Arij van Berkel, Ph.D.
SVP, Group Director

TODAY'S WEBINAR WILL BEGIN SHORTLY

Greenwashing or Profitable Corporate Social Responsibility? Making Strategic Sense of Carbon Credits

QUESTIONS?

Use the questions box on your screen

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Lux Research | The Deciding Factor

GREENWASHING OR PROFITABLE CORPORATE SOCIAL RESPONSIBILITY? MAKING STRATEGIC SENSE OF CARBON CREDITS

Arij van Berkel, Ph.D.
SVP, Group Director

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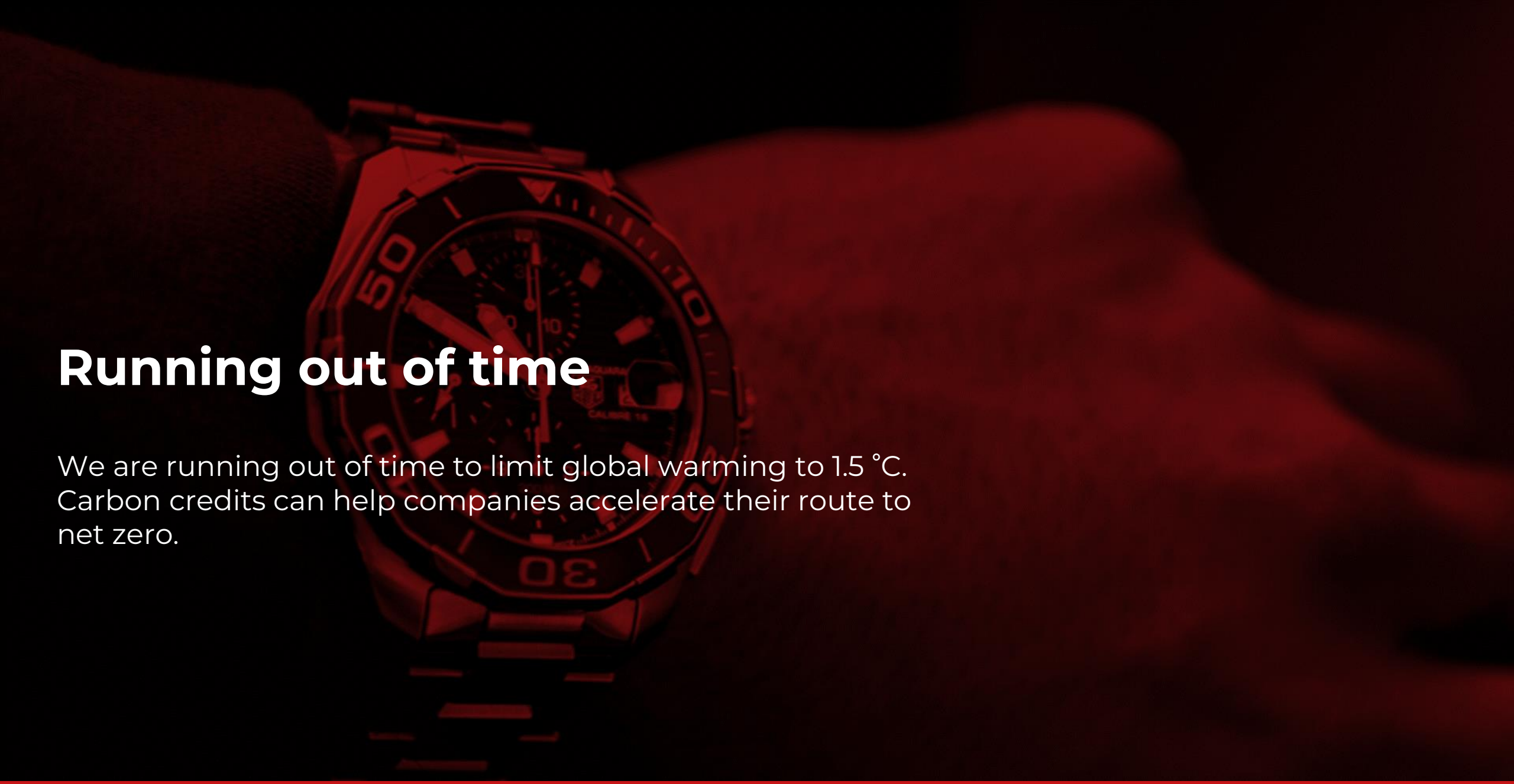
Agenda

