

Implications and Opportunities under CORSlA for Turkey

Part IV – *Trading Carbon Credits*

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Content

- Registries
- Carbon market exchanges
- Pricing
- Compliance strategies

1. Registries



Registries

- Track environmental credits throughout their lifecycle in a secure database
- Database to store, track and retire emission units
- Shall also be used for recording verified emissions data from airlines as will be the case under the CORSIA (Central CORSIA Registry (CCR))



Requirements Registries

- **Integrity** - ensure accountability & integrity within compliance systems such as CORSIA
- **Infrastructure** – provide institutional, legal and operating infrastructure for **efficient and transparent recording** of emission units
- **Regulation** – have **strict rules** governing behaviour for all parties using the registry
 - Ensure all data contained is protected - confidence to market participants

Requirements Registries (cont')

- **Tracking** – enable member states & ICAO to securely track:
 - airlines' verified emissions data
 - emission units (hold, transfer, retire or cancel)
- **Security** – security to protect emissions data, identity of operators, offsetting obligations & emission units held/retired

Registry users and roles

- CORSIA's registry structure will likely include the following features

Aircraft Operators

- Measures & reports emissions
- Buy emission units from market
- Surrender & cancel emission units

Member States

- Reviews emission reports
- Approves monitoring plans
- Records emission unit and cancellation data

ICAO Registry

- Receives and records emissions data
- Calculates offsetting obligations
- Records cancellation of emission units



2. Exchanges



What is the role of an exchange

- Exchange: provide an easy-to-use, online solution for sourcing and selling emission units
- Provide a wide choice of project options to buyers, anonymous sourcing and not lock them in to long-term contracts with sellers



Benefits of Exchanges

- Centralised pool of liquidity
- Electronic clearing and settlement
- Same-day settlement of credits and funds
- No credit, delivery or counterparty risk
- Real-time price transparency
- Secure and transparent web-based marketplace
- Anonymous

The screenshot displays the CBL Markets trading interface. The top navigation bar includes 'MARKET OVERVIEW', 'COMPLIANCE', 'VOLUNTARY', 'WATER', 'ORDERS & TRADES', 'HOLDINGS', and 'FIRM'. The 'VOLUNTARY' tab is active, showing a 'BIDS & OFFERS' table with columns for Actions, Start, Project Type, Instrument, Country, Bid Sum, Bid Vol, Bid, Ask, Ask Vol, Lift, Project D, and S Vintage. Below this, there are sections for 'ORDER ENTRY', 'ORDER MANAGEMENT', 'DISPLAY CURRENCY', 'STANDARD', 'PROJECT TYPE', 'VINTAGE', and 'COUNTRY'. At the bottom, there are 'LIVE ORDERS', 'ALL ORDERS', 'TRADES', 'HOLDINGS', and 'CASH' sections.

