civil society organisations, and private sector to address global environmental issues. The GEF serves as a financial mechanism for the following conventions: Convention on Biological Diversity (CBD), United Nations Framework Convention on Climate Change (UNFCCC), Stockholm Convention on Persistent Organic Pollutants (POPs) UN Convention to Combat Desertification (UNCCD) Minamata Convention on Mercury. The GEF, although not linked formally to the Montreal Protocol on Substances That Deplete the Ozone Layer (MP), supports the implementation of the Protocol in countries with economies in transition (source: GEF).

As an estimated USD2bn is needed every year to support the actual restoration activities, there is a clear sense that the private sector also has a key role to play in contributing to this target, particularly considering the momentum for impact investing¹².

Private sources of financing and impact-driven investors

We believe these numbers concerning investment needs are worth putting in the context of impact investing and related markets estimates that help size the rising amount of private capital oriented towards projects with both financial and sustainability impacts objectives, including those relevant for the LDN achievement (see table below):

1. **Conservation finance:** A 2014 survey by Credit Suisse stressed the USD220-300bn theoretical conservation private investment needs, underlining massive potential uptake in funding for conservation programs to protect ecosystems. Total flows to conservation projects amount to USD52bn, according to Credit Suisse (of which private investments of USD10.4bn, including USD6.5bn for commodities and USD3bn for offset markets).
2. **Impact investing:** While agriculture represented a mere 5% of total impact investment AUM in the latest GIIN/JPMorgan Impact investing survey (USD3bn), it is also reportedly the most dynamic area in terms of number of respondents looking to increase their allocation.
3. **Green bonds:** there are up to USD4.2bn in outstanding bonds relevant to the AFOLU sector (source: CBI, HSBC) while a clearer definition of eligibility criteria as part of the CBI AFOLU standard could prop up the market. Two noteworthy developments:
 - In late February, Sveaskog, which sells sawlogs, pulpwood and biofuel, became the first 'pureplay' forestry company to issue a green bond (SEK1bn).
 - Efforts to build a standard for green bonds that enable deforestation to be curbed are being implemented in Mato Grosso, Acre and San Martin as part of a joint project with Global Canopy Programme called Unlocking Forest Finance of which CBI is a partner (funded by the German government; [link](#))
4. Current and future **forests and land restoration** investments are expected to jump from USD10bn to USD35-300bn in 2030 based on some rough estimates (source: FAO, WRI).
5. **Natural resources** investors' commitment to increase capital allocation (source: Prequin Investor survey, June 2015).

Rising amount of private capital oriented towards projects with both financial and sustainability impacts objectives linked to the LDN target

¹² Impact investments are defined as investments made in companies, organisations, and funds with the intention of generating a social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending upon the circumstances (source: GIIN; [link to the full definition](#)). Beyond the variety of investments involved, the definition of impact investing is subject to debate about the most appropriate associated terminology being used in different contexts and markets (e.g. "social impact investing", "investing for impact and competitive returns"). Characteristics and drivers for impact investing, possible differences and nuances between asset classes, and with ESG, SRI, Responsible Investing strategies and asset classes are further addressed in our December 2013 report *Investors' Impact Integrated = I3* ([link](#)).

Table 17: Impact investing and related markets estimates relevant for investments in landscape restoration

Source	Scope	Market	Details
Impact investing and Green bonds			
GSI Alliance	Impact Investment globally	USD109bn	2014 study collating the results from the market studies of regional sustainable investment forums
Eurosif	Impact Investment in Europe	EUR20.3bn	SRI study 2014
JPMorgan, GIIN	Impact Investing (2015 survey)	USD12.2bn	Impact Investment 2015E commitments
Climate Bonds Initiative	Labelled Green Bonds universe	USD65.9bn	2015 study. Labelled green bonds earmark 100% of the proceeds of the bond sale for projects or assets that fit within the Climate Bonds Taxonomy.
Impact and Green bonds markets related to AFOLU sectors			
Credit Suisse, WWF, McKinsey&Company	Conservation private investments as of 2014	USD10bn	Taking annual global conservation needs to be USD300-400bn, and assuming current governmental and philanthropic conservation efforts were to roughly double to USD100bn per year, a gap of USD200-300bn would remain. This corresponds to around 1% of total private sector annual investments globally.
	Conservation private investments needed	USD220-300bn	
EKO Asset Management Partners, JPMorgan Chase, The Nature Conservancy, the David and Lucile Packard Foundation, and the Gordon and Betty Moore Foundation	Private capital flows to conservation impact investments in 2009-2013	USD1.9bn (26% CAGR)	Of the 2009-13 total, investors committed 66% to sustainable food and fibre production, 23% to habitat conservation, and 11% to water quantity and quality conservation. The large majority of the private investments reported were made in projects located in the US and Canada (USD1.6bn, 82%), likely due to the heavily US-based survey population. Investments in sustainable food and fibre production predominated in both developed and emerging markets. Sustainable forestry and sustainable agriculture accounts for the majority of total committed capital within sustainable food and fibre production.
	Private investors planned commitments in conservation impact investments in 2014-2018	USD5.6bn (30% CAGR)	
JPMorgan, GIIN	Total AUM in Food & Agriculture (2015 survey)	USD3bn	It does not capture some forestry, land conservation, sustainable agriculture reported investments. Only four respondents reported real estate or real assets (agricultural, forest, land, ranch)
Climate Bonds Initiative	AFOLU in the Climate-aligned bonds universe	USD2.3bn	Sustainable forestry, meaning the cultivation of certified forests, accounted for 82% of this theme. A secondary theme is sustainable paper production with 11%. This area remains largely untapped.
	AFOLU in the labelled Climate bonds universe	USD0.3bn	Climate Bonds Standard for agriculture, land use and forestry is under development and will guide issuers in the area on how to issue climate-aligned bonds.

Source: Organisations cited above, Kepler Cheuvreux

Significant funding gaps remain for land rehabilitation

Private funds fostering Sustainable Land Management and land rehabilitation (e.g. Althelia, Moringa, Permian Global, SLM Partners; see table below) provide an increasing wealth of evidence showing bankable projects for transitioning to LDN can deliver strong social and environmental benefits alongside market average or above-average financial returns, with a mix of public and private capital.

Are land protection and restoration equally covered? While some progress has been made in terms of the protection of landscapes, efforts specifically relating to restoration attract a growing interest but are scattered and existing private financing vehicles are insufficient to cope with the magnitude of the challenge in light of a range of stumbling blocks (e.g. transaction and verification costs).

Efforts are insufficient to cope with the magnitude of the challenge

Table 18: Examples of existing mechanisms and funds (excluding companies)

Finance Mechanism / Institution	Investment Available (USDbn)	Description	Integrated landscape management entry points
Enabling Investment Category institutions			
World Bank BioCarbon Fund ISFL	280	Public-private sector initiative (carbon fund) to develop integrated landscape- level programs for emission reductions generated from the LULUCF sector.	Emissions reductions, REDD+, climate smart agriculture, sustainable livelihood.
Global Environment Facility	2,096	Public financing fund with a mandate to serve as the financial mechanism of several major environmental conventions.	Multi-focal programmes to address synergies and trade-offs between land use, climate and conservation issues at the landscape or jurisdictional levels.
Global Mechanism	-	Financial advisory to support developing countries prioritize SLM and access finance from public and private sources for SLM.	Sustainable land management, climate mitigation, adaptation.
Norad & NICFI	480	Development aid providing grants for clean energy, environmental protection and REDD programming and research in developing countries	REDD+, climate adaptation, clean energy.
Asset Investment Category institutions			
Althelia Climate Fund	133m (final close)	Closed-end fund developing multiple revenue streams from forest protection and sustainable land use in Africa, LatAm and Asia. PPP approach through a private equity investment vehicle.	Sustainable land use, adaptation, sustainable livelihoods, REDD+.
Moringa	EUR84m	Closed end fund making direct equity and quasi-equity investments in Portfolio. Companies in Africa and LatAm. PPP approach through a private equity investment vehicle.	Sustainable agro-forestry, adaptation, sustainable livelihoods, carbon, REDD+.
EcoEnterprises Fund	35 (EcoE II)	Provides venture capital to small-scale and community-based companies (organic agriculture, non-timber forest products, sustainable forestry, or ecotourism) in LatAm. PPP approach through venture capital/private equity vehicle.	Sustainable livelihoods, mitigation, adaptation, conservation.
Global Mechanism		Financial advisory to support developing countries prioritize SLM and access finance from public and private sources for SLM	Sustainable land management, climate mitigation, adaptation.
Agro-Ecological Fund		Fund to invest in ecological farmland and agriculture delivering financial benefits from improved profitability by reduced input costs and enhanced resilience.	Ecological organic farm management across a portfolio of farms.
Bunge Environmental Markets	1,600 (AUM)	Major asset manager of emission reduction projects in established and emerging markets. PPP approach	Emissions reductions projects, sustainable land use, supply chain development & adaptation, sustainable livelihoods
TIAA-CREF Global Agriculture I & II	5bn (I) & 3bn in capital commitments (II)	The institutional investor's investment fund makes direct investments in land used for agricultural production.	Sustainable agriculture (integrating environmental stewardship into investment approach).
USAID (multiple components)		Development Credit Authority (DCA) supports lending to underserved credit worthy borrowers. Feed the Future initiative supports sustainable and inclusive agricultural growth.	Food security, livelihoods, climate- smart, sustainable agriculture.
Rabobank (multiple components)		Through various initiatives, funds and partnerships, it finances rural development and sustainable agriculture along the value chain	Sustainability of food supply, inclusive food strategies, rural cooperatives.
Brazilian Central Bank Resolutions		Conditions the concession of rural credit in the Amazon Biome upon proof of compliance with legal and environmental regulations.	Sustainable agriculture, forest conservation.

Source: Landscapes for People Food and Nature

The Land Degradation Neutrality (LDN) Fund project

Leveraging private finance to step up rehabilitation

In this context, a new UNCCD-led initiative aims at creating an Impact Investment Fund for Land Degradation Neutrality (LDN Fund; [link](#)) that will promote the avoidance of land degradation coupled with the rehabilitation of a minimum of 12m ha of degraded land per year (the current estimated amount of land degraded) through the generation of revenue streams from sustainable production/use of rehabilitated lands. It aims to leverage private finance and be an accelerator and amplifier of viable business models on rehabilitated land and prevention of degradation.

Acting in partnership with Mirova that has been selected as the Fund's Structuring Partner, the fund is set to operate as a coordinated investment platform among private institutional investors, international finance institutions and donors. The setting up of such public-private partnership (PPP) could precisely meet the need for a rigorous holistic framework to foster a critical mass of private-sector initiatives.

Comprehensive array of sectors covered

The fund could target a wide range of opportunities contributing to LDN that are relevant across sectors suitable for land restoration and the prevention of degradation – melting direct and indirect investments (e.g. potentially through existing funds).

A new UNCCD-led initiative aims at creating a LDN Fund that will promote the rehabilitation of a minimum of 12m ha of degraded land per year

The fund could target a wide range of opportunities contributing to LDN, going well beyond conservation and the projects most often dependent on strong regulatory markets

Table 19: Projects potentially relevant to the LDN fund per sector (illustrative – not exhaustive)

Food & Beverages; Food retail; agriculture	Pulp & Paper, forestry	Travel & leisure	Utilities	Construction & materials	Metals & mining
Certification labels for land-degradation neutral initiatives	Forestry conservation initiatives	Efficient transport models	Sustainable energy sources	Creation of sustainable infrastructure	Rehabilitation of mining sites
Sustainable agri-business practices (livestock, crop)	Reforestation	Ecotourism projects	Improved waste management systems	Construction projects using environmentally responsible materials	Conservation actions

Source: Kepler Cheuvreux, UNCCD

By clearly focusing on the prevention of degradation, restoration and rehabilitation and following a landscape approach, the LDN fund endeavours to go beyond:

- Conservation finance, which has been used mostly in the sense of preservation.
- Climate finance and the associated projects most often dependent on strong environment-related regulatory markets (e.g. conservation /biodiversity offsets and carbon offsets).

Table 20: Investment opportunities in land use and conservation – narrow definition

Area	Examples
Ecosystems	Soils; forests; fresh water; living organisms
“Regulating” green infrastructure	protected areas; habitat corridors; nature-based fire prevention, flood protection and erosion control; nature-based water treatment, purification, collection and retention; ecotourism and recreational areas
Sustainable cultivated resources	Afforestation/reforestation; crops; livestock; agroforestry; aquaculture
Environmental market (offsetting)	Carbon sequestration credits; mitigation banking/biodiversity offsetting credits; water certificates; permits and rights certificates
“Greening” the supply chain	Agriculture or agri-food business, timber logging, etc.

Source: Global landscape forum

Deconstructing the impact of the Fund: all guns blazing...

Land rehabilitation financed by such a structure could yield a threefold positive environmental and social impact:

1. Contribute to the achievement of global and local **food and water security** by 2050.
2. **Mitigate climate change** by sequestering up to 10% of CO₂ emissions by 2030.
3. Increase the resilience of vulnerable populations (in particular those at the **base of the economic pyramid - BoP**) species and ecosystems to climate change and other stresses.

Table 21: The Land Degradation Neutrality Fund’s indicative targets

	Annual	20 years
Capital mobilised	EUR1bn in the next 3-4 years (first closing: EUR300-500m (end 2016))	n.a.
Land rehabilitated	12m ha	240m ha
Geographical area meeting LDN	5 countries	Worldwide
CO ₂ reduced	0.33 Gt/yr	6.6 Gt/yr

Source: UNCCD

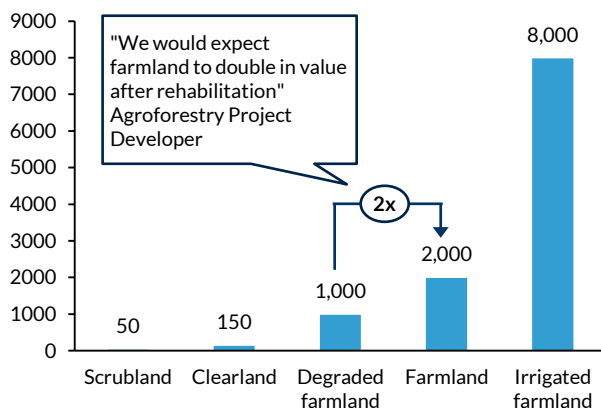
Such fund could potentially mobilise up to EUR1bn in the next 3-4 years while yielding a threefold positive environmental and social impact

...amid growing evidence of attractive investment options

A range of case studies add weight to the view that there is significant value to be generated by LDN through rehabilitating degraded land (see following charts). Numerous large-scale land restoration opportunities may be found in the PUR project, for instance (270,000 hectares under conservation), a community forestry project operator specialised in the development of forestry, agroforestry and agro-ecological projects and linking with several companies (e.g. Hugo Boss, Vinci). In terms of smaller-scale projects, as part of a EUR1.5m financing initiative, the NGO Agrisud, for example, has spurred a project in Haiti’s Nord department based on agroecology that led to substantial economic, climate and social benefits (net income of EUR1,500 per hectare).

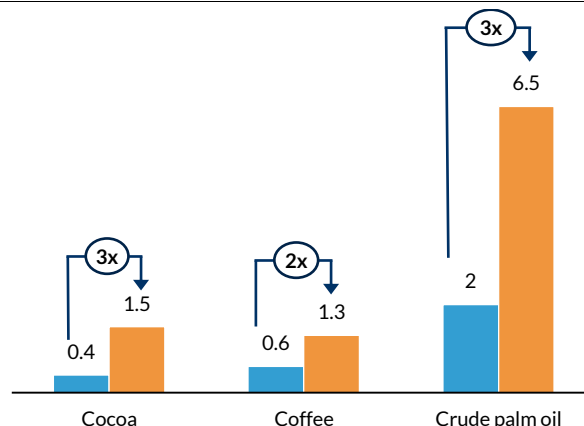
Large-scale rehabilitation projects that are projected to constitute the majority of the total assets under management

Chart 17: Land value (Zambia example) USD/ha



Source: Dalberg analysis

Chart 18: Crop yields Mt/ha



Source: Dalberg analysis

IRRs from forest and landscape restoration are estimated to range from 7% to 79% (source: TEEB). From the perspective of high-risk commodities, the use of degraded lands for sustainable palm oil development instead of clearing rainforests in Indonesia, for example, can boost IRR by 16% (source: ELD).

Table 22: IRR for forest and landscape restoration

Benefit/cost ratio	Typical cost of restoration (high scenario) (USD/ha)	Estimated annual benefits from restoration (average scenario) (USD/ha)	Net present value of benefits over 40 years (USD/ha)	Internal rate of return (%)	Benefit/cost ratio
Coral reefs	542,500	129,200	1,166,000	7	2.8
Coastal	232,700	73,900	935,400	11	4.4
Mangroves	2,880	4,290	56,900	40	26.4
Inland wetlands	33,000	14,200	717,300	12	5.4
Lakes/rivers	4,000	3,800	69,700	27	15.5
Tropical forests	3,450	7,000	148,700	50	37.3
Other forests	2,390	1,620	26,300	20	10.3
Woodlands/shrublands	990	1,571	32,180	42	28.4
Grasslands	260	1,010	22,600	79	75.1

Source: UNCCD, FAO, TEEB

Potential synergies with climate finance and companies

Among a series of challenges, we single out two legitimate questions that will drive the deployment of financing instruments targeting large-scale forestry and landscape degradation:

1. Could Sustainable Land Management (SLM) and land rehabilitation be integrated into carbon markets?
2. What's the scope of collaboration with large companies to foster initiatives of mutual interest?

1) What linkages with climate finance?

While there is still feeble demand for carbon credits in the midst of turbulent market conditions (voluntary carbon markets total c. 87MtCO₂e; ETS total value as of 2014 report amounted to c. USD30bn), carbon markets have been relatively marginal end segments for AFOLU projects as carbon sinks. While few carbon markets presently encompass land use (e.g. California, New Zealand), the creation of over 300 payments for ecosystem services (PES¹³) exemplifies another possible integration of ecosystem services into economic instruments. The majority of voluntary carbon standards relate to avoided deforestation and, to a lesser extent, agro-forestry, tree planting and grassland/rangeland.

The Paris Agreement casts some light on the future of REDD+

On the whole, while we see the deal reached at COP21 as significantly supportive to the role of forests and natural ecosystems, as usual the devil is in the detail, and we are still far from seeing carbon markets playing a pivotal role in the uptake of land restoration.

On the positive side, in a dedicated article (see following table) the Paris Agreement backs up REDD+¹⁴ in explicit terms (c. 9bn of pledges prior to COP21, besides which USD5bn was committed by Germany, Norway and the UK for the period until 2020), as well as the financing mechanism for both adaptation and mitigation through ecosystem protection and sequestration. While the emission reduction target level is not legally binding, countries are required to “pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions”. However, in terms of lingering uncertainties, the ‘Sustainable Development Mechanism’ (SDM), which draws on the Clean Development Mechanism¹⁵ (CDM), remains to be determined, with work ongoing over the next two years.

The challenge of taking voluntary REDD+ credits to the next level through private-sector involvement at scale and financially attractive products largely depends on their integration as a compensation mechanism as part of the follow-up to the global agreement on COP21 reached in Paris in December 2015 as well as countries’ individual commitments. However, the incentives would still be difficult to activate in the short term, as there will be a time lag between any deal and its enforcement in 2020.

¹³ PES is defined as a voluntary transaction in which a well-defined environmental service (ES), or a form of land use likely to secure that service is bought by at least one ES buyer from a minimum of one ES provider if and only if the provider continues to supply that service (conditionality). Source: UNEP, Sven Wunder.

¹⁴ REDD+ is a mechanism being developed by the Parties to the United Nations Framework Convention on Climate Change to reward developing countries for reducing emissions from deforestation and forest degradation. It will create an incentive for developing countries to protect, better manage and wisely use their forest resources, and in so doing contribute to conserving biodiversity and to the global fight against climate change. In addition to the environmental benefits, REDD+ also offers social and economic benefits. Currently, it is being integrated into green economy strategies. Six countries have comprehensive policies targeting transformational change for REDD+ (Brazil, DRC, Guyana, Indonesia, Tanzania, and Vietnam). The critical issues that hinder countries in achieving REDD+ are related to policy implementation: the lack of grievance procedures and lack of operationalised financial systems. Source: UNEP, Global Landscape Forum.

¹⁵ The Clean Development Mechanism (CDM), defined in Article 12 of the Kyoto Protocol, allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO₂, which can be counted towards meeting Kyoto targets.

The creation of over 300 payments for ecosystem services exemplifies another possible integration of ecosystem services into economic instruments

We see the deal reached at COP21 as generally supportive to the role of forests and natural ecosystems

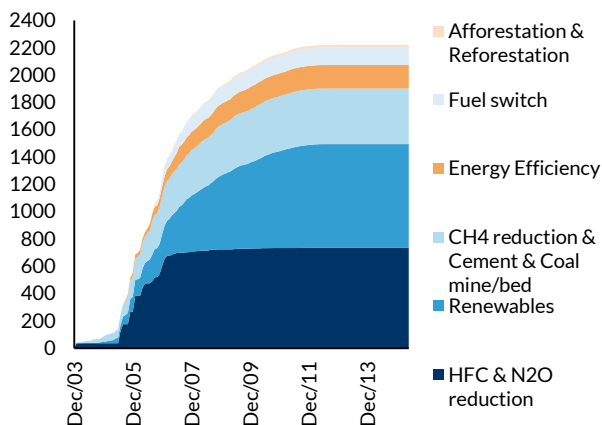
The challenge of taking REDD+ credits to the next level through private-sector involvement largely depends on their integration as a compensation mechanism as well as countries’ individual commitments

Table 23: Comment on Paris Agreement's impact on sustainable land use finance

Section		Comments (main source : Stephen Leonard's blog)
III. DECISIONS TO GIVE EFFECT TO THE AGREEMENT ON FINANCE		
55	Recognises the importance of adequate and predictable financial resources, including for results-based payments, as appropriate, for the implementation of policy approaches and positive incentives for reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks; as well as alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests; while reaffirming the importance of non-carbon benefits associated with such approaches; encouraging the coordination of support from, inter alia, public and private, bilateral and multilateral sources, such as the Green Climate Fund, and alternative sources in accordance with relevant decisions by the Conference of the Parties	<i>The new expected work concerning results-based payments at the Green Climate Fund in 2016 together with the outcome of the Paris Agreement sends a strong signal to countries that efforts to implement REDD+ will gain strength and will play an important role in the climate framework</i>
Article 4		
2	Each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions	<i>The extent to which mitigation measures at the national level may be linked to the voluntary Sustainable Development Mechanism at the international level (see Article 6.4) relate to forests, and more so land, remains part of an ongoing debate around the issue of permanence, as the mitigation benefits must be 'long term'.</i>
Article 5		
1	Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases as referred to in Article 4, paragraph 1(d), of the Convention, including forests.	<i>This provision restates the content of Article 4 of the Climate Convention and, read in the context of the new Agreement, now opens up questions as to how 'conservation' and 'enhancement' of these ecosystems can contribute to achieving the long-term goal of limiting global warming to well below 1.5-2 degrees centigrade. This arguably creates a legal requirement for countries to 'conserve' and 'enhance' ecosystems when taking actions related to climate change.</i>
2	Parties are encouraged to take action to implement and support, including through results-based payments, the existing framework as set out in related guidance and decisions already agreed under the Convention for: policy approaches and positive incentives for activities relating to reducing emissions from deforestation and forest degradation, and the role of conservation, sustainable management of forests and enhancement of forest carbon FCCC/CP/2015/L.9/Rev.1 24 stocks in developing countries; and alternative policy approaches, such as joint mitigation and adaptation approaches for the integral and sustainable management of forests, while reaffirming the importance of incentivising, as appropriate, non-carbon benefits associated with such approaches.	<i>This backs up in explicit terms: 1) "sinks and reservoirs of greenhouse gases" (i.e. biomass, forests and oceans together with other terrestrial, coastal and marine ecosystems); 2) REDD+ (through "positive incentives for activities relating to reducing emissions from deforestation and forest degradation") and a "joint mitigation and adaptation [JMA] approaches for the integral and sustainable management of forests" - the direct reference to REDD sends a strong signal to countries that efforts to implement REDD+ will be ongoing and will play an important role in the climate framework; 3) "non-carbon" benefits (NCB) i.e. which underlines the adaptation dimension.</i>
Article 6		
4	A mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development is hereby established under the authority and guidance of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement for use by Parties on a voluntary basis	<i>Sustainable Development Mechanism remains to be determined, with work ongoing in the next 2 years.</i>
Article 8		
4	Accordingly, areas of cooperation and facilitation to enhance understanding, action and support may include [...] (h) Resilience of communities, livelihoods and ecosystems.	<i>This echoes the preamble below that notes the importance of ensuring ecosystem integrity</i>
Annex		
	Noting the importance of ensuring the integrity of all ecosystems, including oceans, and the protection of biodiversity, recognised by some cultures as Mother Earth, and noting the importance for some of the concept of "climate justice", when taking action to address climate change	<i>Although not in itself legally binding, the social and environmental character of the preamble to this Agreement cannot be ignored. This reflects the broader vision of the SDGs adopted in September 2015.</i>

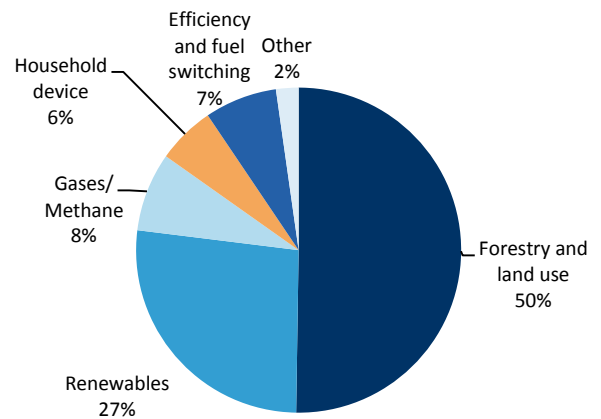
Source: Stephen Leonard, GLF, Kepler Cheuvreux

Chart 19: Growth of total 2012 CERs, by main type (m)



Source: CDMpipeline

Chart 20: VCS project breakdown



Source: CDMpipeline

Land as an umbrella for climate and ecosystem financing mechanisms

Given the cross-cutting nature of land, one could imagine that the same hectare of land could contribute to several climate and ecosystem services-related targets while contributing to various credit markets (e.g. carbon or water credits) that reward its sustainable use.

However, it is clear that LDN should not be seen as an offset; its aim is rather to prevent further land degradation and maintain and improve the productivity of land resources. Land could therefore be seen as the holistic framework under which other environmental commitments should fall. So, rather than taking a sector-wide or isolated view on individual issues (e.g. biodiversity, forestry, carbon, etc.), we believe any new framework should look at all the links and trade-offs, in a 'landscape approach'.

It is clear that LDN should not be seen as an offset and rather as a holistic framework under which other environmental commitments should fall

Table 24: CDM, Ji and VCS largest AFOLU-related projects

Name	Host country	Type	Sub-type	Credit start	Until	Expected kCERs
Lages Methane Avoidance Project	Brazil	Biomass energy	Forest residues: sawmill waste	01-Nov-04	31-Dec-12	1,801
BK Energia Itacoatiara Project	Brazil	Biomass energy	Forest residue: other	01-Nov-02	31-Dec-13	1,699
SEO Biomass Steam and Power Plant in Malaysia	Malaysia	Biomass energy	Palm oil solid waste	10-Jun-06	31-Dec-12	1,416
LDEO Biomass Steam and Power Plant in Malaysia	Malaysia	Biomass energy	Palm oil solid waste	10-Jun-06	31-Dec-12	1,371
Heilongjiang Wangkui 50MW Level Biomass Cogeneration Project	China	Biomass energy	Agricultural residues: other kinds	02-Nov-09	31-Oct-13	1,284
Irani Biomass Electricity Generation Project	Brazil	Biomass energy	Forest residues: sawmill waste	01-Oct-04	30-Sep-11	1,214
Koblitz - Piratini Energia S. A - Biomass Power Plant – Small Scale CDM Project	Brazil	Biomass energy	Forest residues: sawmill waste	01-Feb-02	31-Jan-09	1,210
Kina Biopower 11.5MW EFB Power Plant	Malaysia	Biomass energy	Palm oil solid waste	13-Jan-09	31-Dec-13	1,143
Seguntor Bioenergy 11.5MW EFB Power Plant	Malaysia	Biomass energy	Palm oil solid waste	05-Feb-09	31-Dec-13	1,128
Shandong Yucheng Xinyuan Biomass Heat & Power ("Yucheng Biomass CHP")	China	Biomass energy	Bagasse power	12-Mar-07	31-Dec-12	1,101
Name	Host country	Type	Sub-type	Credit start	Until	Expected kERUs
"Rise-Maksymko"	Ukraine	Agriculture	No tillage	01-Jan-08	31-Oct-12	10,010
LLC "Koziiivske" Farmlands	Ukraine	Agriculture	No tillage	01-Jan-08	31-Dec-12	6,030
"Agrarian Holding Avangard"	Ukraine	Agriculture	Energy efficiency	01-Jan-08	30-Nov-12	5,749
LLC "Vishva Ananda" Farmlands	Ukraine	Agriculture	No tillage	01-Jan-08	31-Oct-12	3,131
Siberian settlements, Russian Federation	Russia	Afforestation	Afforestation	01-Jan-08	30-Jun-12	1,592
OJSC "Ilim Group" Branch in the town of Bratsk	Russia	Biomass energy	Forest residue: sawmill waste	01-Jan-08	30-Sep-12	1,298
CJSC "International Paper" (former Svetogorsk PPM) and Svetogorsk, Russia	Russia	Biomass energy	Forest residue: sawmill waste	01-Jan-08	31-Dec-11	1,255
na	Hungary	Biomass energy	Forest biomass	01-Jan-08	31-Dec-12	1,194
JSC Arkhangelsk Pulp and Arkhangelsk region, Russia	Russia	Biomass energy	Industrial Waste	01-Jan-08	31-Dec-11	817
na	Ukraine	Agriculture	No tillage	01-Jan-08	31-Oct-12	529
Project Name	Country	REDD+/REDD	Sectoral Scope	Estimated Annual Emission Reductions		
KARIBA REDD+ PROJECT	Zimbabwe	REDD+	Ag., Forestry, Land Use	6,550,464		
The Mai Ndombe REDD+ Project	Congo, (DRC)	REDD+	Ag., Forestry, Land Use	5,671,613		
Rimba Raya Biodiversity Reserve Project	Indonesia	REDD	Ag., Forestry, Land Use	3,527,171		
REDD project in Brazil nut concessions in Madre de Dios, Peru	Peru	REDD	Ag., Forestry, Land Use	2,086,089		
Shade Coffee & Cacao Reforestation Project	Peru	REDD	Ag., Forestry, Land Use	1,969,139		
The Kasigau Corridor REDD Project -Phase II The Community Ranches	Kenya	REDD	Ag., Forestry, Land Use	1,614,959		
Cordillera Azul National Park REDD Project	Peru	REDD	Ag., Forestry, Land Use	1,575,268		
Makira forest protected area in Madagascar	Madagascar	REDD	Ag., Forestry, Land Use	1,267,231		
The Envira Amazonia Project - A Tropical Forest Conservation Project in Acre, Brazil	Brazil	REDD	Ag., Forestry, Land Use	1,259,646		
April Salumei REDD Project	Papua New Guinea	REDD	Ag., Forestry, Land Use	1,032,650		

Source: VCS, CDM database

2) What is the role for companies?

To a certain extent, the LDN's fund vision and relevant investable projects echo and overlap sustainability objectives for numerous companies, particularly in terms of environmental risk management (zero net deforestation, sustainability sourcing, no net loss, net positive impact, etc.), as well as projects, whether financed internally (e.g. Nestlé's Rural Development Framework) or set up as separate investment funds (e.g. Danone's Livelihoods funds). As companies also play an important role in terms of demand for sustainable land management and land rehabilitation, we look at areas of convergence as well as scope for collaboration with impact funds that target forestry and landscape restoration in the next sections of this report.

The LDN echoes and overlaps with many companies' sustainability objectives...

...illustrating the scope for collaboration with the impact funds targeting forestry and landscape restoration

Table 25: Existing mechanisms and funds (companies)

Finance Mechanism / Institution	Investment Available (USDbn)	Description	Integrated landscape management entry points
Enabling Investment Category institutions			
Nestlé		- Rural Development Framework is a monitoring tool to quantify the impacts of Nestlé's sustainable sourcing and social impact programmes at the land level.	Sustainable and climate resilient agriculture, sustainable water resource management, supply chain security, livelihoods.
Asset Investment Category institutions			
Livelihoods fund	0.04	Investment fund providing investors with returns in the form of high quality carbon offsets. PPP approach	Agroforestry, rural energy, livelihoods, large scale ecosystem restoration.

Source: Landscapes for People Food and Nature

Land use business case: company focus

We introduce our methodology that aims to: help examine how land degradation-related risks and opportunities are measured and valued across the most exposed sectors; and understand what “land degradation neutrality” (LDN) means in practice for companies regarding cost and risk reduction as well as value creation.

Our approach consists of mapping our universe of stocks by using five broad land degradation-related areas within a framework focused on P&L exposure, risk mitigation levers (leadership, reporting), enabling factors, and opportunities for engagement with financial instruments that work with integrated landscape initiatives. This leads us to structure sectors into three groups based on the most acute level of financial impact on their value chain: 1) agricultural commodities for their supply chain (e.g. consumer sectors¹⁶, pulp and paper); 2) land operators (e.g. construction, utilities, extractives); and 3) end-market exposure (e.g. chemicals, capital goods).

We highlight that obstacles to more accurately assess companies’ risks (e.g. lack of data), particularly possible liabilities, are likely to be mitigated amid growing investor scrutiny after a series of media-covered land-related cases involving institutional investors (e.g. SOCO complaint, palm oil divestments).

Last but not least, we look at how and where the development of new financing vehicles, such as the LDN fund, may also help overcome these barriers by facilitating access to restored land and fostering a range of benefits associated with Sustainable Land Management (SLM), like improved productivity and land value.

Investors increasingly looking at natural capital damage

The financial sector is subject to growing climate and deforestation risk-related hard and soft law mechanisms and pressure, which could increase as a result of the COP21 accord and growing awareness due to large-scale disasters affecting large companies (e.g. the Indonesian forest fires that broke out last year occurred on global palm oil companies Bumitama and Wilmar International’s plantations).

Moreover, a series of cases handled by the OECD’s National Contact Point (NCP) complaint process have involved multinationals’ direct or indirect contribution to land degradation in some form (e.g. through water and air pollution or the use of peat lands¹⁷), or related issues, such as land grabs (e.g. APRIL, Holcim, and IOI Corporation in Indonesia) and displacement (human rights), amid companies’ violation of international standards or increased activism and media coverage (see

A range of cases handled by the OECD National Contact Point (NCP) complaints process have involved multinationals’ contribution to land degradation in some form or related issues

¹⁶ Throughout the report, we use the term ‘consumer sector’ to refer to consumer staples and discretionary.

¹⁷ Pending cases include for example Rabobank’s investment in palm oil in Indonesia (filed on 26 June 2014), Andritz’s contribution to severe impacts from a dam in Laos (filed on 9 April 2014), environmental, health and hr violations by KPO - British gas, ENI, Chevron, Lukoil, and Kazmunaigaz - in Kazakhstan (filed on 6 June 2013) or environmental and labour violations at Socapalm in cameroon (filed on 7 September 2010). Source: OECD Watch.

our June 2014 Business ethics report *Soft law violation & liability Towards Fiduciary Duty 2.0* by ESG Analyst Sudip Hazra). This includes the notable SOCO complaint raised by the NGO WWF regarding oil exploration in a UNESCO protected site in the Democratic Republic of the Congo (DRC). At the heart of this issue was the use of protected sites for commercial purposes.

Recently, damages at 229 World Heritage Sites have come under scrutiny. As a result, it appears that investors support greater company disclosure and more robust policies regarding these unique areas. This also includes an ecosystem services perspective, as reflected in dedicated WWF report in early September 2015.

Additionally, Oxfam's "Behind the Brands" campaign that focused on the supply chain policies of ten of the largest Food & Beverages companies threw the spotlight on companies' accountability and transparency in terms of land issues, and the potential impact on minority shareholders from reputational risks and rising potential liabilities as a result of increasing soft law mechanisms.

A host of possible ongoing environmental liabilities involve some form of land degradation-related risk. These include the ongoing Vale/BHP Billiton environmental pollution case and an ongoing lawsuit against Nestlé, Archer-Daniels-Midland and Cargill on allegations of child labour in cocoa production in Côte d'Ivoire.

Land use core to company fines and investors' due diligence

The ongoing efforts to include natural capital risk in investors' due diligence have focused on including these issues in credit risk analysis. Particularly, it appears that land use issues are of principle concern in investors' due diligence (source: NCC). In addition, new regulations, such as France's biodiversity law (currently being discussed by the senate¹⁸), could also increase legislative firepower regarding environmental degradation. While this is unlikely to be a game-changer, we think trends are moving towards a greater level of third-party scrutiny regarding possible improver behaviour.

Many environmental liabilities involve some form of land degradation risk

¹⁸ According to the latest press reports in early March the amendment that would have recognised the ecological prejudice (polluter pays principle) has been removed, which could significantly water down the law's scope.

Table 26: Environmental fines involving land degradation (illustrative)

Company	Sector	Country	Date/Year	Size of the fines/criminal penalty	Theme/type of offence	Details	Linkages with land degradation
Alliant Energy	Utilities	US	15 July 2015	USD1.1m civil penalty will also pay USD6m for environmental mitigation projects	Clean Air Act violations	Power plants were emitting thousands of tonnes of harmful air pollution each year in Iowa and the Midwest	Levels of sulphur dioxide and nitrogen oxide (and other particulate matter) too high in the air; they contribute to smog and acid rain. Can cause severe respiratory and cardiovascular problems
Anadarko Petroleum Company	Oil & Gas	US	13 November 2014	USD5.15bn (of which GBP4.4bn to be paid to fund environmental clean-up and for environmental claims)	Environmental Contamination	Contamination of various sites across the US for decades	Anadarko's activities of contaminated land across the US, and polluted water supplies
Anker Coal & Mineral Holdings	Mining & Minerals	South Africa	3 April 2012	ZAF260,000 (USD18,600) conditionally suspended for five years	Violations of National Environmental Management Act and Mineral and Petroleum Resources Development Act	The first environmental fine for a miner in SA; very moderate fines only despite wrongfully and negligently giving the Department of Mineral Resources incorrect information	Drilled holes in an ecologically sensitive area (a wetland); leaving core drillings in the ground; failing to properly fill and cap drill holes
BP	Oil & Gas	US	2 July 2015	Record environmental fine of USD18.7bn (fined USD5.5bn under the Clean Water Act; USD7.1bn to be paid in "natural resource damage assessment"	Clean Water Act violations and natural resource damages	4.2m barrels of oil spewed into the Gulf of Mexico over 87 days	Affected the shore of the Gulf Coast; impacts on seafood and wildlife
China National Petroleum Corporation	Oil & Gas	Chad	21 March 2014	USD1.2bn	Oil pollution/contamination	Violation of environmental standards; management of waste	CNPC dug trenches and dumped crude oil without safeguards; CNPC later asked local Chadian workers to remove crude without giving them protective equipment
Duke Energy	Utilities	US	20 February 2015	USD102m	Clean Water Act violations	Pipe break caused a spillage of coal ash from a power plant in North Carolina; the coal ash spilled into a North Carolina river	Water contamination and pollution; degradation of water supply

Continued on next page

Environmental fines involving land degradation (illustrative) ...continued

Company	Sector	Country	Date/Year	Size of the fines/criminal penalty	Theme/type of offence	Details	Linkages with land degradation
East Bay Municipal Utility District	Utilities	US	28 July 2014	USD1.5m in civil penalties. Company also to pay for the cost of repairing sewage system, estimated at USD1.5bn	Clean Water Act violations	Poorly maintained sewage infrastructure has allowed millions of gallons of sewage to escape into San Francisco Bay	Waterways have been polluted; spread of disease-causing organisms; threat to health of citizens; sewage degrades marine ecosystems by reducing oxygen in bay
Hyundai and Kia	Capital Goods	US	3 November 2014	USD100 m civil penalty; also had to forfeit 4.75m emission credits (estimated to be worth over USD200m)	Air pollution	Violation of Clean Air Act; Selling vehicles that emitted more GHGs than automakers certified to the US EPA	No land degradation issues; offense was a breach of the US Clean Air Act
Minnesota Power	Utilities	US	16 July 2014	Civil penalty of USD1.4m	Clean Air Act violations	Unlawfully constructed major modifications at plants without obtaining required permits and without installing the best available air pollution control technology	Levels of sulphur dioxide and nitrogen oxide (and other particulate matter) too high in the air; they contribute to smog and acid rain. Can cause severe respiratory and cardiovascular impacts
Mosaic Fertilizer	Chemicals	US	1 October 2015	USD5m civil penalty to pay to US; USD1.55m to the State of Louisiana; and USD1.45m to the State of Florida	Violation of hazardous waste laws	Failed to meet land disposal restrictions for hazardous waste; treatment, storage and disposal of hazardous wastes without a permit or interim status	Release of hazardous, corrosive, waste waters from fertiliser production contaminates land and degrades it
Royal Dutch Shell	Oil & Gas	Nigeria	7 January 2015	USD55m settlement with residents of the Bodo community in the Niger Delta for two oil spills	Oil pollution/contamination	Two oil spills in Bobo, Nigeria, caused by operational failure of the pipelines	Pollution of the Niger Delta; thousands of hectares of mangrove were affected; local drinking water sources were contaminated; local fishermen had to find alternative ways to make a living
Vale/BHP Billiton	Metals & Mining	Brazil	5 November 2015	c.USD1.7-2.3bn	Environmental Pollution	A dam at an iron ore mine burst; at least 19 people dead	Village destroyed by flood waters; clay-red mud and iron ore residue has contaminated the river and estuary, threatening marine life
Walmart	Food Retail	US	30 May 2013	USD110m criminal penalty	Improper dumping of pesticides without proper safety documentation	Employees hadn't been properly trained on the disposal of chemicals	Chemicals and other hazardous waste were put into municipal bins or poured into the local sewer systems

Source: Companies, various newswires

Finally, the Natural Capital Declaration¹⁹ (NCD) initiative, exemplified by the publication of a comprehensive report on “Bank and Investor risk policies on soft commodities,” also adds to the momentum on these issues in the financial sector, particularly regarding the risks from deforestation, e.g. should invested companies end up paying the cost of damages.

How to map companies’ land use profiles?

Introducing our framework and screening criteria...

We map our universe of stocks based on five broad land degradation-related areas within a simplified framework: 1) land degradation risk exposure, land risk mitigation tools; 2) policy and implementation leadership; 3) reporting; 4) enabling factors; and 5) opportunities for engagement with financial instruments that focus on integrated landscape initiatives.

We map our universe of stocks based on five broad land degradation-related areas

Table 27: KECH framework to map company exposure to land degradation-related risks and opportunities

Steps Area		Description
1	Exposure to land risks	Core business potential exposure to land degradation-related risks and opportunities based on: 1) a sector mapping; and 2) a company’s individual position. This includes both an assessment of the business significance and business contribution to the issue of land degradation, i.e. 1) company’s impacts on land degradation (positive/negative); and 2) land degradation’s impact on financial risks & opportunities (dependencies on LDN).
2	Land risk mitigation: leadership	Commitments, policies and programmes that would enable to seize opportunities by fostering companies’ positive impact on land degradation and/or mitigate risks and their negative contribution to land degradation (including the selection of best practices and evidence of implementation).
3	Land risk mitigation: momentum	Trends in KPIs and qualitative data reported, including the measurement and communication of the economic benefits of switching to sustainable land use.
4	Enabling factors	Regulations and incentives needed to support the engagement of high-impact sectors and businesses.
5	Sustainable Landscape Finance	Opportunities to engage with the financial instruments targeting investments in forestry and integrated landscapes, for example by being involved in rehabilitation projects enabled by these funds or by leasing land that has been rehabilitated by these funds.

Source: Kepler Cheuvreux

...that link land and ecosystem service impacts and dependencies

This framework allows us to map companies’ ability to engage on Land Degradation Neutrality (LDN), based on their existing and potential:

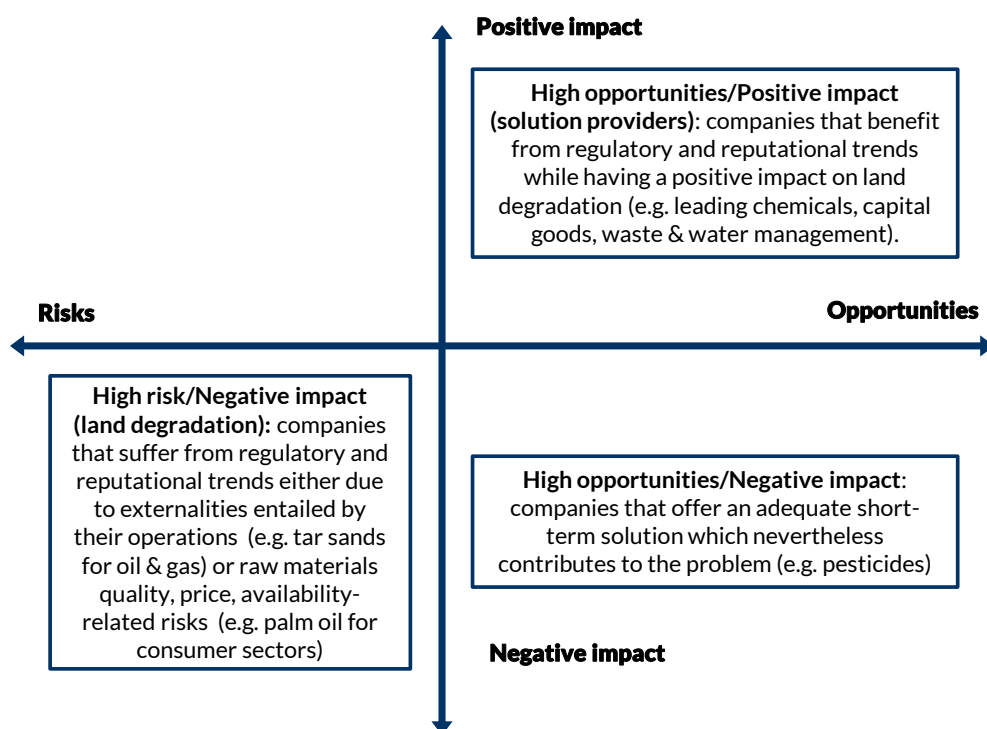
1. **Land impact (“natural capital impact”):** Contribution to the problem of land degradation and the ability to help mitigate it (y axis in the following chart), both on and off-site. KPIs to tackle this include both environmental (soil productivity/restored, CO2 sequestered, biodiversity) and social impact indicators (e.g. job creation, food security, access to energy, and land grabbing). The economic costs of ecosystem use is determined by the gap between “the values of ecosystem services lost due to the conversion of land from its natural ecosystem and the ecosystem services ‘gained’ from the converted land” (source: NCC).

We define the business case for LDN as the gap between the value at risk from Land Degradation and the added-value from sustainable land management

¹⁹ The Natural Capital Declaration (NCD) is a finance sector initiative, endorsed at the CEO level, to integrate natural capital considerations into loans, equity, fixed income and insurance products, as well as in accounting, disclosure and reporting [frameworks](#).

2. **Financial or P&L impact of land (“natural capital dependencies”)**: We place a particular emphasis on the business case for LDN that we define as companies’ financial vulnerability in terms of risks from poor/inefficient performance, as well as their ability to seize commercial opportunities to act and create value via suitable policies, programmes and reporting (x axis). Relevant KPIs cover financial indicators, e.g. raw material costs, environmental liabilities.

Chart 21: Company’s land impact versus land impact on financials risks & opportunities



Source: Kepler Cheuvreux

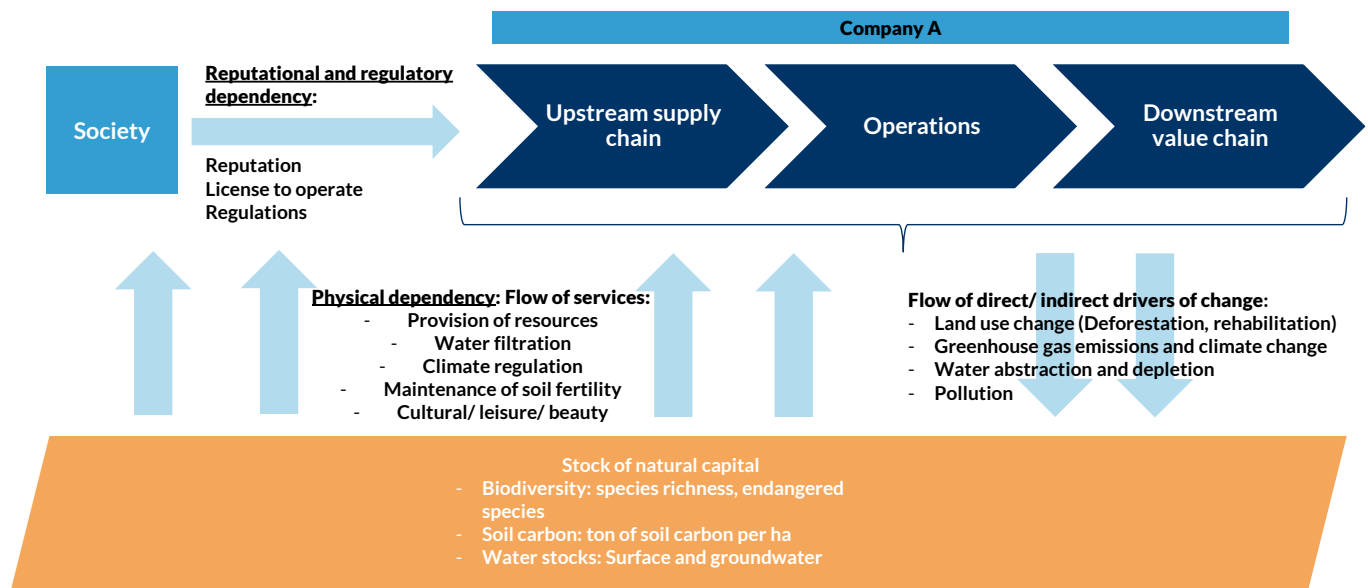
A double-edged sword: land degradation risks vs. rehabilitation upside

Put differently, as highlighted in the first (macro) parts of this report, the stock of natural capital yields a stream of benefits (flows), such as the provision of renewable and non-renewable resources and regulating the climate and weather. Both companies and wider society benefit from these, depending on the business model, location, sector of activity, and position in the value chain.