1 Running out of time

2 Carbon credits as a digital attribute

3 Walking the tightrope

4 Outlook



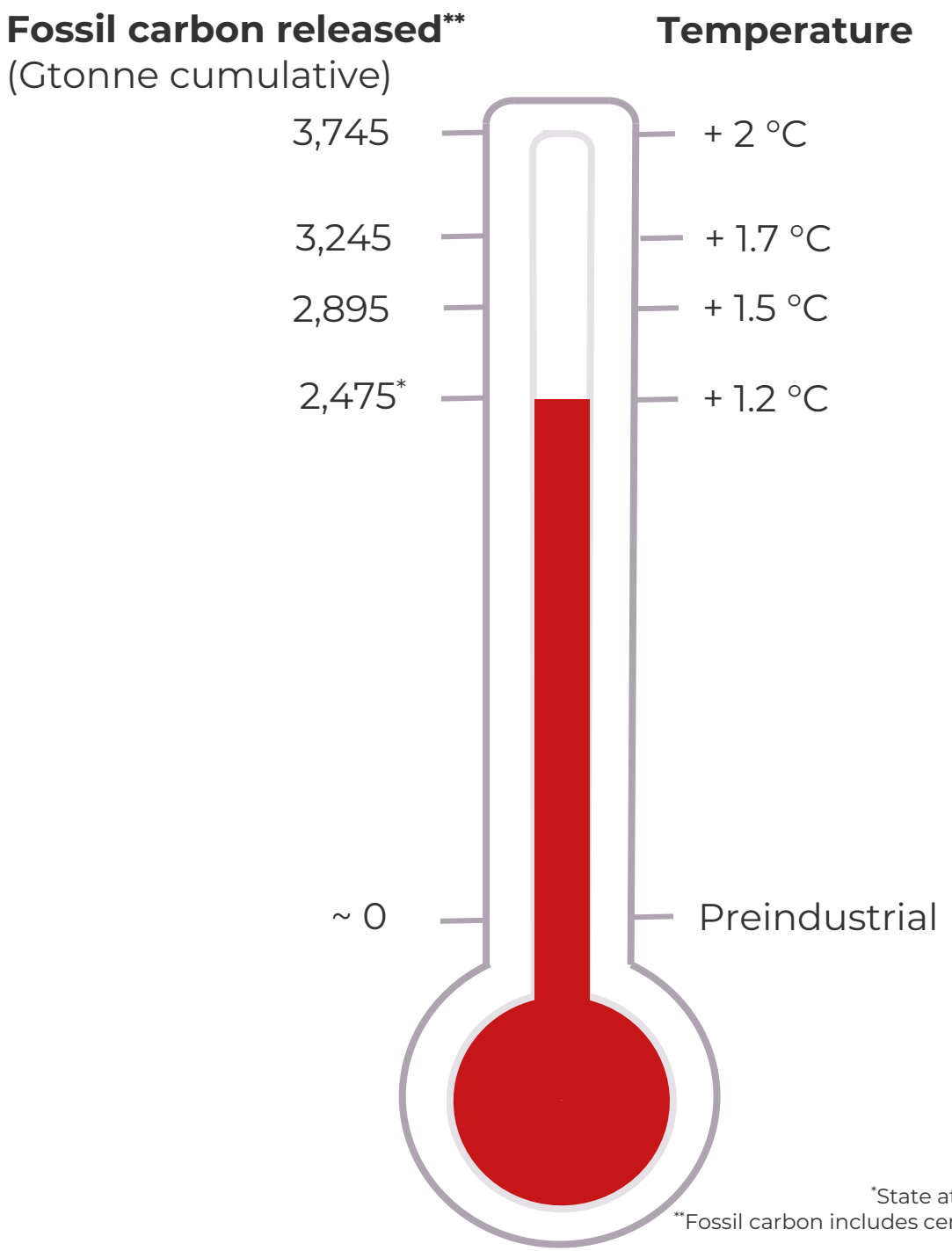
Running out of time

We are running out of time to limit global warming to 1.5 °C. Carbon credits can help companies accelerate their route to net zero.

Near the limit

The world's fossil carbon budget is running out. To limit global warming to 1.5 ˚C, not more than 2,895 Gtonne of CO_2 can be released from fossil sources.

We're less than 420 Gtonne away from that limit.



*State at the end of 2020.
**Fossil carbon includes cement production,

Just 10 more years

The remaining budget lasts until 2033.

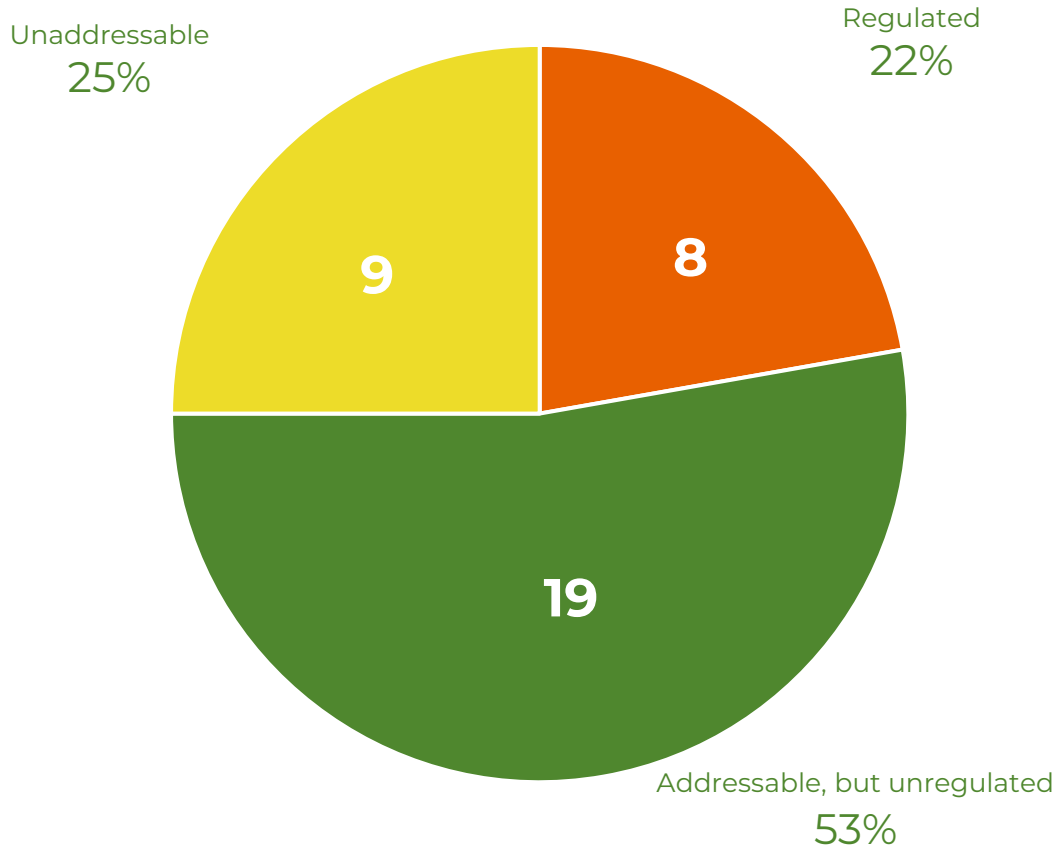
35 Gtonne/a

In 2020, a year with record low fossil fuel consumption, the world released 35 Gtonne of fossil CO_2.
At that rate, the remaining budget will last only 10 more years.

Government policies address only 1/5 of fossil emissions

- **Regulated emissions** are part of stated government policies for 2030 like renewable energy targets or proposed caps in cap-and-trade systems.
- **Addressable emissions** are emissions that **have known solutions** that can be implemented by 2030. Those solutions may be too expensive, though.
- **Unaddressable emissions** are emissions for which **there is no solution** that can be implemented by 2030.

Global fossil emissions Gtonne/a*



** The distribution is calculated on 2019 data; therefore, it adds up to a rounded 36 Gtonne, as opposed to 35 Gtonne for 2020.*

Data: IEA, Global Carbon project, and Lux Research

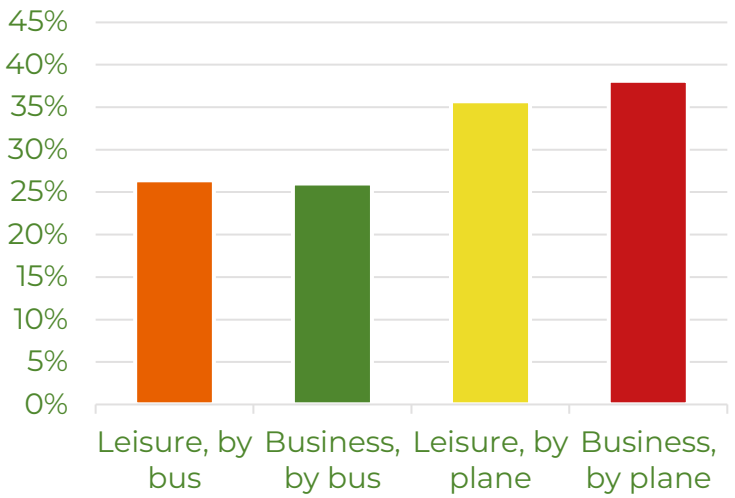
EMISSIONS REDUCTION AS BUSINESS STRATEGY

Self-regulation *is* the competitive advantage toward all stakeholders

Customers

Providing product options

People opting out of carbon offsets*



Shareholders

Boosting resilience

Emitting CO_2 is a business risk.

