Market mechanisms / Article 6 for SF_6 emission mitigation

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Agenda

1. Why do we need international carbon markets?
2. History of international carbon markets
3. Experience with the Clean Development Mechanism of the Kyoto Protocol
4. Designing baseline and monitoring methodologies for SF_6 mitigation
5. The current state of Article 6 markets
6. Outlook for SF_6 mitigation in international carbon markets

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Why do we need international carbon markets?

Reasons for international market mechanisms

Climate change mitigation can be done anywhere without creating any “hot spot problems”

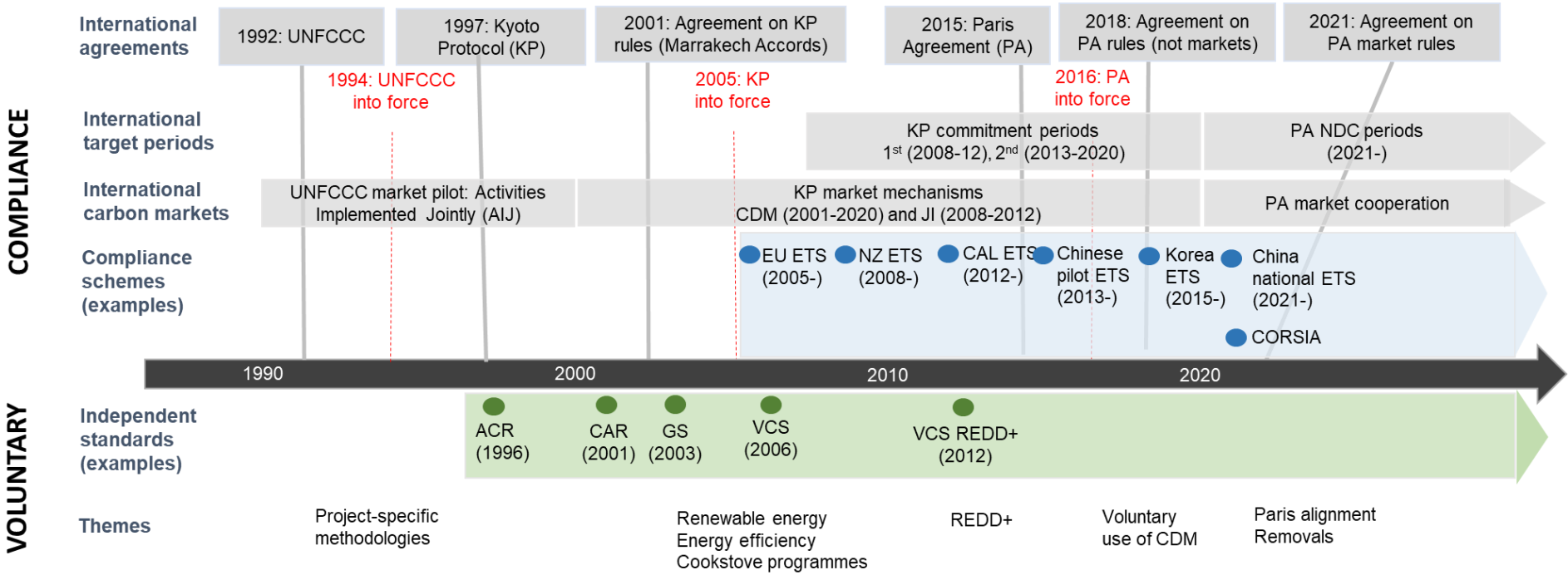
International market mechanisms for greenhouse gas mitigation

- **mobilize the cheapest mitigation options**
- **provide incentives for technology improvement, but**
  - **At politically realistic prices, innovation will remain limited**
  - **Technologies in an embryonic stage will never be competitive with mature technologies at allowance/credit prices that do not reach three-digit levels**
- **Transfer technologies and financial resources to developing countries that are unable to introduce carbon pricing at levels comparable to industrialized countries**
- **Reduce opposition of emitter lobbies against mitigation policy by reducing costs of compliance with emissions commitments**

International market mechanisms have been discussed since the early 1990s and implemented since the mid 2000s