That said, companies directly and indirectly affect the stock of natural capital, and thus the flow of benefits. Companies may destroy the very stock of natural capital on which they depend for the provision of essential services, such as soil fertility maintenance, exposing them to physical risks, such as reduced productivity and increased commodity price and volatility. Their value to society may also be destroyed, thus exposing companies to potential reputational and regulatory risks.

Companies may destroy the very stock of natural capital on which they depend, exposing them to both regulatory and physical risks

Chart 22: Natural capital impact and dependencies



Source: Kepler Cheuvreux

The reverse is also true. Companies may also rehabilitate and restore the stock of natural capital or decrease their contribution to negative drivers, such as climate change, leading to an increased flow of ecosystem services, thus creating value both for the company and society, thereby reducing physical, reputational and regulatory risk.

Consequently, we view the most relevant natural capital-related approaches of companies in their respective contexts as likely ways to contribute to Sustainable Development Goal (SDG) 15.3 to achieve Land Degradation Neutrality (LDN) and SDG 15 (the protection and restoration of the terrestrial ecosystems) on the whole.

Our comprehensive selection of land degradation KPIs

Thus, we have assembled a wide range of cross-sector criteria (16) for a comprehensive review of the materiality of land degradation for companies as well as scope for action.

Nonetheless, companies may also rehabilitate and restore the stock of natural capital

Table 28: Framework and indicators to map companies' exposure and impacts (companies' Land Degradation profiles)

	Criteria	Relevant to assess impact or exposure	Possible response	Comments/Examples
I. Land Risks Exposure				
Objective: Identification of sectors and companies with biggest land use impacts and dependencies				
1	Land contact in value chain	Impact/Exposure	Direct; Distant	Direct= land user (ownership/activities on the land); distant= indirect users of land (source or sell products to organisations owning/operating on the land). Another possible distinction can be between manufacturing and processing companies versus large footprint industries.
2	Area of exposure to those affected by land degradation	Impact/exposure	Customers; Suppliers; Communities	Distant (business relationship to land owners)=farmers as customers (e.g. agricultural input in the chemicals sector) or commodity suppliers; direct (non-business relationship to land owners)=impact on communities via operations (e.g. construction, extractive, retail sectors).
3	Financial impact	Exposure	Raw materials; Operational/Licence to operate; End market (e.g. agricultural inputs, environmental consulting); Energy procurement (biofuels)	Examples of regulatory risks include local environmental regulation concerning forestry and land rights. Examples of legal risks include the OECD guidelines/eco crimes. The list can be theoretically expanded and presented differently for specific areas, e.g. stranded assets, social risks, commercial risks, markets, fire, peat, health, combined factors for palm oil. Examples of opportunities include: securing operations through healthy ecosystems; reinforcing companies' sustainability targets; strengthening companies' image and license to operate; benefits of rehabilitated land assets; supporting social stability. End-market opportunities: revenues from direct solutions to land degradation e.g. agricultural inputs; services e.g. environmental consulting
4	Geographical impact	Impact/exposure	Developed markets; Emerging markets mainly; Global; Countries specific	If specified by the company or based on our assumptions, for example based on sourcing of commodities
5	Land ownership	Impact/exposure	Yes/No	If the company owns land in at least some countries
6	Sector level of risk	Exposure	High; Medium; Low	According to the Economics of Land Degradation classification (ELD)
7	Company level of potential risk	Exposure	High; Medium; Low	Based on our in-house assessment and/or feedback from questionnaire (High, Medium; Low risks)
8	Sector level of impact	Impact	High; Medium; Low	Based on direct and indirect drivers of Land degradation business impacts, i.e. both on and off-site
9	Company level of potential impact	Impact	High; Medium; Low	Based on direct and indirect drivers of Land degradation business impacts, i.e. both on and off-site
10	Land risks exposure view	Exposure	Scale from 1=Low exposure to 5= High exposure	Capacity to absorb increased risks resulting from land degradation

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Framework and indicators to map companies' exposure and impacts (companies' Land Degradation profiles) ...continued

	Criteria	Relevant to assess impact or exposure	Possible response	Comments/Examples
II. Risk mitigation leadership: Policy and Implementation				
Objective: Identify best practices to reduce or eliminate drivers of land degradation while lowering business risks/seizing opportunities				
11	Explicit commitment	Impact/exposure	Zero deforestation target, sustainable sourcing, net positive impact	Specify management commitment, e.g. CEO statement/incentives to meet target
12	Programmes and management systems indirectly supporting sustainable land management	Impact/exposure	Yes/No	Reduce/Avoid/Restore/Compensate LD (i.e., 1) adopt SLM practices, and 2) rehabilitate degraded land); valuing land; engagement with smallholders and raised awareness; proving impact on LD (certification). SLM practices could, for example, include sustainable agriculture, such as conservation agriculture and agroforestry, sustainable forest management, biodiversity, and ecosystem conservation, watershed protection, wastewater treatment, reduction/avoidance of waste sent to landfills, and pest and disease control. In addition, the use of renewable energy from wind, solar or biomass, and investments in sustainable tourism and natural infrastructure can be part of an integrated landuse plan.
13	Programmes and management systems directly supporting sustainable land management	Impact/exposure	Yes/No	Details on land management practices
III. Risk Mitigation Reporting				
Objective: Measurement and communication of economic benefits of switching to sustainable land use				
14	KPIs reported/considered	Impact/exposure	Yes/No	Indicators and metrics that are relevant to LDN monitoring
IV. ENABLING factors				
Objective: Assessment of supportive regulation, legal environments, incentives				
15	Key hurdles	Exposure	Yes/No	Carbon offsets and related mechanisms, incentives to ecosystem restoration, imposed restoration on entities responsible for land degradation or favourable systems for low-income farmers/rural development, engagement with governments
V. Sustainable Landscape Finance				
Objective: Weighing opportunities to collaborate and engage with the LDN Fund and similar integrated landscape investments				
16	Opportunity for engagement with sustainable landscape financing vehicles	Impact/exposure	High; Medium; Low	High/Medium/Low: Opportunity for the LDN fund project and similar integrated landscape investments to engage directly with the company, based on the quality of responses/our assessment: 1. Adopting sustainable land management practices and land use planning; 2. Rehabilitating degraded and abandoned production lands and restoring degraded natural and semi-natural ecosystems

Source: Kepler Cheuvreux, WBCSD

Deconstructing companies' land profiles: 1) Risk exposure

Below, we outline several important preliminary remarks and findings regarding our methodological approach.

High risk and opportunity sectors: from hypothetical ...

To undertake this analysis, we sent a questionnaire (see appendix for the detailed questions) to companies included in 13 sectors considered to be subject to high/medium risks based on the Economics of Land Degradation (ELD) Initiative's findings. This should allow us to select companies with the biggest hypothetical land use impacts on their financial metrics.

This sector risk assessment incorporates the potential impact from land degradation on:

1. The availability and quality of raw materials, ecosystem services and utilities.
2. Operations and workforce availability.
3. Product quality, sector image, brand reputation.
4. Social instability.
5. Investments and expansion.

Although not covered by our questionnaire, we have also added the financial (bank and insurance) sector in the following table.

**Focusing on sectors
subject to
high/medium risks...**

**...including the
financial sector**

Table 29: High-risk sectors

Sector	Level of risk	Comments
Airlines & airports	High Risk	Reduced appeal of a travel destination due to increased poverty, reduced biodiversity, health problems, migration and village abandonment
Beverages	High Risk	Reduced productivity due to land use change, environmental pollution, soil erosion and nutrient loss, leading to increased prices and decreased availability of raw materials; loss of license to operate; opportunities for differentiation (labels, sustainable sourcing).
Banks	High risk	The current thrust due to various carbon, climate and deforestation disclosure discussions, policies and regulations (including "stranded assets" and unburnable coal) keeps pressure on divestments and risk assessments.
Chemicals	Medium Risk	Supply chain risks through the use of oil and natural gas feedstock and bio-based materials.
Construction & materials	High Risk	Reduced availability and increased costs of basic raw materials; reduced productivity due to interruptions in optimised raw material flow and loss of licenses to operate; opportunities for differentiation.
Food and food retail	High Risk	Reduced productivity, due to land use change, environmental pollution, soil erosion and nutrient loss, leading to increased prices and decreased availability of raw materials; loss of licenses to operate; opportunities for differentiation (labels, sustainable sourcing).
Home and Personal Care (H & PC)	High Risk	Bio-based materials particularly vulnerable; opportunities for differentiation.
Insurance	Medium Risk	Higher costs related to increased extreme events and decreased buffering capacity of ecosystems.
Luxury goods	High Risk	Bio-based materials particularly vulnerable; opportunities for differentiation.
Metals & mining	High Risk	Loss of licenses to operate; poverty and health problems leading to reduced availability of workforce and acceptability of operations; pollution-related fines
Oil & gas	Medium Risk	Loss of licences to operate; stranded assets; high reliance on water
Transport	High Risk	Reduced appeal of a travel destinations due to increased poverty, reduced biodiversity, health problems, migration and village abandonment
Travel & leisure	High Risk	Reduced appeal of a travel destinations due to increased poverty, reduced biodiversity, health problems, migration and village abandonment
Utilities	High Risk	Decreased raw material and ecosystem service availability and (water, in particular, necessary for cooling as well as reduced flows in the context of hydroelectricity generation); opportunities for differentiation (sustainable energy)

Source: ELD, UNEP FI, Chatham House, Kepler Cheuvreux (N.B. financial risk assessment does not include explicitly regulatory pressures, which will be not only sector- but also country-specific and based on specific drivers, e.g. climate regulation).

For the financial sector, the current thrust, due to various carbon, climate and deforestation disclosure discussions, policies and regulations maintains pressure on divestments and risk assessment

...to actual material impacts on the P&L

Moreover, land degradation may materialise both directly and indirectly. We distinguish, for instance, land degradation risks related to natural (e.g. water for farmland), social (e.g. community networks), or physical assets (e.g. animals, crops), from regulatory or legal forces, which have more measurable implications.

While all companies across all climate-sensitive sectors may be considered subject to indirect land degradation risks, the impact on particular companies' P&Ls varies greatly depending on the sector and land relationship. Thus, they should be fine-tuned to company-specific contexts.

Land degradation may materialise both directly, and indirectly

Table 30: Direct and indirect drivers of Land degradation business impacts

Sector	Level of negative impact	Direct drivers	Indirect drivers
Beverages	High impact	Conversion of natural habitats; introduction of alien species as part of production or pest management systems.	Water quality issues (nitrates and phosphates runoffs); water depletion
Chemicals	High impact	Conversion of natural habitats; introduction of alien species as part of production or pest management systems (with a need to distinguish the various chemicals sub-sectors)	Greenhouse gas emissions and climate change (e.g. seeds, agrochemicals, fertilisers via nitrogen), water quality issues (nitrates and phosphates runoffs); water depletion.
Construction & materials	High impact	Large impacts from mining (e.g. limestone), biodiversity impacts of forestry if badly sourced.	Greenhouse gas emissions and climate change (e.g. cement production)
Food and food retail	High impact	Conversion of natural habitats; introduction of alien species as part of production or pest management systems.	Water quality issues (nitrates and phosphates runoffs); water depletion.
Metals & mining	High impact	Land take and habitat conversion from exploration and extraction, including associated facilities, such as access roads and tailing dams; induced impacts from increased access to remote areas (in-migration). The major impact beyond actual land taken for mining sites and infrastructure is pollution and runoff from operations, e.g. radioactive waste and other damaging waste can result in irreversible or very long-term damage that is difficult to fix.	High water use and water discharges
Oil & gas	High impact	Land take and access to remote areas during exploration; pipeline and road development, which can lead to habitat fragmentation and increased third-party access to remote areas; transport of invasive species in ballast waters	Greenhouse gas emissions and climate change; water use; water discharges.
Transport	Medium impact	Development of infrastructure	Greenhouse gas emissions
Travel & leisure	Medium impact	Loss of habitats (both from facilities and supporting infrastructure).	Greenhouse gas emissions; waste generation.
Utilities	High impact	Habitat fragmentation through roads and transmission corridors for power lines; biodiversity effects of building dams and flooding. Dams and other infrastructure have major and irreversible impacts on land and all ecosystems the land provides (not just biodiversity). It is actually one of the sectors with biggest local land.	Greenhouse gas emissions and climate change; discharge of heated cooling waters; water use

Source: UNEP FI, Kepler Cheuvreux

Company-specific materiality angles, e.g. operational costs, top line

Hence, our research and companies' responses to our questionnaire indicate that typical, direct land degradation vulnerability (in terms of financial impact) may be particularly meaningful from the following perspectives (moving along the value chain and impact spectrum):

1. **COGS (raw materials) for agricultural commodities:** companies chiefly exposed through their **supply chain** that involves primary production.
2. **Land operators' capex/opex:** companies primarily exposed through their **operations** that take place on land.
3. **End-market exposure:** top-line growth (revenues from land rehabilitation and sustainable land management-related products and services), i.e. companies primarily exposed through **products and services** for customers.

We group companies into three clusters based on the most prominent financial impact from land degradation/rehabilitation:
1) agricultural commodities (COGS)

2) Land operators (capex/opex)

3) top-line growth exposure

Table 31: Land degradation sector clusters per key P&L impact (illustrative – not exhaustive)

Cluster	Key P&L impact	Materiality	Sectors most concerned	Main risks/opportunities	Contribution to Land Degradation Neutrality (LDN)	Upside for collaboration with integrated landscapes funds	Comments
1. Agricultural commodities	Costs Of Goods Sold (COGS)	Raw materials quality, price, availability	Consumer sectors, pulp & paper	Reduced productivity due to land use change, environmental pollution, soil erosion and nutrient loss leading to increased prices and decreased availability of raw materials; loss of license to operate; opportunities for differentiation (labels, sustainable sourcing).	Top down sustainable sourcing targets supporting Sustainable Land Management (SLM), bottom up dedicated programmes involving land rehabilitation (e.g. for palm oil)	Direct through dedicated funding (e.g. Danone), or indirect through e.g. technical assistance on projects (e.g. leveraging companies foundations, such as Lindt Cocoa foundation expertise in sustainable land management for particular commodities).	<i>Palm oil, timber, cocoa, soya and cattle are commodities whose long-term costs prospects are particularly closely related to land degradation and for which companies face a particularly strong pressure to provide more robust evidence that sustainability commitments are implemented on the field and enhance companies resilience to raw materials-related risks (e.g. extreme weather events)</i>
2. Land operators	Capex/opex	Externalities entailed by their operations, supply chain disruptions	Oil & gas, utilities, construction	Limited environmental expenditures and licence to operate risks for construction, extractives, utilities.	Sustainable land management (SLM) projects, systematic and proactive integration of biodiversity considerations across projects; comprehensive coverage of restoration efforts	Sustainable Land Management (SLM and land restoration technical expertise (e.g. utilities and extractives have internal capabilities to conduct restoration projects as part of their licence to operate). Some potential opportunities with renewables projects (e.g. wind) as they offer high suitability for Sustainable Land Management	<i>These sectors are primarily licence-to-operate-driven in their approach to tackle land degradation. The challenge is therefore for companies to demonstrate they take a step farther, which may involve ad hoc Sustainable Land Management (SLM) projects along with more systematic and ambitious support to ecosystem services protection. Evidence of efforts to prevent environmental disasters (e.g. Samarco-like) also takes centre stage.</i>
3. End-market exposure	Revenues	Companies whose specific product(s) and/or service(s) – and therefore growth opportunities – may help tackle land degradation.	Chemicals, capital goods, waste & water management	Positive top-line exposure for Arcadis (e.g. market of site Evaluation and Restoration) , Chemicals active in the agro space are also set to broadly benefit from Sustainable Land Management or SLM (e.g. Syngenta, KWS)	Promoting Sustainable Land Management (SLM) via dedicated engagement programmes with farmers (e.g. Syngenta's "Good Growth" plan)	Sustainable Land Management (e.g. Arcadis restoration business unit) and land restoration (e.g. breeding techniques, learning from training programmes such as the one undertaken by Syngenta) technical expertise	<i>Chemicals active in the agro space business interests revolve around securing long-term relationships with farmers (i.e. their customers) so credible support to Sustainable Land Management (SLM) is central to their business model.</i>

Source: Kepler Cheuvreux

Tentative findings: company profile matrix

The following table provides our initial mapping for companies, which details our assessment of their exposure to businesses risks and opportunities associated with land degradation.

Table 32: Companies' likely exposure to land degradation-related risks and opportunities (indicative)

Company	Sector	Land contact in value chain	Area of exposure to those affected by land degradation	Geographical impact	Land ownership	Financial impact	Sector level of risk	Company level of potential risk	Sector level of impact	Company level of potential impact
Adidas Group	General retail	Distant	Suppliers	India, China, Pakistan and Brazil (cotton)	No	Raw materials	High	High	Medium	Medium
Ahold	Food retail	Distant	Suppliers	Global	No	Raw materials	High	Medium	High	High
Arcadis	Capital goods	Direct	Customers	Global	No	End market (services)	Low	Low	Medium	High
Austrian Post	Transport	Distant	None	Global	No	Energy procurement (biofuels)	High	Low	High	Medium
Barry Callebaut	Food	Distant	Suppliers	Côte d'Ivoire, Ghana, Indonesia, Nigeria, Cameroon, Brazil	No	Raw materials	High	High	High	High
Carrefour	Food retail	Both	Suppliers	Global	No	Raw materials	High	Medium	High	High
Coca-Cola	Beverages	Distant	Suppliers	Eastern Europe, Italy, Russia	No	Raw materials	High	Medium	High	High
Hellenic CRH	Construction & materials	Both	Suppliers	Global	Yes	Raw materials and Operational / Licence to operate	High	Medium	High	High
Delhaize	Food retail	Distant	Suppliers	Global	No	Raw materials	High	Medium	High	High
Deutsche Post	Transport	Distant	None	Global	No	Raw materials	High	Low	High	Medium
EDP Renovaveis	Utilities	Direct	Communities	Developed markets	Yes	Raw materials	High	Low	High	Medium
Elia Group	Utilities	Distant	Communities	Germany, Belgium	Yes	Raw materials and Operational / Licence to operate	Low	Low	High	High
Enagas	Utilities	Distant	Communities	Spain, Mexico, Chile, Peru, Greece, Albania and Italy	Yes	Raw materials and Operational / Licence to operate	High	Medium	High	High
ENI	Oil & gas	Direct	Communities	Global	NA	Operational / Licence to operate	Medium	High	High	High
ERG	Utilities	Direct	Communities	Italy	No	Raw materials and Operational / Licence to operate	High	Low	High	Medium
Fortum	Utilities	Distant	None	Finland, Sweden, Russia	Yes	Raw materials and Operational / Licence to operate	High	Medium	High	Medium
Galp	Oil & gas	Direct	Communities	Global	Yes	Raw materials and Operational / Licence to operate	Medium	High	High	High
Hochtief	Construction & materials	Direct	Customers and Communities	Global	Yes	Raw materials and Operational / Licence to operate	High	High	High	High
Hugo Boss	Home & Apparel	Distant	Suppliers	See commodities producing countries (direct suppliers in Europe)	No	Raw materials	High	Medium	Medium	Medium
Iberdrola	Utilities	Direct	None	Impact where their operations take place	Yes	Raw materials and Operational / Licence to operate	High	Medium	High	High
Jeronimo Martins	Food retail	Distant	Suppliers	Global	No	Raw materials	Low	Medium	High	High
Kering	Luxury goods & cosmetics	Distant	Suppliers	na	No	Raw materials and Operational / Licence to operate	High	High	Medium	Medium
KWS Saat	Chemicals	Distant	Customers	Global	Some acres for R&D purposes	End market (agricultural inputs)	Medium	Medium	High	High
Lindt & Sprüngli	Food	Distant	Suppliers	Ghana (for all consumer beans), Latin America (Ecuador), Madagascar and the Caribbean (for fine flavour)	No	Raw materials	High	High	High	High

Continued on next page

Companies' likely exposure to land degradation-related risks and opportunities (indicative)...continued

Company	Sector	Land contact in value chain	Area of exposure to those affected by land degradation	Geographical impact	Land ownership	Financial impact	Sector level of risk	Company level of potential risk	Sector level of impact	Company level of potential impact
Nestlé	Food	Distant	Suppliers	Global	na	Raw materials	High	High	High	High
Nordex SE	Capital goods	Distant	None	Global	No	Operational / Licence to operate	Low	Low	Medium	Medium
SCA	Forestry, paper and packaging	Direct	None	Sweden (forestry assets) & global (pulp sourcing)	Yes	Raw materials and Operational / Licence to operate	High	High	High	High
Skanska	Construction & materials	Both	Suppliers	Europe, North America	No	Raw materials and Operational / Licence to operate	High	Low	High	High
SNAM	Utilities	Direct	None	Europe	NA	Raw materials and Operational / Licence to operate	High	High	High	High
Statoil	Oil & gas	Direct	None	Global incl. Canada (tar sands)	NA	Operational / Licence to operate	Medium	High	High	High
Suedzucker	Food	Distant	Suppliers	EU	no	Raw materials	High	Low	High	Medium
Symrise	Chemicals	Distant	Suppliers	Global	NA	Raw material	Medium	Medium	High	High
Syngenta	Chemicals	na	Customers	Global	NA	Operational / Licence to operate	Medium	High	High	High
Tesco	Food retail	Distant	Suppliers	Global	No	Raw material	High	Medium	High	High
Vallourec	Oil services	Distant	None	Global	Yes	Raw materials	Medium	Low	High	High
Voestalpine	Capital goods	Distant	None	Global	No	Raw materials	High	Low	Medium	Low
YIT	Construction	Direct	None	Europe	Yes	Licence to operate	High	Low	High	High

Source: Kepler Cheuvreux (N.B. This hinges upon our interpretation of data collected on the level of exposure, land contact, sector level of risks, among other factors, and is obviously subject to a number of shortcomings, in particular data quality and quantity and the sample bias, publicly listed European companies. We will look at ways of refining it in future research).

2) Leadership: key options to mitigate risks

Acting to curb land degradation versus rehabilitation of degraded land

That leads us to pinpoint the potentially actionable relevant land rehabilitation and land degradation risk mitigation options for our stock list:

1. **Land rehabilitation: driving demand for restored land** (degraded land that has been rehabilitated) that may deliver numerous economic (e.g. improved productivity of current land use) and environment benefits (e.g. carbon sequestration).
2. **Land degradation risk mitigation: thwarting or reversing the degradation of existing land that is projected to occur.**

Table 33: Sector risks, drivers of LD and mitigation options (indicative)

Sector	Companies	Land contact in value chain (Direct/Distant)	Customers/Suppliers/Communities	Level of land degradation impact	Drivers of land degradation	Land Degradation mitigation options (existing and potential)
Capital goods	Arcadis	Direct	Customers	Low	None	Environmental Construction Services and Site Evaluation and Restoration (e.g. on brownfield sites)
Chemicals	Symrise, KWS	Distant	Business solutions, raw materials	High	Raw materials	Raw materials substitution (e.g. menthol expansion for Symrise)
Construction	CRH, Hochtief, Skanska, YIT	Direct	Raw materials and operations	Medium to high	Sourcing raw materials from quarries, Contract mining activities (e.g. ores, coal)	Land rehabilitation and restoration
Food	Barry Callebaut, Lindt & Sprüngli, Nestlé, Suedzucker	Distant	Raw materials	Medium to high	Raw materials sourcing (e.g. soya, cattle, palm oil)	Raw materials certification, engagement with farmers
Food retail	Ahold, Carrefour, Delhaize, Jeronimo Martins, Tesco	Distant	Raw materials	Medium to high	Raw materials sourcing (e.g. soya, cattle, palm oil)	Raw materials certification, engagement with farmers
Home & Apparel	Hugo Boss	Distant	Raw materials	Low to medium	Raw materials sourcing (e.g. cotton, wool)	Raw materials certification, engagement with farmers
Luxury Goods	Kering	Distant	Raw materials	Medium to high	Raw materials sourcing (e.g. leather)	Raw materials certification, engagement with farmers
Oil & Gas	Galp Energia, Statoil ASA	Direct	Communities	Medium to high	Onshore oil sands activities	Reclamation activities
Transport	Deutsche Post DHL	Distant	Energy procurement	Low	Biofuels	Guidelines on biofuels
Utilities	Enagas, SNAM, Iberdrola	Direct	Environmental impact studies / Licence to operate	Low	Natural gas	Earth surface restoration via decompacting and replacement

Source: Kepler Cheuvreux

Challenging opportunities for direct SLM undertakings: few land owners

We also emphasise the fundamental distinction between land users and land facilitators or enablers of land rehabilitation/SLM:

1. **Land owners:** A limited number of companies in our universe can be considered as having a direct exposure to land degradation through land ownership. That includes, for example, pulp & paper companies with material forests ownership for which they price the value in their balance sheet (e.g. Stora Enso, SCA, UPM), or Vallourec, among oil services, and others in the table below in sundry sectors (KwS, YIT, Enagas).

A limited number of companies in our universe have a material direct exposure to land degradation through land ownership e.g. pulp & paper companies (e.g. Stora Enso, SCA, UPM)

Table 34: Details on companies with land ownership

Sector	Company	Land ownership
Chemicals	KwS	Some acres for R&D purposes
Construction	YIT	When developing a project, YIT looks for a plot of land for the building. In some cases, it buys the plot from cities or other landowner. In other cases, it rents the plot for the building. Land and water areas are only worth EUR1.3m in the balance sheet.
Oil services	Vallourec	Forests used for eucalyptus production (237,000 ha). Biological assets in the balance sheet amounted to EUR213m in 2014
Pulp & Paper	SCA	SCA is Europe's largest private forest owner (2.6m ha of forest land in Sweden). Total forestry assets are valued SEK30bn.
Utilities	Enagas	In some markets, it is required to own the land. It depends on the regulation of each country, e.g. in Spain, Enagas only has land access authorisation to operate/maintain natural gas infrastructure.

Source: Companies

2. **Land facilitators or enablers:** Most companies operating sizeable land projects, e.g. utilities or construction companies, mainly operate under land lease or land rental contracts, i.e. managed land. Moreover, companies in consumer sectors or that rely on commodities can generally fuel demand for Sustainable Land Management (SLM) indirectly through sustainable sourcing, e.g. pressuring palm oil growers like Sime Darby, Asian Agri, etc. Still, these companies have a crucial role to play, as they can drive systemic changes across their supply chain and beyond.

Companies exposed indirectly have a crucial role to play, as they can drive systemic changes in their supply chain and beyond by promoting or strengthening SLM

3) Enabling factors and sustainable landscape finance

Where and how could a fund help overcome sources of inertia?

The Land Degradation Neutrality (LDN) fund project, which aims to allocate capital to land degradation prevention and land restoration/rehabilitation, together with similar financing instruments (sustainable landscape finance), focuses on tackling the numerous hurdles quoted by companies as undermining their ability to promote land rehabilitation and sustainable land management (SLM), especially uncertainties related to:

1. **Local policy frameworks/access to land.**
2. **Financing mechanisms and engagement with investors.**
3. **The economic and intangible benefits** (e.g. reputational, licence to operate, human capital) companies may reap via factoring in ecosystem services in their business decisions and generally meeting their sustainability commitments.

The LDN focuses on tackling the numerous hurdles cited by companies as undermining their ability to promote land rehabilitation and SLM

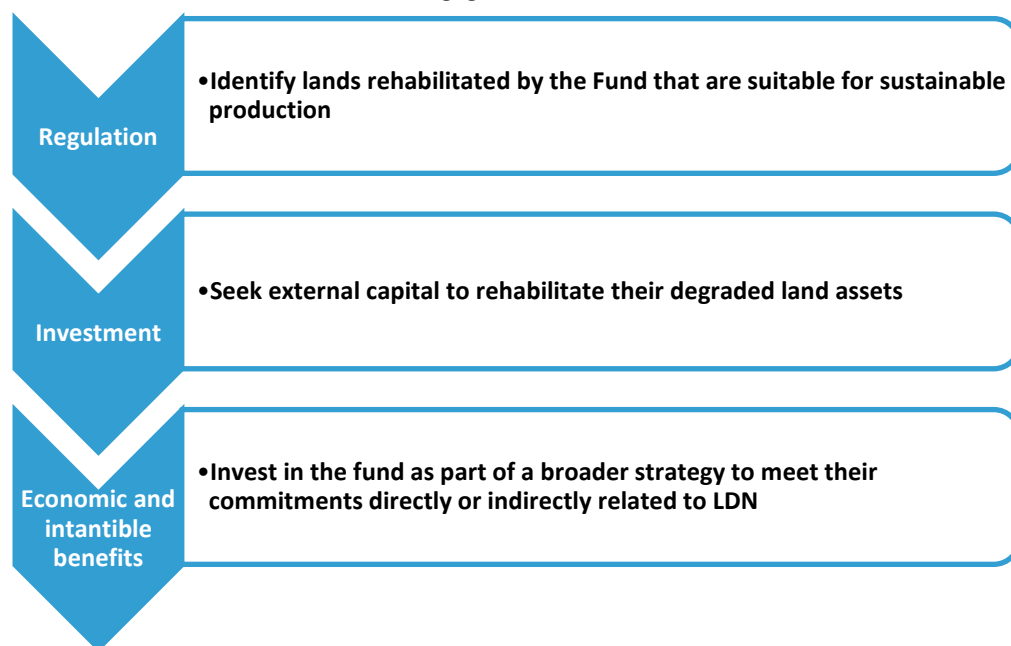
That leads us to conclude that these areas open up direct and indirect engagement opportunities for funds aligned with Land Degradation Neutrality and businesses:

Opportunities of direct engagement with LDN Finance

Broadly speaking, we see three reasons for companies to engage directly with funds centred on integrated landscape management that mirror these three challenges (regulation, investment and economic/intangible benefits).

Three broad reasons to engage directly with the fund

Chart 23: Main rationale for business engagement with LDN finance



Source: Kepler Cheuvreux

There is a range of underlying options for direct business engagements, which correspond to the four common phases of a land management rehabilitation/restoration project, including, but not limited to, the benefits in the following table.

Options for direct business engagement correspond to the four common phases of a land rehabilitation project

Table 35: Core benefits for companies by phase of a typical land rehabilitation project

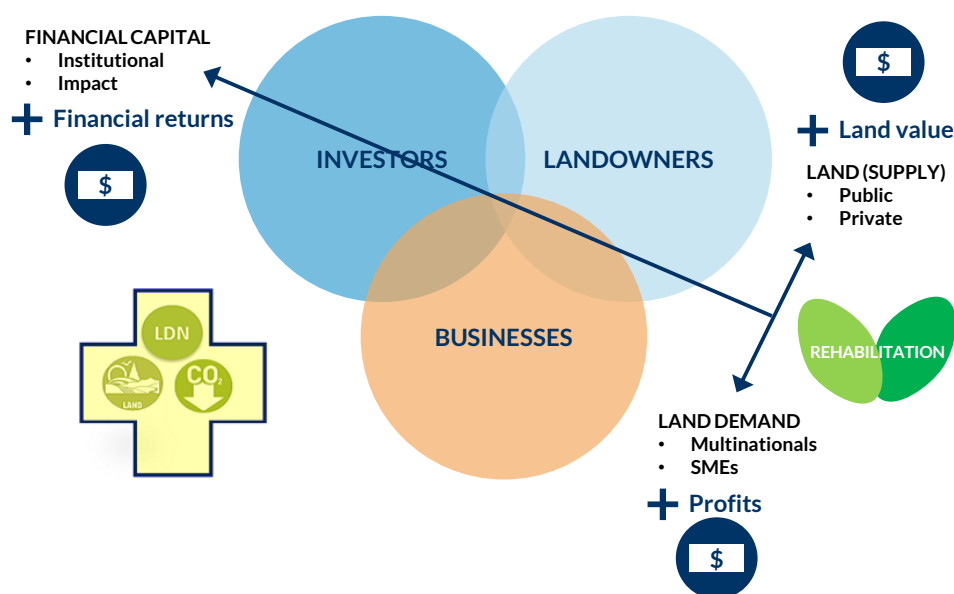
1. Phases 1 and 2	2. Phases 3 and 4
a. Help securing access to degraded land	a. Companies leasing rehabilitated land from the sustainable landscape fund or a similar private equity impact fund
b. Co-investments/partnerships in rehabilitation and SLM projects investments. This may include, for example, a project that could help tackle a long-term risk in a particular company's business, if it were looking for access to specific financing (e.g. water depletion for a brewer factory)	b. Capitalise on benefits of rehabilitated land assets
c. Companies receive loan financing from the fund to rehabilitate land for production or conservation	c. Upgraded land assets can be secured for long-term sustainable use in exchange for leasing fees, commitment to LDN, social and environmental standards and impact reporting.
d. Companies invest in the fund to pursue LDN-related targets	
e. The sustainable landscape fund invests in companies' funds (e.g. Danone livelihoods 3F)	
f. Land restoration companies can bid for rehabilitation projects enabled by the sustainable landscape fund (capital goods company Arcadis provides a valuable study case, as it is directly exposed to sustainable infrastructure projects).	

Source: UNCCD, Kepler Cheuvreux

This means companies may choose to be involved in one or more of these land rehabilitation phases, depending on their preferences and contexts.

In the context of large deals, private equity impact funds could, for instance, act as a platform that helps to reconcile benefits for investors, land owners and companies, based on their input. In our view, this is key in the context of companies' top-down sustainability commitments, which are often hampered by a lack of alignment with policymakers and small stakeholders (e.g. palm oil certification in Indonesia).

Chart 24: LDN financing's direct channels: large deals



Source: UNCCD

Multiple intangible benefits and opportunities of indirect engagement

Synergies between businesses and land restoration and sustainable land management (SLM) funds can take on a variety of shapes, and many times there are interrelated and often intangible advantages for companies.

We think the importance of having a multi-stakeholder intermediary with an additional layer of oversight and third-party expertise (e.g. through transparency platforms like Global Forest Watch), including derisking tools, along with technical support, is especially valuable for large companies, given the sensitivity of land issues and their associated political risks and environmental and social concerns (e.g. human rights on farmland).

Sustainability commitments are often hampered by a lack of alignment with policymakers and small stakeholders, e.g. palm oil certification in Indonesia

Importance of having a multi-stakeholder intermediary with an additional layer of oversight and third-party expertise and derisking tools, given the sensitivity of land issues

Table 36: Broad business benefits for company engagement with integrated landscape investments

Business opportunity	Details and our view
Facilitate relationships with both small-scale producers and policy makers	Including the desired policy framework and mechanisms. This is particularly key in the context of top-down sustainability commitments that are often hampered by a lack of alignment with policy makers and small stakeholders (small-scale producers), including potentially the promotion of local familial agriculture.
Strengthen indicators and monitoring systems	Help enhance the business case for taking action, e.g. by valuing land including the value for productive and ecosystem services, or get a better understanding of the optimal business model for restoration and sustainable land management (identify the smallest investment for the highest return). We think this potential additional layer of oversight with third-party expertise and derisking tools, coupled with technical support and coordination, may prove important.
Propel sustainability commitments and brand value	Adopting LDN targets can help companies reach other targets too (e.g. biodiversity, zero net deforestation, climate change mitigation and adaptation, and poverty alleviation, etc.). Conversely, companies' policies can drive the demand for SLM projects, e.g. through certification. This might also involve companies clarifying their mitigation hierarchy approach vis-à-vis land degradation (first avoidance, thereafter mitigation, and, as a last resort, restoration), and their policy regarding compensation and offsetting the negative impact on land.
Securing operations, access to markets and licences to operate	For both companies with operations that directly depend on productive land or depend indirectly on land or ecosystem services provided by land for their products. This includes meeting regulators' requirements and fostering local acceptance (social license to operate)
Obtaining valuable land assets for Sustainable Land Management (SLM)	Turning degraded land into valuable land assets for sustainable production (e.g. for companies owning land, like those in the pulp & paper sector).
Fostering social stability	Mitigate direct (e.g. to consumers) and indirect (e.g. to company facilities, employees, community networks, physical assets) business risks brought about by social instability.

Source: Kepler Cheuvreux, WBCSD

Challenges ahead: concepts, time and alignment with business drivers

That said, the LDN concept and fund are still at an early phase of their development, and critical elements, such as the indicative sector allocation by region, size, sector etc., are being determined. We think integrating these into companies' policies could face several challenges, in particular:

- 1. Private equity impact funds' funding, business case, returns and additionality:** Some companies might prefer to conduct rehabilitation projects on their own or with other platforms with whom they already have partnerships. They could also feel there is a lack of evidence about the business case for the fund's interventions (methodology and accurate data to measure the costs of action vs. inaction). We also understand that most companies' rehabilitation projects that we look at in this report are dealt with by the companies themselves (i.e. not outsourced) in the context of non-commercial investments, i.e. financial returns are not the prime motive: 1) CSR projects with a predominantly nonfinancial approach; or 2) licence to operate-driven programmes. That means the LDN fund would need to prove environmental and non-financial/intangible benefits (especially alignment with brand, reputational and strategic interests).
- 2. Concepts:** We are still at the very beginning in terms of the level of awareness and understanding of the vision of LDN as well as natural capital-related business risks and opportunities. Companies may handle LDN in various ways in their policies and commitments, and there may be parallel and competing discourses based on the targeted priorities.
- 3. Time:** The often lengthy (10-20 years) timescale needed for large-scale projects may not be aligned with companies' business decision timeframes.
- 4. Risks.** Companies might prefer to keep full control over risk mitigation as part of their investments in sensitive businesses, such as farmlands, rather than be associated with an external impact investing fund. Against the backdrop of NGO scrutiny of global growing investments in farmland, we

Most companies' rehabilitation projects that we review here are taken care of by the companies themselves (i.e. not outsourced) in the context of non-commercial investments

The often lengthy timescale needed for large-scale projects may not be aligned with companies' timeframes

see the potential adverse consequences of developing export-oriented production versus agriculture production for local markets, land conflicts and land grabbing (often considerably complex) as particularly acute concerns that any new sustainable landscape fund would need to thoroughly incorporate into its derisking tools, standards and process.

Next steps: spotlight on sectors helps clarify room for synergies

As there is a need to examine sector contexts for the linkages and business cases for land rehabilitation, we follow our sector cluster classifications (agricultural commodities, land operators and end-market exposure) and now examine:

1. **Agriculture and forestry supply chain impacts on consumer sectors (sustainable sourcing)** that we see as particularly exposed to the associated financial risks and opportunities. We think these companies and their sustainable production and land restoration supply chain actions are ripe for projects promoted by the funds and third parties, given the relative maturity of the underlying investing markets.
2. The other sectors contain companies we see as exposed to the theme at varying levels, including **land operators (sustainable operations)**, and from **an end-market perspective (sustainable products and services)**.

***In the next sections,
we focus on consumer
sectors, utilities,
construction,
chemicals and capital
goods***

Agricultural and forestry commodities

Land degradation typically drives up food prices and exacerbates price volatility, weighing heavily on the base of the economy (bottom of the pyramid or BOP). That said, the likely effects on companies' financials due to sourcing may vary substantially depending on multiple factors, especially their ability to pass on costs to customers. Thus, food companies (especially Nestlé) could have benefitted from the El Niño effect in the short term.

In the longer run, we see physical climate impacts (e.g. extreme weather events, structural shortage of cocoa), coupled with regulatory risks (e.g. national low-carbon policies, tensions between sustainable sourcing and local development priorities) and economic factors (e.g. demography) as likely to cause additional uncertainties in companies' supply chains in relation to stranded asset risks in forestry and agriculture.

Meanwhile, deforestation-related policy and reputational drivers (e.g. Indonesia's forest moratorium, Brazil's forest and soya moratorium, and palm oil scrutiny) have helped move the needle among large European companies' risk mitigation policies, reporting, as well as some concrete steps. Nonetheless, there are still many challenges to achieving faster improvements in industrial supply chains for the most land degradation-sensitive commodities. In particular, we highlight how experiences learned in wood and palm oil (prime concerns by some distance presently) are gradually leading to a shift of focus to other commodities such as soy (subject to growing scrutiny), cattle, cocoa, and leather.

This leads us to conclude that we need to see more robust evidence of ambitious and integrated implementation in which coordinated actions on financing land rehabilitation and sustainable land management (SLM) play an essential role. We have already seen this done at Danone (funding) and Nestlé (policy) as well as in Pulp & Paper, which is well ahead of the curve and where several names (e.g. April Group, SCA, Stora Enso, Suzano) with material land exposure are spearheading actions to support sustainable timber.

Physical climate impacts coupled with regulatory risks (e.g. national low-carbon policies) may cause assets in forestry and agriculture to be stranded

Macro view on land materiality across consumer sectors

Sector snapshot

Table 37: Framework to map companies' Land degradation profiles and opportunities to achieve LDN

Steps	Description
Sectors	Food, Food retail, General retail, Home & Apparel, Pulp & Paper
Main P&L impact	Raw material quality, price, availability
Companies reviewed (* those that have responded to our questionnaire)	<u>Food</u> : AAK, Aryzta, Barry Callebaut*, Bonduelle, Chr. Hansen, Danone, Ebro Foods, Emmi, Evolva, Lindt & Sprüngli*, Nestlé*, Orior, Parmalat, Suedzucker, Unilever, Viscofan; General retail: Adidas Group*; <u>Home & apparel</u> : Hugo Boss; Food retail: Ahold*, Carrefour*, Jerónimo Martins*, Tesco*; Luxury Goods & Cosmetics: Kering*; <u>Pulp & Paper</u> : April Group, SCA*, Stora Enso, Suzano; Beverages: Coca Cola Hellenic; <u>Chemicals</u> : Lenzing. <u>Others</u> : Olam
1. Exposure	
Land impact	<u>Direct driver</u> : Conversion of natural habitats; introduction of alien species as part of production or pest management systems. <u>Indirect drivers</u> : Water quality issues (nitrates and phosphates runoff); water depletion
Financial impact	<u>Risk</u> : Reduced productivity due to land use changes, environmental pollution, soil erosion and nutrient loss leading to increased prices and decreased availability of raw materials; loss of licenses to operate; <u>Opportunities</u> : differentiation, brand value enhancement and protection, cost control (labels, sustainable sourcing, and natural capital leadership).
2. Leadership	Supply chain risk mapping, sustainable sourcing guidelines and policy, certification targets with regards to the main commodities (e.g. palm oil, cocoa, soya, cotton), zero net deforestation objectives supported by evidence of enforcement (e.g. SCA, Nestlé), innovative funding mechanisms (e.g. Danone), SLM and land restoration/rehabilitation projects (e.g. APRIL Group, Olam, Stora Enso, Suzano)
3. Reporting	Commodity share of total sourcing, audits & impact on soil fertility, transparency with regards to risks exposure mapping/natural capital impact and dependencies.
4. Enabling factors	<u>Cross-commodity factors</u> : policies against deforestation & sustainable land use, climate regulation and carbon price signals, action on demand for commodities, action on supply of commodities: tightening standards. <u>Specific commodities factors</u> : <u>Cocoa</u> : SLM and smallholders poverty alleviation mechanisms; <u>Palm oil</u> : focus on ways of having new plantations in Indonesia use "previously cleared and/or degraded land" (e.g. HCS+ methodology proposal)
5. Sustainable landscape finance	<u>Investments</u> : Danone's Livelihoods 3F, whose approach converges with the LDN fund's vision; rehabilitation projects and SLM in all companies' supply chains across the sector (notably Pulp & Paper companies)
Comments	Pulp & Paper companies have been spearheading land rehabilitation projects, as they are especially affected through their forestry assets. Among customer sectors, we see food companies as particularly exposed to the impact land of degradation through food prices (e.g. speculation on a structural risk of the shortage for cocoa); with a need to differentiate their exposure to commodities (deforestation-related commodities tend to face heavier scrutiny). Food retail companies are more indirectly impacted and relatively protected. Reputational concerns seem dominant for luxury goods and general retail, including several names in high-end market segments (e.g. Kering, Hugo Boss), which have been proactive in establishing natural capital reporting frameworks. Pending fine-tuning and expansion plans, this type of reporting can be interpreted as a positive signal regarding the company's efforts to use credible environmental factors to enhance its brand and a possible willingness to subsequently embed environmental considerations into decision making, including risk mitigation, and contribute raising the understanding of the business case (currently still unclear given how their reporting is structured). The use of degraded land for sustainable palm oil has emerged as an interesting area of overlap between companies and LDN goals.

Source: Kepler Cheuvreux

Table 38: Matrix of land degradation risks and practices regarding Land Degradation Neutrality (LDN) by commodity (illustrative – not exhaustive)

	Land degradation risk assessment	Companies most exposed	Companies risks exposure	Comments	Sustainability reporting and risk mitigation performance (examples of best practices conducive to LDN)	Comments	Ability to mitigate the risks	Comments
1) Palm oil	Massively cultivated on monoculture fields, destroying high conservation value areas, forests and soil	AAK, Unilever	High	Indonesia's forest fires put the spotlight on the desertification crisis in the country. In addition, certification standards are mired in controversies amid a challenging regulatory environment	AAK	Clear sustainable palm oil targets that have however been postponed due to RSPO certified supply/demand imbalance	Medium	<u>Reputational:</u> Companies' commitments may conflict with governments' priorities. Costs: AAK usually able to pass on any price inflation/deflation to the customer but shortage of certified palm oil could pose a threat
2) Cocoa beans	Cultivated on degraded land e.g. full-sun farming increases short-term yields, but losing long-term yields and quality and disrupting soil. Cocoa supply may be materially affected by environmental damages in key regions (Côte d'Ivoire, Ghana, Indonesia, etc.) – including soil degradation - compounded by poverty and demographic issues in farming communities.	Lindt, Barry Callebaut	High	There are expectations of a structural shortage amid expanding demand from emerging market middle classes, in particular India, China and Brazil. Companies may also rely on risky countries for their supply e.g. Lindt gets all its consumer beans from Ghana	Lindt, Barry Callebaut	Both companies are working with local farmers to increase the cocoa crop and ensure sustainable cultivation in the context of growing scrutiny over their actual efforts to tackle the most prominent concern, the extreme poverty of smallholders.	High	<u>Cost:</u> Lindt (luxury chocolates) typically benefits from higher cocoa prices, given strong pricing power although demand is more elastic. We see Barry Callebaut (processor) as a cost-plus business model but higher cocoa prices would hurt volumes.
3) Cotton	Soil erosion and chemical disruption, water intensiveness	Adidas, H&M, Lenzing	Medium	2011 sharp hike in cotton prices as a result of adverse weather effected reflected companies' vulnerability, e.g. H&M's share price fell. Sporting goods manufacturers were far less affected.	Adidas	Adidas shows a fairly good level of transparency in its reporting in terms of geographical exposure in its supply chain e.g. as it includes country of origin sustainability sourcing via the Better Cotton initiative	High	<u>Cost:</u> We see the sporting goods sector as likely to be able to mitigate rising raw material costs fairly well
4) Leather	Exposure to areas prone to land degradation	Kering	Medium	Kering sources cashmere, wool and sheep leather that are produced in semi-arid areas which are particularly prone to land degradation and desertification	Kering	We welcome Kering's granular reporting with regards to leather sourcing with, as a first step, an environmental impact assessment, and a commitment to review policies accordingly	High	<u>Cost:</u> Raw material costs are limited. We are not aware of major recent reputational land-related concerns.

Continued on next page

Matrix of land degradation risks and practices regarding Land Degradation Neutrality (LDN) by commodity (illustrative – not exhaustive)...continued

	Land degradation risk assessment	Companies most exposed	Companies risks exposure	Comments	Sustainability reporting and risk mitigation performance (examples of best practices conducive to LDN)	Comments	Ability to mitigate the risks	Comments
5) Soya	Massively cultivated on monoculture fields, destroying high conservation value areas, forests and soil. Soil erosion is also an issue	Ahold, Carrefour, Jerónimo Martins, Tesco	Medium	Strong regulatory momentum, especially in Brazil (e.g. In the Amazon, but not necessarily Cerrado and Atlantic Forest – also there is possibility of transnational leakage)	Ahold	Ahold has especially comprehensive targets in terms of commodities covered and update on status (e.g. including sustainable soya consumption for the Netherlands).	High	<u>Cost</u> : Food retailers are relatively protected, as there are some compensatory effects among products
6) Timber	Logging and disruption of high conservation value ecosystems	APRIL Group, Holmen, SCA, Stora Enso, Suzano, and UPM	Medium	In the past few years, the business case for responsible forestry has become an increasingly important competitive tool and certification standards have reached scale	SCA, APRIL Group, Stora Enso, Suzano	SCA's coverage is particularly thorough (clear target and update on progress, measures). APRIL Group, Stora Enso, Suzano have notable dedicated land restoration projects	High	<u>Cost</u> : The industry's sustainable sourcing and regulation are relatively advanced.

Source: WWF, CDP, Cocoa barometer, sciencedirect, Kepler Cheuvreux

A two-way relationship: impacted and impactful

As stated before, agricultural and forestry activities suffer from the adverse effects of land degradation (e.g. lower productivity) that can threaten future supply. Meanwhile, the sector also drives land degradation through unsustainable farming methods (poor nutrient and soil structure management). These trends can spark numerous risks for companies, be they physical (e.g. Brazil's 2014-15 drought), regulatory, or reputational.

Physical (e.g. drought) and regulatory risks (e.g. low-carbon policies) in forestry and agriculture...

Chart 25: Illustrations of land degradation-related physical, regulatory and reputational risks



Source: Kepler Cheuvreux, NCC, The Guardian

How big are the risks of stranded assets in agriculture and forestry?

The rising awareness of these risks has galvanised the concept of the risk of "stranded assets" in agriculture and forestry.

To illustrate the potential magnitude of the financial impact in the agricultural sector, the Smith School of Environment and Enterprise (SSEE) conducted a ground-breaking analysis in 2013 that included three risk scenarios to assess the Value at Risk (VAR) from natural capital loss caused by the physical and economic drivers of environmental risks. Under the extreme loss of natural capital scenario, it expects the loss calculated by the 0.5% VAR to nearly double from USD6.3trn to USD11.2trn.