Several studies show that **companies with high Scope 1 emissions pay an average 23 base points extra** on debt funding since the Paris Agreement.

Society

License to operate

The number of **cases of citizens suing companies** over climate impact rose from 105 in 2015 to 178 in 2021, **a CAGR of 9.2%.****

Moreover, the court ruled in favor of the claim in 58% of cases and neutral in 32%.

Companies won only 10% of the cases.

*Study performed by Fraunhofer ISE, 2017.
**Centre for Climate Change, Economics and Policy.

EMISSIONS REDUCTION AS BUSINESS STRATEGY

Affordable, scalable, and actionable options needed

System change takes time

- Most "proper" decarbonization requires a system change.
- System change is expensive and slow.
- It is all or nothing, without ability to scale gradually.

LUX TAKE

System change is inevitable, and companies must work on it in the triple helix of industry, government, and academia. However, we cannot wait for system change any longer. Bridging solutions are needed.

Example: Climate-neutral LNG

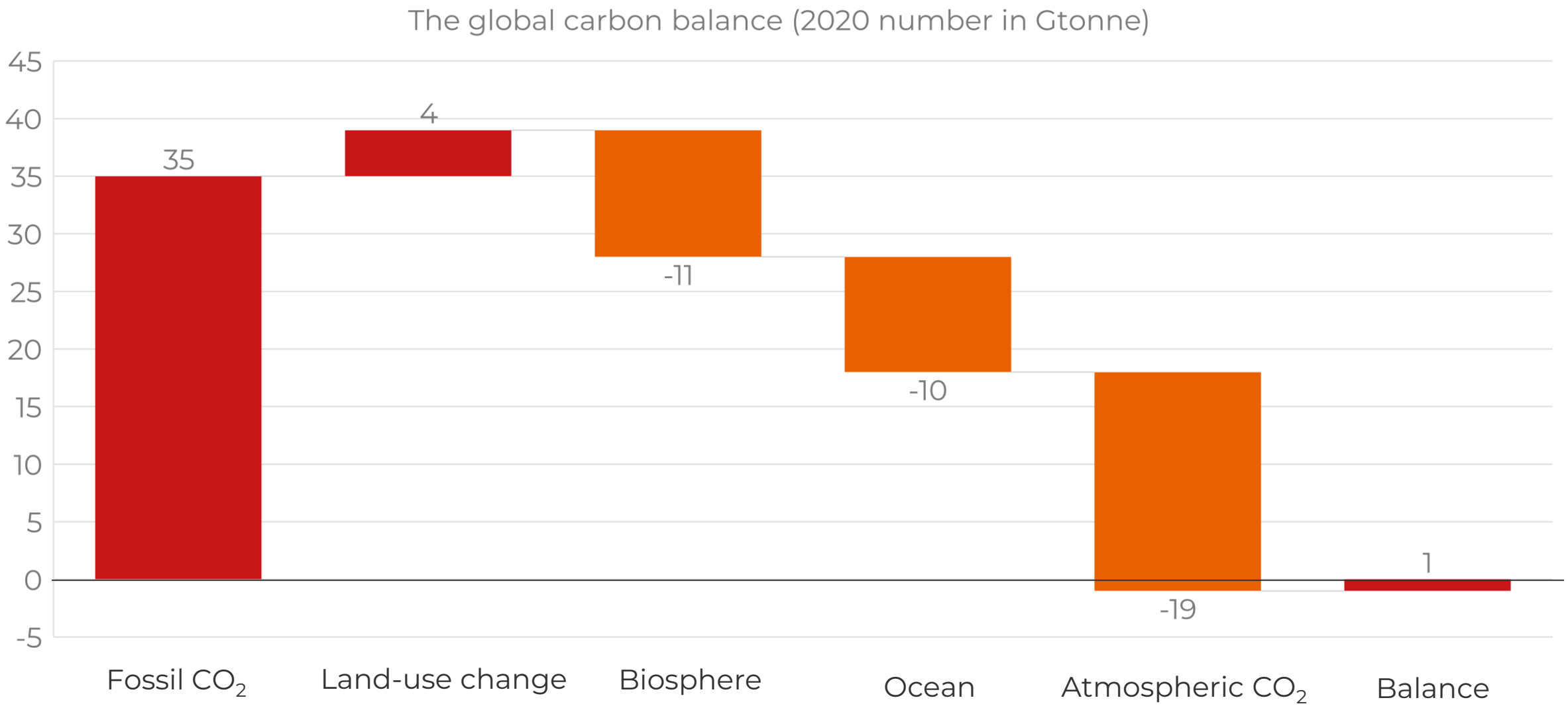
PetroChina

Petrochina bought climate-neutral LNG from Shell in February 2021.

This is LNG with associated carbon credits to offset the future emissions of burning the LNG.

