CREDITING MECHANISMS AND OFFSETS IN AN ETS

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Carbon markets and carbon assets

Two main types of carbon assets

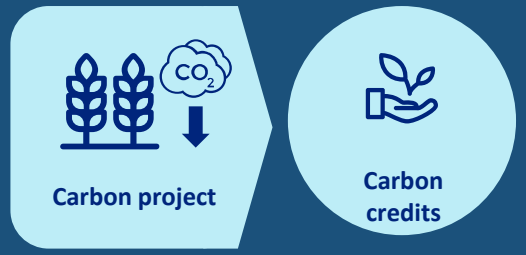
- **Carbon credits**: originate from the certified GHG emission reductions of carbon projects and represent 1 tCO2e that has been avoided or removed
- **Allowances**: issued by the regulatory body of an ETS and permit the allowance holder (regulated entity) to emit 1 tCO2e

Note: Energy Attribute Certificates (such as RECs) are not considered carbon assets

Two main types of carbon markets

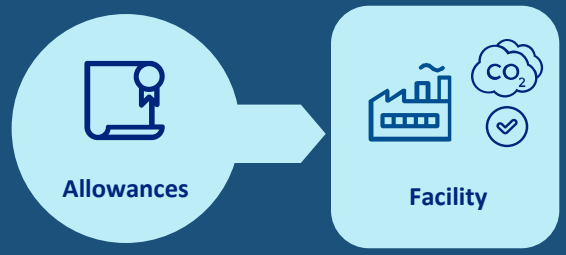
- **Voluntary** market: demand (for carbon credits only) responds to the voluntary effort of organisations to compensate for its unavoidable GHG emissions footprint
- **Compliance** markets (ETS, carbon taxes): demand (for allowances and sometimes carbon credits) is a response to a compliance obligation on GHG emission reductions

Distinguishing carbon credits from allowances



Carbon credits

- Issued to a carbon project developer (carbon credit owner) by an independent carbon standard or a government entity of a carbon crediting mechanism
- Represents the act of reducing, removing or avoiding 1 tCO2e of GHG emissions through having implemented the activities of a carbon project
- Mainly traded on the voluntary carbon market (VCM) but some carbon pricing compliance systems allow for carbon credits to be surrendered for compliance



Allowances

- Issued to regulated entities by the regulatory body of the compliance carbon pricing instrument
- Represents the right to emit 1 tCO2e under a compliance carbon pricing instrument
- Traded in the compliance carbon market only among regulated entities

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Zooming into different types of ETS

Cap and trade

- A cap and trade ETS sets an upper limit on carbon emissions.
- Each regulated entity has a permit to emit emissions (i.e. allowance) within this limit.
- A regulated entity can sell their excess allowance to another regulated entity who fails to stay within their emissions limit.
- Examples of cap and trade ETS: EU ETS, China National ETS, South Korea ETS

Baseline-and-credit

- An baseline-and-credit ETS set an emissions baseline from which it must achieve its reduction target.
- Credits are issued to facilities where emissions fall below the baseline.
- A regulated entity can sell the credits to another regulated entity who fail to achieve its reduction target.
- Example of baseline-and-credit ETS: Saitama ETS, Canada federal Output-Based Pricing System (OBPS)

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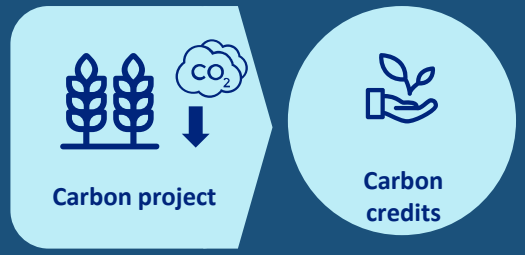
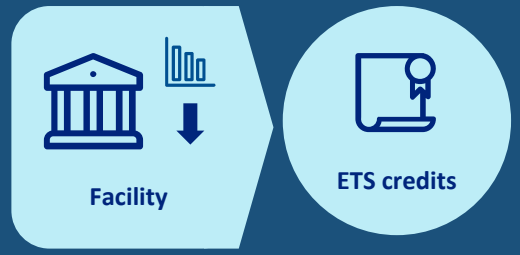
Carbon credits, ETS credits vs. allowances