...may cause assets to be stranded

Ground-breaking SSEE research on the value at risk from loss of natural capital...

Significant challenges in applying the concept in listed equity

We think that an analogy between, on one hand, stranded assets in a fossil-fuel and carbon-risk context, and, on the other hand, forestry and agriculture assets is made more difficult, given:

- Value chain exposure:** As we are primarily looking at European listed companies in this report, it means that they have indirect exposure through their value chains and thus they are affected by raw material prices, availability and volatility (i.e. different from fixed assets, which could be written off, and companies that are directly dependent, such as agricultural producers).
- Low commodity price visibility:** This is related to both cyclical (e.g. 5-15 years) and structural physical risks (e.g. extreme weather events) and regulatory scenarios, including time horizons. The potential consequences of

...whose application faces methodological challenges:

1) Supply chain complexity

2) Low visibility on commodity price scenario

more ambitious actions on climate change for AFOLU as a result of COP21 are harder to gauge than for energy scenarios. As agricultural commodities (infinite resources) do not obey to the same laws as fossil fuels (finite resources), though there is a correlation among their prices. In addition, companies may benefit from structural scarcity, which lead to higher prices brought about by land degradation in certain contexts as long as they are able to pass on raw materials costs to customers.

We still do not know very much about the relationship between stranded asset-related impacts and dependencies in terms of commodities and land on a case-by-case basis. In our view, these concepts of stranded assets in agriculture and forestry in relation to listed equity are more of an assumption currently, as we do not have robust country and sector data. Initial comprehensive research into particular countries' regulatory plans by Chatham House (Brazil, Malaysia, Liberia) highlighted a lack of evidence that deforestation measures created stranded assets or at least stranded assets were never made an explicit component of countries' low-carbon plans.

Gauging future land degradation-related risks: watch price hikes

The general economic assumption in the IPCC and current models is that crop yield growth is likely to slow and food prices rise by 2050 under business as usual (BAU) farming practices to varying degrees of severity, depending on climate change impacts.

Climate change, water scarcity, and competition for land for other food/cash crops may thus continue affect agricultural raw materials (availability, pricing and quality). Decreasing soil fertility is another prominent risk.

Studies of land productivity trends suggest steadily falling productivity, based on 1981-2003 data, primarily in Africa, Southeast Asia and southern China, north-central Australia, the Pampas and parts of the Siberian and North American taiga (source: UNCCD, GIZ). Beyond regional and local differences, in the next 25 years, land degradation could lead to a 12% decrease in global food production, spurring a 30% hike in certain global food commodity prices (source: GIZ). To counter this trend, sustainable land management (SLM) adoption in the short term could yield up to 10% growth in production or a decline in prices.

Divestments involving AFOLU damages to the environment

Financial implications may spur investor actions. The most notable example of divestments related to land degradation was from the Norwegian Government Pension Fund, which withdrew from 27 palm oil companies in 2012 and 2013 following an analysis of their RSPO certification status and certification outlook that included a focus on Malaysia and Indonesia. More recently, Norges Bank Investment Management 2015 Responsible Investment report unveiled additional land degradation-related divestments e.g. 2 palm oil and 4 in Pulp & paper. On 14 October 2015, for example, NBIM announced it was placing Indonesian conglomerate Astra International Tbk PT under observation on the grounds of possible environmental risks involving rainforest destruction.

This relationship between stranded asset-related impacts and dependencies in relation to commodities and the land is at a fairly early stage of research

Land degradation may drive a 12% decrease in global food production, spurring a 30% hike in certain global food commodities prices

Divestments related to land degradation focus on palm oil companies...

...amid concerns about irreversible losses of finite resources...

This reflects concerns about irreversible losses of finite resources (logging of natural primary forests). Moreover, banks may also make zero net deforestation commitments in their agricultural holdings, as seen at BNP Paribas or SocGen²⁰. Finally, several investors have made pledges as part of the NY Declaration on Forests, these include: Boston Common Asset Management, Calvert Investment Management, and Trillium Asset Management.

Next step: how to move the analysis to the company level?

Mounting civil society advocacy and consumer pressure shows the importance of looking into the potential materiality of these risks when assessing a company's primary commodity reliance.

Shedding light on commodity and deforestation risks

Why commodities matter to land degradation

Slightly less than two-thirds of the earth's arable land is used for agriculture, and the demand for commodities from this finite resource continues to grow as a result of secular trends.

Many of these commodities come mainly from regions that are sensitive to land degradation. For instance, it is estimated that 40% of the EU's cropland footprint is actually outside of the EU (source: EC).

Which commodities are the most sensitive?

Given the mounting pressure in terms of commodities' links to deforestation risks for companies (the CDP Forestry programme that looks at soya, timber, cattle, palm oil, biofuels and the Global Canopy Programme), the first sensible question to ask concerns the relationship between land degradation and deforestation.

Land degradation and deforestation are closely linked

Generally, evidence suggest that land degradation is less commodity-specific and harder to isolate geographically than deforestation, as it has more to do with soil/topography conditions, extreme climate events and their management as well as other facts. That said, existing data and feedback from companies indicate that key deforestation-sensitive commodities (soya, palm oil, cattle, wood, etc.) tend to come from regions that are at risk of land degradation (dependencies) as well as underpinning these trends (drivers and impacts). Moreover, deforestation is an obstacle to SLM.

... this demonstrates the importance of looking into commodity-specific risks

What is the link between land degradation and deforestation?

Land degradation is less commodity-specific than deforestation, although they are related

²⁰ Société Générale announced it was strengthening its commitment to adopting the Soft Commodities Compact (backed by the Banking Environment Initiative (BEI) and the Consumer Goods Forum), which aims to help customers in the agricultural commodities sector achieve a target of zero net deforestation by 2020 ([link](#)). Yet signing up to BEI commitments does not necessarily equate to zero net deforestation within their own lending and investments. BNP Paribas has made a clear commitment to zero net deforestation in its agricultural lendings, which was praised as a step forward (source: Forest 500).

Table 39: Commodity water use and direct land use change

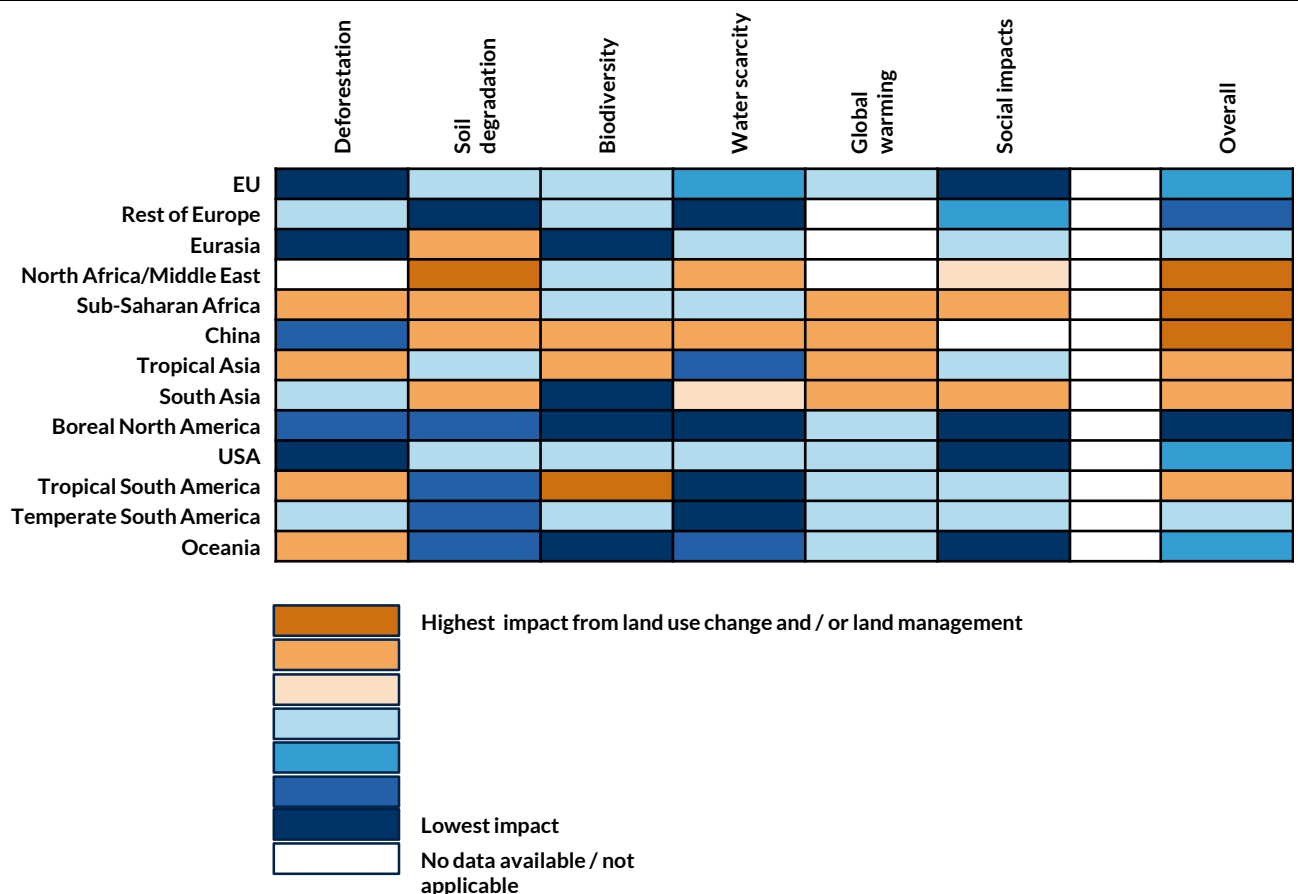
		Mapping	Water use - blue (m3)	Water use - green (precipitation) (m3)	Direct Land use Change (forestation to crop / total land use)*
Cattle	Bovine, live pure-bred breeding (per kg)		256	7,002	
Palm oil	Palm oil, crude (per kg)		1	4,691	4%
Soya cattle	Soya beans (per kg)		70	2,037	2%
Cotton	Seed cotton (per kg)		1,306	2,282	<1%
Cocoa Beans	Cocoa beans, whole or broken, raw or roasted (per kg)		4	19,745	<1%
Biofuels	Maize (per kg)		81	947	<1%

Source: Blonk Consulting (*these macro estimates answer the question: how much land was transformed (m2/ha) from forestry to crops that is attributed to oil palms in Indonesia). Data is subject to uncertainties and limitations and need to be complemented by local data)

The following chart provides a broad comparison of soil degradation and other environmental and social impacts from agricultural production related to the consumption of goods and services globally across regions, highlighting overlapping and different areas.

Soil degradation versus other environmental and social impacts by region

Chart 26: Environmental impacts/region (agricultural production related to consumption of goods and services - indicative)



Source: EC, based on a range of sources focused on existing global impact maps by environmental theme

How to fine-tune commodity positions vis-à-vis land degradation?

Impacts and dependence of a particular commodity on land degradation is largely a function of two factors: land needed and land degraded (given that land can be used/managed sustainably or unsustainably). In other words, it means, for example, looking at two questions: how much land is needed to “produce” and feed one cow/pig/hen (i.e. including for example the soya that goes into producing their animal feed)? And how much land needs to be rehabilitated to compensate for the degradation entailed in the aforementioned production processes?

In this approach, deforestation and other environmental factors such as GHG emissions, or water use could be a few of the factors that make up the land degradation component. That said, land degradation is a more broad-based and differentiated approach than these factors and involves taking a 360-degree view (“landscape approach”).

We adopt an overall approach to overcome data limitations

However, due to the range of variables at play beyond land degradation and rehabilitation (e.g. oil prices and government policies are also substantial drivers of food prices), we think it is a challenge to accurately link commodity prices to companies’ exposure to the costs related specifically to land degradation. Moreover, a key challenge is to combine environmental and social impact indicators to give a full picture of the sustainability footprint of food, which, for instance, includes the tensions between environmental and social issues (poverty alleviation).

Consequently, as existing data is insufficient to build an assessment of companies that includes both local insights and a wider range of contextualised environmental data,²¹ our first step in an effort to tentatively distinguish among companies is to use our general map of regions and commodities considered at risk for land degradation and related issues, including deforestation, climate change, and water use (leather, cotton, cocoa, palm oil, soya).

Exposure: the business case for LDN

Snapshot of link with sector value drivers and risk factors

First, we examine the business case for LDN for consumer sectors in terms of the interrelated value drivers and risks presented in the following table, which are mostly related to product quality as well as commodity availability, prices and volatility; it also includes intangible elements, like brand value, that relate to strategic issues.

Land degradation is different from and broader than environmental factors taken independently...

...but challenges in applying such a method justify a more comprehensive approach that includes related issues like deforestation and water

Key drivers of the LDN business case: commodity prices and brand value...

²¹ The Natural Capital Protocol (NCP) is expected to help fine-tune data on agricultural commodities’ natural capital [impacts](#) (Source: FAO)

Table 40: Illustration of link between land degradation-related issues and consumer sector value drivers and risk factors

Issue	Illustration
Physical risks	Land degradation can prompt drought and flooding and other issues, and therefore lead to additional costs (e.g. 2014-15 Brazil drought).
"Internalisation" of externalities	New regulations reportedly coming into place in China regarding water pollution and water consumption in the textile industry demonstrate how regulation and government policies may force the "internalisation" of externalities that will influence supply chain costs and operation.
Market forces	In the long run, the supply/demand balance of forest products is getting tighter. With this, access to competitive and reliable wood supplies for the Pulp & Paper sector may become an increasingly important competitive advantage for many end-consumer sectors.
Long-term relationships with suppliers/cost savings	Companies can maintain long-term relationships with the same farmers for various years and do not have to invest in additional farmer development. For Coca Cola, for example, it is about COGS reduction, e.g. water savings initiatives to reduce the cost of water to produce its products (its 2014 water cost was EUR13.7m).
Licences to operate	Zero deforestation policies are a basic requirement for access to markets (e.g. Liberia), or certification, in some instances (e.g. certified wood for Pulp & Paper companies).
Reputation	By and large, illegal logging, deforestation and other malpractices can generate pushback from end consumers.

Source: Kepler Cheuvreux

Then, we should differentiate consumer sub-sectors, based on our assessment of their respective sensitivity levels and exposure to two variables: costs (including regulation), and reputational risks (including' rising demand for ethically and locally sourced food).

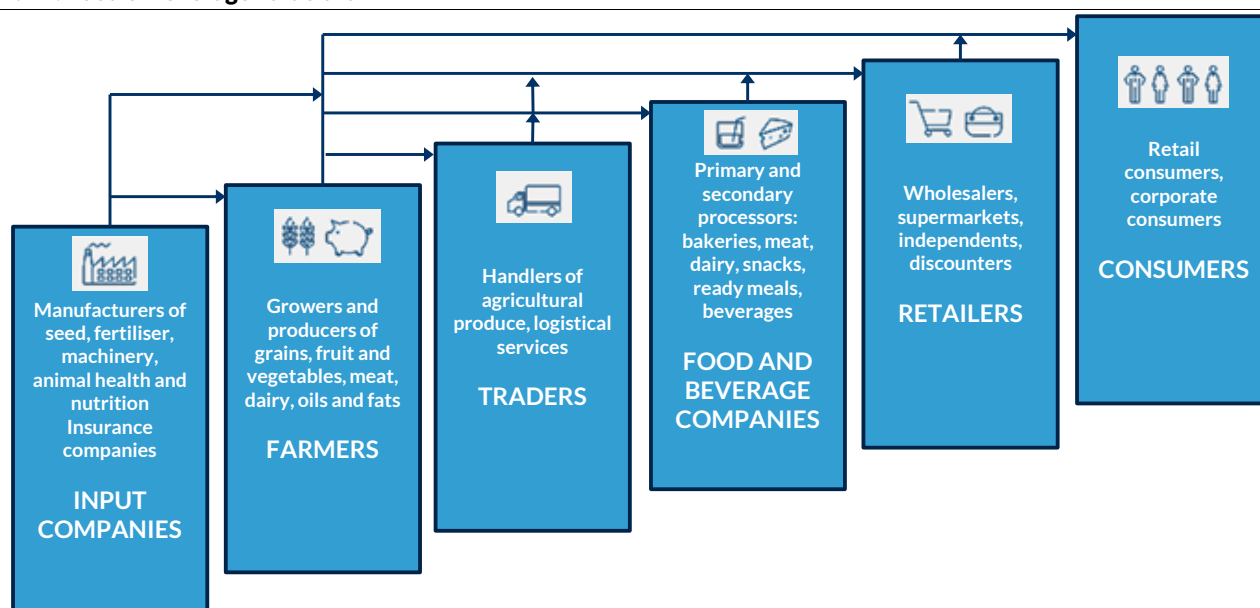
The materiality falls across value chains: retailers at the safest end

Provided products are relevant for retailers (innovative and not overly commoditised) and consumers (typically demand price elasticity is low for food products), food manufacturers may be able to pass on prices. This reflects variations in the financial impact from land degradation on various players across the value chain: generally, such risks tend to fall from producers to traders, processors, manufacturers and retailers; the last of which are less likely to be affected, given their ability to absorb these shocks.

...whose importance varies depending on the consumer sub-sector...

...as risks exposure weights tend to fall from producers to traders, processors, manufacturers and retailers

Chart 27: Food & Beverage value chain



Source: NCC

This also means companies' control over their supply chains need to be examined by subsector as well. For instance, Lindt controls the entire process from bean selection to end-product, while other companies do not source raw materials directly (cotton, wool and leather) themselves.

Table 41: Main business risks

Sector	Comments	Companies reviewed (* those who have responded to our questionnaire)
Food	We see food companies as particularly exposed to land degradation impact through food prices, with a need to differentiate their exposure to commodities.	AK, Aryzta, Barry Callebaut*, Bonduelle, Chr. Hansen, Danone, Ebro Foods, Emmi, Evolva, Lindt & Sprüngli*, s, Emmi, Evolva, Lindt & Sprüngli*,
Food retail	Companies are more indirectly impacted (own brands account for c. 30% of food turnover) and are relatively protected from commodity prices, as there are some compensatory effects among products, and their exposure to the most sensitive commodities (soya, palm oil, cattle) is broadly the same. Reputational risks, however, may be significant.	Ahold*, Carrefour*, Jerónimo Martins*, Tesco*;
Luxury goods & Home apparel	Companies' raw materials cost tend to be extremely limited, compared to overall revenues, and we think land issues are more widely perceived as a (substantial) reputational concern (this element and customers preferences are relevant across other consumer sectors but not on the same scale, in our view)	Kering*; Home apparel: Hugo Boss*
Beverages	Water resources and watershed-related issues are at the heart of companies' business risks (COGS).	Coca Cola Hellenic*
Pulp & Paper	Deforestation-related regulatory and stakeholders pressure	Holmen, SCA*, Stora Enso and UPM

Source: Kepler Cheuvreux

Food companies more affected by productivity, raw materials issues

When factoring in their main commodities and the origins of their products' main raw materials, we would consider AAK, Barry Callebaut, Lindt & Sprüngli, Nestlé and Unilever as especially sensitive, given their significant exposure to commodities sourced from high-risk regions, particularly cocoa and palm oil. Conversely, we think other companies are less exposed, as they primarily source from low-risk countries, e.g. Switzerland for Orior or western Europe for Suedzucker,

Food companies are particularly exposed to land degradation impacts through food prices...

...and we highlight the importance of cocoa and palm oil

Table 42: KECH Food companies key commodities

Company	Key commodities	Comments
AAK	Cocoa	Half of AAK's raw material sourcing is palm oil
Aryzta	Wheat, dairy	
Barry Callebaut	Cocoa	In some areas of the world, such as Indonesia, yields are decreasing, and soil depletion has been cited as one of the causes
Bonduelle	Vegetables	
Chr. Hansen	Dairy	Land degradation has had an adverse impact on cocoa production in Ghana. Material exposure to cocoa has been linked to land degradation
Danone	Dairy	
Ebro Foods	Wheat, rice	Material exposure to cocoa has been linked to land degradation
Emmi	Dairy	
Evolva	Some (dairy) enzymes	Material exposure to cocoa has been linked to land degradation
Lindt & Sprüngli	Cocoa, Palm oil	
Nestlé	Dairy, coffee, cocoa, sugar	Material exposure to cocoa has been linked to land degradation
Orior	Meat	
Parmalat	Dairy	Material exposure to cocoa has been linked to land degradation
Suedzucker	Sugar	
Unilever	Palm oil	Material exposure to palm oil
Viscofan	Meat	

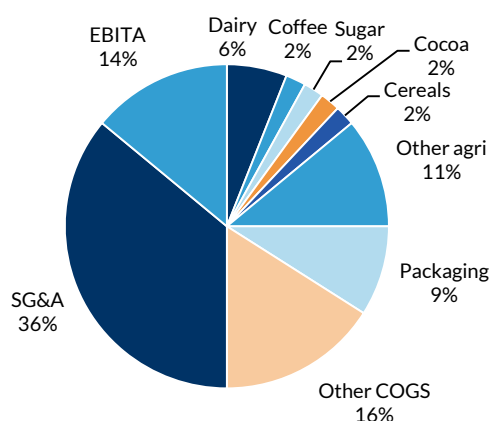
Source: Companies, Kepler Cheuvreux

Mapping commodities' share of COGS: branded names more exposed...

Commodities' share of COGS may indicate a company's theoretical exposure to how land degradation affects the company's price sensitivity. This share varies by company, and agricultural commodities generally account for a higher portion of private label costs than for branded manufacturers, such as Nestlé. This means private label producers come under more pressure to make upward price adjustments in the context of a rising commodity environment.

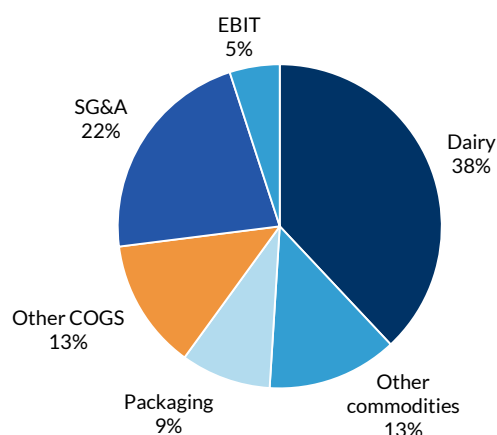
Agricultural commodities account for a higher portion of private label costs than for branded manufacturers

Chart 28: Typical branded P&L (% sales) - Nestlé



Source: Nestlé, Kepler Cheuvreux

Chart 29: More non-branded P&L (% sales) - Emmi



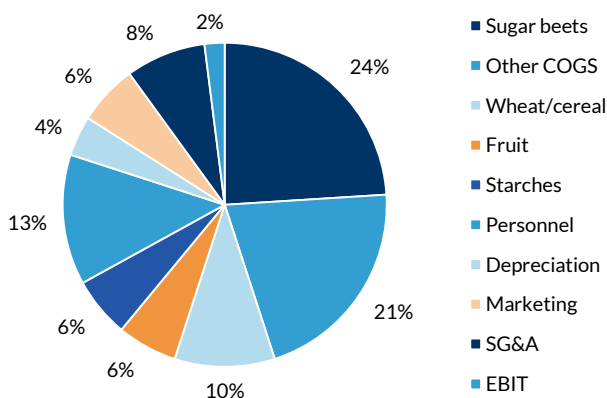
Source: Emmi, Kepler Cheuvreux

...along with stocks sensitive to palm oil

We also emphasise that land degradation is a particularly important issue for companies with substantial exposure to palm oil businesses (especially, Unilever and AAK in our sample), as palm oil developments in forests and peatland lead to loss of environmental services, whose prevention may lead to higher prices. Still, we are also seeing greater attention being paid to other commodities such as cattle and soya (and also the footprint of animal feed), which means palm oil companies will no longer be an exclusive group.

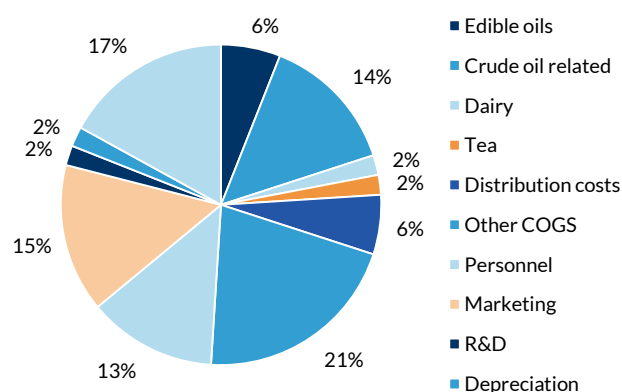
Land degradation is a particularly important issue for companies with substantial exposure to palm oil

Chart 30: Suedzucker's P&L



Source: Suedzucker, Kepler Cheuvreux

Chart 31: Unilever's P&L



Source: Suedzucker, Kepler Cheuvreux

Food retail companies more indirectly affected

We think food retail companies are affected more indirectly (their own brands account for c. 30% of food turnover) and are relatively protected, as there are some compensatory effects among products, and their exposure to the most sensitive commodities (soya, palm oil, cattle) is broadly the same. Furthermore, they have little visibility on the control of their supply chains. Also, note that food retail companies need to emphasise distribution issues in a context of projected tightening regulation for food waste.

Reputational concerns dominant for luxury goods and general retail

For luxury goods companies, raw material costs tend to be limited compared to overall revenues, and we think they perceive land issues as an increasing (substantial) reputational concern.

When it comes to general retail stocks, we estimate the potential underlying impact of land degradation on operational costs as higher for low-end consumer sectors e.g. Inditex, and Hennes & Mauritz. Conversely, as there is a lot of refinement as well as workmanship involved in the production of products, commodities account for a relatively small part of COGS for Hugo Boss (higher end) for example.

Beverages: the case for water looks crystal clear

Given that water resources and watershed-related issues are at the heart of Coca Cola's business risks, it conducts full environmental risk assessments that include land degradation, such as soil and ground water pollution, and source water vulnerability assessments that evaluate land degradation in catchment areas and watersheds, etc.

Outlook for land degradation and commodity prices

We now look at the recent trends in the agricultural commodity market and its outlook, building on our insights into the food sector as a result of the expected El Niño impact (*How will El Niño impact food makers?* from July 2015, by Jon Cox).

Agricultural commodity prices are currently at multi-year lows

Higher food prices typically drive agriculture expansion and deforestation. Global food prices are on a downward trend and have hit multi-year lows, fuelled by declining demand from China and abundant supply, as well as a fall in organic sales growth for food manufacturers.

Food retail companies are more indirectly impacted (their own brands account for c. 30% of food turnover) and are relatively protected

We think land issues are perceived as a (substantial) reputational concern for luxury goods and general retail

Water resources and watershed-related issues are at the heart of Coca Cola Hellenic's business risks

Higher food prices typically drive agriculture expansion and deforestation

Chart 32: Bloomberg agricultural commodity index



Source: Bloomberg

Short-term outlook: El Niño could prompt a rise

While stocks-to-use ratios have been rebuilt in the last couple of years, weather-related disruptions to crops, compounded by dollar appreciation and an oil price rise, could lead to price rises and increased volatility after a period of stability. Indeed, the IMF has said El Niño typically triggers at least a 5% rise in commodity prices in the 12 months following the announcement of an El Niño event (the current condition was declared in June 2015). The UN's World Meteorological Organization said in early September 2015 that the current El Niño pattern may be on track to be the strongest since 1950, potentially triggering major changes in global weather patterns.

Wheat, coffee, palm oil production may be hit

Australian wheat may be hit by drought, Indonesian coffee may be hurt by poor conditions, while production of raw cane sugar along with palm oil and cocoa may be disrupted. Some food companies have already flagged the potential impact from El Niño.

Price rises would actually help food companies

Our food sector research team (analyst: Jon Cox) foresees that stable and rising prices on the back of El Niño could have led to better pricing and boost organic sales growth, triggering a rise in estimates that may support the food sector. Nonetheless, oil prices, which have continued to fall, have offset such an effect for now (we estimate energy represents c. 3-4% of revenues, and distribution cost are c. 5-10% of total costs).

Early margin pressure

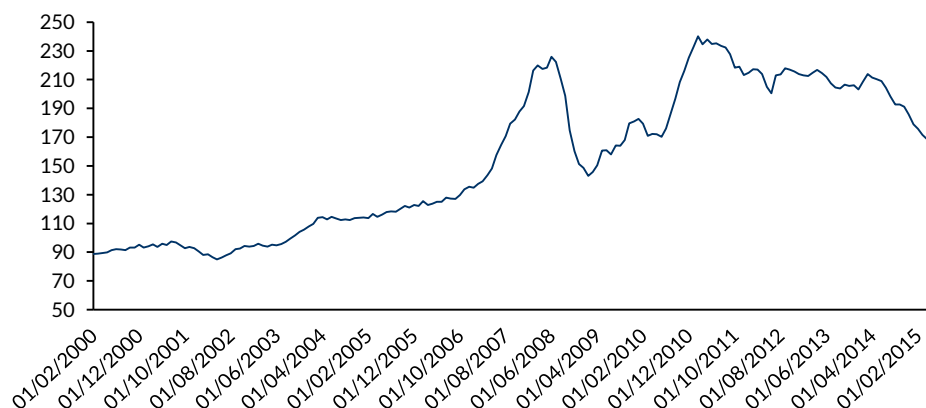
In the short term, quick upward movements in commodities would have an impact on gross margins if food manufacturers were unable to adjust prices quickly enough (and/or they do not hedge needs). However, provided products are relevant for retailers (innovative and not overly commoditised) and consumers (typically demand price elasticity is low for food products), food manufacturers may be able to pass on prices.

El Niño typically triggers at least a 5% rise in commodity prices

Wheat, coffee, palm oil production may be hit

Stable and rising prices on the back of El Niño may lead to better pricing and boost organic sales growth, triggering a rise in estimates that may support the food sector

Chart 33: UN Food and Agriculture World Food Price Index



Source: UN

Nestlé: a likely winner

In our analysis, we believe Nestlé (Buy, TP CHF80) could be best placed to benefit, given its broad agricultural input basket, as many of its agricultural commodities could rise.

Past data using correlation analysis suggested commodity prices and share prices are positively correlated, which we think supports the case for higher organic growth rates among food companies when commodity prices rise.

Yet, in the long run, despite poor visibility, food price inflation (in which land degradation is set to play a key role) could weigh on companies' valuations, particularly if additional costs become harder to pass on.

Worst-case climate change scenario: what impact on the top line?

What could be the greatest potential rise in commodity prices for companies driven by structural shortages, etc.? If we assume that agricultural commodity costs represent 20% of net sales for fast-moving consumer goods (FMCG), and this figure doubles for all commodities, it would have a 20pp negative impact on margins. If we also assume companies are unable to pass on any of these price increases (this is a totally unlikely scenario, as if it were to happen everywhere, all players would be likely to increase prices and consumers would have no choice) and the average margin is 15%, this would mean there would be a loss of 5pp on sales.

Best practices supporting Sustainable Land Management

We see improved supply chain management as a significant lever to mitigate the impact of future environment-related risks on commodities prices and reputation. Many companies' top-down pledges regarding sustainability sourcing requirements refer to zero net deforestation (61 out of 188 as of December 2015), which has been propped up by a host of international initiative, such as the New York Declaration on Forests, as well as national regulations like Indonesia's forest moratorium and Brazil's forest and soya moratorium. Zero net deforestation pledges stand as a useful way to consider where and how Sustainable Land Management (SLM) and land rehabilitation could be expanded.

Case for higher organic growth rates among food companies when commodity prices increase

Most companies' top-down pledges involving sustainability sourcing requirements refer to zero net deforestation

Commitments: putting zero deforestation targets into action

While the number of zero-deforestation objectives explicitly referred to by companies has risen, we think the practical targets deployed by companies vary significantly and often lack clarity and generally merely mean stepping up traceability systems and vague procurement standards, which include certification goals, audits and supply chain engagement.

Understandably, most companies' Board of Directors' resolutions refer to "helping achieve net zero deforestation," as part of the Consumer Goods Forum 2010 but fail to set clearly quantified guidelines; rather they are general qualitative elements regarding work in progress and the main initiatives companies may use. What's more, "helping achieve" is elusive, as companies could rather be embedding zero net deforestation within their own operations, otherwise everyone just passes the burden onto someone else. The core hurdle continues to be traceability, and with that, it is necessary for companies to demonstrate that their zero deforestation pledge has been implemented at the plantation level as well as being aligned with local policies.

Peer comparison: Nestlé and Danone leading the pack

When we look at companies' reporting as well as the main third-party assessments (e.g. Forest 500 Rating), we see Nestlé and Danone as two frontrunners in this race to the top, as they provide comprehensive policy elements for the main commodity criteria (100% RSPO, full segregated), backed up by practical actions. One such example is Danone's pilot projects in Brazil that involve soya, encouraging reporting (value chain GHG emissions factored into the 2050 CO2 neutrality target) and investments, e.g. via spending on ecosystem restoration and its Livelihood Funds. At the same time, we highlight Nestlé's ability to react swiftly and proactively to supply chain scandals, which it demonstrated when it publicly acknowledged that it had used forced labour in its supply chain in Thailand in November 2015, after an investigation by a specialised labour rights charity (Verité).

Practical targets deployed by companies vary significantly and often lack clarity and generally mean stepping up certification goals and supply chain engagement

Nestlé and Danone are among the frontrunners in the race to the top

Table 43: Companies' involvement in the main deforestation-related initiatives and related scores

Name	CDP Forest Report 2015	Forest 500 Rating	Current TFA 2020 Partners	Oxfam's Behind the Brands ranking	Rainforest action network on palm oil commitments	Endorsers of the New York Declaration on Forests	Companies with a disclosed zero deforestation agenda	No deforestation, No Peat, No clearance
Adidas	Participating	4	NA	NA	NA	NA	NA	NA
Ahold	Participating	NA	NA	NA	NA	Endorser	Via support to the CGF	NA
Carrefour	Participating	4	NA	NA	NA	NA	Via support to the CGF	Yes
Danone	Participating	5	NA	8 (2/10 on land)	NA	Endorser	Yes	Yes
Delhaize	Participating	3	NA	NA	NA	Endorser	Via support to the CGF	NA
Jeronimo Martins	Participating	NA	NA	NA	NA	NA	Via support to the CGF	NA
Kering	Participating	4	NA	NA	NA	NA	NA	NA
Lindt & Sprungli	Participating	3	NA	NA	NA	NA	NA	NA
Nestle	Participating	5	Partner	2 (8/10 on land)	Front runner	Endorser	Via support to the CGF	Yes
SCA	Leader on Timber	NA	NA	NA	NA	NA	NA	NA
Tesco	Participating	3	NA	NA	NA	NA	Via support to the CGF	NA

Source: Organisations mentioned (see Appendix for explanations)

Clear complementarities with zero net deforestation pledges

Zero net deforestation and LDN targets overlap in plenty of areas, though the latter has a wider approach that encompasses other land types than forests (e.g. agricultural land, rangeland, etc.) and places a particular emphasis on productivity. As highlighted in the following table, we view the LDN goal as a helpful way to complement deforestation-free commitments, notably through the promotion of forest landscape approaches, e.g. through agroforestry approaches, taking into consideration other issues like water or fostering forest connectivity.

**Zero net deforestation
and LDN targets
overlap**

Table 44: Deforestation-free, No Net Loss (NNL) and Net Positive Impact (NPI) versus LDN approaches

	Description	Commonalities	Differences
Deforestation-free targets	There are four important deforestation-free global targets: • Zero deforestation, which means no forest areas are cleared or converted. • Zero net deforestation, which means no change to the total forested area of the geographic unit in question, but permits new forests to compensate for converted forests. There are different views on what types of new forest should be counted. • Zero gross deforestation, which means an end to conversion of all existing forestland, without offsetting gains in forest cover. • Zero illegal deforestation, which means no deforestation that is not governmentally sanctioned or that violates applicable legal instruments.	One of the causes of land degradation is the reduction or loss of forests. The principal causes of land degradation and forest degradation or deforestation are the same: unsustainable pastoral, farming and agro-pastoral land uses, often exacerbated by a lack of relevant policies. Increasing global demand for food puts pressure on land and forests. Contributing to deforestation-free targets therefore also contributes to LDN. • Zero net deforestation leaves room for change in the configuration of the land-use mosaic, provided the net quantity, quality and carbon density of forests are maintained. The same applies to LDN. • Confusion surrounds forest areas, with zero deforestation-free commitments. The four terms are often used interchangeably, and each does not have its own commonly accepted definition. This issue may be “inherited” by LDN, since land also includes forests.	LDN does not exclusively target deforestation and forest degradation but goes further. The objective of LDN is to maintain or even improve the amount of healthy and productive land resources over time, including forest as well as other land cover types (e.g. agricultural land, rangeland, etc.). It focuses on the productivity of land, hence a more utilitarian approach to land (although this a way of protecting forests too). Moreover, practical challenges should be considered, e.g. there are often difficulties in reconciling commodity-specific policies, such as the use of land-use planning tools to prioritise the protection of certain forest areas, with zero deforestation pledges, as they have different short-term goals (i.e. land-use planning tools often allow for the loss of some forested areas, while, by definition, zero deforestation pledges do not).
No Net Loss (NNL) and Net Positive Impact (NPI) Approaches	NNL and NPI are biodiversity goals for development projects. Biodiversity gains are achieved through compensatory measures implemented in the project region. Achieving an NNL or NPI goal for a given project ultimately means no net reduction in the: • Diversity within and among species and vegetation types; • Long-term viability of species and vegetation types; and, • Functioning of species assemblages and ecosystems, including ecological and evolutionary processes.	Regardless of sector, the diversity, availability and functions of the species, vegetation types, ecosystem services and ecological processes that NNL/NPI goals aim to maintain or improve will in many cases also influence the health and productivity of land and soil. Rehabilitation/ restoration and sustainable land management contribute in many cases to increased biodiversity (e.g. conservation agriculture or forest restoration). Reaching NNL/ NPI will thus, in many cases, also contribute to LDN targets and vice versa. The mitigation hierarchy approaches used for projects with NNL/NPI goals (avoid, minimise, restore, offset) may also be used for projects with LDN targets.	The objectives differ. NNL/NPI targets aim to halt biodiversity loss, while LDN aims to halt the degradation of productive land and ecosystem functions and services. In some cases, these objectives may be reached in conflicting ways. An increase in land productivity may happen at the expense of biodiversity and priorities need to be set.

Source: Global Forest 500, WBCSD

Reporting KPIs: new trends making inroads

When focusing on the underlying details of companies' sustainability sourcing requirements, land is generally reported in relation to broader environmental risks (climate change, carbon emissions, ecosystem services, biodiversity, water) but also social and human rights issues (e.g. labour and working conditions, community impacts and livelihoods). This data helps to achieve two goals: 1) better understand the business case; and 2) analyse companies' land risk management, as a possible proxy for robust governance, brand strategy and competitive advantage.

Towards greater transparency and thoroughness

While companies' approaches may vary, the main trends in risk mitigation generally cover the best practices and issues outlined in the following tables (with companies singled out for their commitment to a particular issue), including evidence of traceability systems and more comprehensive frameworks for cross-commodity policies (beyond palm oil and wood only).

Land generally reported in relation to broader environmental risks and human rights issues

Table 45: Companies' best practices (our selection and comments)

Area	Company	Raw material	Description and illustration	Comments
1. Land risk exposure				
Risk & Opportunities assessment				
Assessment, engagement and reporting beyond tier 1 suppliers	SCA	Timber	SCA's suppliers beyond first tier (tier 2+3) are assessed in terms of compliance with the Global Supplier Standard and certification according to FSC and/or PEFC	<i>Engagement beyond and above tier-1 suppliers has become more frequent in industries under the heaviest and/or more lasting pressure, such as timber and textile.</i>
Leverage of third party expertise at the industry level	Hugo Boss	Leather, textile	Company-led projects to assess suppliers' environmental performance and provide implementation guidelines, e.g. the Global Social Compliance Programme includes a chapter (10) on land use and biodiversity. HB also works with the Textile Exchange, the Natural Capital Coalition and IUCN (a paper was recently released on "Biodiversity Risks and Opportunities in the Apparel Sector")	<i>In the same vein as Kering, this helps strengthen the understanding of the environmental and social impacts of these supply chains while the linkages with their specific respective businesses remain limited and vague.</i>
2. Land risk mitigation: leadership (policy & implementation)				
Overall policy commitments				
Zero net deforestation	Danone	Various	Clearly written commitments to implement zero deforestation agenda including dedicated policies and targets for soya, palm oil	<i>Many companies refer to the Consumer Goods Forum that has made pledges to work towards zero net deforestation but do not elaborate or make explicit references to how it is embedded in their own policies in their official documents</i>
Traceability				
Full traceability	Ferrero	Palm oil	100% of palm oil is traceable back to the plantation. Palm oil supplies come from 63 mills and 301 plantations in: Peninsula Malaysia (75.87% of total volumes), Papua New Guinea (18.17%), Insular Malaysia (3.67%), Brazil (1.2%), Indonesia (0.91%), Guatemala (0.1%) and the Solomon Islands (0.08%).	<i>None of the companies in our peer group (e.g. AAK, Unilever) provide such level of transparency and performance. We see it as a positive first step to be complemented by other elements, such as more stringent monitoring systems, LCA, certification and procurement standards.</i>
Procurement				
1) More stringent procurement standards (involving issues such as legality, establishing traceability and appropriate certification) ; and 2) robust evidence of engagement with farmers (involving financial support, assistance to meet certification and technical support)	Nestlé	Various	This is dealt with at a more operational level, with assessments in the field as part of the implementation of Nestlé Better Farming Practices, Responsible Sourcing Guidelines, or the requirements of certification standards that they use. The Nescafé plan and Cocoa plan, for example, deploy agronomists to assist farmers with in SLM. Nestlé's work also comprises pilot programmes aimed at measuring simplified environmental impact metrics that are communicable to customers (GHG emissions, water, biodiversity impact)	<i>Its Responsible Sourcing Guidelines goes beyond broad references to encouraging good conduct, and incorporates specific details on issues such as legality and certification. The level of technical support, for example via the Forest Trust to increase the resilience and adaptability of smallholders growing palm oil, as well as the ambition to heighten reporting towards customers also seems encouraging.</i>
Incentives for farmers for the protection of ecosystems	Coca-Cola, Danone	Water	Mineral water enterprise Vittel provides incentives to farmers in upstream watersheds to adapt their farming practices for cleaner water. In Portugal, Coca Cola supports cork oak restoration to preserve water quality and availability in watersheds of interest	<i>Incentive schemes for small-scale landowners and farmers to restore land are crucial when the regulatory framework is insufficient</i>
3. Land risk mitigation: momentum				
Certification				
Cross commodities certification and targets	Ahold	Soya	Ahold has expanded its commitments on sustainable sourcing to soy, providing estimates on where it stands for the Netherlands	<i>Ahold displays the most comprehensive targets in terms of commodities covered and status updates. This includes sustainable soya consumption for the Netherlands, which appears notable, considering the lack of reporting around soy among consumer sectors. Although both Carrefour and Delhaize report both palm oil targets and update on status; Delhaize provides the breakdown per type of certificates.</i>

Continued on next page

Companies' best practices (our selection and comments) - continued

Area	Company	Raw material	Description and illustration	Comments
Natural capital reporting				
State of the art natural capital tools on reporting impacts and dependencies	Kering	Leather, textile	Open-sourced methodology to measure and report comprehensively on the environmental footprint in Kering's operations and entire supply chain and put an economic value on it (e.g. breakdown of material impacts on air pollution, GHG emissions, land use)	<i>Kering's landmark reporting can be interpreted as a positive signal regarding the company's efforts to use credibly environmental factors to enhance (and protect) its brand and possibly willingness to subsequently embed environmental considerations into decision making, including risks mitigation, and contribute at some point raise the understanding of the business case (dependencies). Yet we believe it is too early to fully appreciate: 1) how these tools interact with typical business decisions (supply or product design); 2) the scope for replication across other businesses.</i>
Transparency tools (implementation & monitoring)				
Accountability mechanisms comprised of an online platforms tracking their work on deforestation	Asia Pulp & Paper, Wilmar	Timber	These companies publicly disclose shortcomings of their policies and outline how they are working to address them.	<i>There is a growing trend towards the use of satellite data to monitor new deforestation as well as other technologies to back policies through transparency platforms, which reflects the potential of using technology to support the credibility of company programmes and facilitate broader collaboration.</i>
4. Enabling factors				
Promotion of a systemic change through policy engagement				
Industry partnership	Marks & Spencer, Unilever (and other CGF members)	Various	CGF support for a "produce-protect" paradigm of rural development, as well as "jurisdictional forest, climate and agriculture approaches" or even "place-based multi-stakeholder partnerships"	<i>This model shows "domestic public-policy measures for forest protection and land use planning aligned with international support and blended finance solutions to derisk investment in sustainable intensification for agriculture and forest productivity, on the back of sourcing commitments from corporate buyers of sustainably produced commodities" (TFA 2020).</i>
5. Sustainable landscape finance				
Land restoration project				
Forests restoration	April Group, SCA, Stora Enso, Suzano	Timber	APRIL Group pledged USD17m over ten years as part of a project (Restorasi Ekosistem Riau, RER) to restore 20,000ha of degraded forest in the Kampar Peninsula under eco-restoration licenses, granted by the Indonesian government. Suzano in LatAm also fostered partnerships among land users involving the restoration of degraded land resulting in a net positive gain of almost 3m ha of secondary forest as part of a wider innovation SLM project.	<i>More ambitious restoration projects, notably in peatland forest, tend to be promoted by Pulp & Paper companies that have accumulated expertise and have a strong local footprint</i>
Standalone project at the landscape level	SABMiller	Water	Public private partnership in South Africa: the project to remove alien trees is about to begin; the capture and analysis of water data began with 20 water level loggers that are now in place; more efficient drip irrigation systems have been introduced on farms; and farm labourers have received training.	<i>SABMiller has shown best practices in several regions in mitigating long-term risks related to overexploitation in the water sector.</i>
Funding				
Private equity impact fund	Danone, Mars	Various	The Livelihood 3F fund will allocate capital to sustainable agriculture projects featuring a landscape approach. Danone and Mars rely partly on foundation financing (PE impact fund).	<i>It paves the way for collaboration and innovations in terms of financing mechanisms to align stakeholders' interests in light of both commercial and social and environmental returns of context-specific SLM projects.</i>

Source: Kepler Cheuvreux

Where does certification role really stand?

In principle, we think certifications, despite their shortcomings (e.g. adverse consequences on smallholders, customer confusion, focus on sustainability offsets rather than on-site factors, auditing firms' conflicts of interest, etc.) are paramount to help reduce the underlying risks for companies and to give investors a sense of what companies are doing to mitigate these issues, including explicit support for land rehabilitation and SLM. The consumer companies reviewed in this report tend to relate their top-down pledges to certification commitments (percentage of commodities sourced according to certification schemes), which are used as proxies to illustrate progress towards these goals and crystallisers of collective actions.

Focus of food retailers' certification goals: Ahold far-reaching

This is exemplified in food retailers' reporting. While the following table shows that companies have fairly similar reporting patterns in terms of their certification efforts as part of their sustainable sourcing plans, it is still important to look at the details.

Ahold has the most comprehensive targets in terms of the commodities covered and status updates. This includes sustainable soya consumption for the Netherlands, which is notable, given the lack of reporting on soya in consumer sectors. Although both Carrefour and Delhaize report palm oil targets and status updates, Delhaize provides a breakdown by certificate type. Jeronimo Martins and Tesco's recent commitments reflect distinct approaches in terms of regions covered, brands and types of commitment. In fact, Jeronimo Martin does not refer to certification schemes but targets a reduction in its exposure to risky countries and commodities.

Certifications remain, in our view, paramount in terms of support for land rehabilitation and SLM

While the following table shows that companies have fairly similar reporting patterns in terms of their certification efforts as part of their sustainable sourcing plans, it is still important to look at the details

Table 46: Food retail sustainability sourcing targets covering palm oil & soy

Company	Sector	Geographical exposure	Company potential level of risk	Commitment		Update (2014)
				Scope	Horizon	
Ahold	Food retail	Global	Medium risk	Sources 100% of coffee, tea, cocoa, soy and palm oil commodities for its own-brand products in accordance with industry certification standards	2015	Coffee: 83%; Tea: 82%; Cocoa: 40%; Palm oil: 100% certificates; Soya: 0% (Dutch sustainable soya consumption is c. 11%); Seafood: 44%.
Carrefour	Food retail	Global	Medium risk	Using 100% certified sustainable palm oil in Carrefour products	2015	73% for total volumes of palm oil
Delhaize	Food retail	Global	Medium risk	100% deforestation-free palm oil and wood fibres in products and packaging; N.B. local operating companies have additional commitments related to sustainable sourcing	2020	69% of palm oil covered by RSPO certification schemes (57% GreenPalm certificates, 12% Mass Balance/Segregated). Delhaize is currently in the process of formalising a responsible soya policy to update its Responsible Sourcing Programme.
Jerónimo Martins	Food retail	Global	Medium risk	In terms of deforestation commodities, reduce by: 1) 5% of the presence of palm oil in the total sales of its private brand products; 2) 5% of soya, beef, wood and paper products sourced for private brand from countries at risk of deforestation.	2017	2014 commitment: Substitution of deforestation commodities in Private Brand and Perishable products portfolio, and avoidance of countries of origin with high deforestation risk is the first step in Jerónimo Martins's deforestation risk management strategy
Tesco	Food retail	Global	Medium risk	Sourcing RSPO mass balance or segregated palm oil for the UK product portfolio	2015	Ambition to increase the number of commodities the company reports on e.g. timber sourced to FSC standards

Source: Companies

Market momentum for certifications: wide gaps between commodities

We first reviewed market momentum for sustainable standards for major commodities to assess their penetration and the potential for land rehabilitation and Sustainable Land Management (SLM) to be heightened within them therein.

We see their prominence as growing structurally due to sustained drivers like consumer demand for traceability, raw material-related regulations, and efficiency benefit acknowledgements (including internal risks management).

Yet they face an array of challenges, such as structural oversupply, concerns about the evidence of achieved sustainability outcomes (e.g. importance of credits), and the potential for building standards in sectors with numerous smallholders.