History of international carbon markets

The history of international carbon markets



Compliance versus voluntary carbon markets

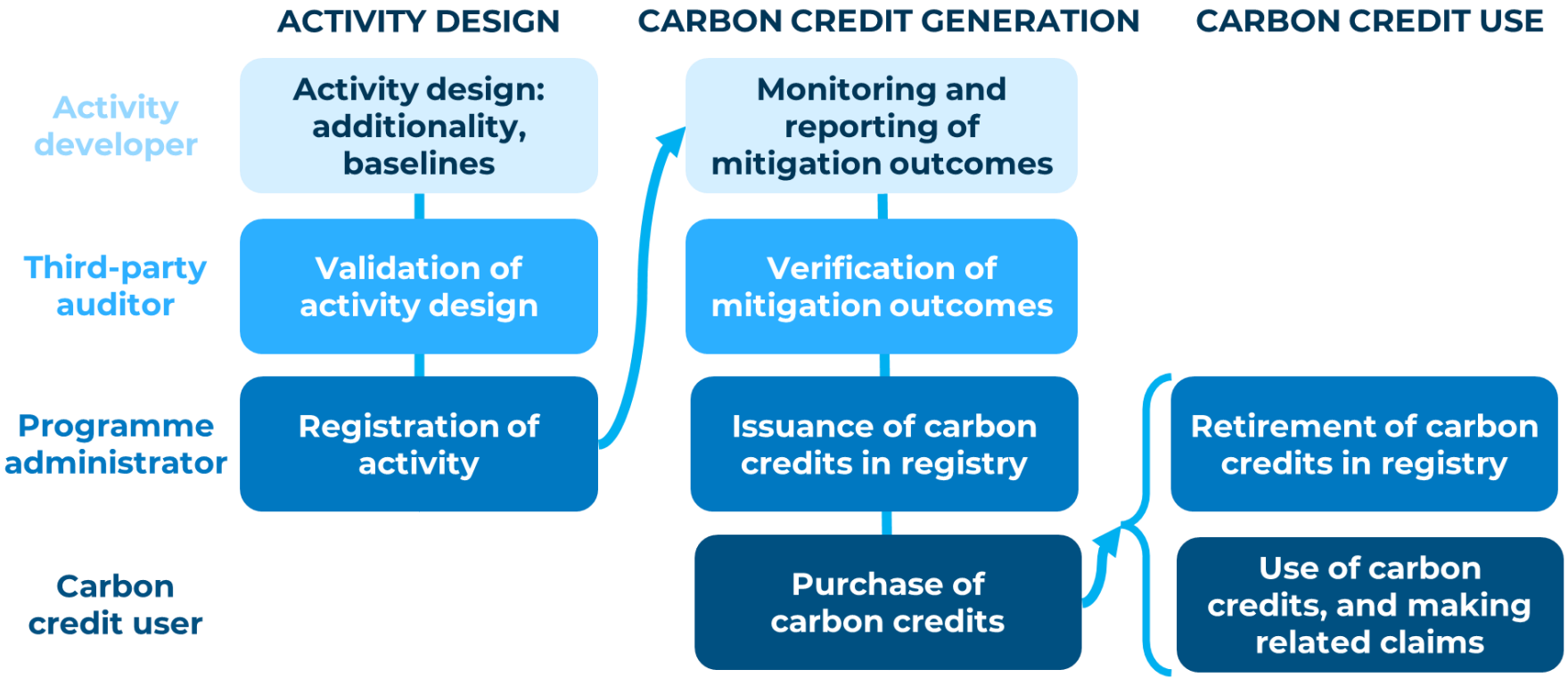
Compliance markets

- **are created and regulated by mandatory national, regional, or international emission reduction regimes**
  - **Article 6 under the Paris Agreement, previously Kyoto Mechanisms**
  - **National emissions trading schemes**
  - **Using of emission credits against domestic mitigation policies (carbon taxes)**