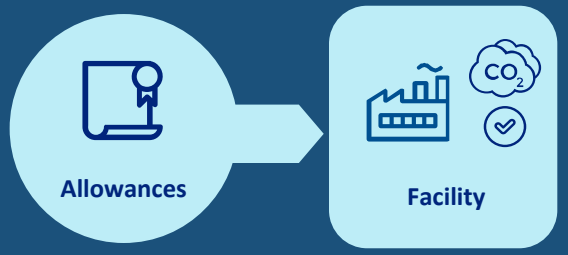
Carbon credits

- Are issued to a carbon project developer/owner by an independent standard or a government body
- Represent the act of reducing, removing or avoiding 1 tCO2e of GHG emissions through the activities of a project **outside the ETS covered sectors.**
- Can be used to offset an entity's ETS compliance obligation.



ETS credits

- ETS credits are issued by ETS regulatory body to a regulated entity which has reduced their emissions below the baseline.
- An ETS credit represent 1 tCO2e of emissions reduction within the ETS scope.
- Credits are traded **in the ETS** only among regulated entities looking to have their emissions stay below the ETS baseline.



Allowances

- Issued by the regulatory body of the compliance carbon pricing instrument
- Represent the right to emit 1 tCO2e under a compliance carbon pricing instrument, such as ETS or cap-and-trade system
- Allowances are **traded in the compliance carbon market** only among regulated entities

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Who certifies carbon credits?

Independent carbon standards

- Independent carbon standards e.g. **Gold Standard, Verra** (and their associated labels) issue carbon credits that are mainly used for voluntary purposes (e.g. corporate carbon neutrality claims). These standards currently issue the vast majority of credits on the market.
- However, some independent carbon credits are starting to become accepted under compliance instruments, blurring the lines between the voluntary and compliance carbon markets.

International crediting mechanisms

- International crediting mechanisms are administered by the **UNFCCC,** before under the **Kyoto Protocol (CDM)**, and now under the Paris Agreement (**Article 6.4 mechanism**). Although these mechanisms are created as a tool to help countries meet their commitments in international treaties (i.e. compliance), some credits have also been used for voluntary purposes.

National and subnational crediting mechanisms

- These mechanisms are often an integral part of regional, **national and subnational carbon pricing schemes** that allow carbon credits to be used for compliance.
- Most of these crediting mechanisms have been established in North America and East Asia and usually have a fully domestic focus in terms of project location and buyers. These credits are meant to be used under voluntary or compliance domestic programs**.**

Who are the major certification standards bodies?

International independent standards

Verified Carbon Standard

Gold Standard

GLOBAL CARBON COUNCIL

Regional & national standards

Woodland Carbon CO_2de

Australian Government
Clean Energy Regulator

CLIMATE ACTION RESERVE

American Carbon Registry

CCER
国家核证
自愿减排量

Technology- specific independent standards

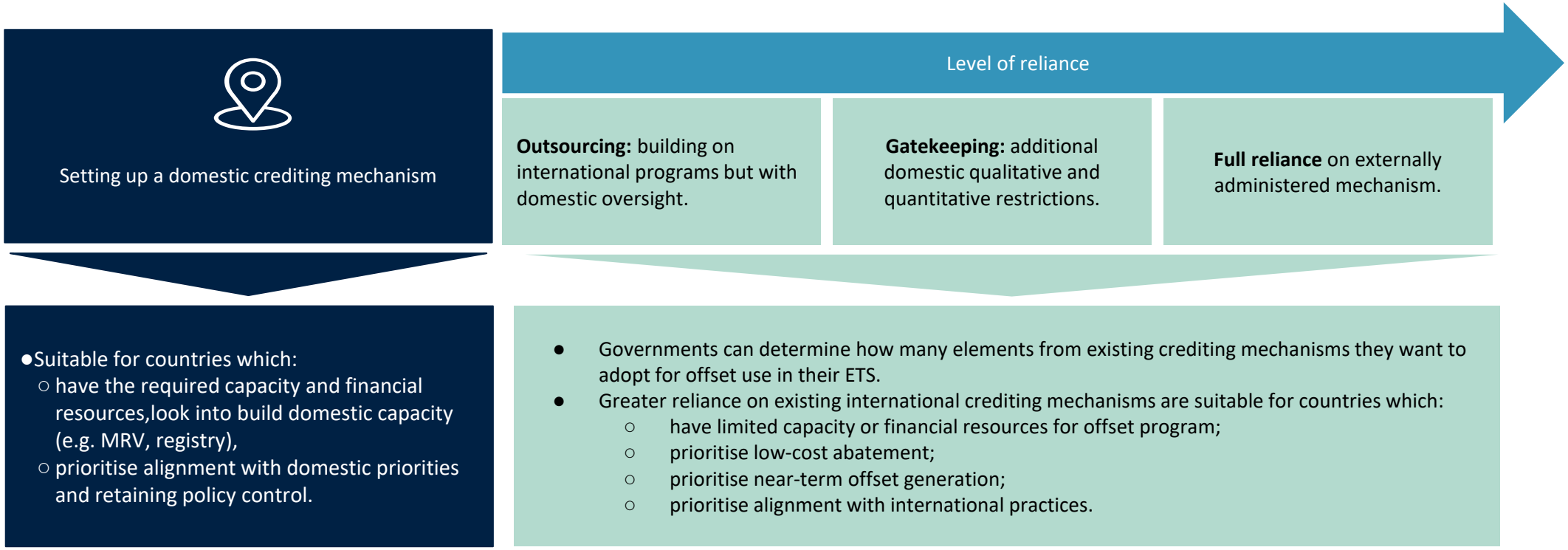
PLAN VIVO
For nature, climate and communities