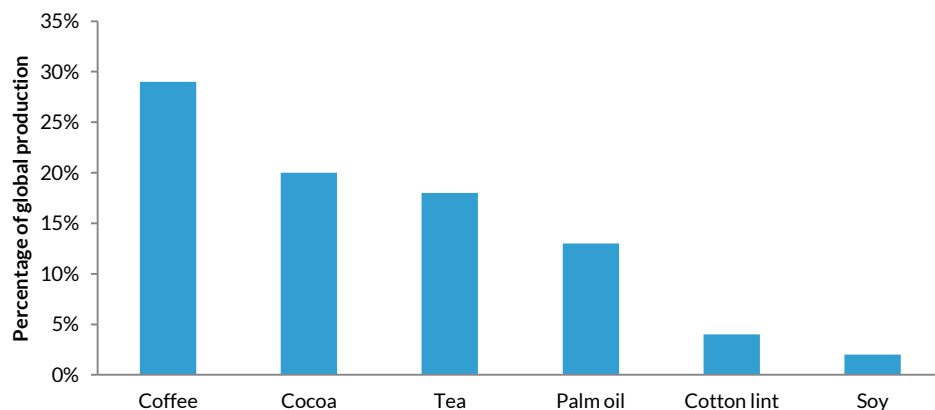
Overall, they still cover only a tiny chunk of global production, yet momentum varies among commodities. Palm oil and cocoa standards appear to have fair penetration and strong momentum, while soya and timber have lower penetration and momentum. That said, timber appears to be further along than soya and benefits from stronger evidence in terms of both its sustainable credentials and, more recently, its business case, thanks to financial benefit estimates (average NPV of USD9.04/m³ of certified FSC production).

Momentum for sustainable standards for major commodities

Palm oil and cocoa standards show fair penetration and strong momentum, but soya and timber have relatively lower penetration and momentum

Both soya and timber continue to grow significantly: 5% CAGR for PEFC certified forest areas globally, while RTRS certified purchased volume of soya rose by 50% in 2014. Increasing the targets covered to other commodities, such as soya and cattle, is a work in process, due to their complexity and more recent efforts.

Chart 34: Certified (including verified) production (2013) (SOYA)



Source: Newsforesight

For example, several companies reported responsible soya policies as part of sourcing programmes (see table below). These include Delhaize, Carrefour, Tesco and are often disclosed under the umbrella of organic and fair trade products, meaning they help prop up underlying revenues.

Table 47: Penetration of most sensitive commodities

	Most sensitive commodities	Palm oil	Soya	Cattle products	Timber	Cotton	Cocoa beans	Biofuels
	Main LD risk	Deforestation and soil degradation	Deforestation and soil degradation	Deforestation	Deforestation	Soil degradation	Deforestation	Deforestation, soil degradation
Land Degradation risk assessment		Massively cultivated on monoculture fields, destroying high conservation value areas, forests and soil. Soil erosion is also an issue	Massively cultivated on monoculture fields, destroying high conservation value areas, forests and soil. Soil erosion is also an issue	Deforestation for grazing land-grabbing purpose. The livestock sector is the world's largest land user.	Logging and disruption of high conservation value ecosystems	Soil erosion and chemical disruption for higher short-term yields trading off long-term yields and quality and disrupting soil	Full-sun farming increases short term yields, quality and disrupting soil	Unclear. However, the use of biodiesel drives the production of soya beans, palm oil and rapeseed
Market reach	Production compliant (Production)	12m tonnes (2015)	5m tonnes (2012)	NA	NA	933,000 tonnes (2012)	899,000 tonnes (2012)	NA
	Production compliant (market share)	20% (2015)	2% (2012)	NA	FSC: 4.5%, PEFC: 6% of total forest area (2013)	3.4% (2012)	22% (2012)	NA
	CAGR (production)	27% (2010-15)	3% (2008-12)	NA	6% (2008-13)	54% (2008-12)	69% (2008-12)	60-70% (2014-22, expected)
	Top-five standard-compliant producers (2012)	Indonesia (49%), Malaysia (42%), Papua New Guinea (5%), Brazil (2%), Colombia (1%)	Brazil (84%), China (7%), Argentina (4%), US (2%), India (1%)		Sustainable certified countries (ha, 2013): Canada (40%), US (12%), Russia (9%), Finland (5%), Sweden (5%)	Brazil (30%), Pakistan (22%), India (21%), Zambia (8%), Côte d'Ivoire (5%)	Côte d'Ivoire (50%), Ghana (17%), Dominican Republic (15%), Peru (4%), Indonesia (4%)	NA
	Top-five producers (2012)	Indones. (53%), Malaysia (36%), Thailand (3%), Colombia (2%), Nigeria (2%)	US (32%), Brazil (26%), Argentina (20%), China (5%), India (5%)	India, Brazil, China, US, Argentina	Forest products producers: India (23%), China (14%), US (13%), Canada (12%), Russia (9%), Brazil (6%)	China (28%), India (23%), Pakistan (13%), Brazil (7%), US (9%), Indonesia (9%)	Côte d'Ivoire (36%), Ghana (22%), Indones. (11%), Nigeria (6%), Brazil (5%)	Producers of Ethanol and Biodiesel: US (42%), Brazil (23%), EU (14%), China (7%), India (2%)
Premium		1-6% (RSPO)	0.3-80%. Highest premiums: Organic, lowest premiums: RTRS	NA	1-30%, more for high quality hardwood	<30%. Highest: Organic. Lowest: Better Cotton.	5-18% or more. Highest premiums: Organic. Lowest premiums: UTZ.	NA

Source: SSI Review, IISD (N.B. We could not find enough data on cattle to draw any conclusion. It is critical to keep in mind that beyond market penetration of standard-certified products, the specifics of the standards are different when it comes to their reach, coverage, clarity, independence, financing schemes and application procedures.)

Cotton standards also show fairly low penetration but strong momentum. Better Cotton's share of global production is predicted to expand from c. 9% currently to c.11-12% in 2015-16.

Would it make sense to integrate LDN into certification schemes?

While certificates do not refer explicitly to Sustainable Land Management (SLM), soil management and land use are incorporated into key certificates. Land-use practices are central to widely used certifications on which sustainability targets are based, e.g. FSC for wood, RSPO for palm oil, Roundtable on Responsible Soy (RTRS), and Global Roundtable for Sustainable Beef (GRSB). Moreover, certifications are focused on a range of more concrete elements that can be perceived as SLM, e.g. for RSPO: HCV conservation, management and monitoring, waste management, no fire for land prep,

Soil management and land use are incorporated into key certificates...

...which are focused on a range of more concrete elements that can be seen as SLM

pesticide use, avoiding extensive development on fragile and marginal soils (including peat) and steep slopes, soil fertility and prevention of erosion and soil degradation, water table management and subsidence prevention for peat, etc. The table below shows existing links between LDN and their respective standards. The next steps is to look into each commodity standard's applications and limitations to assess what additional elements or refinements may be needed to align them more closely with the LDN goal. This involves looking at ways to overcome one common criticism to certification schemes - their lack of integration of productivity and quality issues.

Table 48: Land Degradation's incorporation into key standards for the Most sensitive commodities

Main standard (e.g.)	Short description	Sustainable Land Management (SLM) role in the standards	Other Standards
The Roundtable on Sustainable Palm Oil (RSPO)	Founded in 2004, the Roundtable on Sustainable Palm Oil (RSPO) is a member-based initiative operating in the palm oil sector across 71 countries.	The initiative operates on a business-to-consumer basis, developing standards and providing certification services to ensure sustainable palm oil production among its members. One of the most important RSPO criterion states no primary forests or areas that contain significant concentrations of biodiversity (e.g. endangered species), fragile ecosystems, or areas that are fundamental to meeting basic or traditional cultural needs of local communities (high conservation value areas) can be cleared. Other RSPO principles stipulate a significantly reduced use of pesticides and fires. RSPO guidance for fulfilling voluntary sustainable certification requirements in Indonesia states that new plantations in Indonesia should use "previously cleared and/or degraded land"	IFOAM
The Round Table on Responsible Soy (RTRS)	Founded in 2006, the Round Table on Responsible Soy (RTRS) is a member-based initiative functioning as a multi-stakeholder platform that works toward achieving responsible soya value chains. The initiative develops and manages standards for responsible soya production and operates across 21 countries.	The initiative operates business-to-business. Land degradation is a major concern in the RTRS standard: Principles 4.3 and 4.4 of the RTRS standard for responsible soya production set guidelines for efforts to monitor the change in soil carbon and for responsible expansion of soya cultivation. Principle 5 sets good agricultural practice goals, mainly to protect land.	ProTerra, IFOAM
Standard for Sustainable Cattle Production Systems	Launched in 2010 by the Rainforest Alliance and USAID, the Standard for Sustainable Cattle Production Systems is a Global standard for promoting sustainable farming and sustainable land grabbing for farming purposes.	The standard, which only applies to farms where cattle have access to pastures, includes the following principles: integrated management systems, sustainable pasture management, animal welfare and carbon-footprint reduction. This initiative is expected to help mitigate many of the problems associated with cattle production, including deforestation and greenhouse gas emissions. For instance, the standard requires trees be conserved on pasture lots.	na
The Forest Stewardship Council (FSC)	Founded in 1993, the Forest Stewardship Council (FSC) is a member-based initiative operating within the forestry sector across 102 countries.	The initiative operates business-to-consumer. FSC's principles include: " <i>Demonstrated and uncontested, clearly defined, long-term land tenure and use rights</i> "; " <i>reduction of environmental impact of logging activities and maintenance of the ecological functions and integrity of the forest</i> "; " <i>appropriate monitoring and assessment activities to assess the condition of the forest, management activities and their social and environmental impacts</i> "; " <i>Maintenance of High Conservation Value Forests (HCVFs) defined as forests containing environmental and social values that are considered to be of outstanding significance or critical importance</i> "; and " <i>Plantations must contribute to reduce the pressures on and promote the restoration and conservation of natural forests.</i> "	PEFC
The Better Cotton Initiative (BCI)	Founded in 2005, the Better Cotton Initiative (BCI) is a member-based initiative operating in the cotton sector across eight countries.	The initiative operates business-to-business, developing standards and verifying compliance with these standards in order to ensure sustainable cotton production practices among its members. Principles include soil management directives to maintain soil fertility and structures as well as to minimise erosion. The standard also gives guidelines for nutrient and fertiliser use.	Fairtrade, IFOAM, MyBMP, ABR,
Rainforest Alliance	Founded in 1987, the Rainforest Alliance/Sustainable Agriculture Network (SAN/RA) is a member-based initiative operating in the food and agriculture sector across 43 countries.	The Rainforest Alliance and SAN represent a unique bi-party approach to standards development, conformity assessment and marketing. SAN is a coalition of independent, mostly Southern non-profit conservation organisations that promote the social and environmental sustainability of agricultural activities by developing standards and supporting technical assistance. Studies show improved soil health as a result of certification. The standard includes a criterion setting conditions for new production areas on soils with the appropriate climatic and topographic conditions. Farms are audited for Standards for Sustainable Agriculture set by the Sustainable Agriculture Network, including ecosystem conservation and soil management and conservation criteria (principles 2 and 9 of the Agriculture Standard Guide).	Fairtrade, IFOAM, UTZ

Source: Standards quoted, WRI

Do specific certifications already drive demand for SLM?

Although it seems like a sensible assumption, there are no documented cases to attest to the uptake of Sustainable Land Management (SLM) as a result of certification commitments. What is more common is, for example, the development of company policies around a moratorium on peat and/or forest clearing along their supply chains. How this translates into an actual effect on land management is less clear.

Is there a need for a new certification standard for LDN?

We would also argue that companies' direct involvement or investments in the LDN fund, or programmes financed by the fund, may be seen as relevant alternatives or complementary options to stimulate sustainable practices in their value chain.

Moreover, by allocating private capital to rehabilitation projects that include sustainability practices, an LDN-relevant private equity impact fund could also be a way of overcoming one of the crucial challenges currently confronted with by small producers and suppliers: financing. We understand that many are struggling to cope with the costs of implementing these certifications and SLM-related changes, making it important to explore parallel financing options further. Another opportunity relates to the certification of economic zones devoted to SLM, which might involve self-assessments by cooperatives in order to minimise costs for smallholders.

Creating a new certification standard is challenging and costly. Therefore, we conclude that in order to scale the delivery of LDN, it appears sensible to:

1. **Get LDN/land rehabilitation's role more systematically and explicitly acknowledged** and integrated into existing schemes that have a substantial impact and scale.
2. **Enable companies to go beyond/around certifications in their responsible sourcing guidelines and action plans**, including a greater recognition of their land degradation and ecosystem service footprint and leverage through concrete projects for which they may also be more easily able to articulate resources allocated and associated impact.

Spotlight on commodities

To delve deeper into the alignment between exposure, policies, reporting and financing challenges, we have conducted a review of companies' policies in relation to the impact of selected commodities (cocoa, palm oil, cotton, leather, soy, timber²²), highlighting in turn a selection of best practices and financial risks.

1) Palm oil: Asia's most burning issue

The devastating large-scale fire of tropical rainforests and peatlands in Indonesia in July 2015 put the spotlight once more on companies that rely on palm oil commodities from the highest-risk regions (see following chart).

There are no documented cases to attest to the uptake of SLM as a result of certification commitments

Companies' interactions with the LDN fund may be relevant complementary options to stimulate sustainable practices in their supply chain

We have conducted a review of companies' policies in relation to the impact of commodities, highlighting a selection of best practices and financial risks

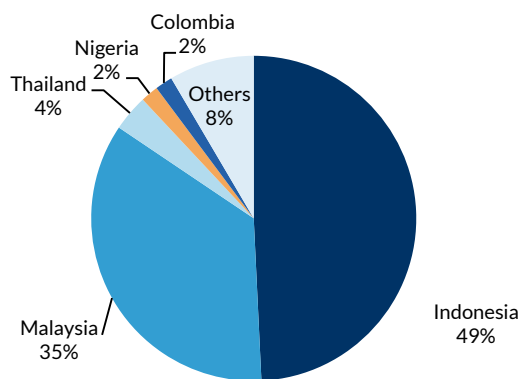
²² This list of land degradation-sensitive commodities is not exhaustive. For example, rubber, which is associated with the loss of tropical forests, raises sustainability concerns that are increasingly reflected in tyre companies' sustainable sourcing policies (e.g. Michelin, Continental).

Certification standards embroiled in controversy

Palm oil is the world's highest-volume vegetable oil, accounting for c. 33% of the global vegetable oil supply (about 62mt of palm oil a year), and is also the most efficient vegetable oil with a production volume per hectare almost six times greater than the volume produced per hectare for rapeseed, and ten times greater than for soy. Palm oil in itself is not bad for the environment, but the use of palm oil has been criticised in the most sensitive countries due to the negative impact of its production on the environment: deforestation and loss of animal habitats (e.g. tigers).

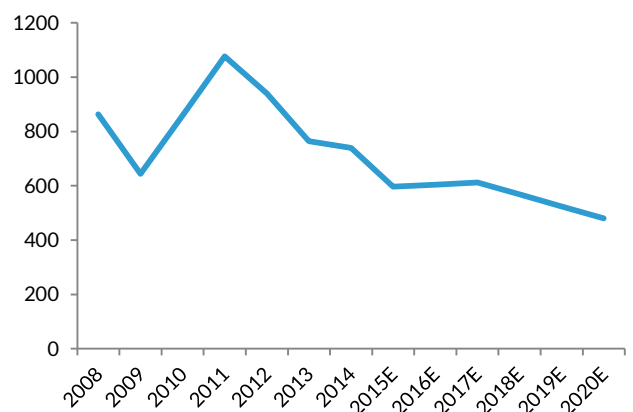
Palm oil sourcing a long-standing contentious matter

Chart 35: Palm oil production by country



Source: USDA

Chart 36: Palm oil prices (USD/mt)



Source: IMF

A key challenge with palm oil is that it is sometimes difficult to find a supplier for specific segregated products in small quantities (companies do not just buy palm oil, but fractions of palm oil). Besides, companies' possible influence is usually very low, although major groups now quantify efforts and publish progress regularly. Typical KPIs covered by companies refer to the percentage of RSPO-certified palm oil (including the breakdown between GreenPalm certificates²³ and Mass Balance/Segregated), the percentage of traceable palm oil, and moving to the future tracking of the percentage of traceable deforestation-free palm oil.

RSPO mired in controversy...

²³ GreenPalm is a certificate trading programme that allows manufacturers and retailers to purchase GreenPalm certificates from an RSPO certified palm oil grower to offset each tonne of palm oil and palm kernel oil they use. Other options include "segregated" (certified palm oil is kept apart throughout the supply chain), "Identity Preserved/IP" (Certified sustainable palm oil is physically separated from other certified and non-certified palm oil throughout the supply chain, i.e. from the RSPO-certified mill through to the end user), and "mass balance" (certified palm oil is mixed with conventional palm oil but monitored [administratively](#)).

The way towards RSPO 2.0...

However, in its current form, the main certification standard, RSPO, has been heavily criticised for its limitations regarding the enforcement of its principles and loose criteria. A range of stakeholders and institutional investors (e.g. recently via a letter filed in June 2015) have called for greater recognition of biodiversity, ecosystem services, climate change impact and social rights, including: High Conservation Value protection, High Carbon Stock protection²⁴, legal compliance, no peatland clearance, social criteria related to palm oil commitments, e.g. land rights (human rights assessments), and GHG emissions reporting. These can be grouped under the umbrella of “No deforestation, No Peat, No clearance” commitments made by ADM, Wilmar, Cargill, Musim Mas, GAR and IOI Loders Croklaan.

As this would basically add constraints in terms of areas that can be used, we would expect the companies concerned to keep pushing for incremental changes to avoid market imbalances in terms of prices. The “RSPO Next” initiative, which was unveiled in February, introduces broader and more stringent criteria. Although some concerns have been expressed since then regarding limitations, for example by Greenpeace which pointed out the choice of: 1) optional guidelines banning new development on peatlands versus requirements to re-wet and restore peatland landscapes affected by company operations; and 2) a ‘net’ carbon approach rather than reliance on High Carbon Stock Approach.

...is a bumpy process

Another persisting significant challenge relates to the market demand for RSPO, considering nearly half of total certified sustainable palm oil (CSPO) worldwide is unsold (source: RSPO).

Additionally, RSPO faces criticism from the Indonesian government that the Indonesia Palm Oil Pledge²⁵ (IPOP) exceeds its authority and threatens the livelihood of smallholders.

Considering auditing firms’ failures, RSPO is also making steps to design a stricter system of information sharing, which will identify and improve transparency, to place the burden to disclose information more on growers.

Lastly, concerns have been repeatedly expressed, notably by some national public and private players, about companies’ abilities to represent smallholders and communities. We think these issues reflect tensions between:

...for its limitations regarding the enforcement of its principles and criteria

“RSPO Next” Initiative

RSPO faces criticism from the Indonesian government that the Indonesia Palm Oil Pledge¹ (IPOP) exceeds its authority and threatens the livelihood of smallholders

²⁴ Basically, two methodologies are used by companies to identify no-go areas, namely HCVF and HCS. They respectively deal with multiple values associated with forests, and their carbon stocks as a proxy for their condition. These two methods are viewed as complementary; the idea being that both should be used in tandem to determine which forest areas should be preserved. But, fundamentally, companies will have to be transparent about their assessments (and later on about their achievements) and disseminate them for review (source: [CIFOR](#)). The High Carbon Stock (HCS) Approach is a methodology that distinguishes forest areas for protection from degraded lands with low carbon and biodiversity values that may be developed. It puts No Deforestation into practice ([link](#)).

²⁵ In 2014, the Indonesian Chamber of Commerce (KADIN) facilitated the signing of a collaborative pledge between major private players in the palm-oil sector with the common goal to work towards ‘sustainable palm oil that is deforestation free, respects human and community rights and delivers shareholder value through collaborative multi-stakeholders efforts’. The Indonesia Palm Oil Pledge (IPOP) was signed at the UN Climate Summit by Wilmar, GAR, Cargill, and Asian Agri. Musim Mas added its commitment to the Pledge in March 2015 ([link](#)). Yet, the Indonesian government subsequently opposed the pledge, citing damages to smallholders.

- Companies' "forced" sustainability requirements and the unsuitable policy framework to enable them to implement them, e.g. companies need to circumvent the law.
- Socio-economic development goals and "no deforestation" approaches (protection of ecosystem services).

This keeps shedding light on the constant need for clarification over stakeholders' objectives and policy alignments, and the actual outcomes/potential unintended consequences.

Table 49: Risks and opportunities of zero deforestation in connection with inclusive green growth issues

Opportunities	Risks
Incentives to intensify/improve plantation management with more efficient use of inputs	Exclusion of smallholders from deforestation-free supply chains due to legality issues and capacity constraints
Upgrading of smallholders' production practices	Pressures on community and smallholder lands considered as low carbon lands may lead to people displacement
More productive use of degraded or low-carbon lands	Value-chain fragmentation may lead to leakage effects
Meeting national GHG reduction commitments	Delayed economic development of underdeveloped regions

Source: CIFOR, CGIAR

EU regulation mandatory disclosure acted as a catalyst

Beyond voluntary standards and pressure from both stakeholders and investors, the firmer EU restrictions on labelling that came into effect in December 2014 also seemingly played an important role in terms of the pressure placed on the most exposed companies, thereby demonstrating the leeway to embed further land degradation-related issues in EU regulation, including disclosure to consumers²⁶.

In our view, it constituted likely pressure on the use of palm oil in some consumer products, impacting vegetable oil company AAK (November 2014 *Still too early to get back in*).

Focus on performance of most exposed stock (AAK)...

AAK intends to achieve RSPO certification for all of the palm oil it purchases. Currently, 20% of AAK's palm oil products (+ 6pp YOY), 27% of its supply, and all its sites, are RSPO-certified. This continued increase is encouraging and may demonstrate efforts in the right direction. However, AAK postponed the target of using only RSPO-certified crude oil to 2018 versus 2015 previously, as demand for RSPO-certified palm oil presently meets only 20% of the global RSPO-certified palm supply (the situation is the same for wood).

Firmer EU restrictions on labelling came into effect in December 2014, also seemingly playing a role in terms of the pressure placed on the most exposed companies

By postponing its sustainable palm oil target, AAK illustrates the significance of the challenges

²⁶ EU regulation No. 1169/2011 concerns both manufacturers and retailers' disclosure of food information to consumers. This directive required producers to specify which vegetable oils and fats are used in their products (previously they could just be labelled as vegetable fat).

Table 50: AAK progress towards sustainable palm oil targets

Target	Horizon	Status	Details
To achieve RSPO certification of all palm oil purchased (PO, PLO and derivatives)	2020	27% of AAK's palm oil products are RSPO-certified	90% of sites handling palm oil have RSPO Supply Chain Certification.
100 % traceability to mills	2014	97%	The traceability to mills is a first milestone; however, an important next step is the risk assessment of the mills data to verify compliance in the supplier base with AAK policy commitments
100% traceability to plantation	2017	n.a.	n.a.

Source: AAK, Kepler Cheuvreux

...and impact on its financials: supply/demand imbalance poses a threat

AAK (Reduce, TP SEK440): While certified palm oil is more expensive, AAK is not overly exposed to palm oil prices, as it passes on any price inflation/deflation to customers. That said, low prices are generally positive for AAK, as lower input prices mean customers are more likely to increase volumes. Also, since consensus tends to be pro certified palm oil, if there is a shortage of certified palm oil, AAK could be forced to source more expensive certified palm oil than the customers may want, which could mean it is unable to pass on the entire price premium for the certified products.

ESG Integration focus: do forest fires burn cash and reputations?

The Indonesian forest fires that broke out last year reportedly occurred on the plantations of global palm oil companies, Bumitama and Wilmar International, which raises questions about the impact on these companies' financials.

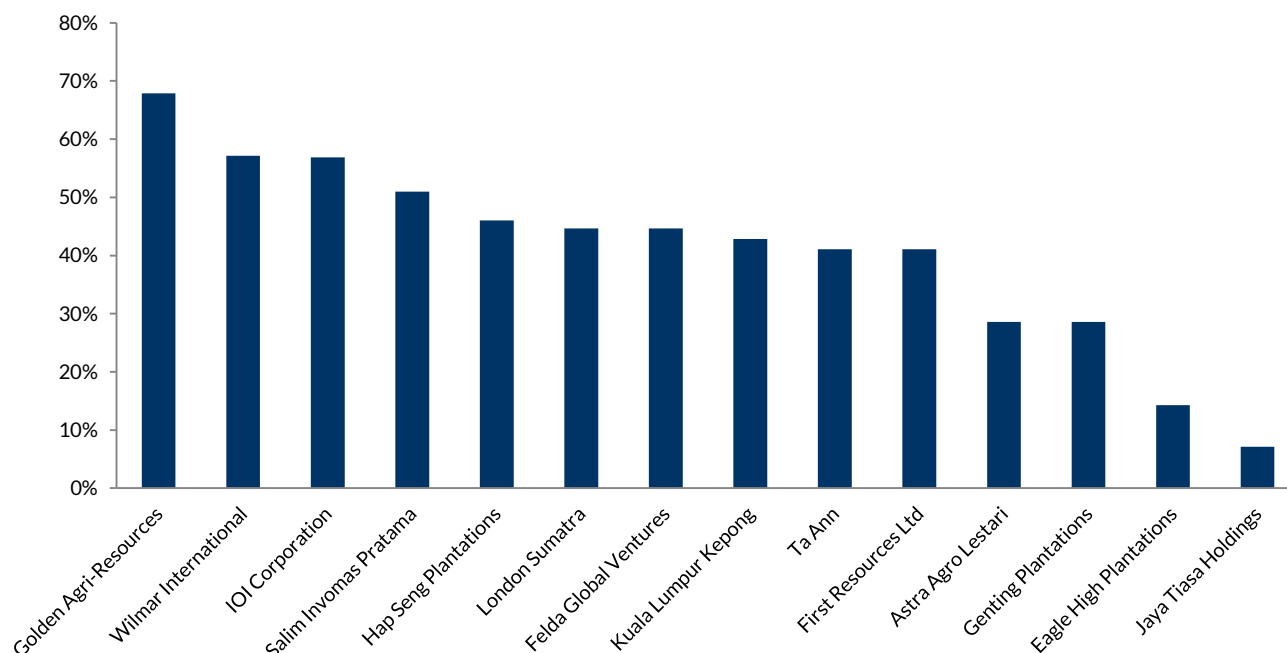
How could palm oil issues fit into the valuation? If we turn our attention to companies that are even more directly exposed, that is planters, we think that over time, those that are more successful in their sustainable efforts could fetch premium valuations relative to their peers, enabling them to attract a wider investor base. In this respect, listed planters with integrated operations appear to be more successful thus far.

What's sustainability business impact and how to assess performance? We believe that some short-term risks of step-up sustainability implementations, such as the potential loss of some suppliers who are unable to meet its sustainability standards could be offset by potential medium-term gains of being a preferred supplier to its customers and attracting a wider investor base. Beyond RSPO certification, the SPOTT (Sustainable Palm Oil Transparency Toolkit) provides a useful score card to gauge palm oil growing companies' sustainability performance based on a range of indicators related to landbank, traceability, peat lands, etc. ([link](#)). Golden Agri-Resources, Wilmar and IOI Corporations would stand out.

AAK usually able to pass on any price inflation/deflation to the customer

Beyond RSPO certification, the SPOTT (Sustainable Palm Oil Transparency Toolkit) provides a useful score card to look into palm oil growing companies sustainability performance

Chart 37: Spott scores on Plantations companies covered by CIMB



Source: Spott, Kepler Cheuvreux

What's the takeaway from previous fires? Our Asian brokerage partner CIMB Regional Head of Plantations view (Ivy Ng Lee Fang, ivy.ng@cimb.com): Back in 2013, several RSPO member companies who were reported in the media to be involved in the forest fires in Indonesia submitted digital maps of their concession areas in Indonesia. An analysis was carried out by two international research experts who compared the concession maps with fire and hotspot maps generated by NASA and NOAA for the 1 to 26 June 2013. This analysis showed that in most cases, no hotspots were identified within the plantation estates. A few hotspots were present in a minority of the areas and these were correctly managed by the respective companies and extinguished within 24 hours of their appearance. RSPO concluded that these three companies have been exemplary in managing the fire and haze situation, as per the RSPO criteria. It also found that concession maps in the public domain do not concur with the maps provided by the three companies. As a result, the initial public information on whose land the fires occurred on can be misleading. We saw this upshot as favourable, as this could have clearly hurt their corporate image. Also, planters who are involved in starting forest fires may face legal action. If the haze situation worsens and lasts for a period of time, palm oil supplies may be crippled as harvesting and pollination activities at the estates may be affected. This may result in lower palm oil supplies and higher prices in the medium term.

What are the planters likely to be related to the fire? As far the 2015 fire is concerned, it is difficult to determine accurately the planters involved. In December 2015, RSPO committed to publishing in Q2 2016 via the Global Forest Watch platform all digital maps of its members' oil palm concessions worldwide, except for Malaysia. We view this as a key crucial step to support fire monitoring activity.

What's the likelihood of similar events in the future? The main causes of the haze (complex land-use regulation, patchy enforcement, weak governance, supply chain opacity) appear here to stay. In fact, forest fires have erupted again on the Island of Sumatra. There will be in any case a lag before the reforms announced by Joko Widodo, Indonesia, president, ahead of CO21 last December, for example the ban on cultivation of high carbon peat and restoration of burnt land, have repercussions.

Growing recognition for the need of a “landscape approach”

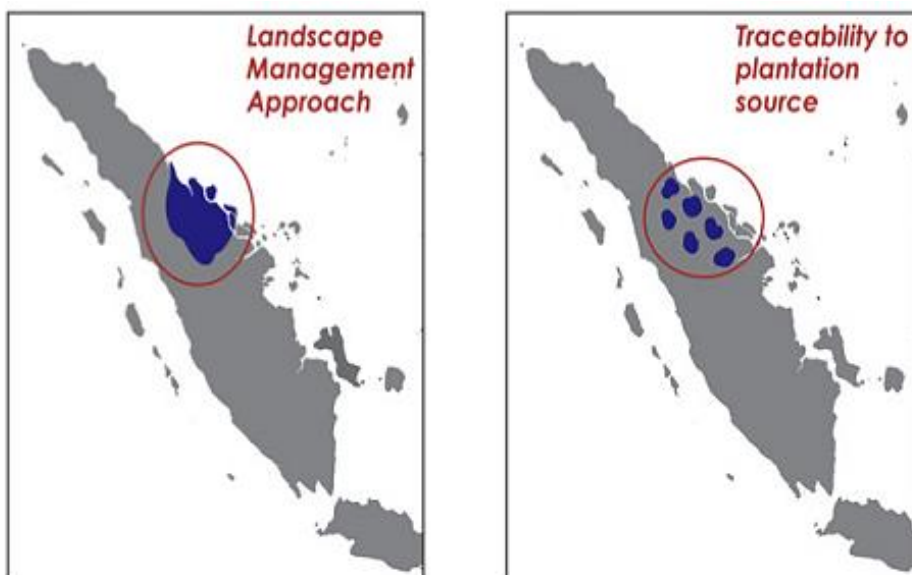
In this context, the “landscape approach” increasingly looks like a solution that could help overcome some of these practical hurdles faced by companies, by handling agricultural production and protecting smallholder farmers’ livelihood and ecosystems across a larger network of land, as opposed to fragmented projects from various public and private stakeholders, as is currently the case (source: Climate Policy Initiative)²⁷.

In practice, a landscape approach to palm oil may seek to combine for example: 1) government engagement and action; 2) entire supply chains; 3) addressing conservation areas; 4) addressing and reporting new concessions; and 5) landscape and KPI integration.

This is worth pointing out, as it directly relates to the approach of the LDN fund, which strives to foster partnerships between governments, businesses and farmers in the context of scalable projects.

The opportunity of “landscape approach”: handling agricultural production and protecting smallholder farmers’ livelihood and ecosystems across a larger network of land

Chart 38: Landscape management approach applied to palm oil: beyond traceability



Source: Climate Policy Initiative

²⁷ A range of stakeholders e.g. GCP, TNC, IDH, EcoAg, WWF etc have been pushing for integrated landscape management and a publication recommending how this should be implemented across public and private sectors was launched at COP 21 ([link](#)).

The upside for sustainable palm oil on degraded land

Additionally, certified palm oil enables us to identify promising opportunities for SLM projects. The RSPO explicitly guides for new plantations in Indonesia to use “previously cleared and/or degraded land”. Moreover, a process alluded to as “land swap” means that, in practice, if a company agrees to set aside some forests in its concession areas, it could obtain access to secondary areas that may include some of the 9.2m ha of degraded land deemed suitable for sustainable palm oil planting in Indonesia.

However, this depends on several factors:

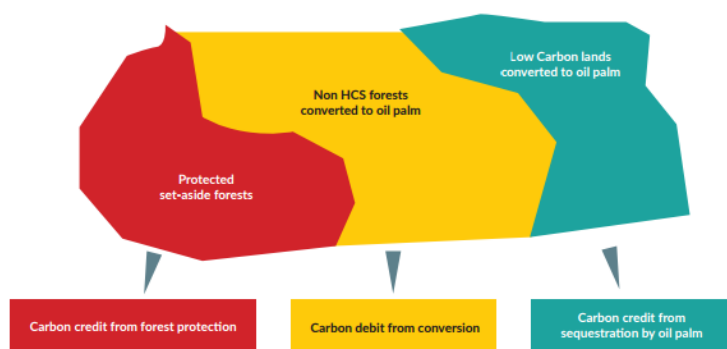
- **Country assessment:** How many millions of hectares can actually be used for land swaps and growing palm oil on degraded land in Indonesia, for example, is unknown.
- **Country regulation:** Legal and administrative processes have proved the main hurdles to convert these degraded lands into projects.

In order to unlock this opportunity, the WRI has created a methodology that focuses on the implementation of a comprehensive free prior and informed content (FPIC) process and the fulfilling of legal requirements, which can help find suitable areas for sustainable palm oil cultivation which have low carbon stocks and low levels of biodiversity.

Gradual refinement of environmental impact standards, e.g. HCS

More recently, ongoing proposals regarding the approaches needed for carbon-neutral conversion to oil palm²⁸ in the context of protecting the high carbon stock (HCS) forests, also reflect the importance of converting low carbon/degraded lands to oil palm (by issuing carbon credit from sequestration by oil palm, as depicted in the chart below). There is a growing sense that HCS and HCV should also be merged.

Chart 39: An approach to the carbon-neutral conversion to oil palm (HCS+ methodology)



Source: Carbon stock

²⁸ A carbon-neutral oil palm concession will produce zero net carbon emissions into the atmosphere. Zero net emissions are achieved by balancing carbon loss from forest conversion to oil palm against carbon sequestration (or avoided carbon emissions) in other areas. Within a single concession, carbon loss from forest conversion can be balanced against ongoing carbon sequestration in protected unconverted forests, as well as in oil palm plantations established on low carbon stock lands. Where relevant, avoided emissions from peatland rewetting can also be taken into account. Source: [Carbon stock study](#) (draft extended summary, October 2015).

The RSPO explicitly guides for new plantations in Indonesia to use “previously cleared and/or degraded land”...

...reflecting the importance of converting low carbon /degraded lands to oil palm to achieve carbon-neutral conversion

2) Cocoa: land degradation is a prominent concern

Cocoa supply may be materially affected by a range of environmental damages in key producing regions (Cote d'Ivoire, Ghana, Indonesia, etc.), including soil degradation, compounded by demographics (a likely labour shortfall) and poverty issues in farming communities. There is evidence that unsustainable cocoa farming has led to land degradation, for example in Ghana.

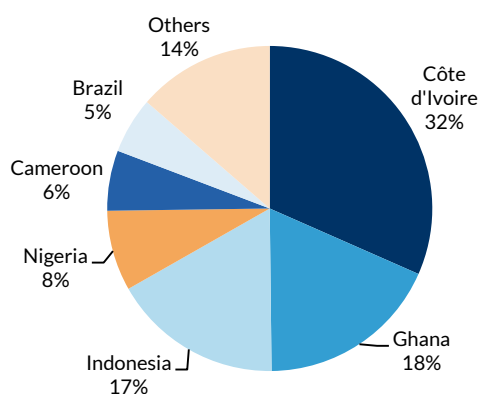
As a result, there are expectations of a possible structural shortage amid expanding demand from the middle class in emerging markets, in particular in India, China and Brazil. Considering Barry Callebaut's and Lindt's exposure (Lindt sources all its consumer beans - not fine flavour - from Ghana), this potentially hampers future growth opportunities.

Unlike most other commodities, global cocoa volumes have already been under pressure amid price rises implemented by the major chocolate producers to offset strong cocoa bean prices, which generally remain on an upward trend. Lindt, for example, increased its prices last year by an average c. 4% in the US and 8% in Canada to compensate for expensive beans. However, in January 2016, cocoa prices plunged.

Cocoa largely grown on degraded soils...

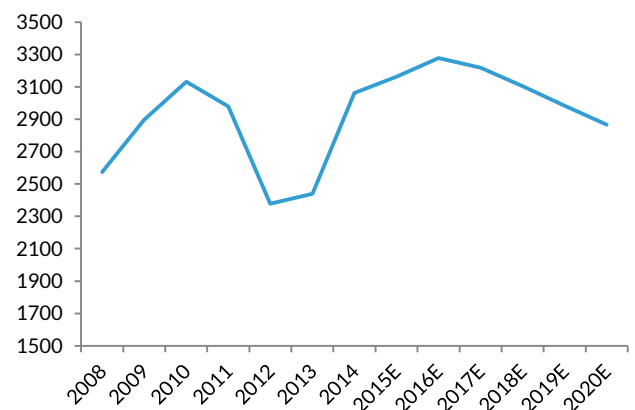
...fuelling fears of a structural shortage

Chart 40: Cocoa bean production



Source: FAOSTAT

Chart 41: Cocoa bean prices (USD/mt)



Source: IMF

What differences between Barry Callebaut's and Lindt's targets?

Both Barry Callebaut and Lindt are working with local farmers to increase the cocoa crop and ensure sustainable cultivation amid growing scrutiny of their actual efforts to tackle the most prominent concern, the extreme poverty of smallholders.

Although it has not set a publicly disclosed sustainability certification target, Barry Callebaut expects growing sales to be partly driven by a sustainable cocoa scheme (Quality Partner Programme) that represents about 5% of sales, and certified sustainable cocoa (UTZ, Rainforest, Fairtrade, organic) - c. 8% of sales - totalling c. 13% of sales from products sold under one of the certification schemes. This involves fostering sustainable practices among land users.

Barry Callebaut expects growing sales to be driven by its sustainable cocoa scheme

In Lindt's case, while the company does not communicate volumes sourced, it does report a sustainable sourcing objective (Global cocoa supply chain traceable and externally verified by 2020) and it recently revealed that it had reached 100% RSPO segregated certification for all our production companies.

Table 51: Cocoa companies' targets and programmes

Company	Sector	Key commodities	Geographical exposure	Company level of risk	Commitment Scope	Horizon	Update (2014)	Mitigation factors and programmes, comments
Lindt & Sprüngli	Food	Cocoa	Ghana (for all consumer beans), Indonesia, Latin America (mainly Ecuador), Madagascar and the Caribbean (for fine-flavour beans)	High risk	Ghana cocoa bean supply chain fully verified	2016	n.a.	"Lindt & Sprüngli Farming Programmes": To teach local farmers sustainable practices (over 22,000 farmers trained). By 2016, more than 45,000 cocoa farmers trained in Ghana
					Global cocoa supply chain traceable and externally verified.	2020	13%	na
					Purchases 100% certified sustainable palm oil according to the RSPO segregation model	2015	Achieved	The change from book & claim to segregation has been implemented gradually
Barry Callebaut	Food	Cocoa	Côte d'Ivoire, Ghana, Indonesia, Nigeria, Cameroon, Brazil	High risk	n.a.	n.a.	No target has been set	Quality Partner Programme (support to cooperatives on sustainability practices) that is being replaced by the HORIZONS cocoa or chocolate product (traceable from farm to warehouse), start of a new Foundation and the Biolands Group (direct cocoa sourcing model) involve engagement with farmers

Source: Lindt, Barry Callebaut

Recommendations for more conducive policy frameworks

As a result, there is a clear sense that approaches focused on raising farmers' productivity levels need to be complemented by a targeted response to tackle smallholders' structural economic challenges, including the need for more expensive cocoa prices.

In terms of regulation, some countries govern the cocoa sector very heavily (e.g. Ghana and Cote d'Ivoire), some not at all (e.g. Nigeria, Madagascar), and some just a little (e.g. Ecuador, some Caribbean islands). This has implications for companies' leverage and priorities in relation to sustainable sourcing and support for sustainable land management. In Africa, for instance, the main challenge is "underdevelopment" in rural areas (illiteracy, no electricity, no access to water/sanitation, insufficient infrastructure, etc.).

In response to this challenge, Lindt sets out the following broad preferences for a conducive policy framework: 1) farmers get as large a percentage as possible from the price they pay for the cocoa; 2) tax money collected on cocoa exports is actually invested back in the rural development of cocoa farming communities.

A patchwork of country regulations of the cocoa sector

What is the potential financial impact of a structural shortage?

Lindt (luxury chocolates) typically benefits from higher cocoa prices, given its strong pricing power, although demand is more elastic. We see Barry Callebaut (processor) as a cost-plus business model, but higher cocoa prices would hurt volumes. From an investment case perspective, we remain long-term positive on the overall Barry Callebaut case (dominant industry position, cost leadership). We also note that AAK benefits from higher cocoa prices as it produces substitutes (specialty fats, including cocoa butter alternatives).

Long-term positive on the overall Barry Callebaut case (dominant industry position, cost leadership)

3) Cotton: mixed evidence over land degradation impact

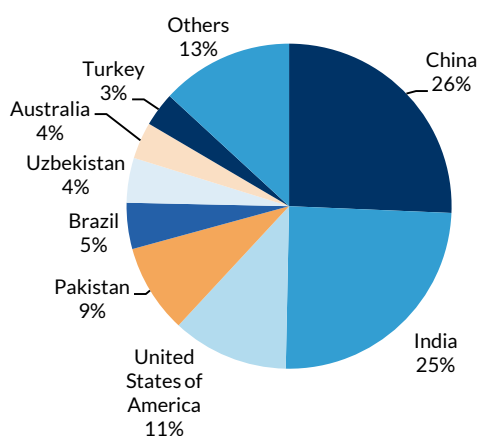
Cotton accounts for 2.5% of total arable land and is subject to particular scrutiny due to its water intensiveness. According to the WWF, “unsustainable cotton farming, with massive inputs of water and pesticides, has already been responsible for the destruction of large-scale ecosystems such as the Aral Sea in central Asia and the deteriorating health and livelihoods of people living there”.

Based on other studies, both water and wind erosion can be severe if the land is conventionally tilled or if the soil surface is not protected by organic material. However, the total amount of cotton production vulnerable to erosion, as well as global estimates of the extent of land degradation and abandonment that has historically resulted from cotton production, is unknown.

Unsustainable cotton farming drives uncertain severe impacts on land degradation

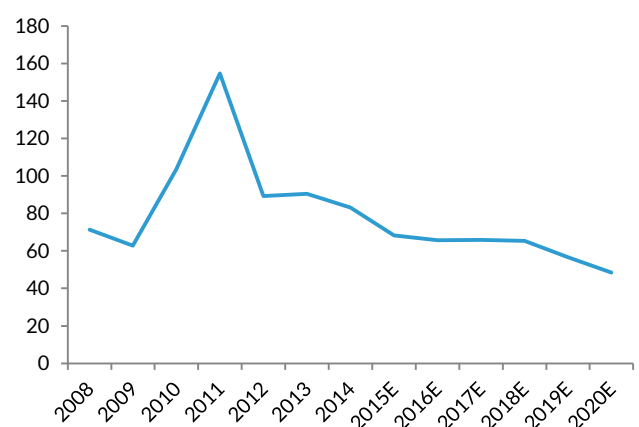
In terms of trends, it is worth noting that cotton prices have been on a downward trend since 2011 and are likely to remain under pressure as a result of Chinese inventory policies.

Chart 42: Cotton lint production 2013



Source: FAOSTAT

Chart 43: Cotton prices (USDc/lb)



Source: IMF

Wool is also suspected of having fuelled land degradation as a result of drought, salination, overgrazing or overuse of water resources (source: ELD). This makes it a prime target for SLM.

Wool is also suspected of having fuelled land degradation

Focus on Adidas transparency and supply chain impacts

Companies can participate by promoting best practices in their supply chain in terms of water consumption, soil fertilisation, pest management and land and diversity management. We highlight Adidas's fairly encouraging level of transparency in its reporting in terms of geographical exposure in its supply chain, as it includes the country of origin's sustainability sourcing via the Better Cotton initiative (India, Pakistan and Brazil) and clear updates on progress. It also indicates that its sustainability sourcing target share (40% Better Cotton by 2015) is not expected to bring about significant shifts in its supply chain, but rather an evolution of the ongoing trend; hence, the importance of China as a sourcing market is set to decrease further, while the importance of markets such as India, Pakistan, Vietnam and Indonesia is set to increase further.

Correlation between cotton prices and stocks' performance?

We make a large distinction between sporting goods companies and fashion retailers.

H&M (Buy, TP SEK365 - analyst Stefan Billing): There is generally a negative correlation between cotton prices and H&M's relative performance, as the company does not pass on prices to customers and prefers to let competitors raise prices in periods of sharp price hikes. The weight of cotton in H&M's COGS slightly rose to c. 4-5%, based on our estimates, and is most likely in line with, or a touch above, the level at peers e.g. Inditex.

We think H&M may be paying a price premium compared to competitors, partly due to its position as the world's largest user of organic and sustainably sourced cotton (c. 21% of its total cotton use). While there is low visibility on cotton prices (which are expected to fall in the next few years, according to the World Bank's projections), we assume H&M's target to achieve 100% of sustainably sourced cotton may add more pressure on its costs in the long run. The company does have some flexibility, but less than Inditex, which has a "proximity sourcing" approach.

Adidas (Buy, TP EUR96.5 - analyst Jurgen Klob): In 2011, Adidas faced a significant rise in raw material prices, especially cotton and oil. The company put the estimated negative impact on its gross margin at 230bps. However, as Adidas's gross margin in 2011 only dropped by about 30bps, the company was very successful in mitigating the cost increases through price hikes, and by swapping cotton for other yarns and making its production methods more efficient.

In this respect, the sporting goods industry is fairly homogeneous. There are only a few players that produce more or less in the same countries and mostly with the same producers. Hence, input cost pressure is the same for everyone, and the sector players' response to cost increases has tended to be rational and pretty much standardised.

Therefore, we think the sporting goods sector is likely to be able to mitigate rising raw material costs fairly well. To a large extent, this is due to the structure of the players and their ability to work on retail prices with their strong flow of innovative

Incremental changes in Adidas' supply chain

H&M's target to achieve 100% of cotton sourced sustainably may add pressure to its costs in the long run

Adidas was very successful in mitigating the cost increases through price hikes, but also by swapping cotton for other yarns and making its production methods more efficient

products. The biggest problem for the players is constantly rising wage costs; material costs can be mitigated in a much easier way.

As a result, both Nike and Adidas are experimenting with new production methods in very small factories, located close to their customers. These very small factories use an almost 100% automated footwear production process with robots and machinery. The production start-up may not be too far off, and a sizeable amount of footwear will most likely already be manufactured by 2020. Hence, the sector has been - and continues to be - extremely creative and innovative, and thus we are rather optimistic about them being able to mitigate raw material costs in their supply and production chain fairly well.

Lenzing: reining in the pressure of fibre markets on natural resources

Lenzing (Buy, TP EUR80 - analyst Stephan Trubrich): It is also worth pointing out the potential winners of the trend away from cotton in other sectors. With a 21% global share of Viscose Stable Fibres, or VSF (including viscose, modal and lyocell/Tencel), we would argue that Austrian chemicals company Lenzing benefits from mounting environmental concerns over cotton production and the shift away from synthetic fibres and certification requirements in the context of a short value chain.

Lenzing is the only worldwide producer that has the technological capability of producing all three generations of man-made cellulose fibres (MMCF) - viscose, Modal and Tencel (lyocell) - which can be found in numerous textile (e.g. apparel, home textiles) and nonwoven (female hygiene products, baby/disinfecting wipes) applications.

MMC is the most environmentally friendly raw material (cellulose available in abundance and renewable) in the global fibre market (c. 7% of the total), and 100% of Lenzing's wood and pulp supply (pulp is the main input factor) is either certified or from controlled wood sources. Lenzing production site in Austria is the largest integrated pulp and fiber production site in the world, which only sources wood from adjacent countries. As regards all other sites, Lenzing buys some external wood pulp. Here, the main share of wood is eucalyptus (e.g. eucalyptus from South Africa for the sites Lenzing Nanjing (LNF) in China and South Pacific Viscose (SPV) in Indonesia). These sites are all FSC certified and Lenzing claims that all FSC fibre can be delivered upon request. This is critical, as viscose which is not sustainably produced can jeopardise forests.

Furthermore, there is no need for chemicals to produce MMC, except for one solvent. Lenzing is undergoing a transformation from a manufacturing to a customer-centric approach, with a clear focus on value rather than on volume.

4) Leather produced on semi-arid areas prone to land degradation

At first glance, some key leather producing countries, e.g. Italy (13%), France (7%), the US (6%) and Germany (3%), can be deemed as fairly low-risk in terms of land degradation compared with others. However, companies sourcing leather in our universe also rely on a range of other sensitive regions. Kering, for example, sources cashmere, wool and sheep leather produced on semi-arid areas, which are

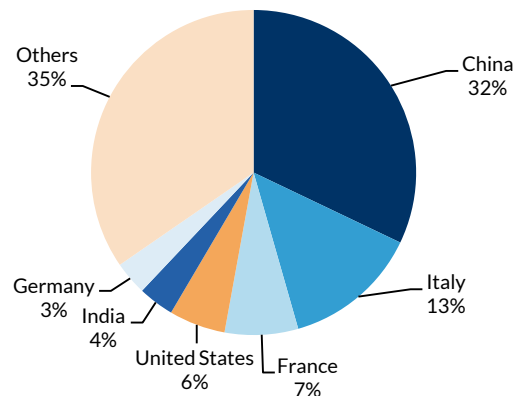
We are rather optimistic about Adidas and Nike being able to mitigate raw material costs fairly well in their supply and production chain

Austrian chemicals company Lenzing benefits from mounting environmental concerns over cotton production and the shift away from synthetic fibres and certification requirements in the context of a short value chain

Kering sources cashmere, wool and sheep leather produced on semi-arid areas, which are particularly prone to land degradation and desertification

particularly prone to land degradation and desertification. That said, we see these issues to be predominantly relevant from a brand value perspective rather than for the cost impact.