BIDS & OFFERS				Buy		Sell					
Actions	Start	Project Type	Instrument	Bid Sum	Bid Vol	Bid	Ask	Ask Vol	Lift	Project D	S Vintage
▶ B	ACR-ERT	Landfill Gas Capture & Combustion	North America/United States	100,000	100,000	USD 1.20					
▶ B	CAR-CRT	Waste	North America/United States	15,000	15,000	USD 2.10					
▶ B	GS-VER		Asia/India	1,000	1,000	USD 2.00					
▶ B	GS-VER	Energy Efficiency	Africa/Uganda	130,000	120,000	USD 3.80					
▶ B	VCS-VCU	Agriculture Forestry and Other Land	Africa/Ghana	20,000	20,000	EUR 3.75					
▶ B	VCS-VCU	Alternative Energy	North America/United States				USD 3.85	30,000			
▶ B	VCS-VCU	Avoided Conversion	North America/United States	1,000	1,000	USD 3.40					
▶ B	VCS-VCU	Biogas - Cogeneration	Asia/Vietnam				USD 1.85	30,000			
▶ B	VCS-VCU	Coal Mine Methane	Africa/Algeria				EUR 0.35	20,000			
▶ B	VCS-VCU	Coal Mine Methane	Europe/Germany	50,000	50,000	EUR 0.25	EUR 0.33	500,000			
▶ B	VCS-VCU	Coal Mine Methane - Drainage	Asia/China				USD 0.55	164,445			
▶ B	VCS-VCU	Energy Efficiency	Latin America/Peru	50,000	50,000	EUR 5.50	EUR 6.45	50,000			
▶ B	VCS-VCU	Energy Efficiency - Domestic	Africa/Malawi				AUD 6.43	2,400			
▶ B	VCS-VCU	Energy Efficiency - Public Sector	Asia/South Korea	190,000	190,000	USD 5.10	AUD 5.80	1,000			
▶ B	VCS-VCU	Energy Industries - renewable/nonrenewable	Asia/India	25,000	25,000	USD 0.75	USD 0.75	152			
▶ B	VCS-VCU	Forestry	North America/United States	55,000	55,000	USD 3.20	USD 3.45	30,000			
▶ B	VCS-VCU	Forestry	Oceania/Australia				AUD 6.50	50,000			
▶ B	VCS-VCU	Reforestation	Africa/Kenya	1,200,000	1,200,000	USD 2.05	USD 2.85	50,000			
▶ B	VCS-VCU	Reforestation	Asia/Indonesia				USD 3.15	50,000			
▶ B	VCS-VCU	Reforestation	Asia/Malaysia	12,565	12,565	USD 1.95	USD 2.05	50,000			
▶ B	VCS-VCU	Reforestation	North America/United States				USD 4.35	3,000			
▶ B	VCS-VCU	Solar Thermal - Electricity	Asia/India	125,000	125,000	USD 0.31	EUR 0.35	10,000			
▶ B	VCS-VCU	Wind	Asia/China				USD 0.35	100,000			
▶ B	VCS-VCU	Wind	Asia/India	216,050	15,000	USD 0.47	USD 0.43	120,000			
▶ B	VCS-VCU	Wind	Asia/Turkey				EUR 1.04	250,000			

LIVE ORDERS											
Actions	Trade ID	Date	Time	Side	Instrument	Mkt	Tag	Prc	Actions	Firm	Account
	0000000109	2017.02.03	15:35:29	BID	VCS-VCU-Voluntary	VCS1200.2012	EUR	VC	+	-	B
	0000000108	2017.02.03	15:28:49	BID	VCS-VCU-Voluntary	VCS4561.2013	USD	VC	+	-	B
	0000000107	2017.02.03	15:23:19	BID	VCS-VCU-Voluntary	VCS4511.2010	USD	VC	+	-	B
	0000000106	2017.02.03	00:53:26	ASK	ESC-Compliance			VC	+	-	B
	0000000105	2017.02.03	00:45:50	BID	VCS-VCU-Voluntary	VCS4561.2013	USD	VC	+	-	B
	0000000104	2017.02.01	09:28:15	BID	VCS-VCU-Voluntary	VCS4211.2013	USD	VC	+	-	B
	0000000103	2017.02.01	09:13:07	BID	VCS-VCU-Voluntary	VCS1210.2012	EUR	VC	+	-	B
	0000000102	2017.02.01	08:36:53	BID	VCS-VCU-Voluntary	LUPNPR003052.2012	USD	VC	+	-	B
	0000000101	2017.02.01	08:11:39	BID	VCS-VCU-Voluntary	string.2011	USD	VC	+	-	B

Source: CBL Markets

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3. Pricing



Pricing

- There is no firm indication of price yet
- Price will depend on supply and demand
- Supply will depend on:
 - ICAO's decision on eligibility - not yet determined
 - Ongoing negotiations on Article 6 of the Paris Agreement (especially on accounting rules and corresponding adjustments)
- There are some initial estimates that can be made based on analysis of supply and costs by activity type