puro · earth

ART
Architecture fc
REDD+ Transactior

Approach to offset use in an ETS

- Countries can set up their own domestic crediting mechanism or rely on existing international crediting mechanisms.
- A domestic crediting mechanism can be tailored to local context and provides more sovereign control over the mechanism and its operations
- On the other hand, reliance on existing crediting mechanisms saves on the costs of establishing a new program and promotes interoperability between different carbon markets



Source: ICAP Presentation (2023). Offset Use Across Emissions Trading Systems and ICAP (2020) ETS Handbook.

Approach to offset use in an ETS

To ensure the integrity of an ETS or to exert more control over offset program, a government can set qualitative and/or quantitative criteria for eligible offsets.

Qualitative criteria

Jurisdiction: the location where the offset project is located (domestic or international credits)

Time period: a number of years since the project is registered or implemented

Project type: project types which are eligible/ ineligible for compliance

Methodology : methodology from domestic crediting mechanism vs international crediting mechanism

Quantitative criteria

The government can limit the number of offsets used for compliance:

- ✓ Using certain % of an entity's emissions obligation (e.g. South Korea, RGGI, China national ETS)
- ✓ Using a cap of offsets to be surrendered ($GtCO_2e$) within a specified period of time (e.g. EU ETS Phase 3)

Source: ICAP Presentation (2023). Offset Use Across Emissions Trading Systems and ICAP (2020) ETS Handbook.

Ensuring environmental integrity

Integrity principles:
The use of offsets should not lead to an increase in global GHG emissions compared to BAU, thus, emission reductions must meet the following criteria

Real

Proven to have genuinely taken place.

Additional

The sequestration or avoided emissions must be additional to what would otherwise have occurred without a management intervention or activity.

Measurable

The impact must be quantifiable, using recognised monitoring practices and methodologies, against a credible emissions baseline.

Verifiable

An independent, third-party auditor must be able to verify that the emissions reductions have indeed taken place.