Chart 44: Leather-producing countries



Source: World Bank

Kering's best practices with regards to natural capital impacts tracking

We welcome the company's detailed reporting with regards to the environmental impact of its corresponding policies (e.g. identification of low-impact beef leather sourcing), as we see it as a positive sign in terms of brand value protection and enhancement. Kering has set clear targets for 2016 with regards to leather sourcing to mitigate land degradation-related risks, backed by measures in the relevant regions, e.g. Patagonia and South Africa for sheep farming.

We welcome the company's detailed reporting with regards to the environmental impact of its corresponding policies

Table 52: Kering - targets and programme

Company	Sector	Key commodities	Geographical exposure	Company level of risk	Commitment Scope	Horizon	Update (2014)	Mitigation factors and programmes, comments
Kering	Luxury goods	Sheep leather, wool, beef, leather, cotton, cashmere	n.a.	Medium risk	100% of leather from domestic livestock from responsible and verified sources that do not result in converting sensitive ecosystems into grazing lands or agricultural lands for food production for livestock	2016	n.a.	Kering started focusing on bovine leather and is now moving to other types of leather. Indeed, the company relies on cashmere, wool and sheep leather produced on semi-arid areas, which are particularly prone to land degradation and desertification. A range of measures have been implemented, e.g. "holistic land management" (including but not limited to organic, ensuring regeneration of grasslands and natural ecosystem services) for sheep farming in Patagonia and South Africa.

Source: Kepler Cheuvreux

5) Soy is the new target of anti-deforestation campaigns...

The bulk of soy producers can be found in the US, Brazil, Argentina, China and India. Pressure on companies is mounting, as soy is still largely overlooked in their reporting, clearly lagging behind timber or palm oil, despite growing regulatory

Mounting suspicion over association with soil erosion and deforestation, especially in Brazil, e.g. in the Cerrado region

pressure and mounting suspicion over the association with soil erosion and deforestation, especially in Brazil, e.g. in the Cerrado region. Soy production in Brazil could lead to losses of 55m tonnes of topsoil a year, according to the WWF.

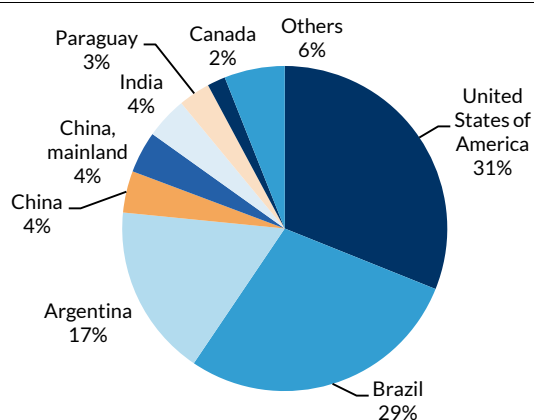
... driven by a range of regulatory concerns

A new Brazilian Forest Code is set to be enforced, replacing the Brazil moratorium due to end in May 2016. According to companies' feedback on the CDP, it could entail higher meat prices or lower margins for producers. This also marks a meaningful change, as many of the ongoing soy commitments made by companies rest on compliance with the soy moratorium. Moreover, the EU's Action Plan to tackle illegal timber has recently been reviewed. The scope of the Forest Law Enforcement, Governance & Trade (FLEGT) action could be revised to include other drivers of deforestation, or the EU may decide to address the other deforestation drivers in a separate Action Plan (source: CDP).

However, none of the companies in our coverage is substantially directly exposed. Outside our coverage, global food processing and commodities trading company Archer Daniels Midland (ADM) illustrates the momentum in terms of company reporting. It provides a stream of data on local initiatives and methodology developments, for example, to review "no exploitation" risks in its soy supply chain.

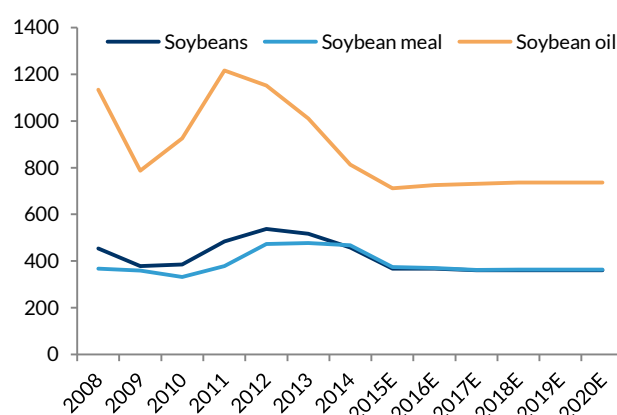
A new Brazilian Forest Code is set to be enforced and replace Brazil's moratorium, due to end in May 2016

Chart 45: Soybean production



Source: FAOSTAT

Chart 46: Soybean prices (USD/mt)



Source: IMF

6) Timber: strong synergies with pulp and paper value drivers

In the past few years, the business case for responsible forestry has become an increasingly important competitive tool, as demand for certified forest products keeps growing and pressure has become fiercer (e.g. customer backlash on Asia Pulp and Paper following the Greenpeace campaign). Moreover, progress in sustainability-related sourcing requirements for the sector may in some cases provide a pattern that could be expanded to other commodities (e.g. first place in the European market requirement as part of the EU Timber Regulation).

Larger companies with a large amount of forest assets (c. 1-2m ha) in our universe are Holmen, SCA, Stora Enso and UPM. While major pulp and paper companies have

We argue that progress in sustainability-related sourcing requirements for the sector may provide a pattern that could possibly be considered for expansion to other commodities

SCA's coverage is particularly thorough

a very similar approach in their quest to get their supply and products (PEFC/FSC) and all their owned land certified, the level of clarity and proactivity of their underlying reporting on procurement (with regards to sustainable forest management) may vary, and we found SCA's coverage to be particularly thorough in this respect (see following table). That said, its level of certified purchased wood (c. 60-64%) is below that of peer UPM (83%) and Stora Enso (80%).

However, the importance of certification as a proxy of sustainable practices should be balanced. For instance, in Scandinavia many private forest owners with small pieces of land (roughly c. 10-1,000ha) will not go through the certification process. This doesn't mean that their forests are managed in an unsustainable way, as they are always regulating how an owner can harvest/plant/utilise its asset, and the forest is worth more if managed according to good practice.

A string of SLM and land restoration projects are already underway

Pulp and paper companies may plant trees according to sustainable forestry models and generally seek to mitigate the negative environmental impact from their activities (e.g. reducing the use of fertilisers and pesticides).

While companies across other sectors are almost exclusively focused on such conservation efforts, pulp and paper companies may also lease land in various regions with a high risk of land degradation and are, based on our review, more often involved in land restoration projects than other sectors, such as:

- Stora Enso in some territories of Laos that were affected during the war.
- Local emerging market competitors (e.g. Suzano in LatAm) have also fostered partnerships with land users involving the restoration of degraded land resulting in a net positive gain of almost 3m ha of secondary forest as part of a wider innovative SLM project.
- In addition, some companies spearheaded more ambitious restoration projects of peatland forest. APRIL Group pledged USD17m over ten years as part of a project (Restorasi Ekosistem Riau - RER) to restore 20,000ha of degraded forest in the Kampar Peninsula under eco-restoration licenses granted by the Indonesian Government.
- Interestingly, companies are permitted to restore the productivity and ecosystem services of degraded areas as part of the Indonesian government's setup of the Ecosystem Restoration Concessions system, in which Asian Pulp and Paper and APRIL Group are involved.

Pulp and paper companies may also be involved in land restoration projects, e.g. Stora Enso in Laos...

...and Suzano in LatAm...

...while APRIL Group pledged a USD17m investment to restore degraded peatland forest

Table 53: SCA target and programme

Company	Sector	Key commodities	Geographical exposure	Company level of risk	Commitment	Update (2014)	Mitigation factors and programmes, comments
Scope Horizon							
SCA	Pulp and paper	Wood	Sweden (forestry assets) & global (pulp sourcing)	Medium risk	All fresh wood fibre-based raw materials in FSC/PEFC certified products or fulfilling FSC standards for controlled wood	n.a. More than 60% of timber deliveries and 63% of pulp deliveries to SCA have FSC and/or PEFC certification.	SCA's suppliers beyond 1st tier (tier 2+3) are assessed on compliant with the Global Supplier Standard and certification according to FSC and/or PEFC
					Forest management: a minimum 5% of productive forest land set aside for ecological landscape plans and a further 5% set aside as part of SCA's consideration for nature in managed forests	n.a. 7% set aside in the long-term ecological plans and a further 14% of the area in planned harvesting sites has been set aside for preservation	Extensive conservation measures

Source: SCA

Stora Enso's actions vs. human rights and land grabbing concerns

In terms of lingering risks, we view human rights and land grabbing as prominent concerns, as reflected by Stora Enso which reportedly took significant actions to address, respectively: 1) uncovered issues of child labour in its supply chain in Pakistan in 2014 (e.g. through dedicated education programmes and collaboration with Save the children as well as human rights assessments); and 2) in China, where the land is owned by government and individuals/businesses are given land rights, to ensure contracts were legally correct when allegations erupted in 2010.

Breaking persisting stumbling blocks to sustainable sourcing

Beyond regulatory challenges, we pinpoint four overarching business barriers to consumer companies' transition to LDN.

1) Better articulating and targeting the business case

Overall, companies are pressured to thoroughly map and monitor their supply chains, which is difficult for many commodities (including soy and palm oil) that are currently subject to special oversight. Such policies may drive up costs, depending on the products, ingredients and the number and type of suppliers involved. It also depends on the companies, as some brands are allegedly pushing the suppliers and not paying for the cost of certification.

The added value from actions (benefits) and support burdens (costs) depend on the concentration of supply chain actors at each level of the supply chain.

However, companies do not report detailed data and there is still very little on the costs involved in using sustainable palm oil and soy that can be linked to companies buying certificates to offset palm oil and soy consumption in the production of their products.

What are the overarching barriers?

The added value from actions (benefits) and support burdens (costs) depend on the concentration of supply chain actors at each level of the supply chain

We see a much more detrimental financial impact related to the risks addressed here than the costs involved

On the whole, we estimate that these costs are often limited compared to companies' total sourcing costs. What's more, we see a much more detrimental financial impact related to the risks addressed here, particularly in the case of extreme weather events, substantial regulatory changes or reputational damage (decreased brand value and licence to operate potentially at stake).

2) Certification cost/benefits: what's the balance?

Considering that SLM and land rehabilitation related practices, including certification efforts, tend to mutually reinforce one another, their financing challenges need to be balanced. Certification and traceability are both costly and complex considering the investments needed in technology and processes, and in many cases establishing a sustainably driven plantation would be more costly.

As the price of certified products is often not any higher than the price of non-certified products, the increased price premium can vary. The benefit for producers is mainly the access to markets and supply chains. Companies have also reported that certification schemes have made them eligible for financing and that the production systems and processes have improved because of, for example, stricter monitoring and reporting requirements.

In addition, there is the benefit of improved and more sustainable production and of a less negative impact on the land and ecosystems. In this sense, we can say that certification schemes benefit from a somewhat clearer business case (e.g. based on pricing premium estimates) and that they are most relevant to producers targeting international markets, as we assume that demand for certified products is low in the local markets. Nonetheless, there are other important concerns such as a greater focus on the structural improvement in productivity and quality, rather than exclusively focusing on the price premiums in an environment where some of these standards have to cope with sluggish demand.

More fundamentally, we see certification and the related traceability as structural trends being applied across the board to help these companies meet customer demand for more details regarding product characteristics, including their origins and impact. By backing or complementing certification developments, LDN-related financing instruments could play a key role in the current financing challenges.

3) Need for local input...

On the whole, based on feedback to our questionnaire and reporting, it seems that companies keep struggling to articulate the business risks and their sustainability sourcing, including deforestation commitments, with monetary numbers. This also involves clarifying the business case for land users, which is paramount for land restoration. The IDH-led Initiative for Sustainable Land Landscape (ISLA) that focuses on the main commodity sourcing landscape aims at bridging this gap

In addition, there is a widespread feeling that the business case, as well as the environmental impact assessment, is only robust when it is location and commodity-specific. This is also precisely the area where we expect the LDN target implementation among countries' pledges and the LDN-related funds deployment to

Certification schemes benefit from a somewhat clearer business case

By backing or complementing certification developments, the LDN fund could play a key part in the current financing challenges

Widespread feeling that the business case, as well as the environmental impact assessment, is only robust when it is location- and commodity-specific

add value by helping companies connect with local evidence that would support their top-down policies and commitments.

4) ... and more vivid connection with supply-chain strategic moves

In our view, the challenge is also getting more intermediaries (traders, processors) on board through strategic partnerships to help foster an understanding of the shared economic benefits together with the pricing of the externalities. At the moment, zero net deforestation commitments are being encapsulated by processors and traders but not yet by their suppliers, who need to enhance capacity building. Jurisdictional REDD+ and sustainable sourcing projects are expected to collaborate more closely.

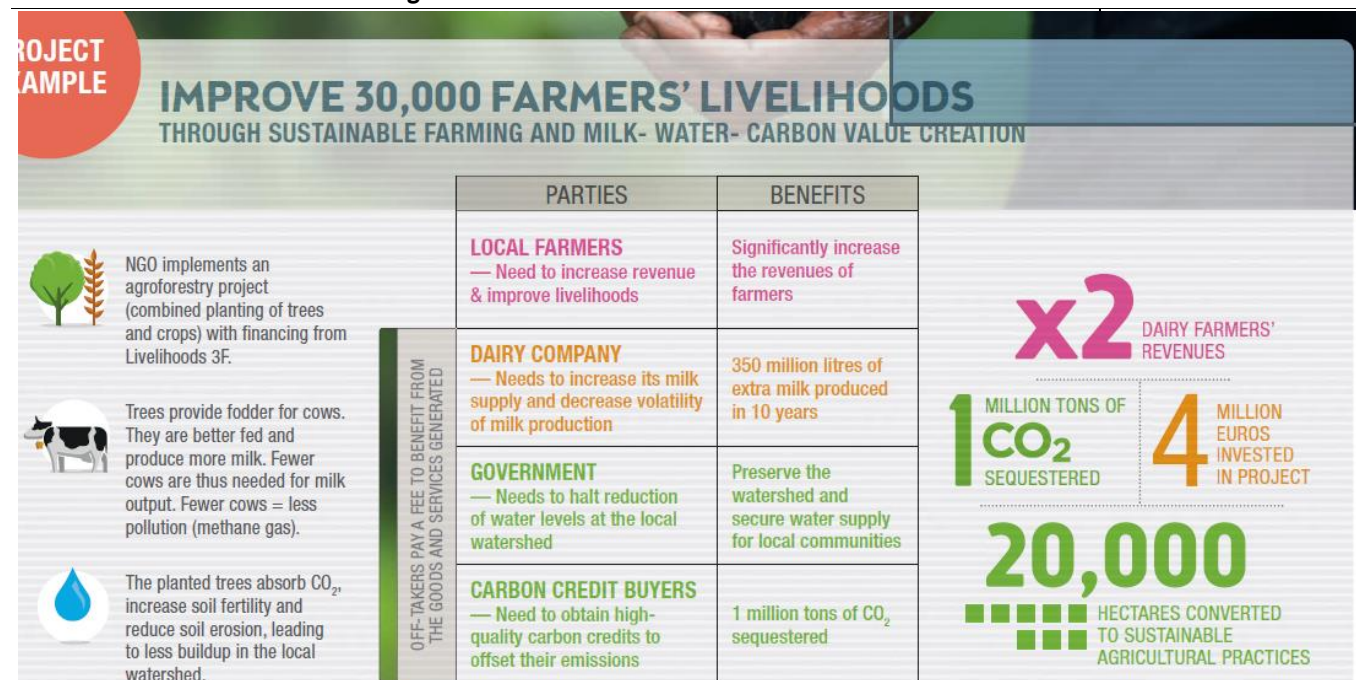
Danone's latest Livelihood 3F (Livelihoods Fund for Family Farming) fund seemingly takes this a step further. The fund was kick-started earlier this year by both Danone and Mars, who jointly committed to investing EUR120m to boost the productivity of smallholders.

The Livelihood 3F fund will allocate capital to sustainable agriculture projects featuring a landscape approach. As private and public offtakers that benefit from externalities generated by projects financed by the fund will provide the financial return via the payment of fees (increased incomes, improved livelihoods, restored natural ecosystem), it paves the way for collaboration and innovation in terms of financing mechanisms aligned to stakeholders' interests in light of both commercial and social and environmental returns of context-specific SLM projects.

Danone's Livelihood 3F (Livelihoods Fund for Family Farming) fund seems to be taking this a step further...

... by paving the way for collaboration and innovation in terms of SLM-friendly financing mechanisms to align with stakeholders' interests

Chart 47: Danone's Livelihood 3F targets



Source: Danone, Kepler Cheuvreux

Land operators and end-market exposure

Aside from oil and gas (notably tar sands), our review of operational challenges identifies hydro and mining as particularly risky projects that may result in irreversible levels of land degradation. Andritz is the most indirectly exposed to large hydro project scrutiny through electromechanical equipment, while Hochtief is involved via CIMIC, the world's leading contract mining company. However, the potential losses of ecosystem services entailed here do not appear to be matched by direct material risks, while land rehabilitation is typically covered by licence-to-operate requirements. The exception remains large-scale environment catastrophes, such as BHP Billiton/Vale's dam spill (at least c. USD2.6bn settlement).

Conversely, we pinpoint competitive opportunities that stem from proactive policy and disclosure with regards to Green buildings and sustainable sourcing (e.g. CRH, Hochtief), the systematic and more ambitious integration of biodiversity issues in utilities projects (e.g. Iberdrola and Elia Group), or direct involvement in land restoration projects from an end-market exposure perspective, i.e. exposure to sustainable products and services (e.g. Arcadis).

Lastly, chemicals may naturally leverage actions to support Sustainable Land Management (SLM) in order to strengthen their relationships with farmers (e.g. as suggested by Syngenta as part of its "Good growth plan").

Construction and infrastructure

Sector snapshot

Table 54: Framework to map companies' Land degradation profiles and opportunities to achieve LDN

Steps		Description
Sector		Construction, Capital goods, Real estate
Financial impact	Externalities entailed by their operations, supply chain disruptions that are typically covered by regulatory requirements.	Raw material quality, price, availability. Revenue growth
Companies reviewed (* those who have answered our questionnaire)	<u>Construction</u> : CRH*, Hochtief*, Skanska*; <u>Capital goods</u> : Andritz, Arcadis, Trevi Group; <u>Metals & Mining</u> : BHP Billiton; <u>Real estate</u> : Gecina	
1. Exposure		
Land impact	<u>Direct drivers</u> : Large impact from mining (e.g. limestone), infrastructure (e.g. large hydro projects), biodiversity impact of forestry if badly sourced. <u>Indirect drivers</u> : Greenhouse gas emissions and climate change (e.g. cement production)	
Financial impact	Reduced availability and increased costs of basic raw materials; reduced productivity due to interruptions in optimised raw material flow and loss of license to operate; opportunities for differentiation and revenue growth for green buildings and restoration projects	
2. Leadership	Use of recycled and alternative materials (e.g. CRH), extensive after-use of restored quarry projects, Green building plans (e.g. Hochtief)	
3. Reporting	Quantitative reporting on environmental expenditures (e.g. CRH), Green buildings business exposure estimates (e.g. Hochtief)	
4. Enabling factors		
5. Sustainable landscape finance	Biodiversity assessment and benchmarking Direct collaboration on rehabilitation projects in a financing context is challenging as projects are primarily licence-to-operate driven	
Comments	The “internalisation” of externalities reviewed here entails limited direct business risks, and we see the bulk of concerns related to liabilities. <u>Construction</u> : land rehabilitation projects are typically conducted as part of licence to operate-related requirements. Mining poses a particular threat (possible irreversible footprints may entail controversies), with Hochtief exposed via CIMIC. Then raw materials extractions from quarries (or sand and gravel pits) e.g. for CRH (no material risk evidenced, however). <u>Capital goods</u> : limited risk for Andritz’s exposure to controversial large dam projects. Positive top-line exposure for Arcadis (Environmental Construction Services and Site Evaluation and Restoration) and Green buildings for Hochtief (more indirect contribution to resource efficiency through the demand for more sustainable products)	

Source: Kepler Cheuvreux

Key exposure factors: is there a price for land use risks?

The various types of construction and infrastructure projects and subsectors at different points in the value chain (real estate, building materials, capital goods, etc.) need to be distinguished based on their specific characteristics, including the level of severity of the land degradation's impact, e.g. reversibility and potential for rehabilitation of the incurred ecosystem services damages. In terms of land rehabilitation potential, note that there are no coordinated efforts similar to the zero net deforestation pledges for consumer industries.

Value chain approach: from damage costs to restoration opportunities

There is ultimately one key question for us: to what extent could these risks be "internalised" in their P&L and drive bolder Sustainable Land Management (SLM) practices? To help address this, we deal with five areas that illustrate some relevant angles across the value chain:

1. Damages related to large hydro projects (utilities, capital goods).
2. Mining (including BHP Billiton/Vale's Samrco case) and extraction from quarries (mining, building materials).
3. Tar sands (oil & gas).
4. REITs embedding biodiversity concerns (property).
5. Restoration (capital goods).

1) Hydro projects can cause irreversible damage

Construction in the form of buildings (e.g. city expansion) and dams can for instance cause irreversible damage to land (as illustrated by the Three Gorges dam in China and the controversy around its impact on soil erosion and ecosystem degradation).

As a result, the most disputed projects are targeted by NGO campaigns that may prompt licence-to-operate and liability-related risks.

Andritz's exposure to controversial projects and pending case: low risk

In our coverage, Andritz is the most indirectly exposed stock, as electromechanical equipment for hydropower stations is the main driver of its renewables business, which makes up 45% of total sales. Besides providing equipment to the Belo Monte dam project in Brazil (along with Arcadis, among other companies), the company is currently subject to a complaint brought to the OECD Austrian NCP regarding the adverse impacts of a dam in Laos (the Xayaburi dam) that allegedly includes fish migration disturbance, the extinction of species and the thwarted flow of nutrient-rich sediment to the Mekong Delta²⁹ (source: OECD). The allegations broadly reflect the indirect adverse consequences of infrastructure developments in countries other than where the projects take place.

In this case, the threat involves both the local environment and the ecologically sensitive Mekong Delta in Vietnam, which may suffer from the reduction of water for consumption and increased sedimentation of arable land.

To what extent could land-related environmental damages be "internalised" in their P&L and drive bolder SLM practices?

Construction of buildings (e.g. city expansions) and dams may cause irreversible damage to land...

²⁹ Andritz has also been subject to land-related controversies as part of its Pulp & Paper business (construction of the ell Bay Pulp that is feared to generate environmental pollution and affect native forests).

However, we reckon that direct potential risks for Andritz are very limited in this specific case as, if an order has already been placed with the company, it is entitled to receive the revenues from the delivery of the equipment even in the event of the worst outcome, i.e. the project being stopped. As all power plants need local regulatory clearance, we don't see how Andritz could incur in liabilities, as it is only providing equipment and not operating the plant.

That said, if we look beyond land degradation risks per se, Transparency International has described public works as the most corruption-prone economic sector³⁰, and, according to International Rivers, many companies, including Alstom (supplier of power generation equipment to hydropower projects), have suffered bribery allegations in hydropower projects in the past (the CEO of Odebrecht, Brazil's major hydropower company, is currently in jail for his company's corrupt practices in hydropower projects.) With such practices, companies risk debarment from World Bank and other multilateral development banks. Such practices also have an impact on a company's public reputation and ability to attract top talent. Second, we may assume that projects that cause major controversies, legal and political problems and delays also absorb a lot of management time. This may not be a financial risk, but still creates costs for respective companies.

...although risks for equipment suppliers are limited

Table 55: Hydro projects subject to concerns about environmental damages (e.g.)

Company	Activity	Dam	Country	Details on size and damages feared
Andritz	Hydro equipment	Ilisu	Turkey	EUR340m contract; This project only threatens the biodiversity of the Tigris valley and the material existence of the inhabitants of Ilisu.
Andritz	Hydro equipment	Belo Monte	Brazil	Order value: EUR330m; planned capacity: 11,230 MW; completion of the project is scheduled for 2019. Concerns have centred on indigenous populations affected.
Andritz	Pulp & Paper	Tamar Valley	Tasmania	Construction of the Bell Bay Pulp that is feared to generate environmental pollution and affect native forests
EDP	Hydro generation	Sao Manoel Dam	Brazil	Capacity: 746MW; EDP's share of the consortium is 66.6% ; the Tapajos river is an important tributary of the Amazon
Engie	Hydro generation	Jirau and Santo Antonio	Brazil	2,475 MW (Jirau); 3,000 people potentially displaced; fragmentation of Rondônia's ecosystems and clearing of vast areas of the region's remaining forests
Endesa	Hydro generation	HidroAysen	Argentina	Endesa owns the majority of the HidroAysen project for five large dams in Patagonia. After years of conflict and undoubtedly high costs to the developer in terms of studies and management time, the projects were halted by the Chilean government in 2014

Source: Banktrack, Andritz, internationalrivers

Focus on Trevi Group Mosul repair challenge

There are currently significant fears over the Mosul dam in Iraq, built by a German-Italian consortium led by Hochtief in the 1980s and whose repairs are being supervised by the Trevi Group as part of a EUR273m contract awarded in early March 2016.

Analyst: Matteo Bonizzoni (mbonizzoni@keplercheuvreux.com): We expect work (a quick fix to the dam's foundation to prevent it from collapsing) to be executed over the next 18 months, leading to significant advance payments. The contract is worth c. 25% of Trevi Group's 2016E intake. Protection by Italian troops might limit

³⁰ See our June 2013 Business ethics report *Corruption indices: From disclosure to risk exposure* by ESG Analyst Sudip Hazra which includes our tool for investors that rates companies on their risk exposures to corruption.

the execution risk (if the dam were to collapse it could lead to flooding in Mosul and Mesopotamia). The Mosul dam repair is also being backed by US authorities. A total repair of the dam would be a different matter and could cost USD2bn.

2) Mining poses a particular threat in terms of adverse impacts

Other sectors related to construction, such as mining, are able to clean up some of the environmental damages incurred by their operations, but some of these effects may also prove irreversible, such as external damages caused by run-offs into ground water and streams.

Takeaway from Brazil's worst-ever environmental disaster (BHP/Vale)

We think the main land use risk lies in potential large-scale environmental disasters similar to the one that affected Vale and BHP Billiton.

A dam burst in BHP Billiton's iron JV (Smarco) with Vale³¹ on 5 November 2015 in Brazil. This was Brazil's worst environmental disaster ever, causing 19 deaths and polluting an 800km-long river. The dam collapse caused mud and ore-mining waste to slide down the mountain. Reportedly, Samarco's Brazilian assets have been blocked by regulators³².

What settlement was reached with Brazilian authorities? In early March 2016, Samarco, backed by joint owners BHP/Vale, reached a settlement agreement with the Brazilian federal government, two state governments (Espírito Santo and Minas Gerais), and other related Brazilian public authorities. The agreement puts in place a mechanism that covers both reparation and compensation, including for registering and resolving claims. Samarco will finance total contributions of c. USD1.7-2.3bn over the next six years to 2021. This amount is inferior to some market expectations considering speculation (press reports had quoted more than twice this amount). The agreement is still subject to court approval in Brazil, yet this amount does not encompass the full costs related to the tragedy as then the company could also be held criminally responsible for the damages due to allegations of negligence.

What was the stock price impact? It is hard to decouple the impact of bottoming commodity prices from the catastrophe on the share price fall since early November, but it is clear that it played a role and sparked an abrupt decline immediately.

Mining poses a particular threat

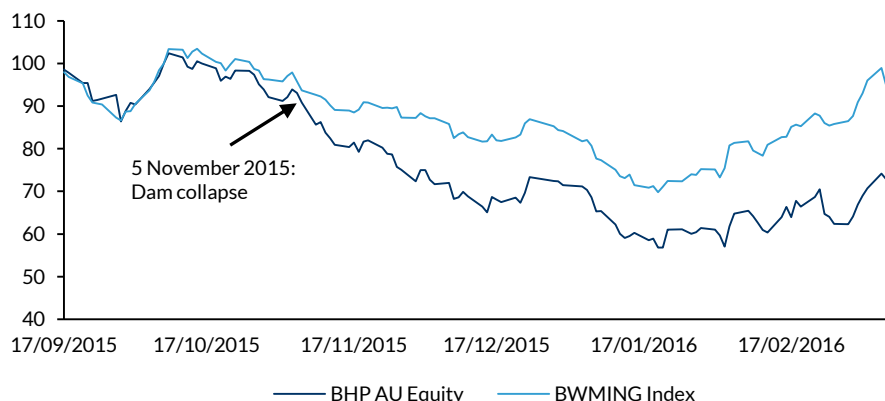
In early March 2016, Samarco, backed by joint owners BHP/Vale, reached a settlement agreement with the Brazilian federal government, where Samarco will finance total contributions of USD1.7-2.3bn over the next six years to 2021 (inferior to some market expectations)

This amount does not encompass the full costs related to the tragedy as the company could also be held criminally responsible for the damages due to allegations of negligence

³¹ Neither company is covered by Kepler Cheuvreux.

³² Source: various newswires (Xinhua, Guardian, Le Monde)

Chart 48: BHP Billiton and Bloomberg world mining index share price (normalised)



Source: Bloomberg

How much can Samarco fund? BHP and Vale contributed in aggregate USD500m towards Samarco (when incorporating the amount already allocated to compensation and remediation activities), yet BHP's share of costs could be covered by its insurance policy on Samarco.

When will Samarco be back online? The answer to this question will largely determine Samarco's ability to self-fund restoration and compensation. At this stage it is too early to assess the timeframe in which Samarco will be operational, but given the project would be cash-flow positive and support 6,000 local jobs (employees and contractors), it could be brought back online when possible.

What's the remediation plan? Reparation means here remediation, i.e. Samarco aims to restore to the condition that prevailed prior to the event, such as through removal of sediment from the river, or rebuilding the towns of Bento Rodrigues and Paracatu de Baixo.

What actions have the companies already undertaken? A humanitarian assessment was undertaken right after the disaster. Samarco also commissioned ERM and Golder & Associates to devise a roadmap for the mid-to long-term recovery process that could encompass: "resettlement of Bento Rodrigues and possibly Paracatu, reconstruction of affected areas from Bento Rodrigues to Candonga Dam (80km downstream in the Rio Doce municipality), review of economic displacement and livelihood impacts from Candonga Dam to Linhares, opportunities for long term development of the regions and a stakeholder engagement strategy".

Besides Samarco's reporting on a range of environmental monitoring programmes, BHP Billiton has commissioned a specialist environmental consultancy (Hydrobiology) to supervise Samarco's actions.

Will investigation findings be made public? BHP Billiton, along with Vale and Samarco have committed to disclosing publicly the findings of the external investigation to be conducted by New York-based law firm Cleary Gottlieb Steen & Hamilton, which is unlikely to happen in the short run.

BHP Billiton, along with Vale and Samarco committed to disclosing publicly the findings of their external investigation

An eye on companies in our coverage: Hochtief

In our universe, for example, Hochtief is particularly directly exposed to such concerns via CIMIC (c. 75% of sales), the world's leading contract mining company that extracts commodities such as ore and coal under long-term contracts with mine owners in Australia, South East Asia and New Zealand. The company claims land degradation is viewed within the framework of project risks and evaluated individually on a project basis. Its services also include mine development and denaturalisation after mine closure.

While responsible construction and mining activities are supposed to lead to the reshaping and renaturalisation of land, even if cleaning up is envisaged in company contracts, their exposure to land degradation-related risks and opportunities may also lie in their supply chain, as they buy timber or material from quarries.

... followed by extraction from quarries

Land use and biodiversity management come into play for cement producers when they have to obtain or maintain quarrying licences in a context of tightening administrative requirements, especially in sensitive biodiversity areas. Quarries are often integrated with a clinker plan and the loss of an operating licence can lead to production disruptions. For example, a significant portion of CRH's raw materials is extracted from quarries (or sand and gravel pits). The company restores most quarries through projects involving housing development, agricultural land, nature parks and other recreational uses (486ha were reinstated in 2014, for total spending of EUR7m on restoration and biodiversity).

The following table highlights the variety of land degradation connections with companies as well as the levers to mitigate this impact. The remediation costs involved are fairly low, which raises a broader question: do they fairly reflect the real costs of damages and provide an incentive for bolder actions?

Do externality costs fairly reflect the significance of damage caused?

While we lack holistic data on possible liabilities affecting this group of companies specifically, based on numerous other examples of environmental damage related to land operators (including the recent BHP Billiton-Vale dam collapse), we suspect that in many cases the externality costs do not reflect the significant of the damage caused.

Green buildings growth

At the other end of the value chain, we also underscore opportunities related to Green buildings. Nearly a quarter of Hochtief Group's sales lie in the green building market segment, for example, which almost doubled volumes in 2014.

Companies are also exposed through their supply chain as they buy timber or material from quarries

CRH spent EUR7m in 2014 on restoration and biodiversity

Green buildings offer top-line growth opportunities

Table 56: Construction land degradation P&L impact

Company	Level of impact	Land ownership	Geographical exposure	Company level of risk	Main exposure to land degradation	Description	Mitigating factors	Land degradation P&L impact
CRH	Supply-side	Yes	Global	Yes	Extraction from quarries	Quarries need to be reinstated or another appropriate after-use needs to be found	The company offers after-use restored quarry projects for nearly all sites, e.g. housing development, agricultural land, nature parks and other recreational uses (486 ha were reinstated in 2014, for a total spending of EUR7m in restoration and biodiversity)	EUR7m budget in 2014 (restoration and biodiversity)
CRH	Supply-side	Yes	Global	Yes	Extraction from quarries	Raw materials include materials extracted from quarries or sand and gravel pits (and also associated process materials, semi-manufactured components and packaging materials)	Use of recycled and alternative materials.	7% of overall material input (recycled materials)
Hochtief	Customer-side	Yes	Global	Yes	"Green" buildings	Amount of (agricultural) land lost during construction, the preservation of biological species in flora and fauna, maintaining the landscape character	Certified/green buildings (LEED, Green Star, or DGNB, BREEAM) and infrastructure projects (Greenroads, or ISCA).	23% of 2014 sales
Hochtief	Customer-side	Yes	Global	Yes	Contract mining activities (e.g. ores, coal) - CIMIC	Amount of (agricultural) land lost during construction, the preservation of biological species in flora and fauna, maintaining the landscape character	Land degradation is viewed within the framework of project risks and evaluated individually on a project basis. Examples: Rehabilitating the affected areas is a key part of the service Thiess offers in the mining business. Equipping vehicle maintenance and repair stations with fluid retention basins.	Total budget/ spending for environmental restoration not disclosed
Skanska	Supply-side	No	Europe, North America	n.a.	Extraction from quarries	There are risks associated with sourcing from unsustainably managed forests, quarries.	Acknowledgment of the growing importance of biodiversity in terms of licence to operate and needs to benchmark it (no detailed quantitative reporting at this stage)	n.a.

Source: Skanska, CRH Hochtief,

3) Oil & gas exposure to tar sands: not held back?

The oil & gas sector land footprint has to be considered in light of the growing importance of US shale oil and to a lesser extent to Canadian oil sands.

In the same vein as construction and hydro, we were unable to find material implications of concerns in connection with tar sands projects in our sample, e.g. the risk for their licence to operate, despite the level of scrutiny and damages. This is largely the result of the dependence on regulations that those practices may actually not infringe upon.

Regarding Statoil for example, the three incidents of stressed vegetation that occurred in 2013 did not breach regulatory requirements, and no breaches of environmental regulation were evidenced in the context of the OECD complaint brought up in the past (Norwegian Climate Network and Concerned Scientists Norway) as the National Contact Point (NCP) concluded that the complaint was primarily directed towards Canada's policy.

What's more, the main reasons for the suspension or cancellation of projects that we see are economical. In the case of ENI, for example, its project in Congo was already under threat when the oil price was USD90/bbl.

In our sample, we were unable to find material implications of concerns in connection with tar sands projects, e.g. risk for their licence to operate, despite the level of scrutiny and damages.

Table 57: Tar sands exposure and mitigation plans

Company	Project Details	Investment/ revenues exposure	Timeline	Business risks to projects	Environmental impact mitigation plans
BP	Sunrise in JV with Husky	n.a.	The project started over a year ago and the phase II is uncertain	n.a.	n.a
ENI	Congo Tar Sands - 1,790 km2 area	A few millions invested as part of preliminary assessments in May 2008 to develop a tar sands prospect in Congo during the 2008-12 period.	On hold and under threat, in our view (the project was not quoted in its 2014 fact book)	Governance deficit within Congo; lack of transparency and community consultation and the area's ecological sensitivity.	ENI allege the project would not take place in rainforest and areas of high biodiversity or involve resettlement of people (yet ENI's own studies estimate that the tar sands zone comprises 50 to 70% rainforest and other highly environmentally sensitive areas). The tar sands permit zone is around 20km to the west of the Conkouati-Douli National Park.
Statoil	Leismer and Corner Oil Sands projects (Alberta, Canada)				Numerous land and biodiversity-related KPIs reported surrounding tar sands. Main environmental impact indicators for tar sand suggest an upward trend (bitumen production, energy consumption). Seedlings planted fell in the recent period. The three incidents of stressed vegetation that occurred in 2013 didn't breach regulatory requirements.
Shell	Carmon Creek Tar Sands (Alberta, Canada)	In October 2015, Shell cancelled its Carmon Creek project, taking a USD2bn writedown	Carmon creek phase I & II was scheduled to start in 2017 (FID in 2013).	The slump in oil prices and the high expense of oil sands projects led to cancellation. A lack of pipeline infrastructure was also a key factor/risk for the project.	Shell had already "cleared the site".
Shell	Athabasca Oil Sands (Alberta, Canada)	USD1.7bn invested with Aboriginal contractors since 2005.	Operations started in 2003 at the Muskeg River Mine. The average life cycle of an oil sands project is typically around 40 years.		They have a plan in place to manage the site, known as reclamation. It is a staged process that takes decades to complete. Soil is removed in layers and stored in separate places to maintain distinct soil types. Once the area has stopped being mined, soils are returned to the area and eventually, a self-sustaining ecosystem will exist where there was once a mine.
Total	Fort Hills Oil Sands (Alberta, Canada)	In September 2015, Total sold 10% of its stake in the Fort Hills Oil Sands project to Canada's Suncor Energy for CAD310m. The total cost of the Fort Hills project is CAD15bn. Total retains a 29.2% stake in the project.	n.a.	n.a	n.a
Total	Surmont Oil Sands (Alberta, Canada)	Total has a 50% stake in the Surmont Oil Sands Project, a joint venture operated by ConocoPhillips.	n.a.	n.a	n.a

Source: Companies, Kepler Cheuvreux

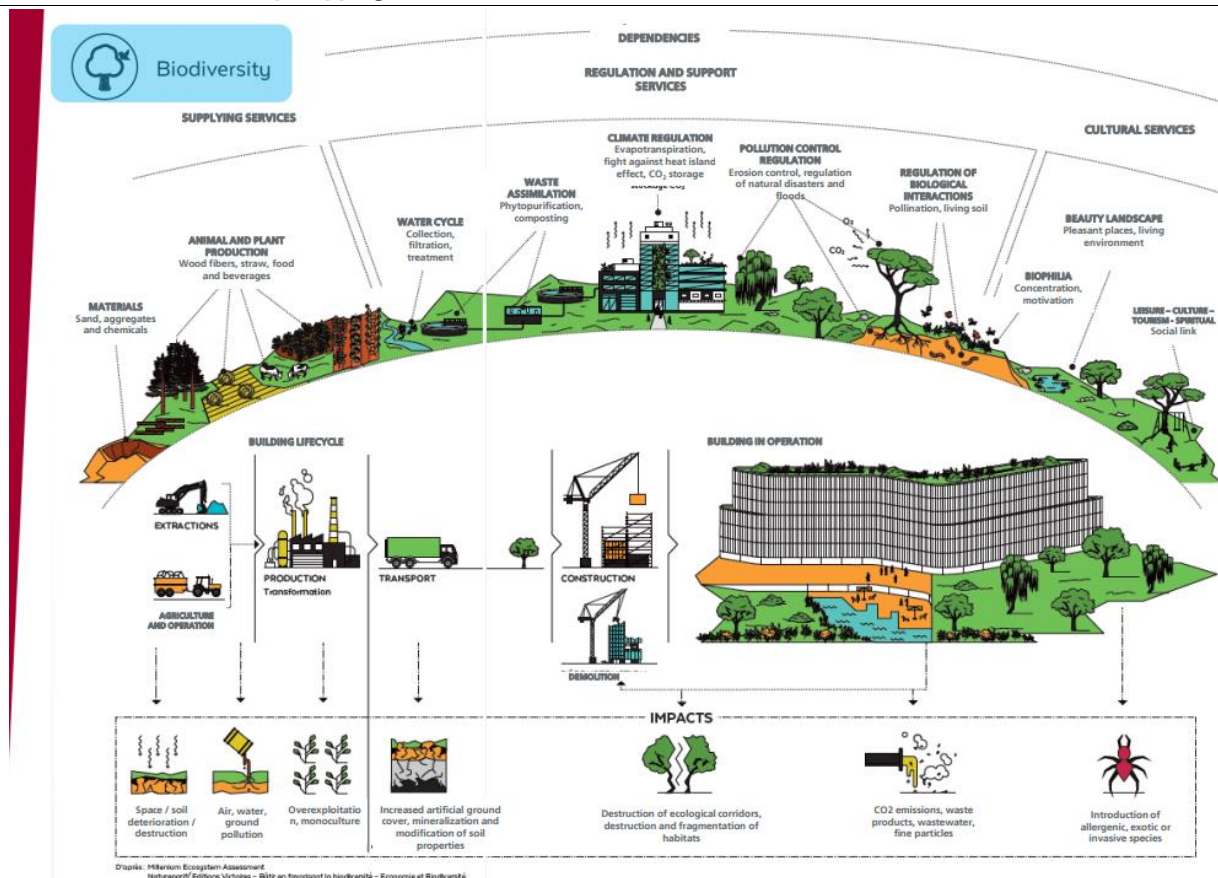
4) Real estate mapping of biodiversity impacts: Gecina

Remediation of brownfield land for real estate development constitutes another source of demand for rehabilitation and Sustainable Land Management (SLM) projects. As land rehabilitation is generally carried out to bring land back to viable use for 'vertical development' of real estate and sustainable infrastructure rather than to restore ecological value, there is an opportunity for companies to go a step further in factoring in ecosystem concerns to foster the property's tangible and intangible value.

Among REITs, we would single out Gecina's mapping of its biodiversity impact and dependencies throughout its full value chain, as part of its Biodiversity commitments and strategy launched in 2012. This means that it commits to incorporating biodiversity across the various building phases and in its engagement with stakeholders. In terms of practical implications, that implies a lower building coverage and higher vegetated surfaces for its property holding. Going forward, we would welcome more quantitative reporting to back up these claims.

Opportunity for real estate companies to take a step further by factoring in ecosystem concerns, e.g. Gecina

Chart 49: Gecina's biodiversity mapping



Source: Gecina

5) Seizing sustainable infrastructure growth: Arcadis, Trevi Group

Restoration may also open up market opportunities for environmental consulting companies and those susceptible to being exposed to sustainable infrastructure more broadly.

Arcadis³³ conducts work on Environmental Construction Services and Site Evaluation and Restoration, focused primarily on restoring brownfield sites, which represents over half of its Environment business line revenues (c. 25% of 2015 gross sales and 15% of operational EBITDA) and it also has a strong position in water management, including waste water treatment systems (13%/10%). A significant portion of work is for companies in oil & gas, chemical, mining conglomerates and transport companies.

Work is also done for government entities ranging from federal clients (Department of Defense) to local authorities. All signs are pointing towards continued high spending to protect the environment in the long run. While environmental restoration is currently a market restricted to Europe and the US in particular (40% of divisional sales are found in the Environmental business), we presume that in time the Far East (and especially China) will offer substantial upside, yet it will take time, as the focus is currently only on growth, both organic and through acquisitions in other segments.

Trevi Group is another company that is potentially exposed to the sustainable infrastructure theme through its foundation services (core business; 40% of 2014E revenues) division. Trevi (previously mentioned for its Hydro contract in Mosul, Iraq) operates in tunnel excavation, soil consolidation, and recovery of polluted sites. The division is focused on dam repair and in general special foundation jobs related to infrastructures (harbours, bridges, motorways, etc.), yet the company is also exposed to the Oil & Gas sector through two of its other key businesses: drilling services and drilling machinery. Besides, the importance of sustainability features in its policy and reporting seem very peripheral.

Environment business line revenues makes up c. 25% of Arcadis gross revenues

Lack of evidence regarding Trevi Group's potential positive sustainability impact

³³ Following reports of a bribery case in Brazil, a large accounting writedown related to recent acquisitions and weakness in some of its main markets, Arcadis's share price has halved since November. The bribery case does not seem to be a major issue, if an issue at all. See our report (Fallen angel, 7 May 2016) from Capital Goods analyst Andre Mulder (amulder@keplercheuvreux.com) for our detailed review of the bribery issue along with Environmental and Water business units' prospects.

Table 58: Arcadis land restoration project examples – Brazil, China, Germany and Canada

Location	Previous Land Use	Size of Site	Type of Restoration Project	Key Outcomes	Financial Information
Land Restoration Project					
São Paulo, Brazil	Manufacturing centre	17,000sqm	The focus of Arcadis's restoration works was to understand how previous manufacturing works had impacted the subsurface ground conditions, and to design and implement remediation works to restore the value of the site for re-use. The works were linked to a development plan, with the remedial solution based on balancing social, environmental and economic needs.	The restoration works have resulted in the generation of a development platform at a brownfield site, enabling the construction of residential and commercial space in the city of São Paulo.	The project value for Arcadis was GBP1.7m
Ingolstadt, Germany	Refinery	450,000sqm	Taking the lead from the German Federal Government, Arcadis supported Bayernoil, an oil refining company, and the city of Ingolstadt in developing and implementing a sustainable land restoration project for the disused Bayernoil refinery. This included detailed investigations to understand the subsurface conditions and level of pollution, through to completion of risk management works including remediation to restore the site to a position where it was fit for future re-use.	The restoration works have reinvigorated the local community, allowing the development of a new city district with residential areas, recreational facilities and commercial zones on land that would have otherwise been deemed as blighted and with limited value.	n.a.
Cape Breton, Nova Scotia, Canada	Coal mining	7,000 hectares	A significant legacy of coal mining in Cape Breton led to the degradation of land, restricting future use and impacting the local environment. The Cape Breton Development Corporation has spent more than 15 years commissioning works to restore the value of the land. Works completed by Arcadis as part of this large-scale scheme have included environmental audits, reviews and assessments to evaluate environmental issues, prospective environmental closure and decommissioning costs as well as restoration option development.	The restoration of 53 former coal mining sites and 17 mine water discharges, resulting in the creation of new recreational space, parks and wetlands in a sensitive coastal area in Canada.	n.a.
Regeneration of a river side					
Yangzhou, China	Industry/mixed use along river bank	10sqkm	Arcadis has supported the planning of a 10 sq km river park along a tributary of the Yangtze, which will improve the city's recreational and ecological quality, but also water safety. The park is, so to speak, a water machine where water is first purified in artificial wetlands and subsequently stored, so clean water is available in dry times for all manner of urban uses. The park also contributes to increasing biodiversity and forms an ecological corridor across the urban area, and helps to mitigate against flood risk. Lastly, the park will contribute significantly to the city's image, since preserving tradition and sustainable development go hand in hand.	n.a.	n.a.

Source: Arcadis

Utilities

Sector snapshot

Table 59: Framework to map companies' land degradation profiles and opportunities to achieve LDN

Steps		Description
Sector		Utilities
Main P&L impact	Externalities entailed by their operations, supply chain disruptions that are typically covered by regulatory requirements	
Companies reviewed (* those who have answered our questionnaire)	EDPR*, Engas*, Fortum*, Elia Group*, Galp energia*, Iberdrola*, Snam*	
1. Exposure		
Land impact	Direct drivers: Habitat fragmentation through roads and transmission corridors for power lines; biodiversity effect of building of dams and flooding. Dams and other infrastructure have a major and irreversible impact on land and all the ecosystems land provides (not only on biodiversity). It is actually one of the sectors with the greatest local impact on land. Indirect drivers: Greenhouse gas emissions and climate change; discharge of heated cooling waters; water use. Conversely,, wind projects offer high suitability for SLM.	
Financial impact	<u>Risks</u> : raw materials e.g. water scarcity that may be exacerbated by land degradation (water necessary for cooling as well as reduced flows in the context of hydroelectricity generation); unsustainable business trends for fossil fuels, and generally the growing pressure associated with the concept of stranded fossil fuel assets; licence to operate related to direct land impact in different ways, e.g. risks lie in natural gas extraction, biomass and hydro projects, while wind farms comparatively tend to have less substantial harmful impacts. <u>Opportunities</u> : opportunities for differentiation (sustainable energy); ability to operate on degraded land, e.g. deserts and drylands can be used for solar production; SLM suitability (wind farms).	
2. Leadership		
	SLM: Elia's sustainable land management(SLM) projects; somewhat substantiated claims of systematic and proactive integration of biodiversity considerations across projects (Iberdrola); comprehensive coverage of restoration efforts (Enagas, Iberdrola)	
3. Reporting		
	Drivers e.g. no. of loss of primary containment that reached the environment; Hydrocarbons discharged in wastewater (mg/l); Exposure: % of sites located in water scarcity areas (according to GWT – WBSCD); Total ha in protected areas; Soil and groundwater quality (pollutants concentration); Soil and groundwater quality (pollutants concentration)	
4. Enabling factors		
	Biodiversity assessment and benchmarking	
5. Sustainable landscape finance		
	Collaboration on large rehabilitation projects seem challenging as projects are primarily licence-to-operate driven	
Comments	We broadly view limited environmental expenditures and licence to operate risks. While the more systematic and ambitious integration of biodiversity issues in utilities projects seems a promising development (e.g. as suggested by Iberdrola and Elia Group), the potential for collaboration between wind energy utilities and the funds LDN-relevant in the context of renewable energy projects on degraded land or a rehabilitation project also appear worth exploring further.	