CORSIA market volume and value

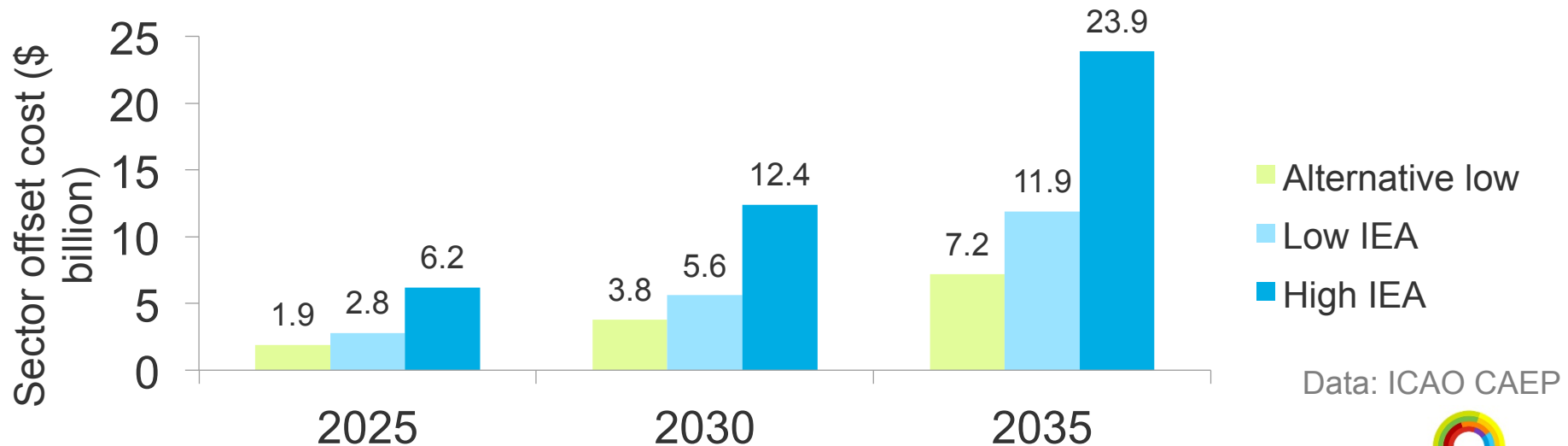
- Total CORSIA offset demand 2021-2035 projected to be **3.0-4.0 GtCO₂** (ICAO)

Carbon price scenarios(\$/tCO₂e)

Scenario	2020	2030	2035	Source
High-IEA	20	33	40	IEA World Energy Outlook
Low-IEA	8	15	20	IEA World Energy Outlook