Permanent

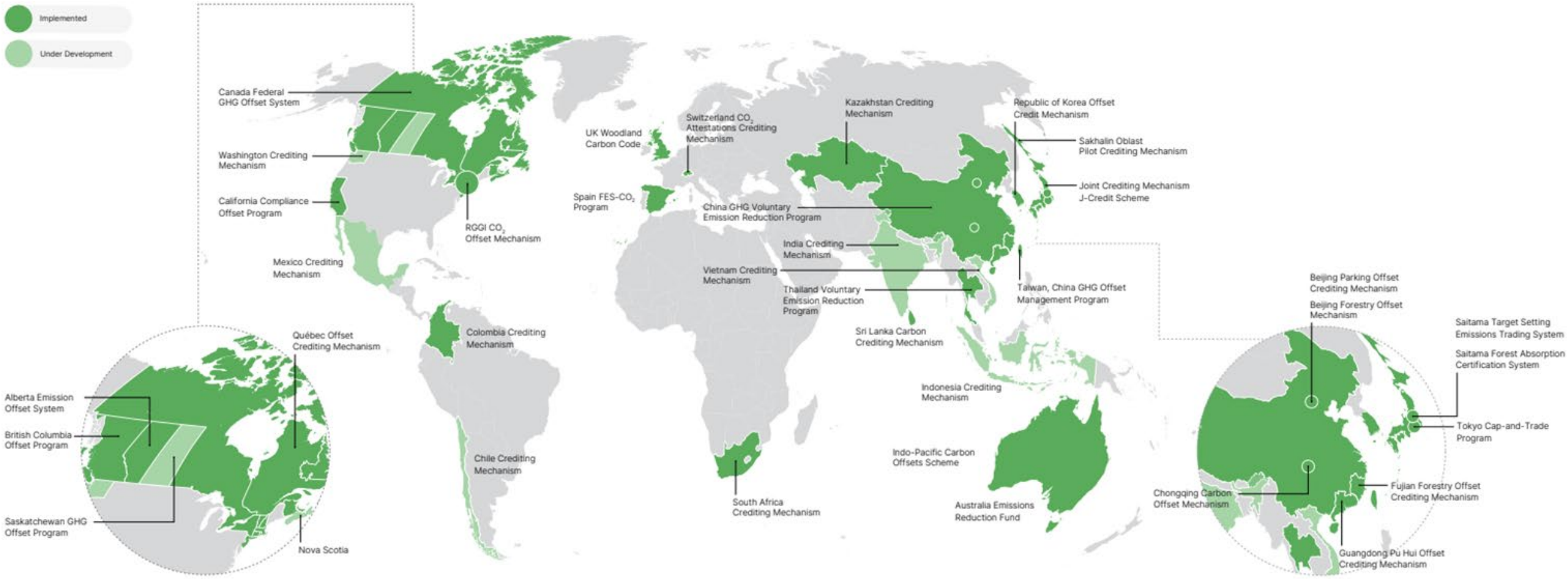
Sequestration or avoided emissions must have a durability against reversals (i.e. release back to the atmosphere), usually for at least 100 years.

Unique

Only one carbon credit can be associated with a single reduction or removal of 1t CO2e: no “double counting” between projects or governmental GHG accounts.

Source: South Pole

Map of international and subnational crediting mechanisms



International offset use in an ETS: EU ETS

In its initial phase, the EU ETS allowed an unlimited use of international offsets as an alternative compliance method. Due to concerns on environmental integrity, EU ETS put increasingly restrictive eligibility criteria and eventually does not allow the use of offsets since 1 January 2021.

PHASE 1
2005 - 2007

Offsets from **Clean Development Mechanism (CDM) credits** and **Joint Implementation (JI) credits were allowed.**

Most project types were allowed except for large hydropower projects and land use, land-use change, and forestry projects (LULUCF). **There were no restrictions on quantity of credits**.

In reality, no offsets were used in EU ETS Phase 1 due to low allowance price.

PHASE 2
2008 - 2012

JI credits from countries not adopting the Kyoto Protocol were not allowed.

Most project types were still allowed except for LULUCF and nuclear projects. Strict requirements were set for hydropower >20 MW.

The use of offset was limited to certain % based on each country's National Allocation Plan.

PHASE 3
2013 - 2020

More restrictive qualitative and quantitative criteria were introduced.

International credits generated after 2012 had to originate from least developed countries. CDM and JI projects from other countries were eligible only if projects were implemented and registered before 2012. Industrial gas credits were not eligible.

The total use of credits for Phase 2 and Phase 3 was **capped at 50% of the overall reduction** under the EU ETS in that period (~1.6 Gt CO_2e).

PHASE 4
2021 - 2030

Since 1 January 2021, **no offsets are allowed** to be surrendered for compliance.

Source: ICAP (2024). EU ETS

Domestic offset use in an ETS: Regional Greenhouse Gas Initiative (RGGI)

Overview of RGGI (in operation since 2010):

- **Sector covered**: Power
- **Emission coverage**: 14% (2020)
- **Emission scope**: CO_2

RGGI allows for the use of offset from **eligible domestic projects within RGGI jurisdiction only.**

✓**Jurisdiction:** Only offsets from RGGI states are allowed. RGGI states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont.