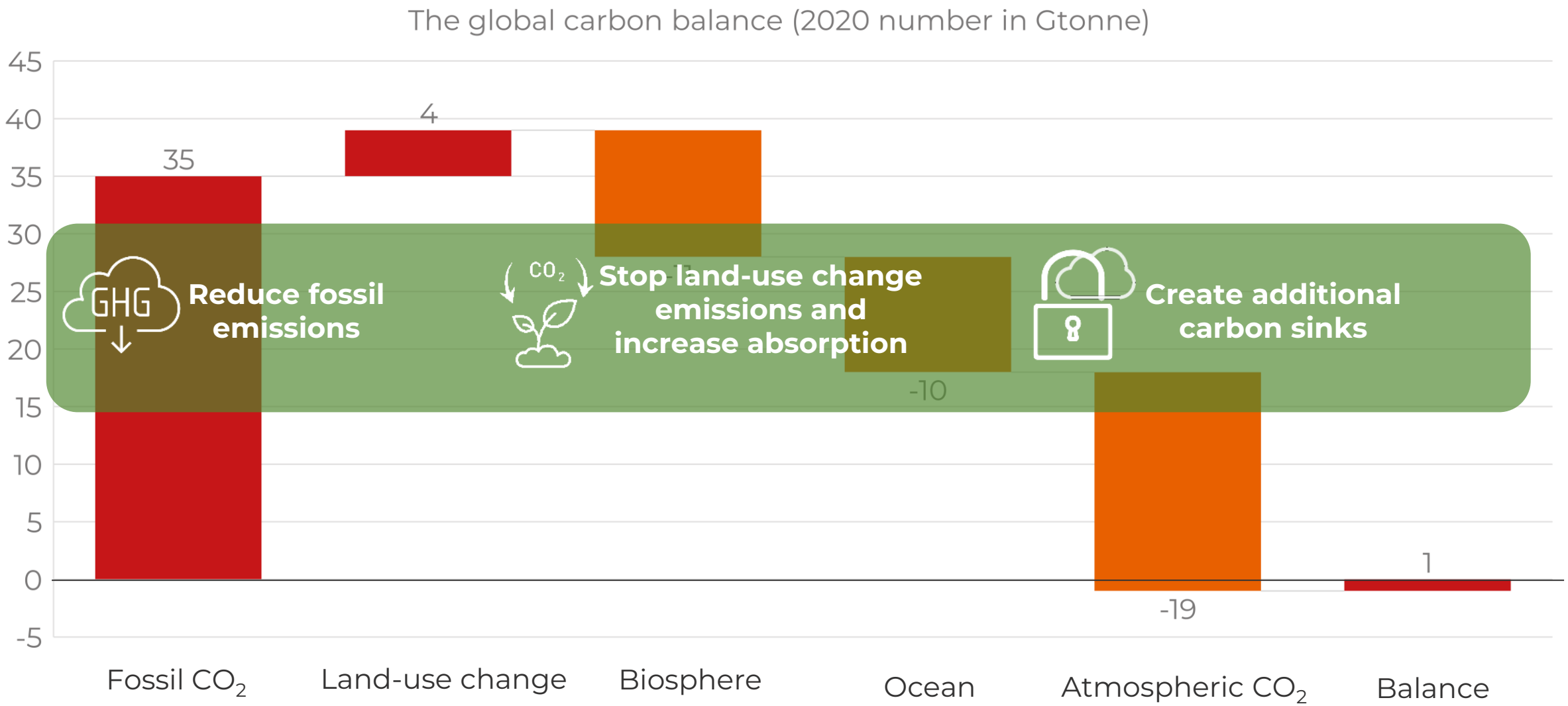
Climate-neutral LNG can be supplied immediately. The alternative of switching to green hydrogen requires a full value chain development, which takes years.

Fortunately, we have more knobs to turn

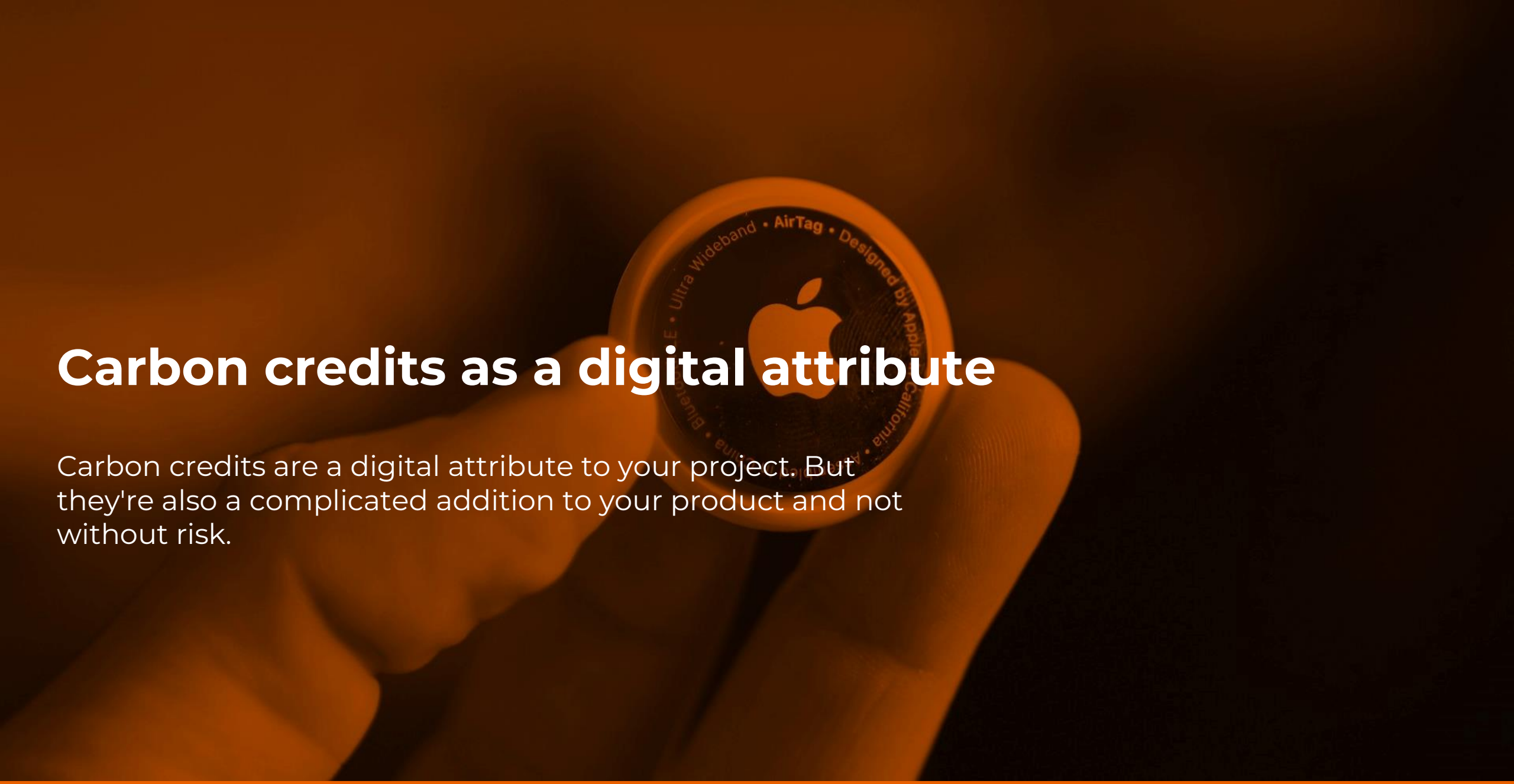


Data source: Global Carbon Project

Fortunately, we have more knobs to turn



Data source: Global Carbon Project



Carbon credits as a digital attribute

Carbon credits are a digital attribute to your project. But they're also a complicated addition to your product and not without risk.