Alternative low*	6	10	12	ICAO alternative

*Alternative low scenario takes into account larger pool of emissions units with lower abatement costs

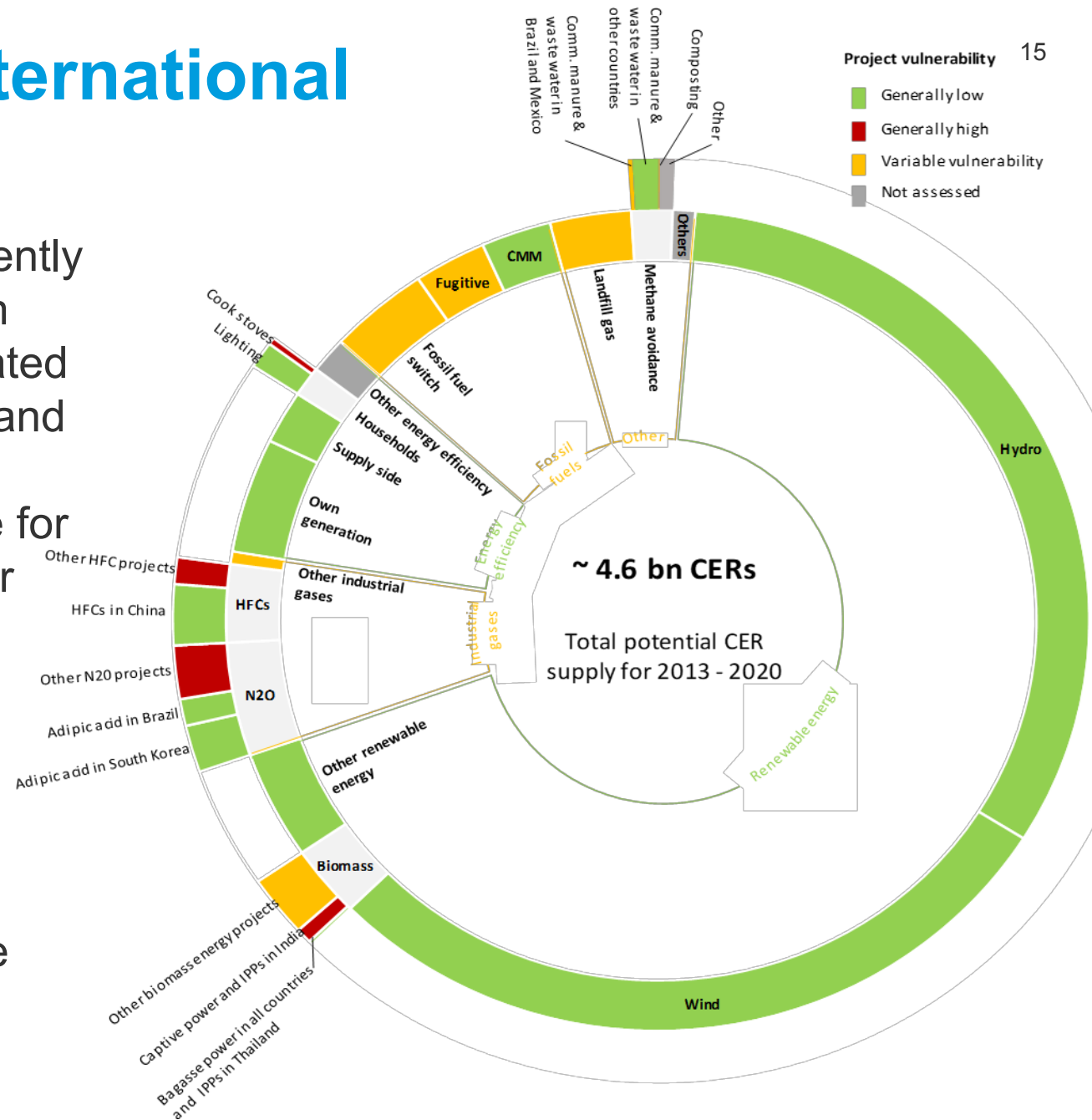
Total sector offsetting costs considering total demand scenario (2021-2035) of **3.8 Gt**:



Carbon offset costs in 2035: **0.4 % - 1.8 %** of annual sector operating costs

Potential International Supply

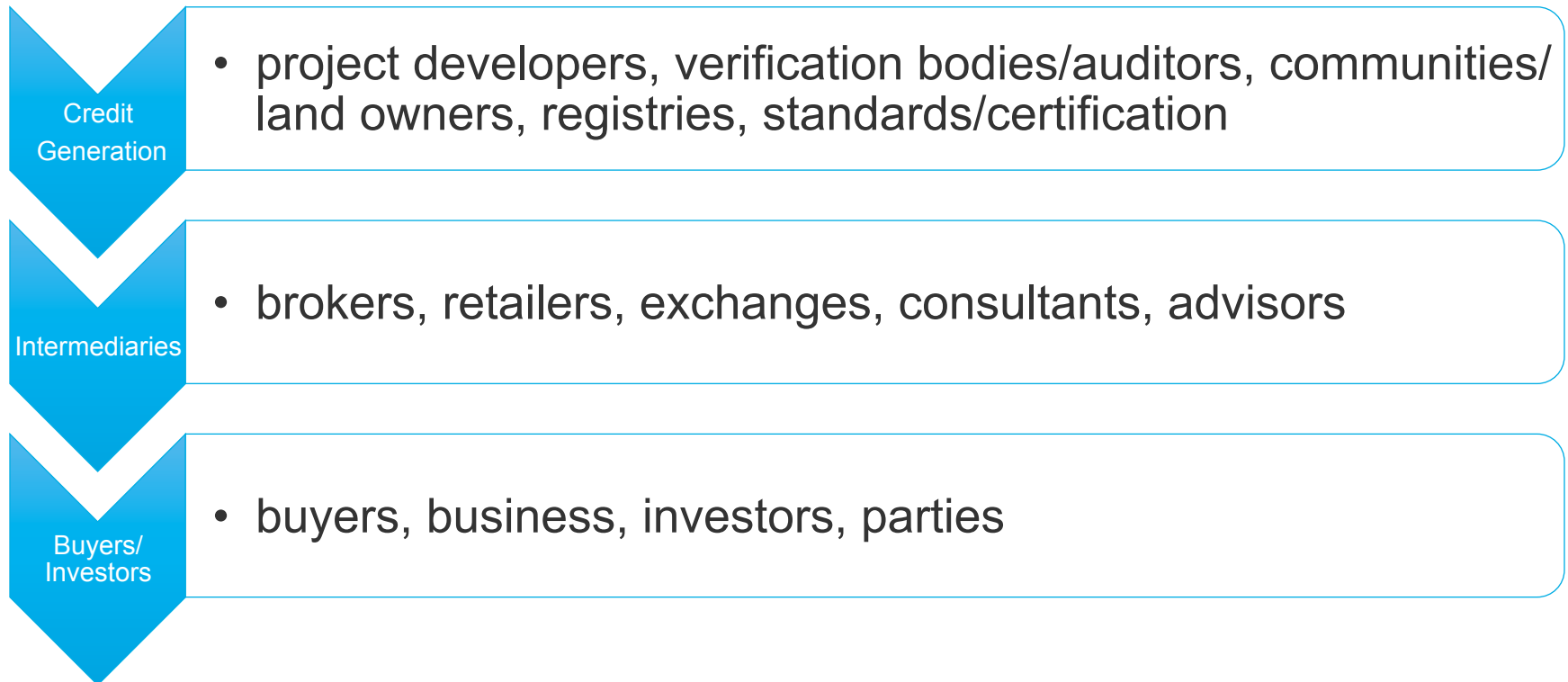
- Supply from currently registered carbon projects is estimated to be between 4 and 6 billion
- Amount available for compliance under CORSIA is depending on eligibility requirements
- Restrictions considered will drastically reduce available amount