✓**Project types*:**

- Landfill methane capture and destruction;
- Sequestration of carbon due to reforestation, improved forest management, or avoided conversion; and
- Avoidance of methane emissions from agricultural manure management operations.

✓**Crediting mechanism:** RGGI's own methodology and registry

✓**Offset limit**: up to 3.3% of compliance obligations

To date, only one offset project (landfill methane capture and destruction) has been approved under RGGI.

* Several states no longer accept application for any offset type but still allow offsets from projects in other RGGI states

Source: ICAP (2024). USA: Regional Greenhouse Gas Initiative; RGGI (2024), Offsets

Offset use in an ETS: South Korea ETS

Overview of South Korea ETS (in operation since 2015):

- Sectors covered: waste, transportation, domestic aviation, buildings, industrial and power sectors
- Emissions coverage: 43% of the country's GHG emissions (654 MtCO2 in 2021)
- GHG Scope: CO2, CH4, N2O, PFCs, HFCs and SF6

South Korea allows for domestic and international offsets from eligible projects to cover up to 5% of an entity's emissions obligation, with following criteria:

✓ **Jurisdiction:** Offsets from projects located in South Korea and abroad are allowed.

✓ **Project types:** All project types are eligible provided they follow an approved project methodology.

✓ **Crediting mechanism:** CDM , Korean Offset Credits (KOC)

✓ **Issuance and conversion time:**
- To be eligible for surrender, all KOCs must be converted to Korean Credits Units (KCUs) within 2 years of KOC issuance.
- Other GHG emissions reductions (e.g CDM) must be converted to KOCs within 3 years since issuance.

✓ **Ownership**: International projects must be operated by a Korean company i.e. if they meet one of the following criteria:
- at least 20% ownership, operating rights or voting stocks are owned by a Korean company;
- a Korean company supplies the low-carbon technology worth at least 20% of the total project cost;
- the projects are funded by a Korean company with a national or regional government operating in a UN-designated least developed country or a low-income economy as classified by the World Bank.

As of December 2022, **61 domestic and 211 CDM methodologies have been approved** for use under the Korean ETS

Source: ICAP (2024). South Korea ETS

Offset use in an ETS: Indonesia ETS

Overview of Indonesia ETS (in operation since 2023):

- Sectors covered: power
- GHG Scope: CO2, CH4, N2O
- Structure: Cap and trade with the plan for introduction of carbon tax for entities failing to surrender allowance or exceed their allowance.

Indonesia allows for domestic offsets from eligible project as an alternative compliance in its ETS.

✓**Jurisdiction:** Domestic projects only.

✓**Project types:** Renewable energy, energy efficiency from buildings and industry, transportation and other energy projects.

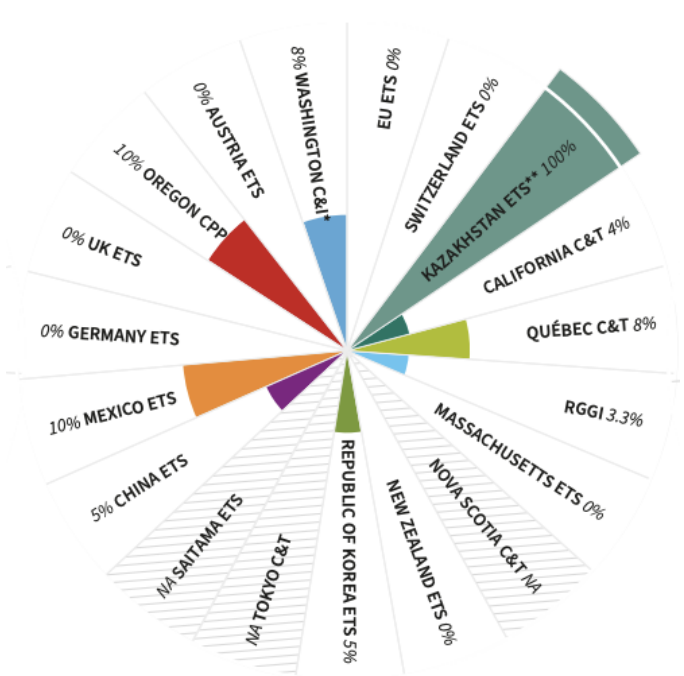
✓**Crediting mechanism:** Indonesia's own domestic crediting mechanism, SPE-GRK. Offsets from other standards are allowed but subject to conversion to SPE-GRK.