Source: Kepler Cheuvreux

Key exposure factors

On the whole, the sector is predominantly exposed through:

- **Raw materials** and exposure to **water scarcity** that may be exacerbated by land degradation (water needed for cooling power plants).
- **Unsustainable business trends for fossil fuels**, and generally the growing pressure associated with concept of stranded fossil fuel assets (e.g. in the US 15 energy companies control 36% of leased federal land). Generally, it's worth noting that the extent to which the burden of absorbing greenhouse gases is placed on forest [land] and oceans will depend on the rate at which the world phases out fossil fuels.
- **Licence to operate** related to direct land impact in different ways e.g. risks lie in natural gas extraction, biomass and hydro projects, while wind farms comparatively tend to have less substantial harmful impacts.
- **Ability to operate on degraded land** e.g. deserts and drylands can be used for solar production.

The sector is on the whole predominantly exposed through...

- **Contribution to a circular economy.** The sector is well-placed to provide a range of solutions that are mirrored in, for instance, Iberdrola's diverse offer: waste management and recycling, water/waste management and biodiversity conservation. Iberdrola also boasts direct involvement in SLM initiatives across its relevant business lines (e.g. vegetation management, reforestation). However, malpractices in these sectors (e.g. wastewater) can also fuel land degradation.

Primarily licence to operate-driven

In terms of direct land impact, land degradation mitigation factors are generally required by law and may for example cover biodiversity protection/environmental impact indicators. For instance, the European authorisation procedure requires an environmental impact assessment that evaluates the potential effects of wind farm projects on the natural matrices (soils, emission and water), taking into consideration several aspects, including impacts on ground stability, contamination of the soil caused by leakages or spillages, compaction of the soil and removal of the soils from site connected to basement and road construction, etc.

Accordingly, we believe a somewhat similar approach to the construction sector may be applied, focusing on:

1. Natural gas.
2. Transmission operators.
3. Wind energy.

1) Key regulations cover mitigation of natural gas adverse effects

The legal nature of the relationship with the land, including land ownership and ability or requirement to conduct land rehabilitation projects, depends on the regulation of each country. For example, in Spain Enagas only has land access authorisation to operate/maintenance the natural gas infrastructures; the land is owned by land owners. In other countries, the land can be owned by the government, the land owner or the operation & maintenance concessionaire.

Authorisations or licenses to operate depend on land restoration being performed in Enagas's largest markets: Spain, Mexico, Argentina. Environmental Impact Assessment (EIA) specified by Spanish law. In 2014, 673km of Enagas's operating pipelines have undergone an environmental monitoring process to evaluate, among other issues, the biodiversity management measures implemented. That same year, the company spent EUR9.3m (environmental investment) of which EUR4.4m on habitat restoration.

SNAM, another company involved in natural gas infrastructure, claims that if any of its related activities could damage the land (i.e. excavations for pipeline construction), original morphologies are always re-established by restoring techniques, aiming to improve land stability and counteracting erosive phenomena.

2) Transmission operators: Elia's SLM projects

Utilities can also be more proactive in terms of Sustainable Land Management (SLM) projects. As an illustration, the Elia Group is mulling an EU-backed SLM project to create green corridors under overhead electrical lines in Belgium. It is also

Land degradation mitigation factors are generally required by law

The legal nature of the relationship to the land depends on the regulation of each country e.g. in Spain Enagas only has land access authorisation to operate/maintain the natural gas infrastructures

Utilities can also be more proactive in terms of Sustainable Land Management (SLM), e.g. Elia Group's project

noteworthy that Iberdrola reports how it aims to integrate biodiversity factors more systematically across its projects, including the prevention of incidents involving power lines (“program vegetation management”).

Table 60: Elia’s sustainable land management projects

Company	Sector	Type	Name	Description	Region	Investment	Business case
Elia group	Utilities	Sustainable land management	Life Elia	Modification of electricity transmission pylon corridors in forested areas, into biodiversity corridors (requirement from EC through LIFE funding)	Belgium	na	Return on investment from three to nine years for various actions (planted edges, restored edges, pasturage, peatlands) - Licence to operate. - The initial business driver for the Life Elia project was cost reduction for corridor management. However, they now also see the potential this can bring towards license to operate – as an additional business driver.

Source: Elia Group

3) Wind energy: high suitability for SLM

Wind facilities do not involve degradation of soil. Conversely, there is only one instance of land degradation which might concern an operative wind: farm erosion processes or landslides. Wind facilities therefore stand out for their compatibility with traditional land uses and may benefit the local population affected, such as via rents paid to landowners for the installation of wind farms. This may also raise the value of the land.

Wind stands out for compatibility with traditional land uses

Table 61: Utilities P&L impact

Company	Sector	Main source of energy	Land ownership	Geographical exposure	Company level of risk	Main exposure to Land Degradation	Mitigating factors	Land Degradation P&L impact
EDP Renovaveis	Utilities	Wind energy	Yes	Developed markets	Low risk	No activities causing land degradation - decommissioning schemes straightforward	Environmental impact studies made do not include land degradation as an impact of facilities	na
Enagas	Utilities	Natural gas	Yes	Spain, Argentina, Chile	High risk	Environmental Impact Assessment (EIA) specified by Spanish law addresses any risks from direct and indirect impacts on biodiversity before starting the project.	Corrective measures cover earth surface restoration via decompacting and replacement, restoration of affected water courses, restoration of banks and slopes and replanting of affected land by sowing herbaceous species and planting trees and shrubs.	EUR9.3m (environmental investment) o/w 4.4m for habitat restoration
ERG	Utilities	Wind energy	No	Italy	Low risk	No activities causing land degradation - decommissioning schemes straightforward	For some specific sites ERG agreed with local authorities particular procedures to minimise the impact of operations, by constructing temporary pitches for cranes and removing them soon after works are completed.	na
Fortum	Utilities	Hydro, nuclear and combined heat and power production (CHP)	n.a.	Finland, Sweden, Russia	Medium risk	Major part of biofuels originate from Nordic countries and Russia, in which the issue is not very topical. Only two small solar power plants in India	Guideline for sustainable use of bioenergy	na
Galp energia	Oil & Gas	Oil & natural gas	n.a.	Global	Low risk	Adverse impact on water resources and soil quality, biodiversity and ecosystem services impact	Soil remediation e.g. elimination of hydrocarbons phase; infiltration/extraction; elimination of VOCs (volatile organic compounds).	na
Iberdrola	Utilities	Renewables including hydro, natural gas, coal, nuclear, waste & water management	Yes	Impact where their operations take place	Low risk	Presence in protected areas as of total per energy: Dams (68%), Electric lines (16%). Solutions to LD: Waste management and recycling, renewable energy reducing pressure on biomass resources, water/waste management and biodiversity conservation	Various projects adjustments and remediation measures through the environmental impact assessment.	na
SNAM	Utilities	Natural gas	na	Europe	High risk	SNAM's core business (gas transportation) doesn't have a direct impact in term of land degradation but, if any related activity should have any (i.e. excavations for pipeline construction) , original morphologies are always re-established by restoring techniques, aiming to improve land stability and counteracting erosive phenomena."	Natural soils (woods, shrubs, natural grasslands) are restored with grassing and reforestation (monitored with periodical plant cares), obtaining the natural protection of soil degradation.	na

Source: Kepler Cheuvreux

Chemicals

Sector snapshot

Table 62: Framework to map companies' land degradation profiles and opportunities to achieve LDN

Steps		Description
Companies reviewed (* those who have responded to our questionnaire)		KWS*, Syngenta*, Symrise*
P&L impact		Revenues
1. Exposure		
Land impact	<u>Direct drivers:</u> Conversion of natural habitats; introduction of alien species as part of production or pest management systems (with a need to distinguish the various chemicals sub-sectors). Indirect drivers: Greenhouse gas emissions and climate change (e.g. seeds, agrochemicals, fertilizers via nitrogen), water quality issues (nitrates and phosphates runoffs); water depletion. The misuse of agrochemicals and fertilizers is one of the drivers of land degradation.	
Financial impact	Supply chain risks through the use of oil and natural gas feedstock and bio based materials; revenues loss if farmers are adversely impacted	
2. Leadership	Syngenta's Good Growth Plan (commitment to improve the fertility of 10m ha of degraded land by 2020 relying upon best farm management practices). Symrise's actions in relation to its sustainability scorecard in raw materials purchase (e.g. goods substitution)	
3. Reporting	KPIs tracking their respective programmes advances (e.g. for Syngenta the ha of farmland impacted by biodiversity programmes, number of smallholders reached, improved productivity without using more land, water or inputs)	
4. Enabling factors	Policies promoting and supporting on the ground implementation and maintenance of SLM; Local adaptability and suitability – Policies to cover all soil threats at a regional level, allowing national flexibility according to local priorities.; result oriented policies, ; decent return on investment - outreach to farmers would be wider and more active if they would also be guaranteed return on investment; product certification could help, but verification would be a crucial and challenging aspect	
5. Sustainable landscape finance	The sector may provide SLM technical expertise	
Comments	Companies' core business objective is to secure long-term relationships with farmers, and SLM may naturally fit into certain sustainable approaches deployed to achieve this goal, as suggested by Syngenta's "Good Growth plan".	

Source: Kepler Cheuvreux

Key exposure factors

Chemicals may raise soil salinization and acidity from pollution and disturb the biogeochemical cycles of nitrogen and phosphorus. The misuse of agrochemicals and fertilisers is consequently one of the drivers of land degradation, though estimated to play a far less important role than water or wind erosion (Odeman, 1994).

The following table (non-exhaustive) outlines the diversity of material environment-related risks by company in the agro space (agrochemicals, seeds and fertilisers).

Misuse of agrochemicals and fertilisers is one of the key drivers of land degradation

Table 63: Key players by segment and related environmental footprint (e.g.)

	Key players	Key long-term drivers and sustainability benefits	Key environmental risks
Seeds	Monsanto, DuPont, Syngenta, Vilmorin, KWS Saat, Dow Chemical, Bayer	Necessity to increase yield on fairly stable arable land with increased demand for high-quality food -> yield enhancements via seed innovations	Soil usage, CO2 emissions and water usage, GMOs
Agrochemicals	Syngenta, Bayer, BASF, Monsanto, DuPont, Dow Chemical, FMC Corp. Nufarm,	Increased pest pressure due to global warming; resistance management calling for new active ingredients and/or product mixes; need to make sure crops stay healthy	Energy intensity, CO2 emissions and water usage Neonicotinoid pesticides: concerns over its contribution to pollinator decline
Fertilisers	Nitrogen: Yara, Mosaic, Agrium, PotashCorp, state-owned or controlled players; Phosphates: Mosaic, state-controlled players; Potash: PotashCorp, Agrium, Mosaic, Uralkali, Belaruskali, K+S,	Necessity to increase yield on fairly stable arable land with increased demand for high quality food -> yield enhancements via optimal fertiliser toppings.	Nitrogen: consumption of fossil fuels in fertiliser production and distribution, GMOs; potash: saline waste water and health and safety

Source: Kepler Cheuvreux

Value chain approach: from solutions to farmers to sustainable supply

We emphasise the following core business challenges for which companies may demonstrate how they contribute achieve LDN:

1. **Breeding programmes (end-market exposure).**
2. **Farmers' engagement programmes (end-market exposure).**
3. **Lowering sourcing impact.**

1) The race between breeding programmes and climate change: KWS

Land degradation may raise two theoretical risks for KWS, for example (global number five in seeds, concentrating mainly on corn, sugar beet and cereals) business:

- Potential changes in soil conditions of high-production agricultural areas could drive up the costs of the company's customers.
- The production of KWS seeds could be adversely affected considering it is conducted outside in special growing zones via contracted farmers.

The company is confident that both risks are very unlikely to materialise due to its belief that breeding programme improvements tend to be faster than climate change. Their central breeding strategies include environmental developments such as land degradation in its product development (agricultural plants) cycles. KWS sees more growth opportunities leveraged on the back of its R&D activities (c. 13% of sales in FY 2014/15) that focus on developing new efficient plant varieties that may add value to farmers.

However, these new plant breeding techniques are confronted with scientific debates, regulatory challenges and customer concerns, reflected in some national frameworks being unfriendly towards GMOs and biotechnologies. The core of the matter is the differentiation between GMOs and new plant breeding techniques in the EU legislation to enable the development of the latter.

KWS is confident that breeding programme improvements are faster than climate change

These new plant breeding techniques are confronted with scientific debates, regulatory challenges and customer concerns

2) Farmers engagement programme: Syngenta

Chemicals active in the agro space, despite their ambivalence, also have a key role to play in terms of engagement with farmers to mitigate the forms of land degradation associated with their products (e.g. excessive use of chemical fertilizers or agricultural over-exploitation) and promote SLM. Syngenta, as part of its Good Growth Plan, has committed to improve the fertility of 10m ha of degraded land by 2020, relying on best farm management practices (e.g. minimum tillage, water and nutrient management, diversified crop rotations, inter-cropping, permanent soil cover, maintenance of soil salinity and soil organic matter, etc.). Syngenta accounts and reports hectares of land where good soil management and use practices are adopted or are maintained or managed on the back of its efforts (through its products, training and capacity building). Finally, Syngenta showed evidence of a holistic approach to addressing the needs of smallholder farmers e.g. by being unique in including smallholder solutions in its R&D pipeline, and developing an innovative smallholder insurance initiative (ACRE).

Linkages with the business strategy context

In our view, this plan is also meant to support its broader 'integrated strategy'.

Syngenta (analyst: Christian Faltz), in particular, is promoting this strategy quite heavily, having integrated its own sales force from formerly separate seeds/agrochemicals channels under one roof. These salespeople now have the task of selling farmers a certain "yield promise". Syngenta's scientists, both in the laboratory and in the field, have fine-tuned the company's seed and agrochemical offerings to bring them into line (depending on climate and soil conditions in a given area) so that farmers using the combined Syngenta offering can expect a higher yield. For this, farmers are obviously expected to pay an upfront premium that they should get back through the higher yield.

To monitor the success of this strategy, Syngenta has "control fields" in the area where it can "walk its own talk". If at the end of the season the company and its "integrated customers" had higher yields than the average in a given crop in the area, Syngenta's customers were indeed well-advised to pay up. If both Syngenta's demonstration field and the farmer's crop failed to achieve a higher yield, it is our understanding that Syngenta's customers would receive a reimbursement for the premium they paid. If, however, the customer had a lower yield while the Syngenta benchmark field had a higher yield, Syngenta can demonstrate to the customer that at some point during the application process the customer did not follow its recommendations and will therefore receive no reimbursement.

Syngenta is being blamed for the seemingly slow adoption of this strategy by its customers. While it works well in less developed agro markets, it has not worked so smoothly with large and educated farmers who have had the means to run their own field tests for years, or in markets like NAFTA where established distribution structures are in the way Crop protection (80% of Syngenta) does not to be fixed. Seeds, however, needs to be reviewed in total.

Syngenta, as part of its Good Growth Plan, has committed to improve the fertility of 10m ha of degraded land by 2020

In our view, this is also meant to support its broader 'integrated strategy'

3) Symrise: lowering sourcing impact

Symrise, which sources thousands of raw materials to produce fragrances, flavourings, and cosmetic active ingredients, among others, sees an opportunity mainly to replace agriculture goods with a significant negative impact with petrochemicals with the same performance and a much better footprint (the last significant change was the menthol expansion, with a carbon footprint around ten times better, much lower water use, much lower emissions and a much better social profile). The company relies on a sustainability scorecard including Land use, Water use, Waste Water emissions, Bio diversity, Bio degradability and Eco Tox classification related topics that enables to create LCA for raw materials and products on the fly.

***Symrise replacing of
agriculture goods
with a significant
negative impact with
petro chemicals with
same performance***

The road ahead: enabling factors

A range of solutions is needed to address political and social issues and the lack of incentives to use degraded land, including bolder international low-carbon regulations better reflecting land use role, land governance empowering smallholders, together with actions on both supply and demand for commodities (e.g. through the expansion to other commodities of specific elements of the EU Timber Regulation and FLEGT).

Meanwhile, three natural capital-oriented initiatives gradually drive fundamental change in both companies (Natural Capital Coalition, Natural Capital Committee) and investors (Natural Capital Declaration) reporting and assessment of their exposure to land degradation-related risks, and help them through state-of-the-art tools (a Natural Capital Protocol is due to be launched in July) to assess how to take business and investment decisions based on them.

As part of these initiatives, a handful of companies (e.g. Dow, Hugo Boss, F. Hoffmann-La Roche, Kering) are already pioneering innovative reporting approaches in which the newly suggested LDN KPIs and objectives could potentially fit over time.

Regulation: main sticking points

While a report released in October 2015 by the WBCSD sets out the key financial and non-financial incentives put forward by businesses to tackle land degradation ([link](#)), we focus at five levels (international, EU, countries, investors, companies) on the following structural barriers that could prevent businesses from acting on land degradation, with a view to reasserting some points and shedding light on a different perspective on other factors:

1. Action on deforestation & sustainable land use.
2. Climate regulation and carbon price signals.
3. Action on demand for commodities.
4. Action on supply of commodities: tightening standards.
5. Land governance.

Table 64: Enabling factors (illustrative – non-exhaustive)

	International	EU	Countries & local jurisdictions
1) Action on deforestation & sustainable land use	Pursuing a global policy against land degradation, including as part of a common international framework on how to achieve LDN, and collaboration on the specific areas identified by the UNCCD and the related complementary initiatives	Setting targets for global impact for land use	Committing to zero net deforestation and ensuring the efficient enforcement of those for key commodities Transforming LDN commitment into national laws, incentivising ecosystem restoration or imposing restoration on entities responsible for land, including through market-based incentive mechanisms at landowners/farmers levels Supporting partner countries, including through development assistance and economic incentives, to undertake policies and measures that help address deforestation & LD Promoting initiatives like favourable tax considerations for demonstrating LDN in property purchase or expansions, subsidies or funds to carry out land restoration activities in any sites deemed as degraded and having a high impact on eco-system services. Mapping technology and farm registration
2) Climate regulation and carbon price signals	Identifying high impact commitments and have countries act upon them. This includes the conservation of high value carbon ecosystems, such as forests and peatlands, and the adoption of proven-effective sustainable agricultural and livestock management practices Fostering Investment mechanisms as part of CO2 certificates market and REDD+ (Reducing Emissions from Deforestation and Forest Degradation)		Establishing climate mitigation contributions that include ambitious goals to reduce AFOLU emissions and/or provisions to generate demand or finance for verified emission reductions from REDD+.
3) Action on demand for commodities	Promoting ways of easing the overall amounts of land demand (in terms of both absolute reductions and changes in the nature of this demand) ; Mandatory labelling of the land footprint of consumer products ; Improved satellite technology to track data and map the supply chain beyond the first tier	Promoting and strengthening FLEGT, and expanding it to other commodities	Promoting public procurement systems that favour sustainably sourced commodities, direct interventions backing certifications (e.g. as in the Netherlands with IDH which has notably set up a public private partnership and Initiative for Sustainable Land Landscapes or ISLA), educate citizens about responsible consumption.

Continued on next page

Enabling factors (illustrative – non-exhaustive)...continued

	International	EU	Countries & local jurisdictions
4) Action on supply of commodities: tightening standards	Enforcing and tightening environmental and social standards in supply-chains	Driving other markets to foster the use of voluntary sustainability standards (e.g. ISCC, RSB, RSPO, RTRS, Bonsucro)	Expanding governments' direct interventions backing certifications Requiring traders in commodities supply chains to comply with responsible commodities requirements and traceability of commodities they trade.
5) Land governance	Boosting the implementation of the Voluntary Guidelines for the Responsible Governance of Tenure of Land, Fisheries and Forests (VGGT) Expanding the guidelines on soil conservation to issues around the secure access to land and land governance		Clarifying tenure and licensing process, an enabling environment to back up the implementation of corporate sustainability commitments, undertaking steps to secure land tenure, in terms of land rights allocation, administration and protection at both the central and local levels.

Source: WBCSD, Kepler Cheuvreux

We elaborate below on a selection of points we deem as particularly critical and that have not been stressed enough in previous sections:

Land governance: the most complex hurdle

Many argue that land governance should be addressed in conjunction with the challenge of sustainable land management considering that unused land has largely unclear ownership and legal title to it. Moreover, less than half of forests in developing countries have insecure tenure, which may be associated with land degradation (source: ELD). In addition, voluntary commitments such as set-asides of high conservation value areas may be conflicting with concession conditions. These risks may be mitigated by companies and investment vehicles through clarifying their positioning over how they:

- Identify legitimate holders of tenure rights, including informal rights.
- Ensure they receive fair and prompt compensation for their impacted tenure rights.
- Support partnerships with tenure rights holders, such as contract farming, outgrower schemes or joint ventures, as alternatives to land acquisitions (source: OECD, CIFOR, World Bank).

The prospect of EU targets for global impacts

The EU contemplates setting targets for global impact for land use, which could mark a breakthrough. The EU regulation related to land use needs to be looked at in terms of its impact on total land use both within the EU and outside the EU.

Table below gives indications about the expected impact in the EU of the main pieces of legislation currently in place, ranging from meaningful in the case as the EU Timber regulation to limited, for instance the EU Biodiversity Strategy 2020 (*No net loss* initiative). On the whole, government rules and regulations in the EU already support measures and mechanisms for avoiding land degradation. There is a general sense that if other countries would also adopt such principles, this would also improve the situation for them.

Many argue that land governance should be addressed in conjunction with the challenge of sustainable land management considering unused land has largely unclear ownership and legal title to it

Table 65: Summary of key drivers in the EU and impact on EU land use

Driver	Force of the driver on EU land use	Impact on total EU land use	Potential impact outside the EU
Climate and renewable energy policies	Medium impact on imports of starch crops, oil crops and wood	Increase	The 2020 Climate and Energy Package and in particular the Renewable Energy Directive that potentially affect global land use by supporting the demand for bioenergy and biomass to reach the targets for increased renewable energy production in 2020. Such targets increase the demand for feedstock for both biofuels (e.g. rapeseed, palm oil, soy for biodiesel and wheat, maize and sugar for bioethanol) and for bio-heating and bio electricity (mainly woody biomass). In order to mitigate these adverse effects the European Commission proposed to cap the volume of food-based biofuels volume to 7% of the energy mix in transport sector in the the "iLUC Directive" which was approved by the European Parliament in April 2015.
Agricultural policies (Greening and market support)	Low	Unclear, but likely to support a slight increase	In a meta-study at a global scale, it has been shown that organic agriculture generally results in a 5 to 34% lower than conventional productivity per hectare as a result of more extensive land management (Seufert et al. 2012). The trend towards growing consumption of organic products in the EU may increase the total land use and iLUC in third countries.
EU Forestry Action Plan	Medium	Low, although afforestation in the EU may affect arable land use and indirect land use change	The EU Timber Regulation prohibits placing illegally harvested timber and products derived from such timber on the EU market. In addition, EU traders have an obligation to keep records of their suppliers and customers to facilitate traceability. An important scheme in this respect is FLEGT; a voluntary scheme to ensure that 221 Study supporting potential land and soil targets under the 2015 Land Communication – Final Report only legally harvested timber is imported into the EU. Wood carrying a FLEGT licence, or a CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) permit, is considered to comply with the Regulation. Given that the EU Timber Regulation came into effect in March 2013, it only has an effect on future land demand.
EU Biodiversity Strategy	Low	Slight increase	Outside the EU, biodiversity loss is highly correlated with deforestation (VITO et al., 2013). In this respect, it is important that the EU Biodiversity Strategy aims e.g. to reduce embodied deforestation of products produced and to increase products with a low deforestation impact within the EU. Furthermore, the Strategy aims to step up its efforts to stop further biodiversity loss worldwide. However, stricter criteria related to imports into the EU may not be in line with WTO trade agreements.
Resource scarcity (Initiatives)	Medium impact on cereals and fruits/vegetables (reduced waste)	Reduction as a result of efficiency improvements, waste targets	na

Source: Biofuelstp.eu, EC

Action on supply: tightening standards

The EU Forestry Action plan already has an impact in some ways on forestry outside the EU. The Timber Regulation and FLEGT prompted a greater emphasis on illegal logging and could expand to other commodities . This would be a substantial move, as the main current traceability-related regulations are restricted to fish (European Commission FoodLaw Regulation 178/2002), minerals (Dodd-Frank Wall Street Reform and Consumer Protection Act, Section 1502 and OECD) and timber.

Moreover, the EU Timber Regulation is unique in that it sets a first placer on the European market requirement (it requires EU traders who place timber products on the EU market for the first time to exercise 'due diligence'), which could help drive a change if expanded to other commodities. Lastly, only the EU fosters the use of voluntary sustainability standards (e.g. ISCC, RSB, RSPO, RTRS, Bonsucro) for the sustainability assessment of feedstocks.

Deforestation: what's next?

We might see a combination between: 1) a jurisdiction approach (push for legal, or moratorium; e.g. VCA agreement VPA Cameroon & EU, flexi wood); and 2) zero deforestation approaches (High Conservation Value or HCV), High Carbon stocks.

The Timber Regulation and FLEGT prompted a greater emphasis on illegal logging and could expand to other commodities

Aligning policies with sustainability goals

We see as key to get governments to support, where relevant, regulation and policy favourable to corporate sustainability commitments, which are typically challenging to implement when going beyond regulatory requirements, as they are associated with perceived losses in sovereignty and offer potential for negative economic consequences (as shown in the palm oil situation in Indonesia and the “no deforestation” approaches).

Investors: towards natural capital risks portfolio assessment

The Natural Capital Declaration initiative: new tools

In this part we welcome the input from the Global Canopy Programme and UNEP FI regarding the Natural Capital Declaration initiative and projects to mainstream natural capital considerations across the finance sector.

Financial institutions have a critical role to play in accelerating a global transition to a greener economy. Banks and institutional investors manage some USD240trn in financial assets, ³⁴ dwarfing the USD100bn or so allocated to green finance in 2013³⁵. Continuing to finance unabated exploitation of natural resources is likely to impact future earnings and credit risk and therefore the stability of global financial markets ([link](#)). To contribute to a more resilient and sustainable economy, the financial sector needs to strengthen capabilities to take account of how the companies they finance depend on natural capital and their impacts on natural resources, including land.

To help catalyse this, the Natural Capital Declaration (NCD) – a unique global finance-led initiative co-convened by UNEP Finance Initiative and the Global Canopy Programme, is working with leading financial institutions to develop critical tools and methodologies to enable more systematic integration of natural capital³⁶ considerations into financial products and services such as loans, bonds and equities.

The NCD is co-developing open-source tools with financial institutions to strengthen to monitoring and managing natural capital risks. These include:

- The **Soft Commodities Forest-risk Assessment Tool** provides a framework for banks and investors to evaluate policies to address deforestation and forest degradation risk linked to land-use change in the agricultural value chain.

The NCD is co-developing open-source tools with financial institutions to strengthen to monitoring and managing natural capital risks

³⁴ World Federation of Exchanges (2015). Global equity trading volumes rise 36% in 1st half 2015 ([link](#)).

³⁵ International Development Finance Club (2014) Mapping of Green Finance Delivered by IDFC Members in 2013 ([link](#)).

³⁶ Natural capital is defined as the stock of ecosystems yielding a renewable flow of goods and services that underpin the economy and benefit businesses and society

- The **Corporate Bonds Water Credit Risk Tool** enables financial institutions to quantify corporate bond issuers' exposure to water stress and integrate water risk factors into credit risk analysis in high-usage sectors such as beverages, mining and power.³⁷
- The **Water Risk Valuation Tool** released by Bloomberg LP ([link](#)) enables equity investors to incorporate water stress into company valuations across copper and gold mining companies.

All the NCD tools and methodologies can be found at <http://www.naturalcapitaldeclaration.org/working-group-2/>

NCD projects from 2016-2018 will include developing methodologies to map natural capital risks across the portfolios and embed them in credit risk assessments; and creating a framework and model to stress-test corporate finance portfolios for exposure to economic risks from droughts.

NCD projects from 2016-2020 will include developing methodologies to map natural capital risks across the portfolios and include them in credit risk assessments

ESG analyst Julie Raynaud's view on the Natural capital reporting outlook

Companies reporting have mainly been focused on quantifying drivers (e.g. land use change) and qualifying risks and opportunities

Corporate: in transition

In this section, we introduce ESG analyst Julie Raynaud's view on the Natural capital reporting outlook.

Robust data on the sustainability benefits is of paramount importance to incentivise bolder moves from companies, as rehabilitation projects going beyond defensive moves (licence to operate and reputational concerns) imply evidence of gains (intangible benefits from positive environmental impacts) in a context of uncertain financial returns for these projects.

KPIs: drivers favoured over impacts and risks and opportunities

From a natural capital accounting perspective, we argue that disclosure on impacts (e.g. terrestrial ecosystem use), risk and opportunities has usually been less complete and quantitative than disclosure on aspects that relate to drivers of land degradation e.g. GHG emissions, data on output (water use).

In our view, reporting initiatives such as GRI, SASB and CDP³⁸ have historically rather focused on improving quantitative disclosure on drivers (and associated targets) and qualitative/quantitative commentary around risks and opportunities. Put very simply, SASB and CDP primarily highlight risks and opportunities and drivers while the GRI also focused on impacts and, as such, a range of aspects that are relevant to Sustainable Land Management (SLM) and land rehabilitation in particular.

³⁷ Developed in partnership with the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), the German Association for Environment and Sustainability in Financial Institutions (VfU) and seven financial institutions.

³⁸ CDP works on behalf on investors for whom it asks for the information from companies so has a different target audience than GRI

Table 66: Drivers, impact and risks and opportunities in the context of financial/extra-financial analysis (examples)

	Extra-financial analysis		Financial analysis
	Aspects that relate to the drivers of land degradation	Aspects that relate to the land impact (changes to natural capital)	Aspects that relate to risks/opportunities (dependencies)
CDP	Greenhouse gases: emissions, targets, initiatives Water use: quantity, location, targets, initiatives Certification, targets, supply chain engagement, traceability	Climate change mitigation and adaptation Indirectly through the concept of local water scarcity/ stress. Not directly linked to land use degradation/ restoration. NA	Reporting on risks and opportunities, not directly linked to land degradation/ restoration. Reporting on risks and opportunities. Reporting on risks and opportunities. Directly linked to land degradation/ restoration, mainly deforestation.
GRI	Reporting on a wider range of economic, social and environmental drivers (not directly linked to land degradation), such as emissions to air/land/water, water withdrawal	Operation sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas (through drivers such as habitat conversion, invasive species, etc. and assessed through criteria such as species affected, extent of area impacts, duration of impacts and reversibility or irreversibility of the impacts) Habitats protected or restored (both on size and location, and condition) Total number of IUCN Red List Species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.	Under "Strategy and analysis" - G4-2 General section on risks and opportunities. Not focussed directly on land degradation/ restoration.
SASB	Reporting on a wider range of environmental, social capital, human capital drivers amongst others	Depends on the indicator (e.g. for Percentage of food ingredients sourced from Regions with High or Extremely High Baseline Water Stress for Processed food).	Sector-specific themes and KPIs based on materiality.

Source: SASB, GRI, CDP

Natural capital-related frameworks are gathering pace

New frameworks are emerging that intend to guide companies in systematically:

1. **Integrating an assessment and monetisation of drivers.**
2. **Calculating the value of natural capital to businesses and society (impact and dependency).**
3. **Delineating the associated risks and opportunities.** Among others, these methods discuss the use of monetisation to express these impacts and dependencies in a metric that can easily be compared to financial returns, thus facilitating the integration of these criteria into traditional financial planning and accounting.

This will provide a means for companies to report on their dependency and impact on natural capital, including soils and land. Turning our attention to the outcomes of these initiatives (namely the Natural Capital Committee and Natural Capital Coalition), have made inroads in different but converging areas.

New natural capital frameworks are set to make fundamental headway

Table 67: Natural capital reporting frameworks

	Natural Capital Committee Work - Natural Capital Accounts (Jan 2015)	Natural Capital Coalition work - Natural Capital Protocol (to be published in 2016).
Assessment and monetisation of drivers	No	Yes
Value of natural capital (stocks) to business	Partially (market value, not dependency)	Full dependency (market and non-market)
Value of natural capital (stocks) to society	Yes	Yes
Risks and opportunities	No (implied)	Yes – internalisation analysis

Source: NCC

What have been the outcomes of the Natural Capital Committee?

The Natural Capital Committee was set up in 2012 and came to an end, in its original form, in September 2015. Its mandate consisted of providing “expert, independent advice to government on the state of England’s natural capital”. One of its contributions is the report *Developing corporate natural capital accounts*, published in January 2015, which sets up a framework to calculate and report in corporate accounts the value of directly-managed natural capital stocks, based on the discounted value of services (flows) arising from these stocks.

The framework³⁹ was tested through a series of pilot cases, namely a hard rock quarry operation of Lafarge Tarmac (Extractive), a farm reconversion to organic production of the National Trust (NGO), farming and forestry activities of the Crown Estate (Statutory Corporation) and the operation of sewerage infrastructure and permitted discharges of United Utilities (Water and wastewater utility). The results comprises a “natural capital balance sheet”, which highlights the private and external (to society through the provisioning of services) value of the land asset - at the time of the analysis and projected in the future, taking into account for example restoration activities at the end of the mining activities (Lafarge-Tarmac).

The Natural Capital Committee that ended in September 2015...

...produced a “Natural capital balance sheet”, which highlights the private and external (to society through the provisioning of services) value of the land asset

Table 68: “Natural capital balance sheet” Lafarge-Tarmac

	Reporting year £'m					Of which reported in fin. accts.
	Non-Renewables		Renewables		Total Value	
	Private	External	Private	External		
Assets						
1 Baseline value	50	-	40	60	150	
2 Cumulative gains / (losses)					-	
3 Additions (disposals/consumption)					-	
4 Revaluations and adjustments					-	
Gross asset value	50	-	40	60	150	40
Liabilities						
5 Legal provisions					(5)	(4)
6 Other maintenance provisions					(15)	
Total liabilities					(20)	(4)
Total net natural capital					130	36

Note: *Values are illustrative.

Source: NCC

³⁹ Economics for the Environment Consultancy Ltd in association with PwC and RSPB (2015). Developing Corporate Natural Capital Accounts. Final Report ([link](#)).

What have been the outcomes of the Natural capital Protocol?

Another notable initiative is the Natural Capital Protocol, planned for publication in 2016, undertaken by a large consortium of organisations (Natural Capital Coalition including the WBCSD, IUCN and Cambridge University, PWC and Efttec, part of the Natural Capital Committee, are also part of the Natural Capital Coalition), thereby ensuring continuity with past work. The Protocol is being tested.

The scope of the protocol will be larger than the one of the natural capital account, as it will not only include stocks but also an understanding and monetisation of the link between different drivers (water use, emissions, waste generation) with natural capital stocks. It will also include guidelines on the identification and quantification of internalisation drivers, i.e. how costs or benefits to society may be realised as costs or benefits to companies through reputational and regulatory effects.

Companies' pilot projects push boundaries e.g. Dow, Hugo Boss, Kering

Companies are starting to use this approach to assess their impact and dependencies on land and natural capital. For example, Dow Chemicals has been collaborating with The Nature Conservancy since 2011 to assess how it relies on and affects nature ([link](#)) to integrate these considerations into strategic decision-making.

Table 69: Companies undergoing a test of the Natural Capital protocol (e.g.)

Companies	Objective
Dow	Water use opportunities and risks in site specific locations
Hugo Boss	Identifying the drivers of environmental impacts along the supply chain to inform raw material procurement strategies
F. Hoffmann-La Roche	Investigating how natural capital assessments can potentially enhance the management and reporting of environmental issues
Kering	Exploring how to bring natural capital assessment results into strategic business decisions

Source: Environmental leader, Kepler Cheuvreux

In practice: still a need for harmonisation

The table below displays the responses of selected companies to our question: "How do you see LDN fit it into your quantitative sustainability reporting"? The variety of indicators self-reported by each company shows the variety of ways through which they approach the subject, and the associated lack of harmonisation.

While reporting on GHG emissions and to a certain extent water use is well developed, land and natural capital (including biodiversity) is seen as quite complex. An additional layer of complexity stems from the fact that for many sectors, most of the risks and opportunities are situated further down the supply chain. Finally, the links between indirect drivers (pollution, water abstraction) and land do not appear to be well-recognised by companies. We think the push for initiative and reporting KPIs at the "landscape level" could support this report by articulating the interdependencies between areas of impact and the need for coordinated actions.

Natural Capital Protocol planned for publication in 2016

The scope of the Protocol will not only include stocks but also an understanding and monetisation of the link between different drivers (water use, emissions, waste generation) with natural capital stocks

The NCP will provide a means for companies to report on their dependency and impact on natural capital, including soils and land

Table 70: Reporting: Land degradation-related KPIs

Company	Sector	Type of impact	Indicator reported/contemplated	Land ownership	Indicator
Arcadis	Capital goods	Environmental business focused on land quality	Contemplated	No	Areal extent of land restored/habitats created on behalf of clients each year
Coca cola	Beverages	Bottled production	Contemplated	Yes	Accounting for sustainability carbon and water pricing (e.g. natural capital accounting)
CRH	Construction	Extraction from quarries (or sand and gravel pits)	Reported	Yes	Total hectares reinstated
Enagas	Utilities	Natural gas transmission services	Reported	Yes	Surface area restored (sq km)
					Surface area replanted (sq km)
					Length of pipelines where environmental audits have been performed (km)
					Length of pipelines where environmental monitoring has been performed (km)
Galp Energia	Oil & Gas	Oil and natural gas	Contemplated	Yes	Number of loss of primary containment that reached the environment
					Hydrocarbons discharged in wastewater (mg/l)
					Soil and groundwater quality (pollutants concentration)
					Percentage of sites located in water scarcity areas (according to GWT – WBSCD)
					Sites located in biodiversity protected areas (according to the Integrated Biodiversity Assessment Tool)
Hochtief	Construction	Contract mining	Contemplated	Yes	Measurement of the affected land by location and size
Lindt	Food	Raw materials	Contemplated	No	Number of sustainability programmes for raw materials (incl. farming programmes) in place that include elements to foster biodiversity & soil fertility
					Plan to measure affected land by location and size
Iberdrola	Utilities	Renewables including hydro, natural gas, coal, nuclear, waste & water management	Reported	Yes	Total hectares in protected areas
Snam	Utilities	Natural gas infrastructure	Reported	n.a.	Kilometres of pipeline with land restoration, kilometres of pipeline with land reforestation, total kilometres of reforestations submitted to plant care
Syngenta	Chemicals	Soil conservation	Reported	n.a.	Number of hectares of farmland where good soil management and use practices are adopted

Source: Companies

Reporting on land impacts: best practices

Outside the scope of our questionnaire, we would flag Olam & Fibria's evidence-backed implementation of pledges.

Olam KPIs to reduce indirect land impacts from third-party farmers and supplier

Table 71: Policy commitments on land use

Company	Business	Context	Target	Means	Update
Olam	Agricultural commodity trading	Singapore Olam manages 1-1.5m hectares of land for timber and 100-150 hectares for palm oil. It recently increased investments in due diligence and land selection for its palm oil business (e.g. new LIDAR advanced technology, which costs EUR1.5/ha)	Reduce indirect land impacts from third-party farmers and suppliers: 1) 50% tonnage compliant with the supplier code (60% large-scale farmers); 2) 2020 target: 100% tonnage	Compliance with the Supplier Code in products rated as higher risk, such as rubber and palm; Compliance with supplier code for all products.	n.a. (2015 target)
Fibria	Fibre pulp	Brazil 100% of Fibria's pulp comes from rapidly growing forests planted in degraded pastureland.	1) 2014 target to reduce the amount of land needed for pulp production by one-third; 2) commitment to restore 40,000 hectares of its own areas between 2012 and 2025	1) Conventional genetic improvement of eucalyptus, improvement of environmental management and increased productivity	1) n.a.; 2) at the end of 2014, Fibria had restored 10,641 hectares (27% of the goal)

Source: Olam, Fibria

In terms of monitoring systems, agribusiness and palm oil, mammoth Group Wilmar has set up a monitoring dashboard that can gather stakeholder input. The dashboard reveals the list of suppliers (mills) and shows where the group sources its raw materials from, allowing customers to trace supply flows from refineries back to palm oil mills. The other key feature of the dashboard is the grievance procedure which is a tool for Wilmar to handle any grievance from external parties concerning the implementation of Wilmar's Policy and any sustainability-related issues.

Are we leaning towards more environmental P&L accounts?

At the same time, several companies are embracing the whole concept of natural capital valuation and reporting. Most publicly disclosed analyses and results use the same steps as PUMA and Kering in their P&L accounts. They mostly focus on their impact on society, both negative (costs) and positive (benefits). Our challenge involves the assessment of the actual connection with financials (left out of Kering's latest EP&L) and business decisions.

Pending fine-tuning and expansion plans, we argue that Kering's landmark reporting can be interpreted as a positive signal regarding the company's efforts to use credibly environmental factors to enhance (and protect) its brand and a possible willingness to subsequently include environmental considerations in decision making, including risk mitigation, and contribute in raising the understanding of the business case. However, we believe it is too early to fully appreciate: 1) how these tools interact with typical business decisions (supply or product design); 2) the scope for replication across other businesses; and 3) their integration in typical financial communications.

Key benefits of land valuation

We expect the assessment of the real value of their land assets, including all related ecosystem services, to potentially help companies make informed decisions on how best to manage them. Valuation can help assess the true cost and benefits of adopting sustainable land management or restoring land, and select the scenario that best balances environmental, social and economic returns.

While it is possible that dependency analysis, and internalisation through reputational or regulatory risks, is being conducted internally, it is barely publicly disclosed in quantitative terms.

Shadow land prices?

The notable exception remains the use of carbon shadow pricing to manage the regulatory risk associated with climate change or water shadow pricing. Beyond the example of Kering, for societal costs, one can imagine a more prevalent shadow price reporting for "land" in the future, to fully integrate this consideration into strategic decision-making. Companies with substantial land ownership (e.g. SCA, Vallourec) already report the value of land in their balance sheets. All pulp & paper companies make similar valuations, and they are all substantially below the market values we observe when there are forestland transactions (our estimated market value for SCA would be c. EUR60bn). These assets are in Sweden, and a relevant question to companies with similar ownership in higher risk regions would involve the climate change impact and risks of stranding in policy scenarios.

Wilmar has set up a microsite to increase transparency on sustainability

Several companies are embracing the idea of natural capital valuation and reporting (e.g. Kering) but connections with financials remain blurred

Can one imagine a shadow price for "land" in the future to fully integrate this consideration into strategic decision-making?

Chart 50: Examples of capital integration into company reporting

	FINANCIAL CAPITAL				NATURAL CAPITAL				SOCIAL CAPITAL				HUMAN CAPITAL			
	Costs		Benefits		Costs		Benefits		Costs		Benefits		Costs		Benefits	
	Direct	Value chain	Direct	Value chain	Direct	Value chain	Direct	Value chain	Direct	Value chain	Direct	Value chain	Direct	Value chain	Direct	Value chain
Standard Chartered			■	■												
Scotiabank					■	■										
DSM					■	■										
otto group					■	■										
PUTRA					■	■										
bam					■	■										
Dow							■									
ochmeo									■	■	■	■				
Infosys															■	
nobaro			■		■		■									
SAATCHI					■	■			■	■						
Holcim	■		■		■	■	■		■		■					
THE CROWN ESTATE			■	■	■	■	■				■	■				
PWC			■	■	■	■									■	
	■	■	■	■	■	■		■	■	■	■	■			■	■

Valued, monetized, reported impacts of: ■ one product or plant ■ one or more business unit(s) or entire operation

Source: Trueprice

The focus on transparency, including greater independent evidence, engagement and multi-stakeholder collaboration, are all key to fill these data gaps, supported by quantitative modelling techniques such as life cycle analysis (LCA) and environmentally extended input/output models.

LDN business targets suited for these frameworks

LDN-related business targets could reflect these pathways, for instance by measuring the increase of agriculture or agroforestry in areas under conservation within their holdings or concessions, or how much area has been set aside as buffer zones or conservation areas, and thus what the increase in ecosystem service delivery has been.

The indicator identified for companies to report on their progress towards LDN is “trends in land degradation”. This shows the trends in degrading, stable, or improving land at the global, regional and national levels and mirrors the previously mentioned indicators (section 1) that are emerging for countries, in particular the “Proportion of land that is degraded over total land area”. These trends are determined according to a baseline defined by the current spatial extent of degrading, stable, and improving land. The indicator is measured by the spatial area (ha, sq km) or proportion (%) of land that is degrading, stable, and improving per reference land unit (e.g. national, sub-national, land use/cover type). Numerous, widely used global data sources are available to measure these trends⁴⁰.

The indicator identified for companies to report on their progress towards LDN is “trends in land degradation”

⁴⁰ UNCCD (2015)

Stock profiles

Notes on the methodology to map company land profiles

KPIs considered

Our company assessment focuses on two variables: 1) land risk exposure; and 2) associated risk mitigation levers, grouped into policies and reporting. Companies are then ranked on each variable (risk exposure on a scale from 1 to 5 and risk mitigation from 1 to 10), which is the sum of the five points allocated to both policies and reporting.

Table 72: KECH framework to map company exposure to land degradation-related risks and opportunities

Steps Area	Description
1 Exposure to land risks	Core business potential exposure to land degradation-related risks and opportunities based on: 1) a sector mapping; and 2) a company's individual position. This includes both an assessment of the business significance and business contribution to the issue of land degradation, i.e. 1) company's impacts on land degradation (positive/negative); and 2) land degradation's impact on financial risks & opportunities (dependencies on LDN).
2 Land risk mitigation: leadership	Commitments, policies and programmes that would enable to seize opportunities by fostering companies' positive impact on land degradation and/or mitigate risks and their negative contribution to land degradation (including the selection of best practices and evidence of implementation).
3 Land risk mitigation: momentum	Trends in KPIs and qualitative data reported, including the measurement and communication of the economic benefits of switching to sustainable land use.
4 Enabling factors	Regulations and incentives needed to support the engagement of high-impact sectors and businesses.
5 Sustainable Landscape Finance	Opportunities to engage with the financial instruments targeting investments in forestry and integrated landscapes, for example by being involved in rehabilitation projects enabled by these funds or by leasing land that has been rehabilitated by these funds.

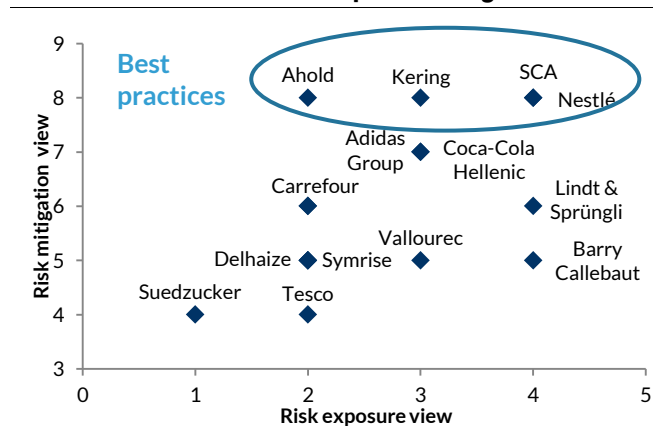
Source: Kepler Cheuvreux

Scoring objective

Scoring is purely indicative and partly subjective, and the underlying analysis of 34 companies in total is chiefly based on the responses received from our questionnaire and company reporting. It aims first and foremost to reflect the broad spectrum of company impacts and dependencies across sectors, along with best practices in terms of evidence disclosed that underline companies' attempts to prevent such risks from negatively impacting their P&L and intangible assets in the long run. Ahold, Kering, SCA, Nestlé and Iberdrola stand out in their respective sectors.

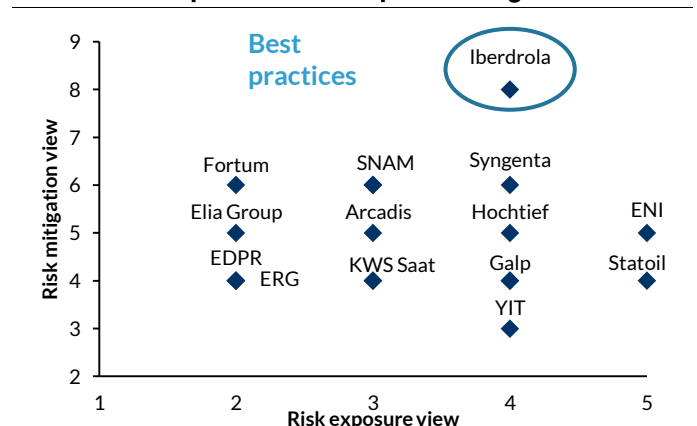
Ahold, Kering, SCA, Nestlé and Iberdrola stand out as LDN "champions" in their respective sectors

Chart 51: Commodities – risk exposure/mitigation scores



Source: Kepler Cheuvreux

Chart 52: Land operators – risk exposure/mitigation scores



Source: Kepler Cheuvreux

Limitations and complementary points

- All companies that provided answers to our questionnaire tend to show a higher-than-sector average level of transparency on these issues, i.e.: 1) those with the lowest score here would outperform the sector on many criteria; and 2) laggards are not comprehensively listed here.
- Our complementary review of best practices has also pinpointed several non-responding companies in various sections of this report that have demonstrated some form of leadership e.g. Asia Pulp & Paper, Cargill, Olam, Unilever, Suzano and Danone.
- While our review primarily looked into companies' exposure in terms of land-use risks, in the stock profiles we also underlined those with a positive alignment with land degradation neutrality (e.g. wind energy players EDPR, ERG & Nordex - through their core business indirect or "off-site" impact on land use; with Arcadis and Lenzing, these companies are part of our Green impact universe, i.e. stocks best placed to address environmental challenges).