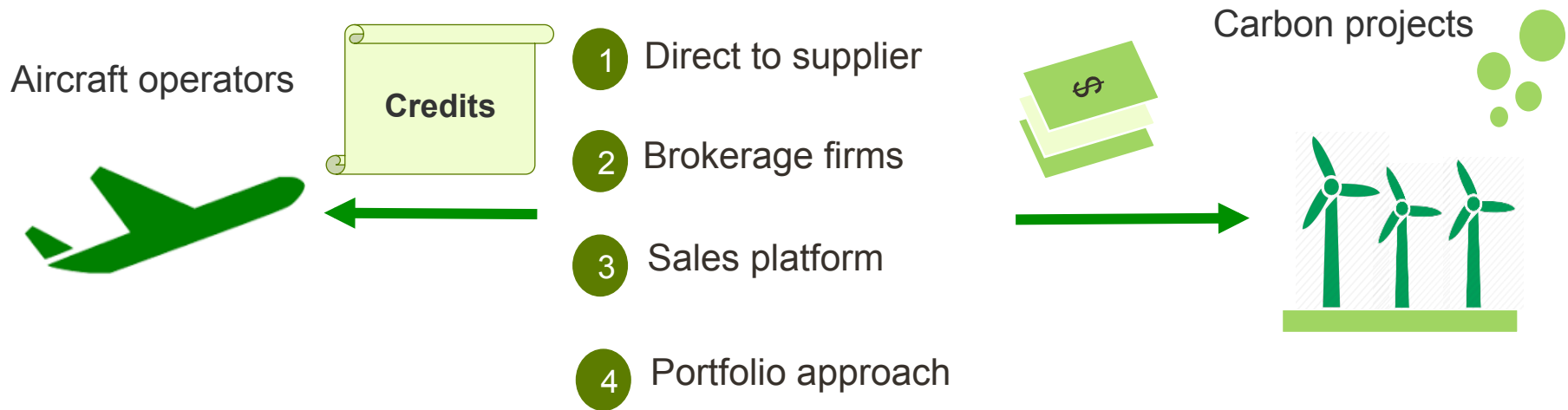
4. Purchasing Strategies



Value Chain of the Carbon Market



Supply strategies

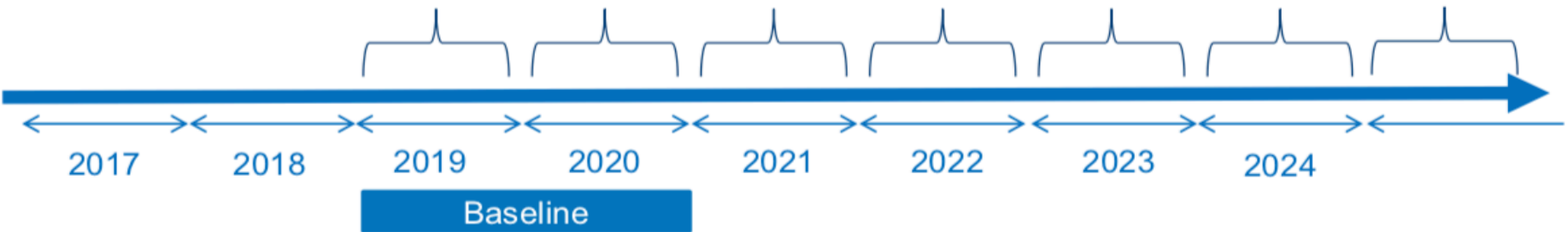


Reporting and Compliance Cycles

From 2019: CO2 monitoring and reporting

- From 2019, aircraft operators will be required to monitor and report CO2 on an annual basis
- Monitoring will be required for all international flights, including on exempted routes

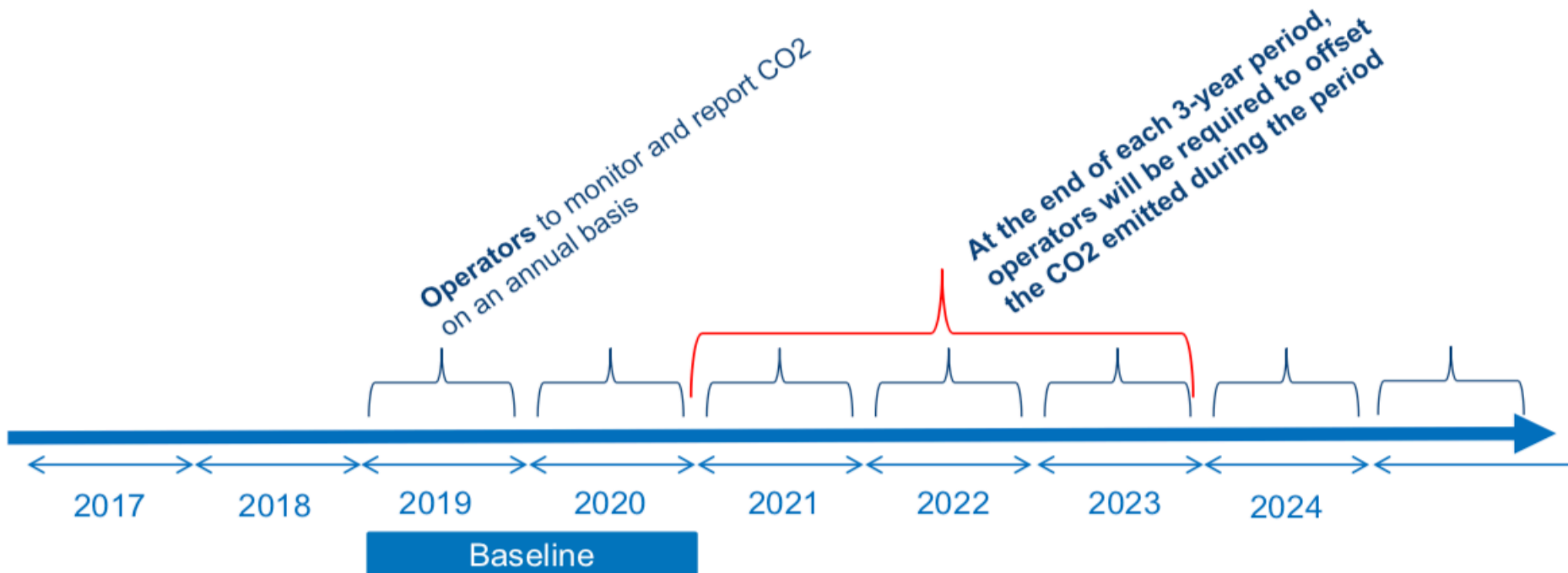
*Operators to monitor and report CO2
on an annual basis*