✓**Quantity limit:** No information on quantity limit in the regulation. However, during the pilot phase, offsets were allowed for up to 30% of an entity's emissions cap/allowance.

Source: ICAP (2024). Indonesia ETS

National and subnational ETS allowing use of offsets

- Many ETSs allow emitters to use carbon credits to fulfil compliance obligations - subject to a **quantitative limit of around of 5-10%**:
  - Main share of mitigation to be achieved by the emitters (promote in-house mitigation)
  - Induce technological change and decarbonization
- Most ETS restrict use of carbon credits to **domestic credits** (except for Korea ETS) and rely on **domestic crediting mechanisms*** (except for California cap-and-trade program, which is linked with Quebec ETS)

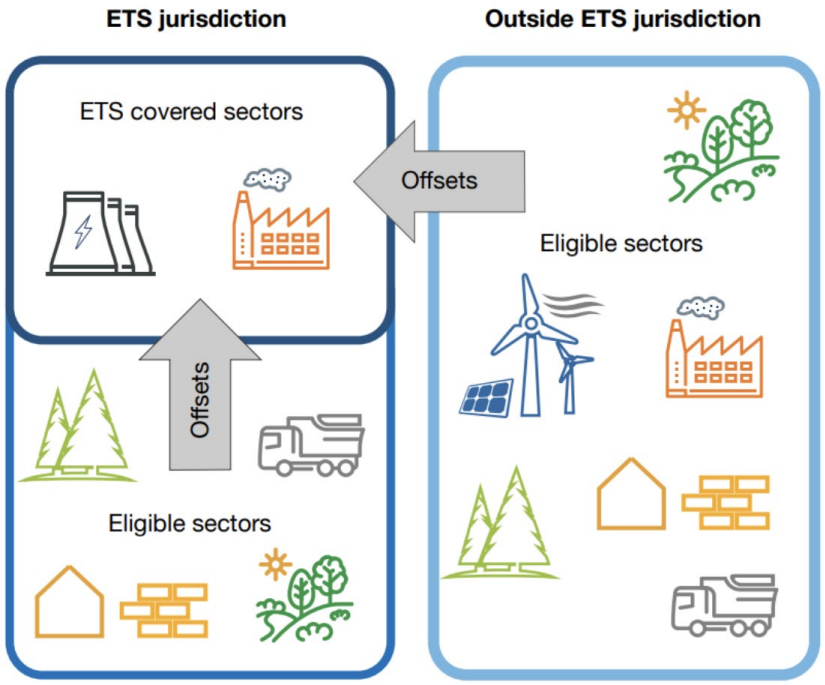


Source: ICAP Brief #3. Emissions Trading around the World (left); ICAP (2023). Offset Use Across Emissions Trading Systems (right)

** Carbon taxes such as South Africa carbon tax and Singapore carbon tax recognize international carbon standards.*

National and subnational ETS allowing use of offsets

- Domestic crediting mechanism is being considered as part of future or current carbon pricing schemes (e.g. Mexico, Colombia, Viet Nam, Indonesia, Thailand).
- The objectives are twofold:
  - promote domestic mitigation in sectors not covered by the ETS, contribute towards NDC fulfillment
  - build up a domestic supply of carbon credits to help emitters access more cost-effective mitigation options
- Whereas, where overseas Article 6-authorised carbon credits are permitted, it allows for:
  - more cost-effective mitigation opportunities
  - promotes international cooperation



Source: ICAP (2023). Offset Use Across Emissions Trading Systems

Demand for carbon credits in global compliance carbon markets

National/sub-national systems and targets
Carbon pricing schemes

- Use of carbon credits in domestic carbon pricing schemes contribute **domestic GHG emission mitigation goals**
- Almost 50% of existing ETSs across the world and some carbon tax schemes allow use of carbon credits to meet their obligations in compliance markets.
- At the moment, nearly all schemes are designed to have quantitative limits on the use of credits and require credits to come from local projects.