Let's get precise about carbon credits and offsets

Carbon credit

A (digital) certificate showing your company has paid to remove 1 tonne of CO_2 from the atmosphere or reduce 1 tonne of CO_2 emissions.

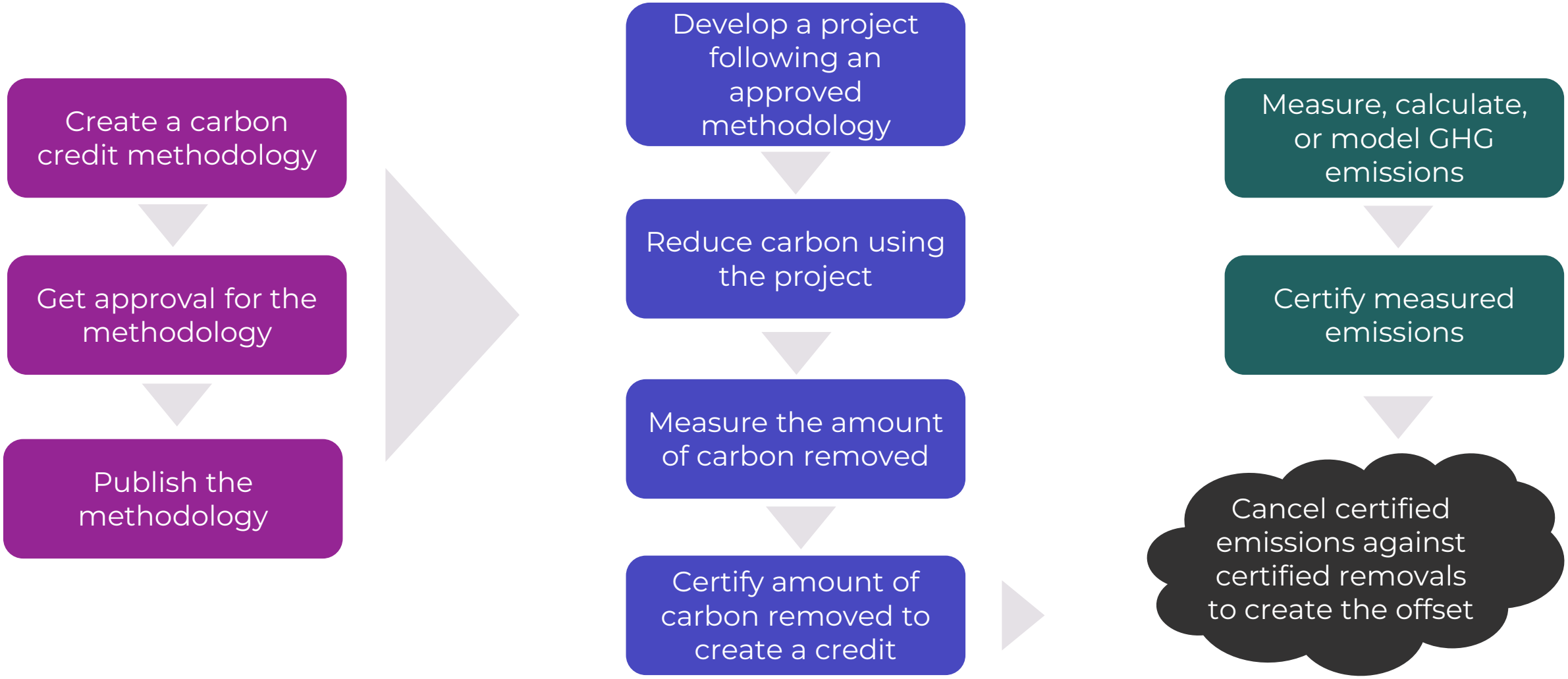
Offset
A carbon credit is used to compensate an emission. This creates the carbon offset. The credit and the emission are both canceled.

Carbon emission

A (digital) certificate showing your company emitted 1 tonne of CO_2 into the atmosphere as verified independently.

HOW TO MAKE THIS HAPPEN?

The carbon offset value chain



HOW TO MAKE THIS HAPPEN?

The carbon offset value chain

Four major standards organizations

Verified Carbon Standard

Gold Standard for the Global Goals

American Carbon Registry at WINROCK INTERNATIONAL

CLIMATE ACTION RESERVE

Hundreds of project organizations

GREEN CHOICE

CarbonGreen INVESTMENTS Guernsey

Greenoxx greening the future

BCP

At least 40 verification and validation bodies

SCSglobal SERVICES Setting the standard for sustainability

KPMG

TÜV SÜD

TÜVNORD

ASTER GLOBAL ENVIRONMENTAL SOLUTIONS

CQC

CEC

KBS

GHD

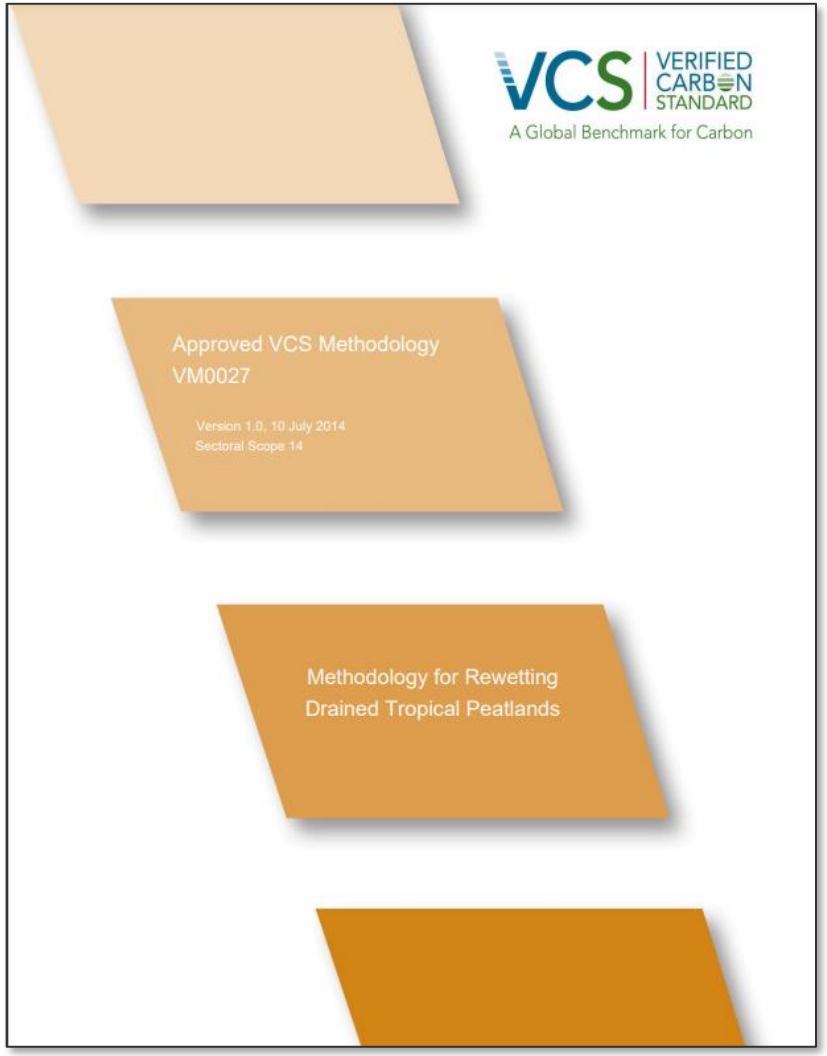
Example methodology: Rewetting drained tropical peatland

How it works:

- Peat formation is a natural way to store carbon.
- When peatland is drained, peat formation stops.
- Rewetting the peatland increases carbon storage.