Voluntary carbon markets

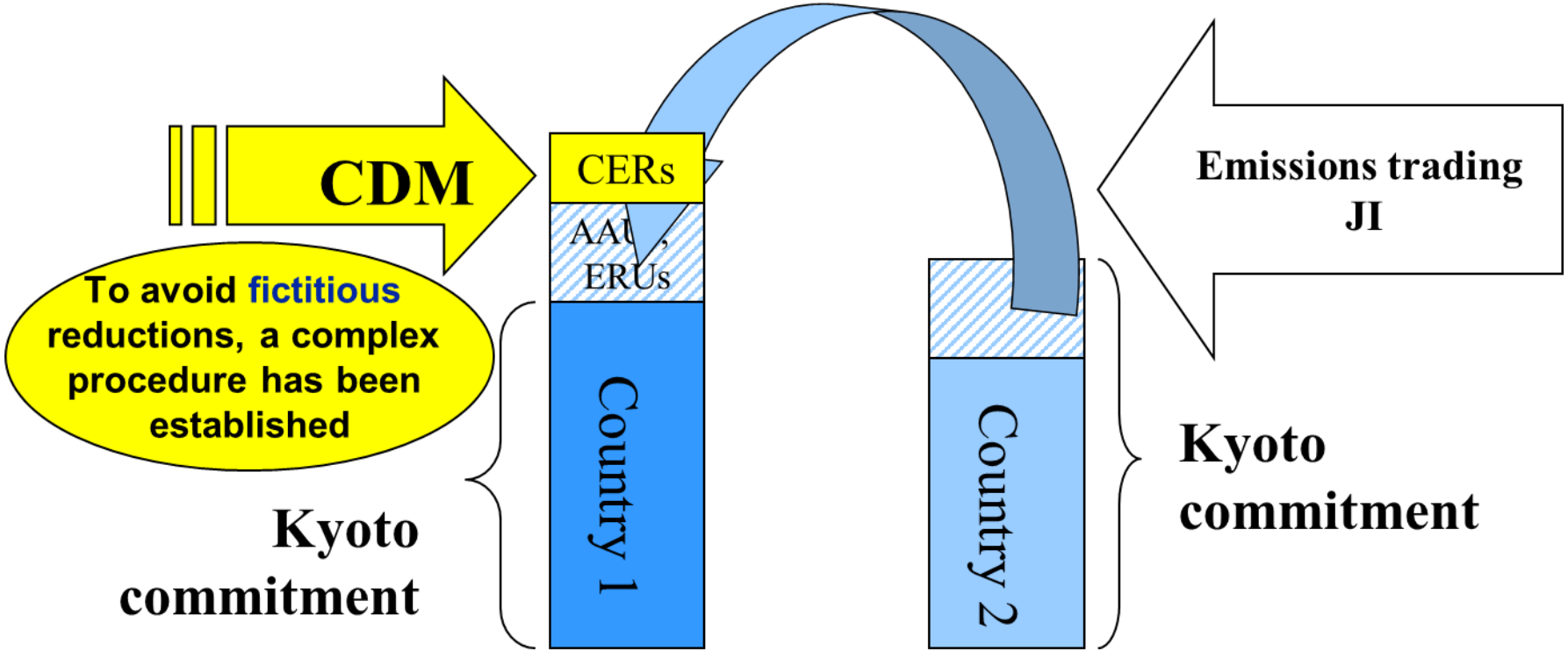
- **allow businesses and individuals to purchase emission credits on a voluntary basis with no intended use for compliance purposes**
- **currently worth 1.2 billion $ annually, growing rapidly until 2022, but still much smaller than the compliance markets (~100 billion $)**

Typical carbon credit activity cycle



Experience with the Clean Development Mechanism of the Kyoto Protocol

The CDM “safety valve” for industrialized countries



Lessons from the CDM

CDM was used strongly

- **>7800 projects and > 300 programmes registered**
- **~2.3 billion emission credits issued**

SF_6: various methodologies available but few projects implemented

- **Various sectors (electricity, LCD displays, magnesium) developed methodologies for SF_6**

Meth no.	Meth name	Projects	Issuance
AM35	SF6 Emission Reductions in **Electrical Grids**	8	0.072 million
AM65	Replacement of SF6 with alternate cover gas in the **magnesium** industry	3	3.579 million
AM78	Reduction of SF6 emissions in **LCD screen manufacturing** operations	4	3.868 million
AM79	Prevention of SF6 venting following tests of **Gas insulated electrical equipment**	1	1.252 million
AM119	SF6 emission reductions in **gas insulated metal enclosed switchgear**	0	-

SF_6 mitigation in the electricity sector under the CDM

One large success story driven by demand for credits under the Korean emissions trading scheme: collection of SF_6 from testing of gas insulated electrical equipment and re-use at an SF_6 manufacturing facility