International sectoral targets
CORSIA (ICAO)

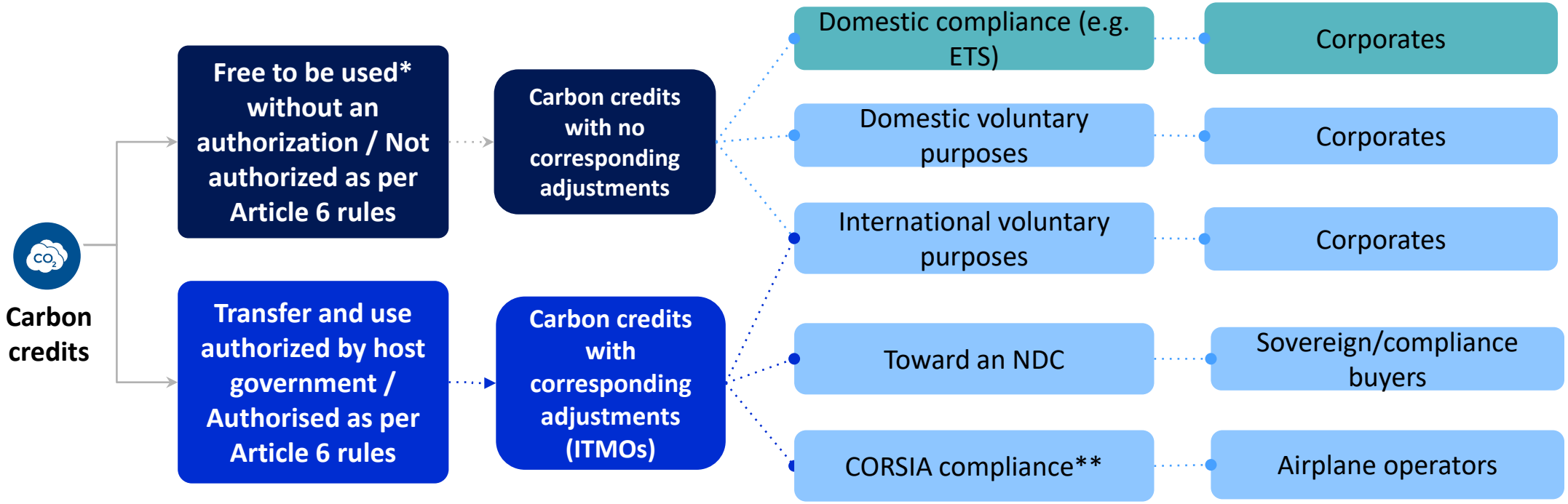
- CORSIA enforces carbon-neutral growth from the international aviation sector from 2021 and **allows carbon credits to be used for compliance purposes**
- Using the CORSIA baseline emissions of 85% of total CO2 emissions covered by CORSIA in 2019, ICAO estimated that offsetting requirement under CORSIA could range from **600 million to 2.1 billion tCO_2e** from 2024 until the end of the scheme in 2035.

International market-based mechanisms
Paris Agreement Article 6

- Countries such as Switzerland, Sweden, South Korea, Singapore and Japan have indicated interest in purchasing carbon credits between now and 2030 to meet or exceed their first NDCs.
- Collectively, countries' demand for carbon credits could range from **150 to 310 $MtCO_2e$** to achieve their NDCs in 2030.

Segmentation of carbon markets by use cases

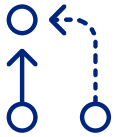
With Article 6 rules in place, carbon credits will be differentiated by its **use type (end use)** based on whether the transferring (host) country has authorised the use of the carbon credits for Article 6 cooperative approaches. Ultimately, the management and use of carbon credits would have to abide by the relevant national regulations.



Source: South Pole (2023)

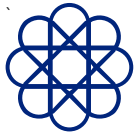
* Under certain circumstances, approval/registration is still required by the voluntary project with the host country in question.
** Pre-2021 verified ERs used for complying with CORSIA are not required to be accompanied by a corresponding adjustment.

Conclusions



Offsets (i.e. carbon credits) can be allowed as an alternative compliance method in an ETS.

Offsets can incentivize mitigation actions in non-ETS covered sectors, help achieve specific policy targets.



However, offsets could lead to environmental integrity issues (if crediting mechanism is not designed and implemented properly) and lower allowance price, disincentivizing obligated actors. Governments can set qualitative and quantitative criteria to reduce the risks associated with the use of offsets.

Jurisdictions have different criteria for the use of offsets. Some do not allow the use of offsets altogether, others only allow domestic offsets while a few allow for both international and domestic offsets with specific requirements.

THANK YOU!

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