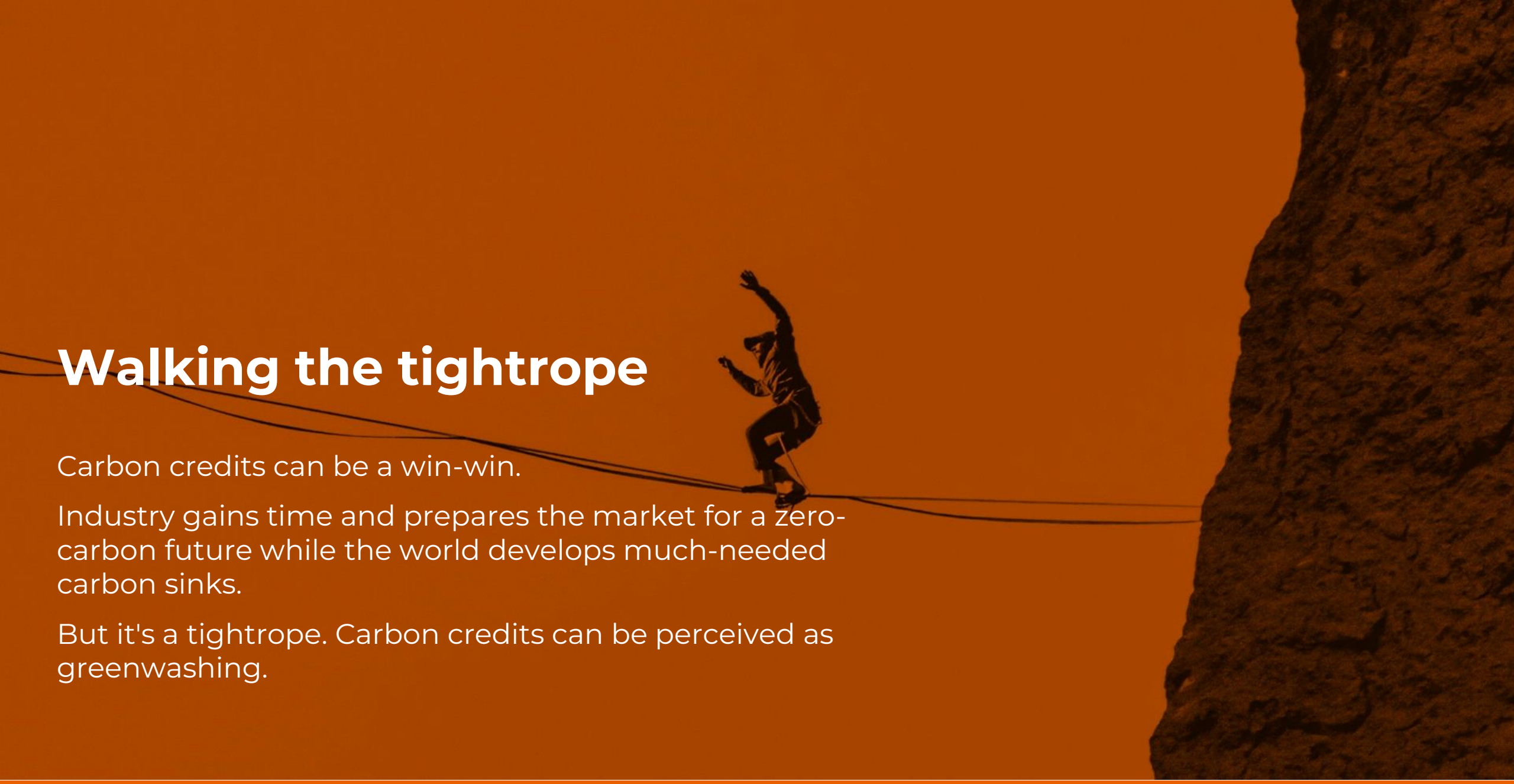
How to quantify the carbon credit:

- Establish a baseline peat formation.
- Create a digital terrain model through extensive survey (e.g., using lidar).
- Measure peat thickness by sampling.
- Acquire water flow data with daily (or more frequent) measurements.
- Feed everything into a computer model (SIMGRO).
- Simulate scenarios before and after the project.
- Conduct error analysis on all the above.



Source: Verra repository of approved methodologies; click on image for the original document.

Walking the tightrope



Carbon credits can be a win-win.

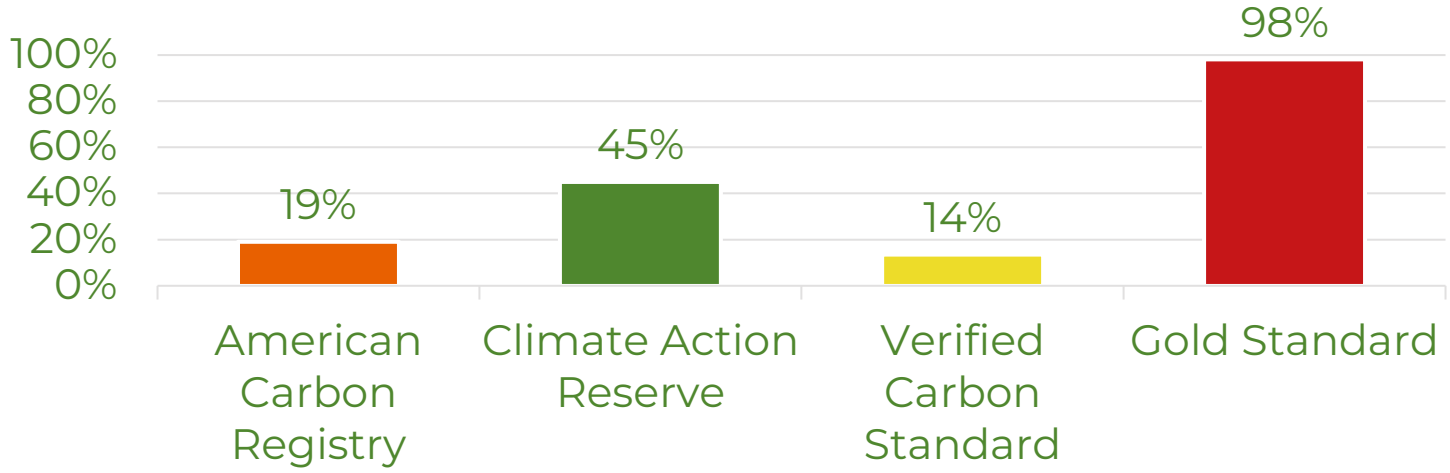
Industry gains time and prepares the market for a zero-carbon future while the world develops much-needed carbon sinks.