Cluster-approach caveats

In practice, when it comes to our choice of grouping companies by clusters according to the most significant level of financial impact of land in their value chain (raw materials, operations or end-markets), we also argue that there is not a "one-size-fits-all" framework that rigorously applies, and, in many cases, frontiers between these areas are blurred, i.e. all companies remain ambivalent by nature.

For example, some construction companies have both a negative impact/high risk through their supply chain (e.g. raw materials extracted from quarries) and operations (externalities) and sales growth may be propped up by activities that contribute positively to sustainable infrastructure projects enabling land restoration/rehabilitation (Green buildings). Besides: 1) licence to operate risks may generally put revenues at risk across all sectors; 2) there is a range of relevant KPIs not reflected in the P&L, comprising: a) intangible assets including brand equity, employee attraction and retention; and b) share price correction.

Challenges to fine-tune the risks and opportunities assessment

We have identified the following fundamental company-specific drivers of the degree of companies' awareness or perception of the actual significance of land degradation risks and impacts on companies:

- **Distance from the land and differences between on- and off-site impacts:** companies extracting from the land or operating on degraded land tend to be more proactive (e.g. pulp & paper companies), and off-site drivers and impacts tend to be neglected.
- **Geographical exposure to land degradation "hot spots"** (regions and countries where the sectors are having the highest negative impact, particularly Brazil and Indonesia for commodities).
- **Consumer-facing industries** often reflect mounting stakeholder pressure (e.g. customers, suppliers or communities affected) and more indirect risks.

No "one-size-fits-all" framework rigorously applies

There are company-specific forces that determine companies' awareness of the actual significance of land degradation risks

- **Investors' expectations/pressure** in the midst of growing pressure from civil society and policymakers regarding the integration of sustainability criteria into investment decisions (e.g. palm oil, hydro, linkages with protected sites all recall past or ongoing liabilities).
- **Evidence of the degree of interdependence with the core sustainability objective(s) and sector value drivers**, that often revolve around climate change/energy, and increasingly water, while land use and biodiversity are often not yet as mature in reporting frameworks, in our view. What's more, certain land degradation-related issues easier to link to climate change, such as deforestation, have arguably benefitted from more focus of initiatives focused on increasing corporates transparency towards investors, than others, for instance land grabbing and food waste. We think the latter is set to gain more attention as a result of regulatory actions contemplated in e.g. the US and the EU.
- **Companies' size.** As usual, the level and quality of companies' reporting and policy on sustainability issues are largely concomitant with their size.
- **Degree of severity and irreversibility.** Generally, we point out the need to make some important differentiations between sectors, partly based on their land footprint. For example, while sectors involving agricultural production are supposedly causing the most land degradation, at a site level extractives will in most cases cause much more irreversible damage than agriculture, and therefore hinder potential rehabilitation.

Cluster 1: Agricultural and forestry commodities

Key sectors: food & beverages, food retail, general retail, home & apparel, pulp & paper

Adidas Group

Ahold

Barry Callebaut

Carrefour

Coca-Cola Hellenic

Delhaize

Hugo Boss

Jeronimo Martins

Kering

Lindt & Sprüngli

Nestlé

SCA

Suedzucker

Symrise

Tesco

Vallourec

Adidas Group

Germany | General retail | land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials (cotton, leather).
Geographical impact	India, China, Pakistan and Brazil (cotton, cattle products).
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	Medium
Company level of potential impact	Medium

Land risks exposure view (1=Low exposure; 5= High exposure)

Comments

Medium to low, as Adidas, the largest global athletic and leisure shoes and apparel supplier, has proved reliable in mitigating significantly rising raw material costs in the past (as reflected in 2011 with cotton and oil). The main raw materials are: cotton, rubber, polyester, oil (derivatives) and EVA. While it is difficult to precisely estimate their respective importance, we assume that cotton, whose impact on land degradation is particularly manifest, is below the mathematical average of 20%, since polyester has become a greater part of production. Leather is certainly much lower than 20%, probably 10%, if at all. Leather shoes have declined in importance and footballs have been made from synthetic leather for quite some time now. While raw materials and labour costs make up around 36% of total revenues (raw material costs are 60% of its costs of goods sold, 40% is labour, overhead, duty, freight, profit), Adidas was very successful in mitigating such raw material cost increases via price increases, but also via exchanges of cotton with other yarns and more efficient production methods. In this respect, the sporting goods industry operates very homogeneously. We therefore see the sporting goods sector being able to mitigate rising raw material costs fairly well. This is very much due to the structure of the players and their ability to work on retail prices with their strong flow of innovative products. The biggest problems for the players are the constantly rising wage costs.

2. Land risk mitigation: leadership

Commitment	Sustainable sourcing for cotton, leather (certification/standards).
Management systems supporting indirectly Sustainable Land Management	More use of sustainable materials, including Better Cotton Initiative (30% as of 2014 vs. 40% targeted by 2015), BLC Leather Working Group and LWG monitoring protocol. Traceability protocol (garment purchase orders for more sustainable materials), innovation (experimentation with new production methods in very small factories).

Management systems supporting directly Sustainable Land Management

Leadership profile view (1=Minimum; 5= Maximum)

Comments

No.
4
Sustainable sourcing targets underpinned by evidence of undertakings focused on traceability and procurement standards. Innovation, e.g. new local production methods in very small factories, also notable. All these levers help mitigate reputational risks.

3. Land risk mitigation: Momentum

KPIs reported Sustainable sourcing (cotton, leather).

Performance profile view (1=Minimum; 5= Maximum)

Comments

3
Relatively encouraging level of transparency on country of origins for sustainable sourcing via the Better Cotton initiative (India, Pakistan and Brazil) and update on progress reported (Adidas is seemingly on track to meet both its cotton and leather targets), including narrative on trends. The ramp up of its sustainability targets is not expected to bring about significant shifts in its supply chain, but rather an evolution of the ongoing trend, hence the importance of China as a sourcing market to decrease further, while markets such as India and Pakistan, but also Vietnam and Indonesia, to increase further.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)

n.a.

5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration

Medium

6. Appendix

CDP Forest Report 2015	Participating
Forest 500 Rating	4
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	n.a.
No deforestation, No Peat, No clearance	n.a.

Source: Adidas, Kepler Cheuvreux

Ahold

Netherlands | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Global
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Low. Food retail companies are more indirectly impacted (their own brands account for c. 30% of food turnover) and are relatively protected, as there are some compensatory effects between products, with their exposure to the most sensitive commodities (soy, palm oil, cattle) broadly the same.
2. Land risk mitigation: leadership	
Commitment	Endorsement of zero deforestation via the Consumer Goods Forum and 100% sustainability sourcing by 2015 (certification).
Management systems supporting indirectly Sustainable Land Management	Source 100% of coffee, tea, cocoa, soy and palm oil commodities for own brand products in accordance with industry certification standards.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	4
Comments	Most ambitious sustainable sourcing target among food retailers reviewed in the report (2015 for all commodities).
3. Land risk mitigation: Momentum	
KPIs reported	Sustainable sourcing (coffee, tea, cocoa, palm oil, soy, seafood).
Performance profile view (1=Minimum; 5= Maximum)	4
Reporting score	Cross commodities reporting including sustainable soy consumption (Netherlands).
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium
6. Appendix	
CDP Forest Report 2015	Participating
Forest 500 Rating	n.a.
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	Endorser
Companies with a disclosed zero deforestation agenda	Via support to the CGF
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Barry Callebaut

Switzerland | Food | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain
Area of exposure to those affected by land degradation
Financial impact
Geographical impact
Land ownership
Sector level of risk
Company level of potential risk
Sector level of impact
Company level of potential impact

Distant
Suppliers
Raw materials (cocoa).
Cote d'Ivoire, Ghana, Indonesia, Nigeria, Cameroon, Brazil.
No
High
High
High
High
4

Land risks exposure view (1=Low exposure; 5= High exposure)

Comments

Barry Callebaut is the world's biggest manufacturer of cocoa and chocolate products with its ingredients in around one in four of every chocolate product sold globally. It supplies liquid chocolate products to consumer goods companies who then brand them as their own. It is integrating Petra Foods' cocoa ingredients business. Raw material costs pose a medium to high risk as it runs a cost-plus business model (cost leadership) but higher cocoa prices would hurt volumes. Cocoa supply may be materially affected by a range of environmental damages in key producing regions (Cote d'Ivoire, Ghana, Indonesia, etc.) – including soil degradation - compounded by poverty issues in farming communities. Expectations of a potential structural shortage of cocoa in the very long run thus pose a real threat.

2. Land risk mitigation: leadership

Commitment
Management systems supporting indirectly Sustainable Land Management

No
Quality Partner Program, replaced by the new HORIZONS cocoa and chocolate products range and foundation launched in 2015. It works together with the Biolands Group (Barry Callebaut's direct sourcing and farm services organisation) to directly engage with farmers.

Management systems supporting directly Sustainable Land Management

Direct support (training involves 70,000 farmers, 25,000 farmers in the foundation's activities, also including a focus on boosting productivity).

Leadership profile view (1=Minimum; 5= Maximum)

Comments

2
(+) Wealth of cocoa's sustainability programmes.
Cost leadership.
(-) Lack of precise quantitative commitment at company level.

3. Land risk mitigation: Momentum

KPIs reported
Performance profile view (1=Minimum; 5= Maximum)

Sustainable sourcing (cocoa).
3

Reporting score

(+) Certified sales on the rise (13% of sales from products sold under one of the certification schemes). Cocoa Sustainability Report quite thorough on all initiatives and data on premium paid to farmers.
(-) However, no sustainability certification, forward-looking data or traceability data. The latter seems to be a stumbling block. Besides, we think the integration of sustainability impact on financials could possibly be expanded (e.g. details on premium, impact on sales of certified chocolates).

4. Sustainable Landscape Finance

Key hurdles quoted to advance Sustainable Land Management (SLM)

n.a.

5. LDN Finance

Opportunity for engagement with investment vehicles supporting landscape restoration

Medium

Source: Kepler Cheuvreux

Carrefour

France | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Both
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Global
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Low. Food retail companies are more indirectly impacted (their own brands account for c. 30% of food turnover) and are relatively protected, as there are some compensatory effects between products, with their exposure to the most sensitive commodities (soy, palm oil, cattle) broadly the same.
2. Land risk mitigation: Leadership	
Commitment	Zero deforestation via the consumer goods forum and sustainability sourcing; 100% certified sustainable palm oil for 2015; support to the Rainforest Alliance for beef.
Management systems supporting indirectly Sustainable Land Management	Focus on quality criteria in procurement.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Predominant focus on wood, paper, palm oil, but gradual broadening to other commodities underway.
3. Land risk mitigation: Momentum	
KPIs reported	Sustainable sourcing (palm oil and wood, paper), official endorsement of legal compliance, high carbon stock protection, no peatland clearance, social criteria.
Performance profile view (1=Minimum; 5= Maximum)	3
Reporting score	Palm oil progress partly reported (73% of total volumes certified; breakdown by type of certificate not found e.g. except Delhaize); official endorsement of peatland clearance, etc.; targets and reporting on commodities could be broadened to soy and beef.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium
6. Appendix	
CDP Forest Report 2015	Participating
Forest 500 Rating	4
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	Via support to the CGF.
No deforestation, No Peat, No clearance	Yes

Source: Kepler Cheuvreux

Coca-Cola Hellenic

Switzerland | Beverages | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Eastern Europe, Italy, Russia.
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	2014 water cost: EUR13.7m (0.2% of sales); bottling business. N.B. the stock is not covered.
2. Land risk mitigation: leadership	
Commitment	New water commitments made in November 2015 (30% reduction in water use intensity in 2010-20).
Management systems supporting indirectly Sustainable Land Management	Water protection programme, sustainable agriculture sourcing (in line with the Coca-Cola system), community water conservation projects (c. EUR1m in 2014/EUR5.8m in total water savings projects). Coca-Cola has introduced references to fair compensation and grievance mechanisms where land rights have been violated in its supplier guiding principles on human/worker rights.
Management systems supporting directly Sustainable Land Management	n.a.
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Range of relevant programmes; the company is also part of the test phase of the Natural Capital Coalition.
3. Land risk mitigation: Momentum	
KPIs reported	Water cost (EUR13.7m), water use intensity, m3 water savings, water pricing considered.
Performance profile view (1=Minimum; 5= Maximum)	3
Reporting score	(+) Cost impact articulated, natural capital pilot project including water pricing ambition. (-) No quantitative references to sustainable sourcing.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Tax considerations for demonstrating LDN in property purchase or expansions, subsidies or funds to carry out land restoration activities in any sites deemed as degraded and with a high impact on eco-system services.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Coca-Cola Hellenic, Kepler Cheuvreux

Delhaize

Belgium | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Global
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Low to medium. Effects for food retail companies vary and are less significant, but overall more significant for private brand products, in our view (e.g. Delhaize's 20-55% of sales in operating markets).

2. Land risk mitigation: leadership

Commitment	Zero deforestation via the consumer goods forum and sustainability sourcing.
Management systems supporting indirectly Sustainable Land Management	100% deforestation-free palm oil and wood fibres in products and packaging.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Broadly in line with industry standards.

3. Land risk mitigation: Momentum

KPIs reported	Sustainable sourcing (palm oil, wood).
Performance profile view (1=Minimum; 5= Maximum)	2
Reporting score	RSPO progress broken down per type of certificate (69% of palm oil use is covered by RSPO certification schemes (12% mass balance/segregated; 57% GreenPalm certificates), no reference found to endorsement of legal compliance, high carbon stock protection, not peatland clearance, social criteria.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	Low
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6. Appendix

CDP Forest Report 2015	Participating
Forest 500 Rating	3
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	Endorser
Companies with a disclosed zero deforestation agenda	Via support to the CGF.
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Hugo Boss

Germany | Home & apparel | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials (wool, cotton and leather).
Geographical impact	See commodity-producing countries (direct suppliers in Europe).
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	Medium
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Low (higher end of the market is far less impacted and e.g. the weight of personnel costs tends to be higher).

2. Land risk mitigation: leadership

Commitment	n.a.
Management systems supporting indirectly Sustainable Land Management	Environmental performance programme and implementation guidelines (based on Global Social Compliance Program criteria); suppliers need to provide information on land use and biodiversity when the protection of regions, plants and the animal world has to be assured; supplier assessment.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Range of internal policies such as implementation guidelines, notable work with the Natural Capital Coalition and IUCN (a detailed paper was recently released on "Biodiversity Risks and Opportunities in the Apparel Sector, which outline differences between raw material origins, e.g. sourced from farmed crops and use; and use, e.g. natural fibre and synthetic fibres), no clear commitment at the group level yet.

3. Land risk mitigation: Momentum

KPIs reported	In development internal assessments hinge on International Cotton Advisory Committee (ICAC) data.
Performance profile view (1=Minimum; 5= Maximum)	2
Reporting score	(+) Natural capital protocol pilot (identifying the drivers of environmental impacts along the supply chain to inform raw material procurement strategies). (-) We would welcome more detail on traceability, procurement, raw materials dependencies overall.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	In development with the Natural Capital Coalition. Lack of data on its wool and cotton farms.
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	Low
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Source: Kepler Cheuvreux

Jeronimo Martins

Portugal | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Global
Land ownership	No
Sector level of risk	Low
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2

Comments

Low. Food retail companies are more indirectly impacted (their own brands account for c. 30% of food turnover) and are relatively protected, as there are some compensatory effects between products, with their exposure to the most sensitive commodities (soy, palm oil, cattle) broadly the same.

2. Land risk mitigation: leadership

Commitment	Zero deforestation via the consumer goods forum and sustainability sourcing.
Management systems supporting indirectly Sustainable Land Management	Sustainable Sourcing Policy (soy, beef, wood and paper products for private brands) and Suppliers Code of Conduct.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Company-specific target with a level of ambition that is hard to assess (no reference to certification). JM aims to lower the share of products from high risk countries and palm oil on the whole, while boosting certification.

3. Land risk mitigation: Momentum

KPIs reported	Not commodity-specific.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Details expected given the 2014 commitment that explicitly includes palm, oil, soy and beef. Latest update: 1) reached its objective of introducing certified products in sustainability in at least six products during the 2012-14 three-year period; 2) assessed impacts that deforestation commodities represent for its supply chain, having mapped out the presence of these ingredients in the private brand products.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	Increased client awareness and recognition; supplier pro-active actions.
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	Low
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6. Appendix

CDP Forest Report 2015	Participating
Forest 500 Rating	n.a.
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	Via support to the CGF.
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Kering

France | Luxury goods | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials (cashmere, wool and sheep leather).
Geographical impact	n.a.
Land ownership	No
Sector level of risk	High
Company level of potential risk	High
Sector level of impact	Medium
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	Medium to low (high end of the market). Kering is a major operator in the luxury goods industry (with Gucci, YSL, Bottega Veneta, Balenciaga and Boucheron) and in sports goods (with Puma and Volcom), and sources cashmere, wool and sheep leather produced in semi-arid areas that are particularly prone to land degradation and desertification. Nonetheless, the luxury goods sector's endorsement of sustainability, in which Kering provides a particularly stark example, is mainly stirred by reputational risk mitigation, in our view.
2. Land risk mitigation: leadership	
Commitment	"100% of leather from domestic livestock within Kering's products to come from responsible and verified sources that do not result in converting sensitive ecosystems into grazing lands or agricultural lands for food production for livestock by 2016." Sustainability sourcing (leather, gold, diamonds, paper and packaging).
Management systems supporting indirectly Sustainable Land Management	Multiple programmes e.g. "holistic land management" (including but not limited to organic) (ensuring regeneration of grasslands and natural ecosystem services) for sheep farming in Patagonia and South Africa; shareholder of Wildlife Works Carbon (world's leading REDD+ project company). Internal guidelines. Particularly ambitious audit policy; support to the Leather Working Group to assess tanneries at industry level.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	4
Comments	Level of evidence of top-down commitment seems above peers reviewed, reflecting a clear will to use sustainability as a brand value protector and enhancer.
3. Land risk mitigation: Momentum	
KPIs reported	Environmental P&L, based on supply chain mapping, focusing on the environmental impact, including the impact on land use (societal costs). The EP&L constitutes an open-sourced methodology to measure and report comprehensively on the environmental footprint in Kering's operations and entire supply chain and give it an economic value (e.g. breakdown of material impacts on air pollution, GHG emissions, land use).
Performance profile view (1=Minimum; 5= Maximum)	4
Comments	Kering's environmental impact was deemed to be worth EUR793m in 2014 (+2.2% YOY). Kering's EP&L, which is expected to impact reductions, coupled with the support to REDD+ and project details constitute positive signs, and we believe reinforce the credibility of its commitments and risk mitigation profile, but we would welcome more details on the connections with financials (currently dismissed in the way the information is presented in the report) and business implications on the whole. We also believe it is too early to fully appreciate: 1) how these tools (EP&L) interact with typical business decisions (supply or product design); and 2) the scope for replication across other businesses.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Common international framework on land use impact valuation including biodiversity loss.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	High
6. Appendix	
CDP Forest Report 2015	Participating
Forest 500 Rating	4
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	n.a.
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Lindt & Sprüngli

Switzerland | Food | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain
Area of exposure to those affected by land degradation
Financial impact
Geographical impact

Distant
Suppliers
Raw materials (cocoa).
All consumer cocoa beans from Ghana, and fine flavour beans from Latin America (mainly Ecuador), Madagascar and the Caribbean.

Land ownership
Sector level of risk
Company level of potential risk
Sector level of impact
Company level of potential impact

No
High
High
High
High

Land risks exposure view (1=Low exposure; 5= High exposure)

4

Comments

Medium to high. Benefits from higher cocoa prices, given strong pricing power, although demand is more elastic: Lindt, for example, increased its prices on average by c. 4% in the US and 8% in Canada to compensate for expensive beans last year.

Cocoa supply may be materially affected by a range of environmental damages in key producing regions (Cote d'Ivoire, Ghana, Indonesia, etc.) – including soil degradation - compounded by poverty issues in farming communities.

Lindt gets all its consumer beans - not fine flavour - from Ghana, where there is evidence that unsustainable cocoa farming has led to land degradation.

Expectations of a potential structural shortage of cocoa in the very long run pose a real threat.

2. Land risk mitigation: leadership

Commitment
Management systems supporting indirectly Sustainable Land Management

Sustainability sourcing (cocoa, palm oil).
Global cocoa supply chain traceability and external verification deployment.
Countermeasures versus soil fertility risks via "Lindt & Sprüngli Farming Programs" (e.g. ISFM training for cocoa farmers in Ghana, and fostering agroforestry systems in cocoa cultivation).

Management systems supporting directly Sustainable Land Management

Direct support (training, input).

Leadership profile view (1=Minimum; 5= Maximum)

3

Comments

Lindt has set both cocoa and palm oil targets (2020 and 2015, respectively). 2016 interim target for cocoa bean supply to be fully verified. Palm oil is, however, limited in its sourcing (consumption represents 0.005% of the world harvest of around 50m tonnes).

3. Land risk mitigation: Momentum

KPIs reported
Performance profile view (1=Minimum; 5= Maximum)
Comments

% of global cocoa supply chain traceable and externally verified.

3

Traceability and external verification update is expected.

"Lindt & Sprüngli Farming Programs" updates are provided (over 22k farmers trained). By 2016, more than 45k cocoa farmers trained in Ghana.

Around 13% of its global cocoa supply chain is traceable and externally verified. The change from book & claim to segregation is being implemented gradually, and Lindt has reached 100% RSPO segregated certification for all our production companies.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)

Governments, e.g. ensuring legal land titles, no-deforestation policies, no short-term incentives for farmers for soil fertility management (e.g. by distributing only chemical fertilisers).

5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration

Medium

Source: Kepler Cheuvreux

Nestlé

Switzerland | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials (Dairy, coffee, cocoa, sugar)
Geographical impact	Global
Land ownership	na
Sector level of risk	High
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High

Land risks exposure view (1=Low exposure; 5= High exposure)

Comments

Medium to high. In terms of raw material costs, Nestlé tends to benefit from the rise of commodity prices, given its broad agricultural basket. In terms of peculiar cases (, business, reputational and liability risks are reflected in all key supply chain controversies the company has been embroiled in in the recent period (although none relates to land degradation risks per se): 1) Maggi Noodles in India for food safety (USD77m in direct losses and replacement of the country head; but the product is back on the shelves); 2) child labour in the cocoa supply chain in Cote d'Ivoire (in January 2016 the US Supreme Court rejected Nestlé, ADM & Cargill's bid to dismiss Alien Tort case alleging complicity in forced child labour in their cocoa supply chain in Cote d'Ivoire); and 3) self-disclosure of child labour in the Thai seafood industry following an investigation undertaken by a third party.

2. Land risk mitigation: leadership

Commitment

Management systems supporting indirectly Sustainable Land Management

Management systems supporting directly Sustainable Land Management

Leadership profile view (1=Minimum; 5= Maximum)

Comments

Zero deforestation via the Consumer Goods Forum and sustainability sourcing (cross commodities).
Nestlé Responsible Sourcing Guidelines (applying to soy, palm oil, pulp & paper) and Nestlé Better Farming Practices, official endorsement of legal compliance, high carbon stock protection, no peatland clearance, social criteria; Nescafé plan and Cocoa plan deploy agronomists to assist direct farmers with regards to SLM; zero tolerance for land grabs supported by: 1) references to the principle of Free, Prior and Informed Consent in Nestlé's Responsible Sourcing Guidelines; 2) work on industry voluntary guidelines; 3) commitment to an accessible and independent company grievance mechanism for responding to cases.

Direct support (training, input).

4

Nestlé's policy is particularly thorough e.g. regarding procurement standards and traceability of soy, palm oil.

3. Land risk mitigation: Momentum

KPIs reported

Performance profile view (1=Minimum; 5= Maximum)

Comments

Raw materials (% of fully complying suppliers, share of volumes traceable per commodities).

4

Indicators across the board suggest a positive trend. Cross commodities' approach to traceability, official endorsement of peatland clearance, etc., details of Sustainable Land Management (SLM) support. Nestlé's work also comprises pilot programmes aimed at measuring simplified environmental impact metrics communicable to customers (GHG emissions, water, biodiversity impact).

Details for palm oil: "In 2014, 82% of Nestle's global volume of palm oil (445,000 tonnes) was traceable at least as far as the mill in the country of origin; 32% was Responsibly Sourced = traceable back to a plantation that meets Nestle's standards/engaged in continuous improvement. 2015 targets are to achieve 95% of volumes as traceable and 70% as Responsibly Sourced."

Details for soy: "In 2014, 41% of soy was traceable back to the mill and supply base; 32% of its soy volume was Responsibly Sourced."

Nestlé's ability to react swiftly and proactively to supply chain scandals should also be underlined, as this was demonstrated more recently when it publicly acknowledged having unveiled forced labour in its supply chain in Thailand in November 2015 as a result of an investigation undertaken by a labour rights specialised charity called Verité. We see such self-disclosure (increasingly common in cases of business ethics wrongdoing) as best risk mitigation practice.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)

Governments: incentives to encourage the productive use of existing degraded and underutilised land, in preference to the continued conversion of natural ecosystems.

5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles
supporting landscape restoration

High

6. Appendix

CDP Forest Report 2015	Participating
Forest 500 Rating	5
Current TFA 2020 Partners	Partner
Oxfam's Behind the brands ranking	2nd (8/10 on land).
Rainforest action network on palm oil commitments	Front runner
Endorsers of the New York Declaration on Forests	Endorser
Companies with a disclosed zero deforestation agenda	Via support to the CGF.
No deforestation, No Peat, No clearance	Yes
CDP Forest Report 2015	Participating

Source: Kepler Cheuvreux

SCA

Sweden | Forestry, paper and packaging | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	None
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Sweden (forestry assets) & global (pulp sourcing).
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	Medium to high (core business relies on sustainable land use). SCA is focussed on consumer products such as tissue, and personal care products such as incontinence products, feminine hygiene products, and baby diapers. The company is Europe's largest private forest owner (2.6m ha of forest land in Sweden, i.e. lower risk regions). Its total forestry assets are valued at SEK30bn. Around 50% of wood raw materials used in SCA's forest products operations are sourced from the group's forests. The remainder is sourced from suppliers, the majority of which are located in Sweden. Note there are expectations that the company may spin off its forest assets and forest products division.
2. Land risk mitigation: leadership	
Commitment	Sustainability sourcing (timber) covering illegal timber, biodiversity of forests and certification.
Management systems supporting indirectly Sustainable Land Management	Suppliers assessment beyond tier 1, conservation measures.
Management systems supporting directly Sustainable Land Management	Through sustainable forestry ownership.
Leadership profile view (1=Minimum; 5= Maximum)	4
Comments	Extensive conservation measures coupled with certification ambitions (no horizon set for these targets, however). Only biodiversity-focused targets reported here.
3. Land risk mitigation: Momentum	
KPIs reported	Net sequestration of carbon dioxide, long-term harvesting prospects, control over wood raw materials.
Performance profile view (1=Minimum; 5= Maximum)	4
Comments	Suppliers' assessment beyond tier 1, update on certification progress (coverage overall particularly thorough compared with interrogated European peers). Update on targets : More than 60% of timber deliveries and 63% of pulp deliveries to SCA have FSC and/or PEFC certification (vs. 100% targeted). The target to have at least 5% of land set aside from forestry in ecological landscape plans and a further 5% set aside as part of SCA consideration for nature in managed forests is exceeded (7% and 14%, respectively). This is above theregulatory requirement to encourage Swedish forest assets to be natural forests/conservation areas. We believe the political situation in Sweden is actually partly shifting a bit, since the need to build and exploit new areas is large given the inflow of immigrants. So we think if anything happens on the political scene, there will be less demanding requirements from politicians.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Climate mitigation contributions that include ambitious goals to reduce forest emissions and/or provisions to generate demand or finance for verified emission reductions from REDD+.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	High

6. Appendix

CDP Forest Report 2015	Leader in timber.
Forest 500 Rating	n.a.
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	n.a.
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Suedzucker

Germany | Food | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials (sugar)
Geographical impact	EU
Land ownership	no
Sector level of risk	High
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Suedzucker is the biggest sugar manufacturer in Europe, producing c. 5m tonnes of refined sugar a year. The company also manufactures ingredients for food and non-food products, it produces bioethanol and is the largest processor for fruit preparations in the world. We see land degradation-related risks as medium to low (core business may be impacted, but sourcing is mainly from Europe, which is not among the highest risk regions).
2. Land risk mitigation: leadership	
Commitment	No (broad environmental impact objectives, e.g. waste, climate; not sourcing specific).
Management systems supporting indirectly Sustainable Land Management	Member of the Sustainable Agriculture Initiative Platform SAI.
Management systems supporting directly Sustainable Land Management	Farmers training on seed methods avoiding soil erosion.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Exposure to EU means a relatively lower exposure to risks
3. Land risk mitigation: Momentum	
KPIs reported	n.a.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	No land-related KPI found.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Claims that governmental rules and regulations within the EU already support measures and mechanisms for avoiding land degradation.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low.

Source: Kepler Cheuvreux

Symrise

Germany | Chemicals | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials
Geographical impact	Global
Land ownership	n.a.
Sector level of risk	Medium
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Medium to low. Symrise is a leading manufacturer of flavours and fragrances (F&F), which is expected to hold the number-two market position in the worldwide F&F industry in 2016. It is also a strong player in the cosmetic ingredients, pet and baby food markets. Symrise's big bulk products are sourced mostly locally and are mainly commodities such as sugar, salt, wheat and vegetables. Symrise uses some ingredients derived from palm oil or derivatives, which are minor in comparison with its overall raw material consumption or global industry demand.
2. Land risk mitigation: leadership	
Commitment	Qualitative comments on sustainable sourcing; goal to assess all suppliers based on sustainability criteria by 2020.
Management systems supporting indirectly Sustainable Land Management	Product sustainability scorecard (LCA for raw materials).
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Hard to compare with peers, given raw materials considered (e.g. vanilla or onions).
3. Land risk mitigation: Momentum	
KPIs reported	Percentage of suppliers covered by assessments; raw materials purchased from nearby locations.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	We would welcome more data regarding sustainable sourcing impact (e.g. following a natural capital protocol approach) and detailed quantitative reporting on the sustainability efforts vis-à-vis key raw material sourcing (e.g. onion, vanilla), e.g. training, certification.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	If more countries improve crop rotation, or biodiversity conservation, control of chemicals.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low

Source: Kepler Cheuvreux

Tesco

United Kingdom | Food retail | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw material
Geographical impact	Global
Land ownership	No
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Low. Food retail companies are more indirectly impacted (their own brands account for c. 30% of food turnover) and are relatively protected, as there are some compensatory effects between products, with their exposure to the most sensitive commodities (soy, palm oil, cattle) broadly the same.
2. Land risk mitigation: leadership	
Commitment	Zero deforestation via the consumer goods forum and sustainability sourcing for a variety of commodities, including palm oil, wood, tuna, cotton and tea.
Management systems supporting indirectly Sustainable Land Management	Sustainable Agriculture strategy, part of which will seek to measure and address land degradation risks such as soil quality, water pollution, water extraction, high-carbon animal feed and fertiliser.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Less detailed reporting than Ahold and Delhaize; the company acknowledges it should broaden its coverage to other commodities.
3. Land risk mitigation: Momentum	
KPIs reported	Partial on raw materials sourcing; waste recycling. Sustainable sourcing of key raw materials, including cotton (sustainable cotton by 2020) and palm oil (segregated or mass balance by end 2015); own operations food waste; own operations and distribution carbon emissions; own operations water usage; recycling.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Endorsement of peatland clearance, etc. could be made clearer; targets and reporting on commodities could be reinforced and expanded to other commodities such as soy.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Strong support for single certification schemes (e.g. in soy); certification programmes driving improvement in the supply chain but do not alienate growers; mapping technology and farm registration; improved satellite technology.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium
6. Appendix	
CDP Forest Report 2015	Participating
Forest 500 Rating	3
Current TFA 2020 Partners	n.a.
Oxfam's Behind the brands ranking	n.a.
Rainforest action network on palm oil commitments	n.a.
Endorsers of the New York Declaration on Forests	n.a.
Companies with a disclosed zero deforestation agenda	Via support to the CGF.
No deforestation, No Peat, No clearance	n.a.

Source: Kepler Cheuvreux

Vallourec

France | Oil services | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	None
Financial impact	Raw materials
Geographical impact	Global
Land ownership	Yes
Sector level of risk	Medium
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	Medium. Land ownership in low-risk areas of land degradation but exposure to indirect consequences, in our view, such as rise in extreme weather events e.g. droughts through its forests used for eucalyptus production (237,000 ha). Biological assets in the balance sheet amounted to EUR213m in 2014.
2. Land risk mitigation: leadership	
Commitment	Broad carbon policy unveiled in November 2015 (qualitative commitments regarding the 2020 energy efficiency plan & eco-solutions linked to the climate in the group's three markets).
Management systems supporting indirectly Sustainable Land Management	Impact through energy purchased (36% renewable, mainly charcoal; from reusing gas from the blast furnaces, and from the tar derived from the carbonisation of charcoal to generate power).
Management systems supporting directly Sustainable Land Management	Forest exploitation is Cerflor certified and run alongside an environmental license. No deforestation risks related to eucalyptus production; CDM projects e.g. mitigation of Methane Emissions in the Charcoal Production.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	No GHG emissions target.
3. Land risk mitigation: Momentum	
KPIs reported	GHG emissions from charcoal, transformation rate of wood into charcoal; broad environmental data (e.g. recycling of industrial waste, recycled metal).
Performance profile view (1=Minimum; 5= Maximum)	3
Comments	A detailed study of forests' net carbon balance is expected (evidence of carbon emissions capture).
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Support for biomass valorisation projects.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Cluster 2: Land operators

Key sectors: construction & materials, oil & gas, metals & mining, utilities

CRH

EDP Renovaveis

Elia Group

Enagas

ENI

ERG

Fortum

Galp Energia

Hochtief

Iberdrola

Nordex SE

Skanska

SNAM

Statoil

YIT

CRH

Ireland | Construction & materials | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Both direct and distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Global
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	CRH is one of the top world producers of building materials, focusing on aggregates and ready-mix concrete. The company faces fairly low regulatory compliance costs (EUR7m budgeted for restoration and biodiversity in 2014); its main exposure is through raw materials and reputational concerns (a significant portion of CRH's raw materials is extracted from quarries (or sand and gravel pits), possible liabilities.
2. Land risk mitigation: leadership	
Commitment	Broad environmental impacts mitigation (e.g. 1) commitment to a 25% reduction in specific net cement CO2 by 2020 compared with 1990 levels; 2) air emission reduction from clinker production; and 3) growing alternative raw materials use; unspecified); biodiversity plans for quarries.
Management systems supporting indirectly Sustainable Land Management	Use of recycled and alternative materials, quarry reinstatement plans; CSI involvement.
Management systems supporting directly Sustainable Land Management	Quarry reinstatement.
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Sector driven by licences to operate. Roadmap for environment and climate change could possibly include more quantitative and time-referenced targets that would indicate the company's ambition to strengthen its positioning versus land issues (e.g. on alternative raw materials).
3. Land risk mitigation : Momentum	
KPIs reported	Total hectares reinstated, mt of recycled and alternative materials, quarries with reinstatement plans (98%).
Performance profile view (1=Minimum; 5= Maximum)	3
Comments	Reinstatement KPIs (486 ha were reinstated in 2014, for a total spending of EUR7m in restoration and biodiversity). Some 98% of quarries have rehabilitation/restoration plans. In terms of off-site impact and support to more sustainable building materials: increased use of alternative materials e.g. ground limestone, fly-ash (PFA) and slag that notably helps to replace a proportion of clinker in cement (1.8m tonnes in 2014 vs. 1.6m tonnes in 2013). However, the KPI on alternative materials as a percentage of clinker and cement fell to 11.8% from 15.4% because of a growing use of ground limestone in cement and no target has been set. CRH has achieved 2015 net cement CO2 target for a 15% reduction ahead of schedule and is on course to achieve the 2020 goal (25% reduction in scope 1 t CO2/t cementitious product compared to 1990) and air pollution target for clinker production.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

EDP Renovaveis



Portugal | Utilities | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Communities
Financial impact	Raw materials
Geographical impact	Developed markets
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Only wind generation. More than 40% of its EV relates to the US, 25% to Spain and only 10% to Portugal.
2. Land risk mitigation: leadership	
Commitment	Not relevant: wind has a strong compatibility with Sustainable Land Management (SLM).
Management systems supporting indirectly Sustainable Land Management	n.a.
Management systems supporting directly Sustainable Land Management	n.a.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Wind strongly aligned with SLM.
3. Land risk mitigation: Momentum	
KPIs reported	n.a.
Reporting profile view (1=Minimum; 5= Maximum)	2
Reporting score	Not relevant: wind has a strong compatibility with Sustainable Land Management.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Elia Group

Belgium | Utilities | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Communities
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Germany, Belgium.
Land ownership	Yes
Sector level of risk	Low
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Electricity transmission system operators; exposure to Belgium. Cost reduction for corridor management is the main driver.
2. Land risk mitigation: leadership	
Commitment	n.a.
Management systems supporting indirectly Sustainable Land Management	n.a.
Management systems supporting directly Sustainable Land Management	Sustainable Land Management approach, once Elia's project is completed (modification of electricity transmission pylon corridors in forested areas, into biodiversity corridors).
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Interesting sustainable corridor management approach as part of a EU-backed pilot project (modification of electricity transmission pylon corridors in forested areas into biodiversity corridors).
3. Land risk mitigation: Momentum	
KPIs reported	Detailed cost benefit analysis of the sustainable corridor management approach.
Performance profile view (1=Minimum; 5= Maximum)	2
Reporting score	Details on project but CSR data limited at group level. On the pilot project, Elia Group discloses details of findings and implications, e.g. return on investments.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	High

Source: Kepler Cheuvreux

Enagas

Spain | Utilities | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Communities
Financial impact	Raw materials and operational/licence to operate
Geographical impact	Spain. Enagas also holds stakes in gas infrastructures in Mexico, Chile, Peru, and Sweden and is involved in the TAP project, a key pipeline in Europe that will link Greece, Albania and Italy
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	Enagas is the Spanish Gas Transmission System Operator and the owner of Spain's high pressure gas transport network. Its sales mix is fully domestic and mostly (95%) regulated. Regulatory compliance, including land impact, is fairly heavy in the gas infrastructure business. Besides the direct impact of underground pipelines on land use and wildlife, numerous environmental issues in the transportation of gas, e.g. methane leakage, drive risks related to the "off-site impact" of gas projects (broader exposure to climate change-related regulations).
2. Land risk mitigation: leadership	
Commitment	Broad qualitative statement on CSR commitments, including biodiversity, and carbon emission reduction target.
Management systems supporting indirectly Sustainable Land Management	Environmental Impact Assessment (EIA) covers direct and indirect impacts on biodiversity.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Narrative could possibly be backed by a clear roadmap including more quantitative targets.
3. Land risk mitigation: Momentum	
KPIs reported	Internally - biodiversity: area restored the replanted area, length of pipelines where environmental audits have been performed and length of pipelines where environmental monitoring has been performed.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Interesting KPIs reported internally as part of Environmental Impact Assessments (EIA), whether the company can aggregate and report them publicly remains a question mark. Update: "In 2014, 673km of operating pipelines have undergone an environmental monitoring process to evaluate, among other issues, the biodiversity management measures implemented." "In 2014 on-site environmental audits were performed on 177km of gas pipeline."
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

ENI

Italy | Oil & gas | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Communities
Financial impact	Operational/Licence to operate.
Geographical impact	Global
Land ownership	n.a.
Sector level of risk	Medium
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	5
Comments	High impact & risk business (integrated oil & gas company with capital concentration in politically and land degradation sensitive regions). Exposure to controversial projects involving land degradation, such as Congo tar sands (claimed to be the leaders in Africa), also including investments to produce oil palm (70k ha plantations) for food and bio-diesel and gas-fuelled electricity. The tar sand projects in Congo are, however, currently on hold and are unlikely to materialise, in our view (only preliminary assessments were conducted and the ENI 2014 factbook does not mention them). Environmental liabilities may be substantial. Regulatory compliance direct cost for land limited: EUR277k for remediation expenditures and investments. ENI's 2020 study undertaken on all its sites (operated and non-operated) concluded that 16% of ENI-operated sites have different degrees of exposure to biodiversity risk (applying a safety zone of a 20km radius) and neither ENI-operated nor non-operated sites concern UNESCO natural World Heritage Sites.
2. Land risk mitigation: leadership	
Commitment	Definition by 2017 of integrated action plans for biodiversity and ecosystem services in 20% of the Assessment Units (AU) exposed to biodiversity risk in 2012. Broader climate commitments (absolute carbon emission reductions target).
Management systems supporting indirectly Sustainable Land Management	Environmental Impact Assessment (incorporating biodiversity and ecosystem services issues since 2010)/Oil spill remediation actions.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Stepping up biodiversity goals (new detailed plan by 2017) welcome, although the time lag may be questioned, especially considering potential future investments in the high risk/impact tar sand project (although very unlikely in the short term) that we include in our watch list. A move from case studies on biodiversity, e.g. Ecuador Amazon's Villano field (traditional onshore field through a EUR2.1m project following a "No Net Loss of biodiversity" approach using a mitigation hierarchy) to a group-wide quantitative and time referenced reporting on the systematic integration of biodiversity management could indicate the level of commitment. More broadly, anecdotal evidence of support at industry level, e.g. 1) it co-led the Task Force that issued the Ecosystem Services Guidance for oil and gas industry association in 2011; 2) it road tested the Guide to Corporate Ecosystem Valuation assessing the ecosystem service (ES) impacts and dependencies.
3. Land risk mitigation: Momentum	
KPIs reported	Waste from production activities including remediation expenditures and investments, water resources and biodiversity (water withdrawals, etc.).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Waste and water covered; biodiversity record is less clear, as it now takes into account limited quantitative reporting (seven studies and Environmental Impact Assessments (EIA) standards set at global level - eleven assessments). Some evidence of local efforts (e.g. reportedly successful restoration of impacts on biodiversity of oil operations for the Ecuador Amazon's Villano field). Decrease in spills over the past three years in barrels from 3,759 to 1,179. So expenditure on landscape protection and ecosystems and biodiversity conservation has fallen (from EUR5.9m to EUR4.7m).
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	LDN could be included in Environmental Impact assessment requirements.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low

Source: Kepler Cheuvreux

ERG



Italy | Utilities | Land Cluster: land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Communities
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Italy
Land ownership	No
Sector level of risk	High
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Provision for environmental risks limited (EUR5m); ERG is strongly positively aligned with sustainable land management (core business being wind generation).
2. Land risk mitigation: leadership	
Commitment	Not relevant: wind has a strong compatibility with Sustainable Land Management.
Management systems supporting indirectly Sustainable Land Management	Environmental Impact Assessment/no activities causing land degradation - decommissioning schemes straightforward.
Management systems supporting directly Sustainable Land Management	Wind conducive.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Wind strongly aligned with Sustainable Land Management (SLM).
3. Land risk mitigation: Momentum	
KPIs reported	n.a.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Not relevant: wind has a strong compatibility with Sustainable Land Management (SLM).
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Compliance with the current regulations on plan authorisation is sufficient guidance.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Fortum

Finland | Utilities | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	None
Financial impact	Raw materials and Operational/Licence to operate.
Geographical impact	Finland, Sweden, Russia.
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	More of an indirect impact/risk. Core business covers hydro, nuclear and combined heat and power production (CHP) in rather low risk regions. We see limited risk overall, including its biofuel business, as the main part of biofuels originate from Nordic countries and Russia.
2. Land risk mitigation: leadership	
Commitment	Quantitative targets for environmental impact reduction, not land use specifically (e.g. CO2 and fuel use).
Management systems supporting indirectly Sustainable Land Management	Guideline for sustainable use of bioenergy/Environmental Impact Assessments (EIAs) for hydro.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	No particular commitment related to land use or biofuel.
3. Land risk mitigation: Momentum	
KPIs reported	Broad environmental impacts (GHG emissions, etc.).
Performance profile view (1=Minimum; 5= Maximum)	3
Comments	No particular indicator related to land use or biofuel.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Galp Energia

Portugal | Utilities | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Both direct and indirect.
Area of exposure to those affected by land degradation	Communities
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Global
Land ownership	Yes
Sector level of risk	Medium
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	Activities span from exploration and production of oil and natural gas to refining and marketing oil products and biofuels, natural gas marketing and sales and power generation. LDN is not considered by the company as a direct material risk. However, we see it connected indirectly with its high priorities, e.g. hydrocarbon reserves and protection, process safety & spills, and also to biofuels.
2. Land risk mitigation: leadership	
Commitment	Qualitative and not time-referenced broad environmental impact mitigation (CO2, etc.).
Management systems supporting indirectly Sustainable Land Management	Environmental Impact Assessment (EIA).
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	No particular commitment related to land use or biofuel.
3. Land risk mitigation: Momentum	
KPIs reported	Internally: amount of loss of primary containment that reached the environment; hydrocarbons discharged in wastewater (mg/l); soil and groundwater quality (pollutants concentration); sites located in water scarcity areas (according to GWT – WBSCD); sites located in biodiversity protected areas (according to the Integrated Biodiversity Assessment Tool).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Interesting KPIs reported internally as part of EIAs; whether the company will aggregate and report them publicly remains a question.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low
6. Appendix	
2015 CDP global forest report participating companies	Communities
Companies' score on the Forest 500 rating	Raw materials and operational/licence to operate.
Current TFA 2020 Partners	Global
Endorsers of the New York Declaration on Forests	Yes
Companies with a disclosed zero deforestation agenda	Medium
Members of the Consumer Goods Forum	High

Source: Galp, CDP, Kepler Cheuvreux

Hochtief

Germany | Construction & materials | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Customers and communities.
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Global
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	Hochtief is a globally diversified construction and services company. It owns 69.65% in the Australian listed company Leighton and is also present in Europe and the US. Contract mining activities business (e.g. ores, coal) through CIMIC (c. 75% of sales).
2. Land risk mitigation: leadership	
Commitment	Broad environmental impact, no land use specifically (CO2, etc.).
Management systems supporting indirectly Sustainable Land Management	Soil protection as part of the mining services business, green buildings programme including contribution to resource efficiency through the demand for more sustainable products.
Management systems supporting directly Sustainable Land Management	Environmental restoration as part of the mining business (e.g. re-forestation after mining projects).
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Licence-to-operate driven.
3. Land risk mitigation: Momentum	
KPIs reported	Being developed (e.g. the measurement of the affected land by location and size is being contemplated).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Green buildings dynamic a positive (23% of 2014 sales after nearly doubling in volume). Neither total budget/spending for environmental restoration nor total land affected by size have been disclosed.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low

Source: Kepler Cheuvreux

Iberdrola



Spain | Utilities | Land cluster: land operators

1. Land risk exposure

Land contact in value chain	Direct
Area of exposure to those affected by land degradation	None
Financial impact	Raw materials and operational/licence to operate
Geographical impact	Impact where their operations take place
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	

Iberdrola is the largest Spanish utility by market cap, with a market share of 36% in distribution and c. 30% in generation (baseload representing above 50% of the mix); range of energy infrastructure (hydro, thermal, power, etc.); limited use of biomass. About 23% of EBITDA is derived from Renewables.

2. Land risk mitigation: leadership

Commitment	Broad environmental impact reduction (new 2015 target is 50% reduction of emission intensity for 2030 compared to 2007) and biodiversity policy.
Management systems supporting indirectly Sustainable Land Management	Biodiversity programme backed by a range of initiatives (prevention, habitat protection, mitigation of project damages). End market exposure (waste management and recycling, water/waste management and biodiversity conservation all constitute possible solutions).
Management systems supporting directly Sustainable Land Management	Sustainable Land Management e.g. vegetation management, reforestation programme.
Leadership profile view (1=Minimum; 5= Maximum)	4
Comments	

Especially thorough policy and actions. We estimate renewables (wind energy equipment, wind energy generation, hydro generation) account for 23% of its EBITDA (first nine months of 2015), hence its inclusion in our Green Impact universe. The company was assigned a C+ (performance band) for its lobbying and influence on climate-related regulations and policies that stressed that "their apparent support for GHG emissions reduction targets EU 2030 is at the cost of support for renewable energy and energy efficiency that they see as duplicate." (source: <http://influencemap.org>).

3. Land risk mitigation: Momentum

KPIs reported	Total hectares in protected areas and details on the reservoirs, facilities, lines and substations, concerned. Claims of systematic and proactive integration of biodiversity concerns are somewhat substantiated by a dedicated report providing greater details on specific conservation and habitat compensation measures.
Performance profile view (1=Minimum; 5= Maximum)	4
Comments	Reporting includes a biodiversity report (latest spanned 2011-13), which also includes details of its presence in protected areas as total per energy; however based on this, the performance over time is hard to gauge, a higher connection with its financial reporting and broader systematic quantitative reporting would be welcome.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	Fiscal incentives should be required and are welcome.
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	Medium
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Source: IBE, Kepler Cheuvreux

Nordex SE



Germany | Capital goods | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Distant
Area of exposure to those affected by land degradation	None
Financial impact	Operational/licence to operate.
Geographical impact	Global
Land ownership	No
Sector level of risk	Low
Company level of potential risk	Low
Sector level of impact	Medium
Company level of potential impact	Medium
Land risks exposure view (1=Low exposure; 5= High exposure)	2
Comments	Wind (producer of onshore wind power systems).
2. Land risk mitigation: leadership	
Commitment	Not relevant: strong compatibility with Sustainable Land Management (SLM).
Management systems supporting indirectly Sustainable Land Management	n.a.
Management systems supporting directly Sustainable Land Management	n.a.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Not relevant: strong compatibility with SLM.
3. Land risk mitigation: Momentum	
KPIs reported	n.a.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Not relevant: strong compatibility with SLM.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Low.