Sector	Status	Meth	UNEP#	Country	Mitigation p.a. (kt CO_2e)	Issued credits
Electricity	Registered	AM79	5239	Korea	165	1.252 million
Electricity	Registered	AM35	5050	China	155	0.072 million
Electricity	Registered	AM35	6773	Korea	136	-
Electricity	Validation	AM35	12674	Iran	52	-
Electricity	Validation	AM35	7167	China	16	-
Electricity	Rejected	AM35	6138	Korea	1383	-
Electricity	Rejected	AM35	8636	China	148	-
Electricity	Rejected	AM35	5266	Indonesia	60	-
Electricity	Rejected	AM35	5471	Brazil	8	-

Designing baseline and monitoring methodologies for SF_6 mitigation

Key aspects to be considered in “Article 6 proof” meths

- **encourage ambition over time**
- **be transparent, conservative, credible**
- **below ‘business as usual’ / historical emissions, adjusted downwards**
- **align to the long-term temperature goal of the Paris Agreement**
- **equitable sharing of mitigation benefits between the participating Parties**
- **contribute to reducing emission levels in the host Party; and align with its NDC, its long-term low GHG emission development strategy**
- **take into account uncertainty, leakage, policies and measures**
- activity would **not have occurred in the absence of the incentives** from the mechanism,
  - taking into account all relevant national policies, including legislation, and
  - representing mitigation that exceeds any mitigation that is required by law or regulation, and
  - taking a conservative approach that avoids locking in levels of emissions, technologies or carbon-intensive practices

The current state of Article 6 markets

Features of emerging carbon markets under Article 6

Article 6.2
Cooperative Approaches

- Between two or more countries, on the basis of **bilateral** agreements
- Involves the use of internationally transferred mitigation outcomes (ITMOs)
- Limited international oversight

Article 6.4
Mechanism

- Open to all countries
- Contributes to GHG mitigation and sustainable development
- Similar features as CDM: **subject to international rules** → successor mechanism

Common principles

- **Environmental integrity (→ additionality, NDC ambition)**
- **Transparency, prevention of double counting**