But it's a tightrope. Carbon credits can be perceived as greenwashing.

Emissions reduction

Create carbon credits by reducing unregulated emissions.

Share in total carbon credits: Emissions reduction*



Risks:

- Regulation can catch up.
- Public perception is not favorable: “no-brainers.”
- Quantification often difficult: what-if reasoning.

Advantages:

- Many options exist.
- Usually good business case: “no-brainers.”
- Quick and scalable implementation.

*Based on Lux’s classification of public registry data; carbon credits issued between January 2020 and March 2022.

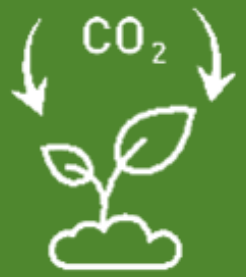
Example project: Improved cookstoves in Uganda

impactcarbon

- More than 90% of Ugandan households use solid fuel for cooking.
- Impactcarbon's stove saves 50% on charcoal: USD 100 per family per year.
- More than 500,000 units sold to date, made affordable by carbon credit revenue.
- Annual credits: 74,000.

LUX TAKE

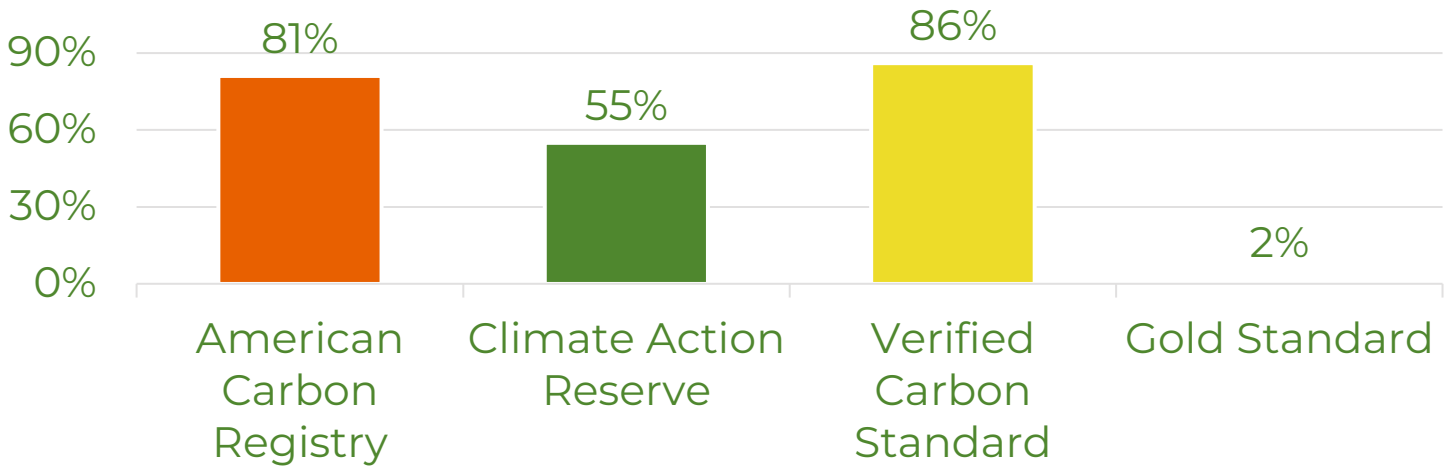
This project has a high impact on several of the U.N. Sustainable Development Goals. It is relatively easy to implement and scale and also has an indirect impact to prevent deforestation. **Clients should consider these types of energy-efficiency projects rather than developed-economy projects.**



Dynamic storage

Change a system (usually natural) so that it starts to store more carbon than it releases.

Share in total carbon credits: Dynamic storage*



Risks:

- Regulation can catch up.
- Quantification often difficult: heavy dependence on models.
- Disastrous events can destroy the credits: forest fires.

Advantages:

- Usually combines with natural development.
- Scalable implementation (not so quick).
- Creates future carbon resources: biomass.

*Based on Lux's classification of public registry data; carbon credits issued between January 2020 and March 2022.

Example project: Turning logging forest into a nature reserve

NATURE CONSERVANCY CANADA

- Nature Conservancy Canada acquired 54,792 ha of commercial logging forest in 2008.
- It changed the business model from selling timber to selling carbon credits.
- Carbon credits are generated through forest management that ensures biodiversity and carbon retention.
- Annual credits: 124,847.

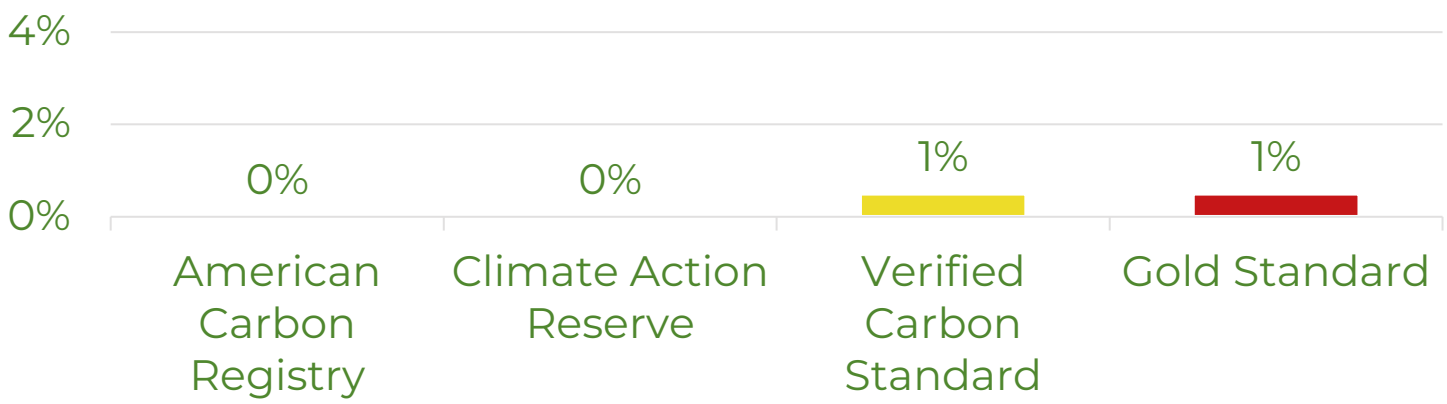
LUX TAKE

Carbon credits now offer an alternative business model to forestry when applied in areas of high value for biodiversity. This type of project enjoys broad public support but has the inherent risks of dynamic carbon storage. **Proceed with caution.**