Source: Kepler Cheuvreux

Skanska

Sweden | Construction & materials | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Both direct and distant
Area of exposure to those affected by land degradation	Suppliers
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Europe, North America.
Land ownership	No
Sector level of risk	High
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	As part of contracts and via supply chain, e.g. buys timber. Skanska is the largest construction company in the Nordics and one of the largest worldwide. It operates through four divisions: construction (residential, non-residential & civil construction), residential development (development of housing projects), commercial property development (development of office buildings, retail facilities & logistic properties), and infrastructure development (development of infrastructure projects).
2. Land risk mitigation: leadership	
Commitment	No target (mere acknowledgement of the importance of biodiversity and need to benchmark it). Advocates process-based targets and indicators. Broad objectives to have "zero waste, zero unsustainable materials and zero hazardous".
Management systems supporting indirectly Sustainable Land Management	Sustainable sourcing (guidelines for quarry products and timber, etc.); support to World Green Building Council work & broad environmental policy.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Broad statements, not even a carbon emission reduction target, which could be underpinned by a detailed roadmap with targets.
3. Land risk mitigation : Momentum	
KPIs reported	No land or biodiversity specific reporting. Some reporting on waste (e.g. total average amount of waste diverted from landfill).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	CR reporting could be enhanced. No detailed biodiversity-related quantitative reporting at this stage, green buildings or sourcing. Only anecdotal examples regarding green buildings.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Support to the measurement of biodiversity.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

SNAM

Italy | Utilities | Land Cluster: Land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	None
Financial impact	Raw materials and operational/licence to operate.
Geographical impact	Europe
Land ownership	n.a.
Sector level of risk	High
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	Snam is an integrated group operating in gas transport (natural monopolist in Italy), gas distribution (the biggest Italian player) and gas storage. Claims land degradation is not a risk based on its Enterprise Risk Management (natural gas business). We think it actually may be significant given its exposure to the Natura 2000 network (23km of Special Protection Zone/Site of EU interest affected by its methane pipelines).
2. Land risk mitigation: leadership	
Commitment	Broad environmental impact reduction (e.g. CO2), land not covered directly.
Management systems supporting indirectly Sustainable Land Management	Claims application of best practices in unstable soils or soils with geological instability, although there are no concrete details.
Management systems supporting directly Sustainable Land Management	No
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	Broad statements dismissing the importance of land degradation risks in terms of materiality may not fairly reflect the rising awareness and scrutiny of possible malpractices.
3. Land risk mitigation: Momentum	
KPIs reported	Kilometres of pipeline with land restoration, kilometres of pipeline with forest landscape restoration, total kilometres of reforestation submitted to plant care, distance covered by methane pipelines in Natura 2000. Networking sites (largest network of protected areas in the world, spanning more than 18% of the EU's land area and nearly 6% of its marine territory).
Performance profile view (1=Minimum; 5= Maximum)	3
Comments	Land restoration/forest landscape restoration KPIs welcome (in network km: both restoration and plant care went down in the past few years, while both forest landscape restoration and environmental monitoring increased) but details on spending (for now broken down by expenses but no actual amounts) and a roadmap would be welcome.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Government provisions.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Statoil

Norway | Oil & gas | Land cluster: agricultural & forestry commodities

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	None
Financial impact	Operational/licence to operate.
Geographical impact	Global incl. Canada (tar sands).
Land ownership	n.a.
Sector level of risk	Medium
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	5
Comments	Primarily located offshore but strongly relevant in Canada (onshore oil sands activities).
2. Land risk mitigation: leadership	
Commitment	Broad environmental impact reduction (e.g. 2020 targets for CO2 and global emission reduction target of 60% by 2050).
Management systems supporting indirectly Sustainable Land Management	Soil monitoring and e.g. Caribou habitat mitigation and monitoring programme.
Management systems supporting directly Sustainable Land Management	n.a.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Land not covered directly (the tar sands report does not include commitments on quantitative KPIs).
3. Land risk mitigation: Momentum	
KPIs reported	Percentage of total land disturbed and total land reclaimed. Tar sand project specific environmental KPIs (e.g. bitumen production, natural gas consumption, seedling planting, incidents of stressed vegetation).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Numerous land and biodiversity-related KPIs reported reflect the damages to the land and biodiversity and level of scrutiny surrounding tar sands. Main environmental impact indicators for tar sand suggest an upward trend (bitumen production, energy consumption). Seedlings planted fell in the recent period. The three incidents of stressed vegetation that occurred during 2013 did not breach regulatory requirements. No breaches or environmental regulation was evidenced either in the context of the OECD complaints brought up in the past (Norwegian Climate Network and Concerned Scientists Norway). The National Contact Point (NCP) concluded that the complaint was primarily directed towards Canada's policy.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

YIT

Finland | Construction & materials | Land cluster: land operators

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	None
Financial impact	Licence to operate.
Geographical impact	Europe
Land ownership	Yes
Sector level of risk	High
Company level of potential risk	Low
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	Medium to high risk. YIT is the largest residential construction company in Finland and the largest foreign residential construction company in Russia. YIT also has one of the largest business premises and is one of the biggest infrastructure construction companies in Finland.
2. Land risk mitigation: leadership	
Commitment	No clear sustainability roadmap.
Management systems supporting indirectly Sustainable Land Management	Assessment of the condition of the land before buying it. Purification of the land if needed.
Management systems supporting directly Sustainable Land Management	n.a.
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	Lack of commitments to address these issues (not even carbon emission reduction targets).
3. Land risk mitigation: Momentum	
KPIs reported	Nothing related to land degradation.
Performance profile view (1=Minimum; 5= Maximum)	1
Comments	Limited reporting.
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	Corporate responsibility reporting to come from same operator.
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	Medium

Source: Kepler Cheuvreux

Cluster 3: End market exposure

Key sectors: Capital goods, Chemicals

Arcadis

KWS Saat

Syngenta

Arcadis



Netherlands | Capital goods | Land cluster: end-market exposure

1. Land risk exposure	
Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Customers
Financial impact	Revenues (services).
Geographical impact	Global
Land ownership	No
Sector level of risk	Low
Company level of potential risk	Low
Sector level of impact	Medium
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	Arcadis provides management, consultancy, design and engineering services (top three in Europe, top ten globally) and therefore faces more of an indirect risk: regulatory compliance in general (Environment, Water, and Infrastructure), and possibly some specific reputational and liability risks related to the most controversial projects (e.g. large contract with the Belo Monte hydro plant in Brazil). In the Environmental business unit, a significant portion of work is for companies in oil & gas, chemical, mining conglomerates and transport companies. Work is also done for government entities, ranging from federal clients (Department of Defense) to local authorities. On the whole, we however more view Arcadis as a play on opportunities linked to major environmental trends which propel demand for its solutions.
2. Land risk mitigation: leadership	
Commitment	n.a.
Management systems supporting indirectly Sustainable Land Management	n.a.
Management systems supporting directly Sustainable Land Management	Core business involves environmental remediation and site restoration. Arcadis conducts work on Environmental Construction Services and Site Evaluation and Restoration, focused primarily on restoring brownfield sites; this represents over half of its environment business line's revenues (c. 25% of Arcadis's 2015 gross revenues and 15% of EBITA) and also has a strong position in water management, including waste water treatment systems (13%/10%). To a lower extent, the building business line might make a positive contribution to the sustainable buildings theme.
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	In terms of environmental impact, no systematic/global policy underpinned by commitments on land use impact & sustainability. This mirrors the nature of Arcadis's business as a service-based consultancy. Business-wise, the demand for more stringent energy/resource efficiency standards is generally an attractive opportunity. We estimate that its group exposure to positive environmental impact themes, closely intertwined with land degradation challenges both from an on- and off-site perspective, represent c. 38% of its sales and 25% of its EBIT. As regards its environmental business, in the short term: the disappearance of the all-inclusive GRIP (Guaranteed Remediation Programme – an approach to ensure that, for example, site closure for a portfolio of contaminated sites meet the environmental cleanup standards set by the regulators) projects has led to lower sales volumes and in particular lower margins for Arcadis. In the longer run, while environmental restoration is currently a market restricted to Europe and the US, in particular, we presume that in time East Asia, especially China, will offer substantial upside. Yet, it will take time, as the focus is currently definitely on growth only, through a combination of organic growth and acquisitions in other segments.
3. Land risk mitigation: Momentum	
KPIs reported	KPIs considered: areal extent of land restored/habitats created on behalf of clients each year; otherwise, focused on indirect impact (e.g. building credentials).
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	We would welcome quantitative reporting on project outcomes/environmental impact (mostly qualitative data reported on solutions, based on anecdotal case studies for which there are some details on carbon emission savings).
4. Enabling factors	
Key hurdles quoted to advance Sustainable Land Management (SLM)	National regulation covering restoration for assets (e.g. brownfield regulation).
5. Sustainable Landscape Finance	
Opportunity for engagement with investment vehicles supporting landscape restoration	High

Source: Kepler Cheuvreux

KWS Saat

Chemicals | Chemicals | Land cluster: end-market exposure

1. Land risk exposure

Land contact in value chain	Distant
Area of exposure to those affected by land degradation	Customers
Financial impact	End market (agricultural inputs).
Geographical impact	Global
Land ownership	Some acres for R&D purposes.
Sector level of risk	Medium
Company level of potential risk	Medium
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	3
Comments	

KWS is one of the leading seed breeding companies and globally number four. It specialises in corn, sugar beets and cereals, with operations mainly in Europe and North America. The main land degradation-related risks relate to reduced income for farmers. Land degradation may raise, for example, two theoretical risks for KWS (global number five in seeds, concentrating mainly on the corn, sugar beet and cereal business): 1) potential changes in soil conditions of high productive agricultural areas could drive up costs of the company's customers; 2) the production of KWS seeds could be adversely effected considering it is conducted outside in special growing zones via contracted farmers. The company's confidence that both risks are very unlikely to materialise rests on its belief that breeding programme improvements tend to be faster than climate change. Its central breeding strategy includes environmental developments such as land degradation in its product development (agricultural plants) cycles. Questions could possibly be raised over KWS Saat's dismissal of land degradation as a non-material issue.

We stress that these new plant breeding techniques are confronted with scientific debates, regulatory challenges and customers' concerns, reflected in some national frameworks that are unfriendly towards GMOs and biotechnologies. The core of the matter presently concerns the differentiation between GMOs and new plant breeding techniques in the EU legislation in order to enable the development of the latter.

2. Land risk mitigation: leadership

Commitment	n.a.
Management systems supporting indirectly Sustainable Land Management	Contribution to resource efficiency via product developments/plant breeding (agricultural crops like corn, sugar beets or cereals). KWS sees more growth opportunities leveraged on the back of its R&D activities (c. 13% of sales in FY 2014-15) that focus on developing new efficient plant varieties that may add value for farmers. Supports to public gene banks in Peru and Ethiopia.
Management systems supporting directly Sustainable Land Management	
Leadership profile view (1=Minimum; 5= Maximum)	2
Comments	No systematic/global policy underpinned by commitments on land use impact and sustainability. Commitment to address smallholder farmer development limited according to the latest Access to seeds index.

3. Land risk mitigation: Momentum

KPIs reported	Use of resources (seeds sold, use of pesticides in research and breeding), pollution loads, energy, CO2, R&D plans; no response to the CDP.
Performance profile view (1=Minimum; 5= Maximum)	2
Comments	Questions could possibly be raised over the increase in the use of pesticides on seeds for sale by the company in Germany since 2010, waste water rise, pollution loads, total CO2 emissions driven by seed quantities transported.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	n.a.
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	Medium
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Source: KWS Saat, Kepler Cheuvreux

Syngenta

Switzerland | Chemicals | Land Cluster: End market exposure

1. Land risk exposure

Land contact in value chain	Direct
Area of exposure to those affected by land degradation	Customers
Financial impact	End market (agricultural input).
Geographical impact	Global
Land ownership	n.a.
Sector level of risk	Medium
Company level of potential risk	High
Sector level of impact	High
Company level of potential impact	High
Land risks exposure view (1=Low exposure; 5= High exposure)	4
Comments	

Syngenta is the leading global agrochemicals firm, having been formed by the spin-off/merger out of the agro assets of Novartis and Astra Zeneca in 1999. The company may be seen as having an ambivalent profile from a land degradation risk perspective. On the one hand, it is faced with potential risks of reduced income for farmers. Syngenta may also have to cope with continued regulatory and consumer risks related to its products and GMOs (genetically modified organisms) in particular. On the other hand, in terms of long-term prospects, Syngenta is set to benefit from favourable trends: food security, also with the help of crop protection, and high-yielding stress-tolerant seeds will continue to be in high demand.

2. Land risk mitigation: leadership

Commitment	Farmers' engagement through the Good Growth Plan (Sustainable Land Management engagement with farmers involving fertilisation target for 10m hectares of degraded land).
Management systems supporting indirectly Sustainable Land Management	R&D supporting the UNCCD to establish and launch the Soil Leadership Academy
Management systems supporting directly Sustainable Land Management	Good Growth Plan involves farmers training on best farm management practices, e.g. minimum tillage, water and nutrient management, diversified crop rotations, inter-cropping, permanent soil cover, maintenance of soil salinity and soil organic matter, etc.
Leadership profile view (1=Minimum; 5= Maximum)	3
Comments	

Ambitious goals to increase farmers' productivity and income in a sustainable way, that are set to support the company's core business objective to secure long-term relationships with farmers. In our view, this plan is also meant to support its broader 'integrated strategy'. The company has integrated its own sales force from formerly separate seeds/agrochemicals channels under one roof. These salespeople now have the task of selling farmers a certain "yield promise". Syngenta is being blamed for the seemingly slow adoption of this strategy by its customers. It works well in less developed agro markets, but has not worked so well with large and educated farmers who have the means to run their own field tests over years, or in markets like NAFTA, where established distribution structures are in the way. Crop protection (80% of Syngenta) does not need to be fixed. Seeds, however, need to be reviewed in total.

3. Land risk mitigation: Momentum

KPIs reported	Hectares of farmland impacted, smallholders reached and farmers trained etc. (detailed progress data).
Performance profile view (1=Minimum; 5= Maximum)	3
Comments	The platform allocated to the Good growth plan, and the underlying accountability credentials (use of an independent company), provide a useful tool.

Its "inclusive seeds" trajectory is particularly worth underlining as the company was ranked second in both the Global Index Field Crop seed companies - out of seven - and Vegetable Seed companies, out of 10, in the Access to Seeds report that was released in February 2016. Syngenta showed evidence of a holistic approach to address the needs of smallholder farmers e.g. by being unique in including smallholder solutions in its R&D pipeline, and developing innovative smallholder insurance initiative (ACRE). Still, Syngenta could provide more details regarding its actual breeding programmes for specific crops as part of the Good Growth Plan.

4. Enabling factors

Key hurdles quoted to advance Sustainable Land Management (SLM)	Range of broad suggestions to policy makers to address soil conservation challenges (result-oriented policies, etc.).
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5. Sustainable Landscape Finance

Opportunity for engagement with investment vehicles supporting landscape restoration	High
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Source: Kepler Cheuvreux

Engagement questions

Our framework to analyse land risks and best practices

Table 73: Engagement questions on companies' exposure to land degradation risks and opportunities

Question	Sector most concerned
1. Land risk exposure	
a. Context	
How exposed is your business to forest and landscape degradation, i.e. are land use and biodiversity a material issue and an element of competitiveness for your company (dependencies/value drivers perspective)?	Cross-sector
Does your company own or manage land for: a) production of commodities (e.g. timber, palm oil, cattle products, soil); or b) any other activity that relates to your core business (e.g. raw material extractions)? If so, could you specify the relevant indicators (ha of land under ownership, ha of land leased, ha of land managed) and if your company is in need for more land?	Cross-sector
b. Risks	
How does your business risk assessment take into account forest & landscape degradation and damages to biodiversity?	Cross-sector
In which area(s) of your value chain, geographical footprint (regions and countries where your company is active), and businesses – e.g. product, brands - do you see the main business risks associated with forest and land degradation?	Cross-sector
Are you able to share quantitative data that helps give a sense of the business risk magnitude and the most relevant type of business risk related to land (e.g. raw material scarcity, license to operate, regulatory changes)?	Cross-sector
Have you faced any litigation risk/fines involving forest and landscape degradation?	Cross-sector
Has your company assessed or quantified the proportion of land that is at risk of stranding in your balance sheet?	Cross-sector
How much of your total commodities supply is coming from most-at-risk areas?	Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper
How many of your activities/production sites are located in the most-at-risk areas and which projects could be affected by concerns related to damages to the land and biodiversity?	Land operators e.g. Construction, Real estate, Utilities, Mining, Oil & Gas
c. Opportunities	
How does your assessment of business opportunities take into account forest and landscape restoration as well as biodiversity protection?	Cross-sector
Do you have estimates that give a sense of the potential market opportunities and/or cost savings associated with your businesses that may contribute positively and more directly to the Land Degradation Neutrality (LDN) target?	Cross-sector

Source: Kepler Cheuvreux

Table 74: Engagement questions on leadership, reporting, enabling factors and land finance

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices	Description and illustration
2. Land risk mitigation: leadership				
a. Overall policy commitments				
How do your sustainability policy commitments and targets handle forest & landscape degradation and restoration, and biodiversity protection (ref. the Sustainable Development Goal 15 more broadly: «Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss»)?	Cross-sector	Low	Syngenta	Commitment to improve the fertility of 10m ha of degraded land by 2020 relying on best farm management practices
Do you have a dedicated policy to handle land and biodiversity risks and opportunities (payment for ecosystem services, REDD etc.)?	Cross-sector	Medium	Gecina, Iberdrola	Gecina: Commitment to mapping its biodiversity impact and dependencies throughout its full value-chain, as part of its Biodiversity commitments and strategy launched in 2012. Iberdrola: Systematic and proactive integration of biodiversity considerations across projects
Where do you see your company engaging explicitly in forest and landscape restoration via new initiatives and/or a strengthening of existing ones?	Cross-sector	Low	n.a.	Prospective question
Have you committed to zero deforestation, land-related issues (e.g. zero tolerance for land grab) and communicated precisely on the underlying strategies and targets for key commodities (including issues such as peatland and clearance)?	Consumer sectors/ Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Medium	Danone	Clearly written commitments to implement zero deforestation agenda including dedicated policies and targets for soy, palm oil
Have you committed to forestry and landscape restoration as well as biodiversity protection (e.g. through a "no net loss" or "net positive impact" approach)?	Land operators e.g. Construction, Real Estate, Utilities, Mining, Oil & Gas	Low	Rio Tinto	Articulate goal to have a net positive impact on biodiversity by minimising the negative impacts of its activities and by making appropriate contributions to conservation
b. Traceability				
What's your level of traceability for your key commodities (including plantations for palm oil)?	Consumer sectors/ Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Low	Ferrero	100% of palm oil traceable back to plantation.

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Engagement questions on leadership, reporting, enabling factors and land finance...continued

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices	Description and illustration
c. Procurement				
Do your procurement standards address issues such as legality, establishing traceability and appropriate certification (i.e. go beyond merely 'following ethical standards') and do you deploy workshops and training on these issues?	Consumer sectors/ Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Low	Nestlé	This is dealt with at a more operational level, with assessments carried out in the field as part of the implementation of Nestlé Better Farming Practices, Responsible Sourcing Guidelines, or the requirements of certification standards that they use. Nescafé plan and Cocoa plan for example deploy agronomists to assist direct farmers with regards to SLM. Nestlé's work is also comprised of pilot programmes aimed at measuring simplified environmental impact metrics communicable to customers (GHG emissions, water, biodiversity impact)
Does your collaboration with suppliers involve financial support, assistance to meet certification and technical support?	Consumer sectors/ Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Low	Coca-Cola, Danone	Mineral water enterprise Vittel provides incentives to farmers in upstream watersheds to adapt their farming practices for cleaner water. In Portugal, Coca Cola supports cork oak restoration to preserve water quality and availability in watersheds of interest
How do you engage with policy makers and stakeholders to promote a systemic change?	Consumer sectors/ Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Medium	Marks & Spencer, Unilever (and other GCF members)	CGF support for a "produce-protect" paradigm of rural development. Jurisdictional forest, climate and agriculture approaches" or even "place-based multi-stakeholder partnerships
What are the investments and targets associated with your efforts to promote land restoration and Sustainable Land Management (SLM)?	End-markets exposure: Chemicals (agrochemicals, seeds, fertilisers)	Low	Syngenta	Commitment to improving the fertility of 10m ha of degraded land by 2020 relying upon best farm management practices; spending is not disclosed
How deep are these issues embedded in your audits?	Consumers sectors/ Agricultural commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper	Medium	Enagas	Environmental audits have been performed (km); Length of pipelines where environmental monitoring has been performed (km)

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Engagement questions on leadership, reporting, enabling factors and land finance...continued

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices		Description and illustration
3. Land risk mitigation: Momentum					
a. Overall reporting					
How do you see the SDG 15 ("Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss), including Land Degradation Neutrality (LDN), fitting into your quantitative sustainability reporting (KPIs)?	Cross-sector	Low	n.a.	Prospective question: the SDGs were only approved last September and are not yet robustly reflected in companies' reporting	
b. Natural capital					
Do you engage with the Natural Capital Protocol and report on your natural capital impacts and dependencies?	Cross-sector	Low	Kering, Hugo Boss	Kering: Innovative environmental P&L (e.g. detailing leather sourcing environmental impact assessment and policies taken accordingly, e.g. identification of low-impact beef and leather sourcing). Hugo Boss: company-led projects to assess its own suppliers' environmental performance and provide implementation guidelines e.g. the Global Social Compliance Programme includes a chapter (10) on Land use and biodiversity. HB also works with Textile Exchange, the Natural Capital Coalition and IUCN (a paper was recently released on "Biodiversity Risks and Opportunities in the Apparel Sector "	
Does your company measure trends in land use change (e.g. land degradation or improvement, or land rehabilitation/restoration), biodiversity (e.g. Habitats protected or restored (ha)) and presence in protected areas?	Cross-sector	Low	Iberdrola	Iberdrola reports its presence in protected areas as of total per energy	
Does your company measure trends in land use change (e.g. land degradation or improvement, or land rehabilitation/restoration)?	Cross-sector	Low	Olam	With regard to its 2015 target to reduce indirect land impacts from third-party farmers and suppliers Olam aims to achieve: 50% tonnage (60% large-scale farmers); 2020 target: 100% tonnage; How: compliance with the supplier code in products rated as higher risk such as rubber and palm; compliance with supplier code for all products.	
Which opportunities for further reporting on your actions and exposure do you see?	Cross-sector	Low	na	Prospective question	
c. Environmental externalities					
Do you report quantitatively on environmental expenditures (e.g. budget for restoration and biodiversity) and trends in terms of management, targets?	Land operators e.g. Construction, Real estate, Utilities, Mining, Oil & Gas	Low	CRH	EUR7m budget in 2014 (restoration and biodiversity)	

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Engagement questions on leadership, reporting, enabling factors and land finance...continued

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices	Description and illustration
d. Biodiversity				
Do you report on significant impacts of activities, products and services on biodiversity in protected areas and areas of high biodiversity value outside of protected areas	Cross-sector	Low	Galp Energia	Sites located in Biodiversity-protected areas (according to the Integrated Biodiversity Assessment Tool)
Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organisation's discharges of water, runoff and solid waste disposed	Cross-sector	Low	na	GRI
IUCN red list species and national conservation list species with habitats in areas affected by operations, by level of extinction risk	Cross-sector	Low	na	GRI (companies make broad references to it, claiming they take them into account, e.g. Enagas, but do not report quantitative data systematically and comprehensively)
e. Raw materials				
Do you provide detailed reporting on your raw materials sourcing (e.g. countries of origin, volume sourced, and their respective importance in your COGS)?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Low	Adidas	Relatively encouraging level of transparency in its reporting in terms of geographical exposure in its supply chain as it includes countries of origin sustainability sourcing via the Better Cotton initiative (India, Pakistan and Brazil), procurement costs as a percentage of revenues (leather, timber) and it provides an update on progress.
f. Certification				
Do you provide a quantitative update on all relevant commodities certification and targets (e.g. % of sourcing covered, % of land managed under a certification scheme)?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Medium	Ahold	Most thorough reporting of the retailers reviewed here: Ahold displays especially comprehensive targets in terms of commodities covered and updates on status (e.g. including sustainable soy consumption for the Netherlands).
Which opportunities do you see for further reporting on your actions and exposure to this issue?	Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Low	na	Prospective question

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Engagement questions on leadership, reporting, enabling factors and land finance...continued

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices	Description and illustration
g. Transparency tools (implementation & monitoring)				
Does your assessment, engagement and reporting go beyond tier 1 suppliers?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Low	SCASCA's suppliers beyond 1st tier (tier 2+3) are assessed on compliance according to the Global Supplier Standard and certification according to FSC and/or PEFC	
Are you able to report investments and outcomes of a work undertaken at the landscape level / any particularly innovative multi-stakeholder partnerships e.g. on stronger land use planning?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Medium	April Group, SCA, Stora Enso, Suzano	APRIL Group pledged USD17m over ten years as part of a project (Restorasi Ekosistem Riau (RER)) to restore 20,000ha of degraded forest in the Kampar Peninsula landscape under eco-restoration licenses granted by the Indonesian government. Suzano in LatAm also fostered partnerships between land users involving restoration of degraded land resulting in a net positive gain of almost 3 million ha of secondary forest as part of a wider innovation SLM project
Do you use technological means to collect and report relevant data, e.g. satellite, and have you set up an online platform to track your work on deforestation and land degradation?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Low	Wilmar, Asia Pulp & Paper	They publicly disclose contraventions of their policies and outline how they are working to address them. Wilmar has set up a monitoring dashboard to gather stakeholder input.
Do you report publicly outcomes of your suppliers assessments e.g. via a suppliers scorecard?	1. Consumer sectors / Agricultural & Forestry commodities: Food, Food retail, General retail, Home & Apparel, Pulp & Paper 2. Construction & materials	Low	Symrise	The company relies on a sustainability scorecard including Land use, Water use, Waste Water emissions, Bio diversity, Bio degradability and Eco-Tox classification-related topics that enable the company to create LCA for raw materials and products on the fly. No details are however reported on the findings.

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Engagement questions on leadership, reporting, enabling factors and land finance...continued

Questions	Sector most concerned	Level of reporting in our sample	Companies' best practices	Description and illustration
4. Enabling factors				
What conditions would help to support your company's implementation of land degradation neutrality (LDN), sustainable land management (SLM) or rehabilitation and restoration effectively by: governments (e.g. incentives, policies, regulations, etc.) ; investors (e.g. financial mechanisms)	Cross-sector	Low	Lindt	Lindt sets out the following broad preferences for an encouraging policy framework: Where the farmers get as high a percentage as possible from the price they pay for the cocoa; Where tax money collected on cocoa exports is actually invested back into the rural development of cocoa-farming communities.
5. Land finance				
Does your company have a specific strategy to finance activities related to responsible land management or rehabilitation/restoration e.g. private equity impact fund?	Cross-sector	Low	Danone	The innovative Livelihood 3F fund will allocate capital to sustainable agriculture projects based on a landscape approach. Danone and Mars rely partly on foundation financing (private equity impact fund).

Source: Kepler Cheuvreux

Appendix

Questionnaire sent to companies (short version)

1. How exposed are you to land degradation?
2. How does your risk assessment take into account land degradation?
3. How does your assessment of opportunities take into account land degradation neutrality (LDN)?
4. How do your sustainability policy commitments, targets and implementation handle land degradation?
5. How do you see LDN fitting into your quantitative sustainability reporting (KPIs)?
6. What conditions would help to support your company's implementation of LDN, sustainable land management (SLM) or rehabilitation and restoration effectively by:
 - a. Governments (e.g. incentives, policies, regulations, etc.)
 - b. Investors (e.g. financial mechanisms)

Valuation table with analyst coverage

Table 75: Kepler Cheuvreux universe stock recommendations

Company	Ticker	Sector	Cap (EURm)	Analyst	Rating	Target local	Price local	Currency local
Agricultural & Forestry commodities								
Adidas Group	ADS GR	General retail	14693	Jürgen Kolb	Buy	110	98	Euro
Ahold	AH NA	Food retail	14703	Fabienne Caron	Buy	22.3	20	Euro
Barry Callebaut	BARN SW	Food	5167	Jon Cox	Hold	1000	1057	Swiss francs
Carrefour	CA FP	Food retail	16455	Fabienne Caron	Buy	31	24	Euro
Danone	BN FP	Food	37076	Jon Cox	Buy	75	62	Euro
Delhaize	DELB BB	Food retail	8224	Fabienne Caron	Hold	89.3	92	Euro
Hugo Boss	BOSS GR	Home & apparel	3735	Jürgen Kolb	Hold	52	54	Euro
Jeronimo Martins	JMT PL	Food retail	8458	Inigo Egusquiza	Hold	12	13	Euro
Kering	KER FP	Luxury goods & cosmetics	20966	Catherine Rolland	Reduce	155	160	Euro
Hennes & Mauritz	HMB SS	General retail	50537	Stefan Billing	Buy	365	285	Swedish Krona
Lenzing	LNZ AV	Chemicals	1647	Stephan Trubrich, CFA	Buy	80	62	Euro
Lindt & Sprüngli	LISN SW	Food	13220	Jon Cox	Reduce	60000	67650	Swiss francs
Nestlé	NESN VX	Food	217617	Jon Cox	Buy	78	71	Swiss francs
SCA	SCAB SS	Forestry, paper and packaging	18927	Mikael Jafs	Buy	290	251	Swedish Krona
Suedzucker	SZU GR	Food	2863	Richard Withagen	Buy	21	14	Euro
Symrise	SY1 GR	Chemicals	7456	Martin Flueckiger	Hold	58	55	Euro
Tesco	TSCO LN	Food retail	24215	Fabienne Caron	Hold	176	189	British Pounds/Pence
Vallourec	VK FP	Oil services	2140	Kevin Roger	Buy	9	7	Euro
Land operator								
CRH	CRH ID	Construction & materials	17599	Josep Pujal	Hold	25	24	Euro
EDP Renovaveis	EDPR PL	Utilities	5626	Jose Porta	Hold	6.2	6	Euro
Enagas	ENG SM	Utilities	6307	Jose Porta	Hold	25.2	26	Euro
ENI	ENI IM	Oil & gas	46874	Bertrand Hodée	Hold	13.5	13	Euro
ERG	ERG IM	Utilities	1660	Claudia Introvigne	Buy	14.6	11	Euro
Fortum	FUM1V FH	Utilities	14638	Ingo Becker, CFA	Hold	11	13	Euro
Hochtief	HOT GR	Construction & materials	6457	Joaquin Ferrer, CFA	Buy	87	93	Euro
Iberdrola	IBE SM	Utilities	37533	Jose Porta	Hold	6.1	6	Euro
Nordex	NDX1 GR	Capital goods	2074	Douglas Lindahl	Hold	29	26	Euro
Skanska	SKAB SS	Construction & materials	7968	Bjorn Gustafsson	Buy	186	181	Swedish Krona
SNAM	SRG IM	Utilities	17488	Claudia Introvigne	Hold	5	5	Euro
YIT	YTY1V FH	Construction & materials	624	Bjorn Gustafsson	Reduce	4	5	Euro
End market exposure								
Arcadis	ARCAD NA	Capital goods	2075	Andre Mulder	Buy	19	15	Euro
KWS SAAT AG	KWS GR	Chemicals	1793	Christian Faitz, CFA	Hold	260	281	Euro
Syngenta	SYNN VX	Chemicals	30643	Christian Faitz, CFA	Buy	450	404	Swiss francs

Source: Kepler Cheuvreux

Organisations supporting sustainable forestry and landscape management

Table 76: Key initiatives and commitment types driving zero net deforestation commitments

	Description	Approach/Methodology/Guidance
Deforestation rating & disclosure initiatives		
2014 CDP global forest report participating companies	The CDP is a disclosure project: companies disclose their exposure to deforestation by responding to numerous questions. It gives investors insights about their own portfolio's exposure to deforestation.	The information collected is requested on behalf of investors. Companies simply have to respond to a questionnaire. The forests programme has over 300 investor signatories, all of which have access to the responses submitted by companies. While the CDP does not check the accuracy of the companies' responses, it relies on transparent links. Companies that misrepresent data to CDP would be misrepresenting it to the stakeholders who have access to the response (including investors).
Companies' score on the Forest 500 rating	The Forest 500 rating is an initiative by the GCP to identify powerbrokers of deforestation and rate their influence on deforestation	Forest 500 starts by selecting entities that have the biggest influence on deforestation and then rates them on a scale from 0 to 5. Two methodologies exist, one for selecting the powerbrokers, the remaining one for scoring them. Both methodologies are detailed by the Forest 500 programme.
Oxfam's Behind the brands	Scorecard assessing the world's ten largest food and beverage companies on sustainability	Seven areas (e.g. women farm workers and small-scale producers in the supply chain, land, both rights and access to land and sustainable use of it) and four indicator categories (e.g. awareness, commitments); based entirely on publicly available information on company policies
Rainforest Action network's work on palm oil commitments	Focused on palm oil sustainability progress	Assesses, among other factors, how companies' palm oil procurement policies promote responsible production practices e.g. protection of rainforests and peatlands while » respecting and upholding human rights, including the right for communities to give or withhold their free, prior and informed consent to development on their lands ».
Supply-change	Resource for businesses, investors, governments, and the civil society organisations that support and hold them accountable; providing real-time information on the extent and value of commitment-driven commodity production and demand.	Aims to provide company profiles detailing their commitments by commodity
SPOTT	SPOTT features a scorecard that assesses oil-palm growing companies using publicly available information about the sustainability of their operations (focus on the 50 companies that are most exposed).	RSPO reporting requirements, land bank, environmental management, peat land, zero burning, GHG emissions, and traceability

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Key initiatives and commitment types driving zero net deforestation commitments ...continued

	Description	Approach/Methodology/Guidance
Industry commitments		
Current TFA 2020 partners	TFA 2020 is a public-private partnership in which partners take voluntary actions, individually and in combination, to reduce the tropical deforestation associated with the sourcing of commodities such as palm oil, soy, beef, paper and pulp and does so by tackling the drivers of tropical deforestation using a range of market, policy and communications approaches.	TFA 2020 has no ambition to be a standard setting or certifying body. Instead, it serves as a marketplace for ideas and initiatives to tackle tropical deforestation, a repository of best practices and a forum where partnerships between governments, business and civil society can be forged.
Endorsers of the New York Declaration on Forests	The NY Declaration on Forests is a non-legally binding political declaration. Signed by governments, companies, civil societies and indigenous organisations, it aims to halve natural forest loss by 2020 and end forest loss in 2030. It also aims to restore forest and croplands.	The associated voluntary action agenda provides guidelines as to what companies can do to achieve these goals. The Forest Declaration update provides updates on progress (http://forestdeclaration.org/)
Companies with a disclosed zero deforestation agenda	All the companies that have a clear timeline for zero deforestation or zero net deforestation	"Zero net deforestation" acknowledges that some forest loss could be offset by forest restoration. Zero net deforestation is not synonymous with a total prohibition of forest clearing. Rather, it leaves room for change in the configuration of the land-use mosaic, provided the net quantity, quality and carbon density of forests is maintained. It recognises that, in some circumstances, conversion of forests in one site may contribute to the sustainable development and conservation of the wider landscape (e.g. reducing livestock grazing in a protected area may require conversion of forest areas in the buffer zone to provide farmland to local communities).
Members of the Consumer Goods Forum	Industry network gathering retailers and manufacturers. In November 2010, its Board of Directors agreed to a resolution on deforestation, with the aim of achieving zero net deforestation by 2020.	The group's resolution is non-binding. It works in partnership with the various other initiatives e.g. TFA 2020. The Consumer Goods Forum sets out a range of potentially supportive measures backed by guidelines that members may voluntarily implement e.g. support for the use of certified sustainable palm oil

Source: Initiatives mentioned

Front page photo credit

Photo : Yann Arthus-Bertrand

Field on hillsides of the Ksar valley, Tataouine governorate, Tunisia (33°08'N, 11°25'E).

This animal shape traced on the hillsides is a plot of land used for cultivating grain. The furrows and outline of the field, which is terraced, follow the contours of the ground and retain water from the rare but torrential rains. In this way runoff is limited, water is made available for farming, and the precious soil is preserved. Limiting soil erosion and gathering rainwater are top priorities for the Tunisian government.

The country loses more than 37,000 acres (15,000 ha) of soil per year, and it is estimated that close to 654m cubic yards (500m m3) of rainwater enter the sea through runoff. All over Africa there is a significant risk of soil degradation. Population growth, and poverty in certain regions, are raising fears that large areas of forest will be felled to meet demand for food, fuel, medicines, and building land. The soil thus exposed would be in greater danger of being eroded.

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Glossary

AFOLU: ‘AFOLU-related investments’ refers to land and natural resource (soils, plant, animal) related management investments, including management of agricultural land (cropland, farmland), livestock, forestry, pasture land, wetland and mangrove management and management of coastal and riverine fisheries. It includes management of inputs to and outputs from landscapes and aquatic systems intended to meet demands for food, fuel and fibre. It also includes associated infrastructure and technologies.

Agroforestry: Spatial or temporal combination of trees and crops or animals, with biological, social and economic synergies.

This provides higher productivity, reduced risks, a more stable income for local populations, and positive environmental impacts.

Tropical agroforestry projects typically combine forestry activities (timber, industrial tree crops or fruit trees) with cattle, food crops, or niche export crops.

Biodiversity: Quantity and variability among living organisms within species (genetic diversity), between species and between ecosystems. Biodiversity is not itself an ecosystem service but underpins the supply of services. The value placed on biodiversity for its own sake is captured under the cultural ecosystem service called “ethical values”.

Conservation finance: A mechanism through which a financial investment into an ecosystem is made – directly or indirectly through an intermediary – that aims to conserve the values of the ecosystem for the long term.

Deforestation: The direct human-induced conversion of forested land to non-forested land

Degradation: Reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of land resulting from land uses or processes, including processes arising from human activities and habitation patterns such as:

1. Soil erosion caused by wind and/or water;
2. Deterioration of the physical, chemical and biological or economic properties of soil; and
3. Long-term loss of natural vegetation;

Degraded land: Areas that have had their natural forest cover cleared or significantly diminished, and now contain low levels of biodiversity and low stocks of carbon (below 40 tonnes per ha). These lands do not necessarily have poor soil quality; rather they are “degraded” relative to forest that was there before. In practice, the criteria used to define, for instance, ‘degraded’ landscapes remain ambiguous, with, for example, practical implications for the many companies committed to prioritising the use of degraded lands for the production of agricultural commodities without new deforestation.

Desertification: Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors including climatic variation and human activities. When land degradation occurs in the world's drylands, it often creates desert-like conditions. Land degradation occurs everywhere, but is defined as desertification when it occurs in the drylands.

Ecosystem: An ecosystem is a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit. Examples of ecosystems include deserts, coral reefs, wetlands, rainforests, boreal forests, grasslands, urban parks and cultivated farmlands. Ecosystems can be relatively undisturbed by people, such as virgin rainforests, or can be modified by human activity.

Ecosystem services: Ecosystem services are the benefits that people obtain from ecosystems. Examples include food, freshwater, timber, climate regulation, protection from natural hazards, erosion control, pharmaceutical ingredients and recreation.

Eco-tourism: Responsible travel that strives to be low-impact with the purpose of educating the traveller; providing funds for ecological conservation; directly benefiting the economic development and political empowerment of local communities; and fostering respect for different cultures and for human rights

Forest: Despite much discussion, there remains confusion over the definition of the term "forest". A commonly used definition is that of 10% tree cover. However, this one-size-fits-all approach does not take into consideration the local context and how forests differ in their ecological structure across and between continents. One way of moving beyond this arbitrary definition, and classifying forests according to their value, is to define a forest using high conservation value and high carbon stock toolkits.

Forest landscape restoration: Forest landscape restoration (FLR) is usually defined as a process to regain ecological integrity and enhance human well-being in deforested or degraded landscapes within biomes with the natural potential to support trees. Importantly, the goal of FLR is to enhance native ecosystem functions. It should restore ecological and economic productivity without causing any loss or conversion of natural forests, grasslands or other ecosystems. FLR does not call for increasing tree cover beyond what would be ecologically appropriate for a particular location.

Green infrastructure: Planned and managed natural and semi-natural systems which can provide more categories of benefits, when compared to traditional grey infrastructure. GI solutions can enhance or even replace a functionality that is traditionally provided by man-made structures (e.g. constructed wetland in lieu of an industrial wastewater treatment plant).

Integrated landscape management: Long-term collaboration among different groups of land managers and stakeholders to achieve the multiple objectives required from the landscape, including agricultural production, provision of ecosystem services, protection of biodiversity, and local livelihoods, health and well-

being. Stakeholders seek to solve shared problems or capitalise on new opportunities through technical, ecological, market, social or policy means that reduce trade-offs and strengthen synergies among different landscape objectives.

Landscape: A landscape is a socio-ecological land system composed of a mosaic of natural and/or human-modified ecosystems whose configuration reflects the past and present activities of the area.

Landscape approach: The landscape approach refers to a combined geographical and socio-economic approach to managing land, water, and forest resources, which together form the foundation for meeting the goals of food security and inclusive green growth. It offers a different take on land-use planning by connecting protected areas, forest, woodlands, agro-silvopastoral lands, croplands, and irrigated agricultural lands.

Land degradation: Any reduction or loss in the biological or economic productive capacity of the land resource base. It is generally caused by human activities, exacerbated by natural processes, and often magnified by and closely intertwined with climate change and biodiversity loss.

Land cover: Six categories are used by IPCC to describe land cover (forest land, grassland, cropland, wetlands, settlements and other land) plus a seventh category of perennial crops, i.e. multi-annual crops whose stem is usually not annually harvested such as short rotation coppice and oil palm.

Land use change: Change in the purpose for which land is used by humans (e.g. between crop land, grass land, forest land, wetland, and industrial land).

Land-use change impacts: Emissions and removals due to land-use change.

Life cycle assessment (LCA): Compilation and evaluation of inputs, outputs and potential environmental impacts of a product system throughout its life cycle (ISO 14044:2006).

Locally controlled forestry: This refers to the local right of forest-owning families and communities to make decisions on commercial forest management and land use, with secure tenure rights, freedom of association and access to markets and technology.

Mitigation banking: The restoration, creation, enhancement, or preservation of a wetland, stream, or other wildlife habitat area that is undertaken for the purpose of offsetting the anticipated loss of comparable resources due to development.

Natural Capital: World's stocks of natural assets which include geology, soil, air, water and all living things.

Payments for Ecosystem Services: A voluntary transaction in which: 1) a well-defined environmental service (ES), or a form of land use likely to secure that service 2) is bought by at least one ES buyer; 3) from a minimum of one ES provider; and 4) if, and only if, the provider continues to supply that service (conditionality). (UNEP, 2008).

REDD: The UN-REDD Programme is the United Nations' collaborative initiative on reducing emissions from deforestation and forest degradation (REDD) in developing countries. The programme was launched in September 2008 to assist developing countries to prepare and implement national REDD+ strategies. It is an inter-agency programme of the Food and Agriculture Organisation of the United Nations (FAO), the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP), and builds on the convening role and technical expertise of these UN agencies. The programme currently supports REDD+ readiness activities in 53 (as of June 2014) partner countries across Africa, Asia-Pacific and Latin America.

REDD+: REDD+ is a mechanism being developed by the Parties to the United Nations Framework Convention on Climate Change to reward developing countries for reducing emissions from deforestation and forest degradation. It will create an incentive for developing countries to protect, better manage and wisely use their forest resources, and in so doing contribute to conserving biodiversity and to the global fight against climate change. In addition to the environmental benefits, REDD+ also offers social and economic benefits. Currently, it is being integrated into green economy strategies.

Six countries have comprehensive policies targeting transformational change for REDD+ (Brazil, DRC, Guyana, Indonesia, Tanzania, and Vietnam). The critical issues that hinder countries in achieving REDD+ are related to policy implementation: the lack of grievance procedures and lack of operationalised financial systems.

Rehabilitation: Process aimed at regenerating the capacity of the land to provide a certain range of ecosystem goods and services. Land rehabilitation does not necessarily return the land to its pre-disturbance conditions.

Remediation: Removal of pollution or contaminants from water (both ground water and surface water) and soil.

Renovation: Complete restoration of land to its previous condition, operation and capacity.

Restoration is a process that initiates or accelerates the recovery of a degraded terrestrial ecosystem with respect to its health, integrity and sustainability. Land restoration aims to return an area of land to a close approximation of its condition prior to disturbance.

Sustainable land management: land-use practices that ensure that land, water, and vegetation adequately support land-based production systems for both current and future generations. SLM aims to enhance the economic and social well-being of affected communities, sustain ecosystem services and strengthen adaptive capacity to manage climate change.

Sustainable agriculture: Efficient production of safe, high-quality agricultural products, in a way that protects and improves the natural environment, the social

and economic conditions of farmers, their employees and local communities, and safeguards the health and welfare of all farmed species.

Source: UNCCD, SAIPlatform, Global canopy Programme, Mükker, Global Landscapes Forum, EIB, Scherr, Crédit Suisse, Nature Conservancy

Research ratings and important disclosures

Disclosure checklist - Potential conflict of interests

Stock	ISIN	Disclosure (See Below)	Currency	Price
AAK	SE0001493776	nothing to disclose	SEK	605.00
Adidas Group	DE000A1EWWW0	nothing to disclose	EUR	96.33
ADM TRONICS UNLIMITED	US0010041004	nothing to disclose	USD	0.18
Ahlstrom	FI0009010391	nothing to disclose	EUR	7.68
Ahold	NL0010672325	nothing to disclose	EUR	20.11
AK HOLDINGS	KR7006840003	nothing to disclose	KRW	57900
ALLIANT ENERGY CORP.	US0188021085	nothing to disclose	USD	70.83
Anadarko	US035111070	nothing to disclose	USD	107.39
April Group	FR0004037125	nothing to disclose	EUR	11.56
Arcadis	NL0006237562	nothing to disclose	EUR	15.39
Aryzta	CH0043238366	nothing to disclose	CHF	49.16
ASA RESOURCE GROUP	GB00B0GN3470	nothing to disclose	GBP	0.65
Austrian Post	AT0000APOST4	nothing to disclose	EUR	34.65
Barry Callebaut	CH0009002962	nothing to disclose	CHF	1,086.00
BHP Billiton	GB0000566504	nothing to disclose	GBP	1,825.00
Bonduelle	FR0000063935	nothing to disclose	EUR	25.77
BP	GB0007980591	nothing to disclose	GBP	356.00
Carrefour	FR0000120172	nothing to disclose	EUR	25.34
Chr. Hansen	DK0060227585	nothing to disclose	DKK	419.20
COCA COLA	US1912161007	nothing to disclose	USD	44.81
COCA-COLA HBC (CDI)	CH0198251305	nothing to disclose	GBP	1396
CRH	IE0001827041	nothing to disclose	EUR	24.80
Danone	FR0000120644	nothing to disclose	EUR	63.62
Delhaize	BE0003562700	nothing to disclose	EUR	93.42
Deutsche Post	DE0005552004	nothing to disclose	EUR	22.91
Dow Chemicals	US2605431038	nothing to disclose	USD	49.06
DUKE ENERGY	US26441C2044	nothing to disclose	USD	77.51
Ebro Foods	ES0112501012	nothing to disclose	EUR	18.92
EDP Renovaveis	ES0127797019	nothing to disclose	EUR	6.40
Elia	BE0003822393	nothing to disclose	EUR	43.43
Emmi	CH0012829898	nothing to disclose	CHF	469.50
Enagas	ES0130960018	nothing to disclose	EUR	25.50
ENI	IT0003132476	14, 16, 18	EUR	13.40
ERG	IT0001157020	nothing to disclose	EUR	11.15
Evolva	CH0021218067	8, 9	CHF	0.97
Fortum	FI0009007132	nothing to disclose	EUR	13.19
Galp	PTGALOAM0009	nothing to disclose	EUR	10.89
GALP ENERGIA SGPS	PTGALOAM0009	nothing to disclose	EUR	10.885
HOCHTIEF	DE0006070006	nothing to disclose	EUR	100.80
Holmen	SE0000109290	nothing to disclose	SEK	250.90
Hugo Boss	DE000A1PHFF7	14, 16, 18	EUR	54.01
Hyundai Motor	KR7005380001	nothing to disclose	KRW	
Iberdrola	ES0144580Y14	nothing to disclose	EUR	5.95
Jeronimo Martins	PTJMT0AE0001	nothing to disclose	EUR	13.68
Kering	FR0000121485	9	EUR	163.05
Kia Motors	KR7000270009	nothing to disclose	KRW	
KWS Saat	DE0007074007	nothing to disclose	EUR	285.00
Lenzing	AT0000644505	nothing to disclose	EUR	61.95
Lindt & Sprüngli	CH0010570759	nothing to disclose	CHF	68,980.00
Mosaic	IS0000010817	nothing to disclose	ISK	17.50
Nestlé	CH0038863350	nothing to disclose	CHF	71.50
Nordex	DE000A0D6554	nothing to disclose	EUR	26.42
OLAM INTERNATIONAL	SG1Q75923504	nothing to disclose	SGD	1.74
Orior	CH0111677362	6, 8	CHF	61.10
Parmalat	IT0003826473	nothing to disclose	EUR	2.42
Royal Dutch Shell	GB00B03MLX29	nothing to disclose	EUR	21.89
SCA	SE0000112724	nothing to disclose	SEK	253.40
Skanska	SE0000113250	nothing to disclose	SEK	183.30
SNAM	IT0003153415	14, 16, 18	EUR	4.91
SOCFIN DEAD - 06/09/06	BE0003500080	nothing to disclose	EUR	383
Statoil	NO0010096985	nothing to disclose	NOK	131.80
Stora Enso	FI0009005961	nothing to disclose	EUR	7.67
Suedzucker	DE0007297004	nothing to disclose	EUR	13.58
SUZANO HOLDING PN	BRNEMOACNPA9	nothing to disclose	BRL	10.02
Symrise	DE000SYM9999	nothing to disclose	EUR	55.49
Syngenta	CH0011037469	nothing to disclose	CHF	409.90
Tesco	GB0008847096	nothing to disclose	GBP	195.20
Total	FR0000120271	nothing to disclose	EUR	42.11
Unilever	NL0000009355	nothing to disclose	EUR	39.93
UPM	FI0009005987	6	EUR	15.44
Vallourec	FR0000120354	nothing to disclose	EUR	7.08
Viscofan	ES0184262212	nothing to disclose	EUR	52.14
voestalpine	AT0000937503	nothing to disclose	EUR	28.83
WALMART STORES (BOG)	US9311421039	nothing to disclose	COP	153480
YIT	FI0009800643	nothing to disclose	EUR	5.13

Source: Factset closing prices of 09/03/2016

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Total	100.0%	0.0%

Source: Kepler Cheuvreux

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