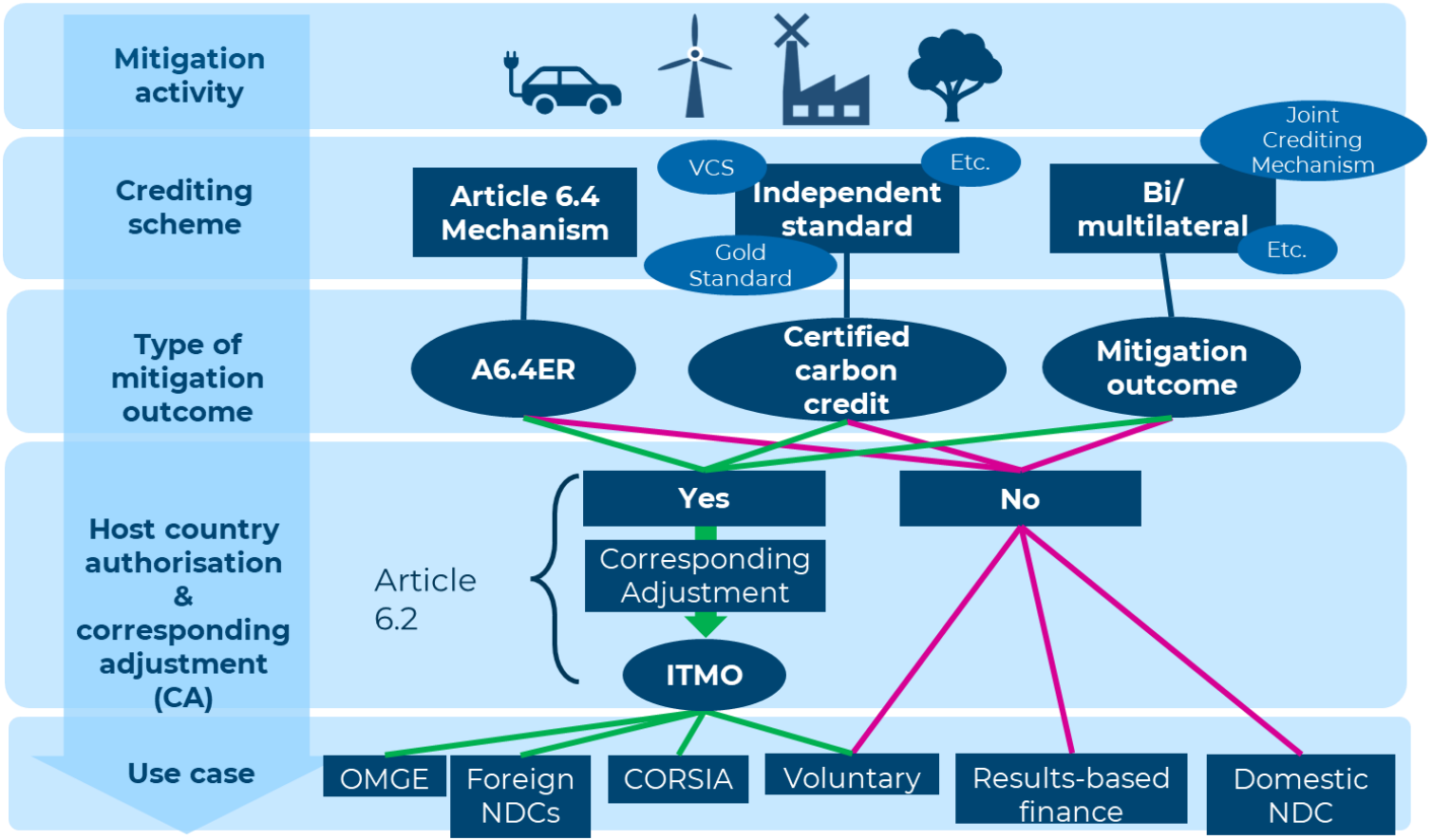
Stringent Art. 6 criteria

Both Art 6.2 and 6.4 rules have stringent requirements to ensure environmental integrity, including

- **Demonstrating additionality**
- **Taking into account all existing NDC targets and related policies and practices**
- **Setting baselines below business-as-usual (BAU)**
- **Increasing ambition**
- **Addressing uncertainties in quantification and preventing overselling**
- **Addressing potential leakage**
- **Contributing to the implementation of NDCs and long-term low-emission development strategies, and the long-term goal of the Paris Agreement**
- **Requiring verification of mitigation outcomes**
- **Respecting obligations on human rights, the rights of indigenous peoples, local communities, migrants, children, persons with disabilities and people in vulnerable situations, gender equality, empowerment of women and intergenerational equity**

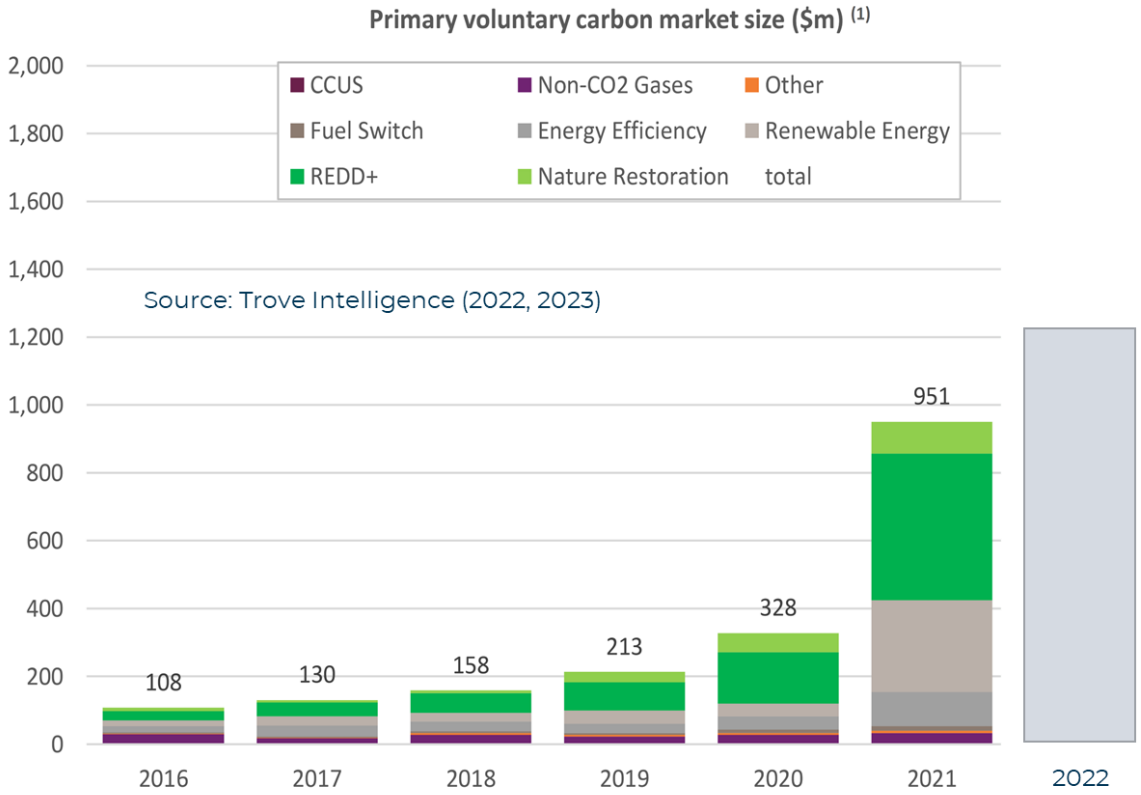
Art 6.2: participating Parties report how they ensure that relevant criteria are met
A6.4Mechanism : Supervisory Body oversight