Permanent sinks

Create a systems that stores carbon "permanently" in the ground or in minerals

Share in total carbon credits: Permanent sinks*



Risks:

- Public perception: littering.
- Can be seen to perpetuate the fossil industry.
- Requires large investments: long-term play.

Advantages:

- Usually very robust: the carbon stays put.
- Potential for very large volumes.
- Can be combined with transformational change.

*Based on Lux's classification of public registry data; carbon credits issued between January 2020 and March 2022.

Example project: Using CO_2 to cure cement faster and better

CARBON CURE

- Carbon Cure developed a method to cure cement using CO_2.
- The result is faster-curing, stronger cement.
- The method requires investments in equipment on the building site.
- Carbon Cure has an approved carbon credit methodology with VCS but no projects yet.
- Annual credits: 0.

LUX TAKE

Storing CO_2 in cement is a very reliable way of sequestering carbon and much more scalable and easier to deploy than CCS. **Clients should consider developing project using this methodology.**

CCS: carbon capture and storage

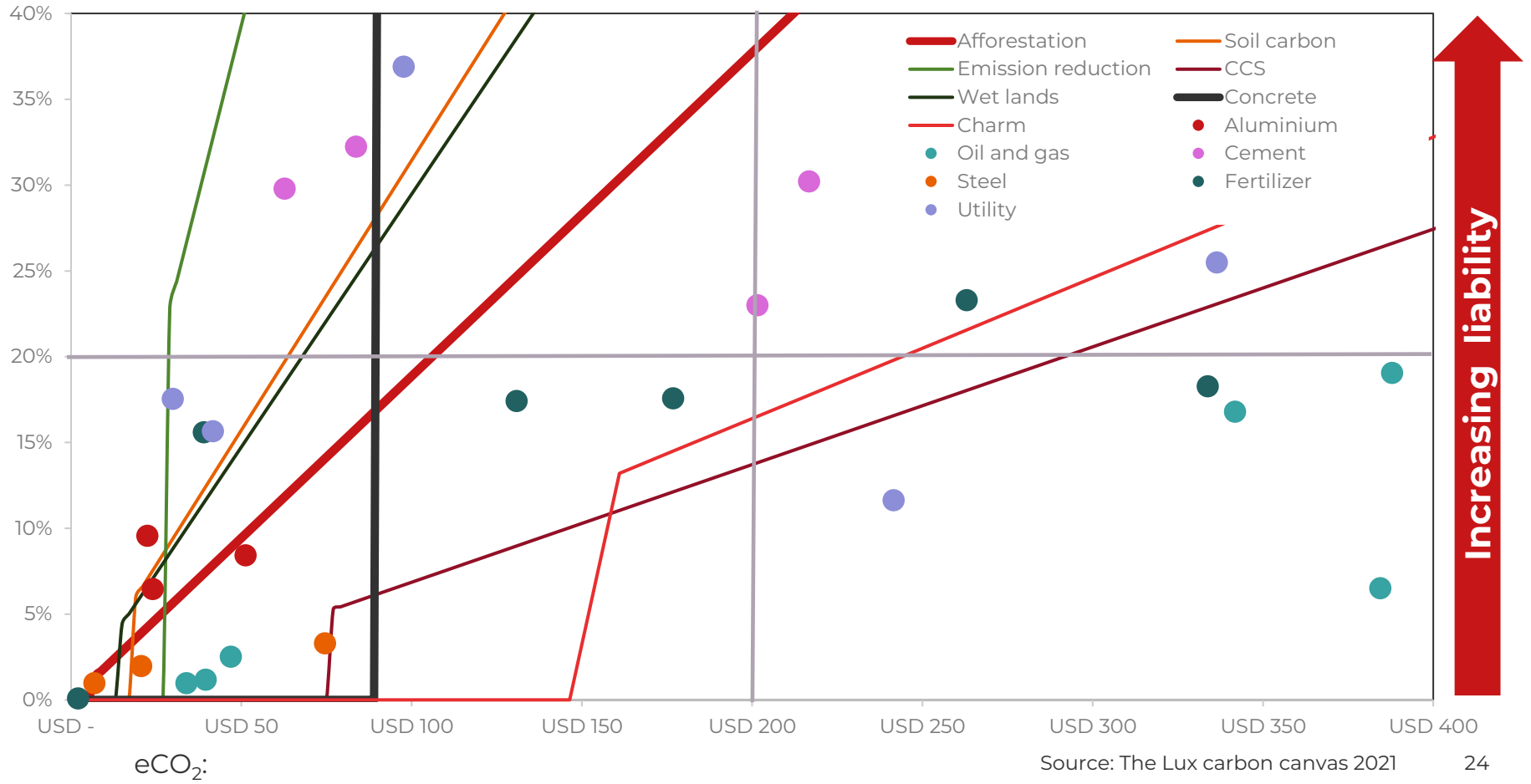
Consider the liability you are willing to accept

- Carbon credits create a liability.
- The higher you are on the canvas, the higher your liability.
- Stay under the line!

Example:
Concrete has very low liability. It is a solid way of keeping carbon out of the system, but expensive.

Afforestation is cheap but has a high liability.

Lux Carbon Canvas: 2021 Edition (zoomed in)
Available capital from sales (y-axis);
Critical carbon price USD/tonne eCO_2 (x-axis)



Source: The Lux carbon canvas 2021

Outlook

1. Industrial decarbonization requires more time than available in the 1.5 °C scenarios. These scenarios also require investments in carbon-negative solutions.

2. Carbon credits can create a competitive advantage toward all stakeholders and help fund much-needed carbon sinks and climate adaptation.
Carbon credits help ease the market gradually into higher prices for decarbonized products.

3. Carbon credits must be part of a full decarbonization strategy, or else they become greenwashing. You must balance liability and utility of carbon credits. That also requires a longer-term exit strategy (aka structural decarbonization).

Thank You

A link to the webinar recording will be emailed within 24–48 hours.

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