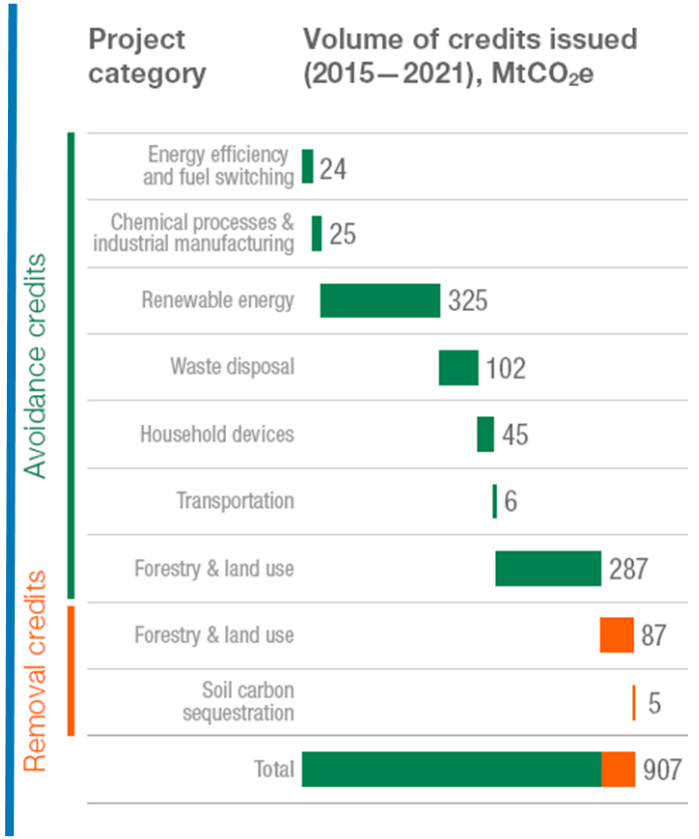
Article 6 interplay with voluntary market



Source:adapted from Perspectives Climate Group (2021)

Voluntary market: gold rush, SF_6 sidelined





Outlook for SF_6 mitigation in international carbon markets

SF_6 mitigation in the electricity sector – a good fit for the carbon market?

- Low hanging fruit such as renewable electricity generation can no longer be used for international carbon markets – SF_6 reduction in the electricity sector is a “medium hanging fruit” that becomes increasingly attractive in the context of Article 6 of the Paris Agreement
- SF_6 reduction in the electricity sector is crucial to prevent “lock-in” of emissions-intensive electricity distribution systems
- SF_6 reduction in the electricity sector is an attractive activity type for emerging economies
- There is some experience with the activity type under the Clean Development Mechanism (CDM) that shows the opportunities as well as the challenges of its use for international carbon markets
- The German SF_6 Initiative will work on methodological approaches to overcome the hurdles encountered in the CDM context
- We are looking for countries who would be willing to engage on SF_6 mitigation in the electricity sector in the context of Article 6

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