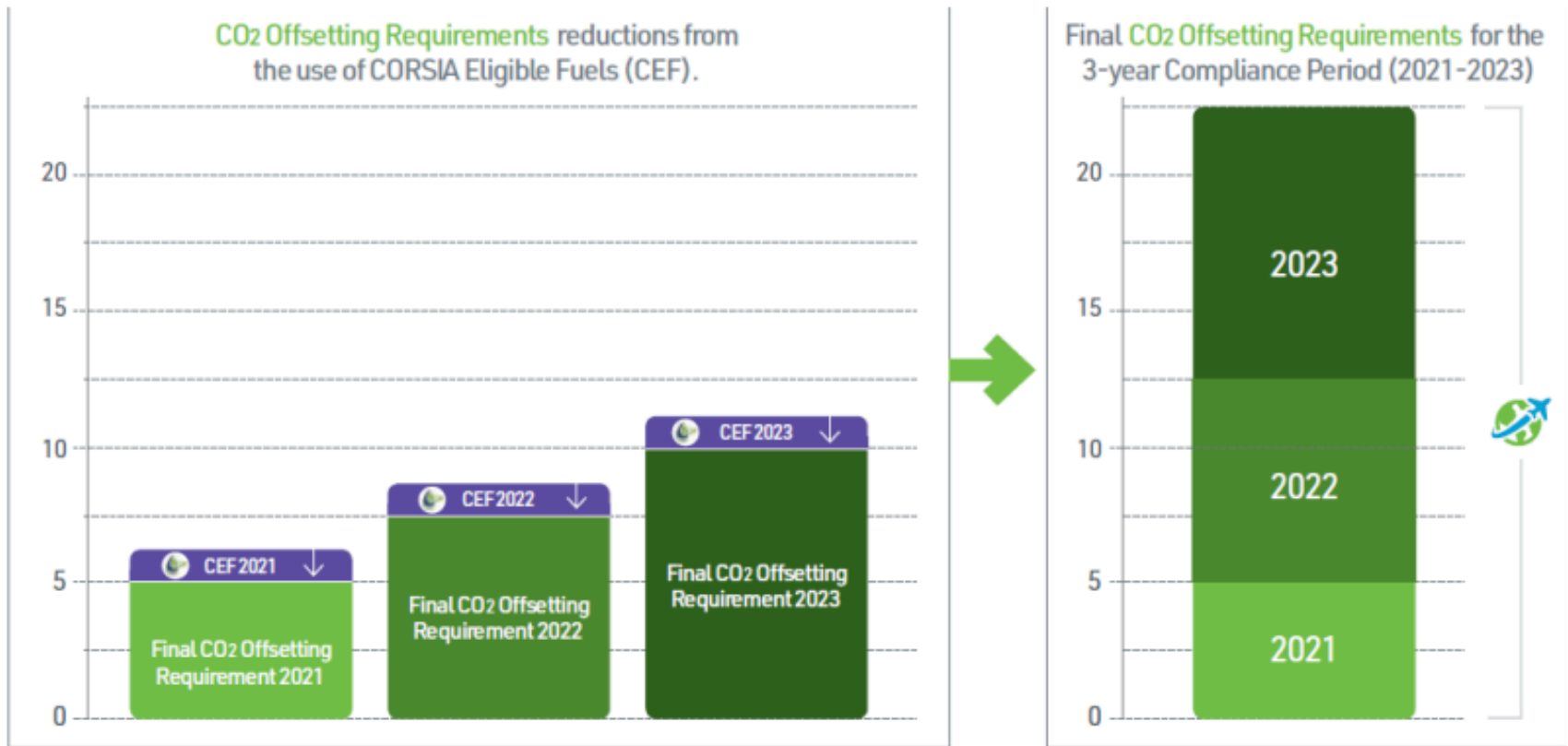
Reporting and Compliance Cycles

From 2021: 3-year compliance cycle

- Every three years, aircraft operators will need to surrender a quantity of offsets which corresponds to their offsetting requirements
- The offsetting requirements do not apply to emissions on exempted routes



CORSIA Compliance Cycle



CORSIA Compliance Cycle: Key Dates

Compliance cycle	Notification of final offsetting requirements	Cancellation of emissions units	Submission of verified emissions unit cancellation report
2021-2023	By 30 November 2024	By 31 January 2025*	By 30 April 2025
2024-2026	By 30 November 2027	By 31 January 2028*	By 30 April 2028
2027-2029	By 30 November 2030	By 31 January 2031*	By 30 April 2031
2030-2032	By 30 November 2033	By 31 January 2034*	By 30 April 2034
2033-2035	By 30 November 2036	By 31 January 2037*	By 31 April 2037

**or, if the notification of final offsetting requirements occurs after 30 November, 60 days after the notification of the final offsetting requirements.*



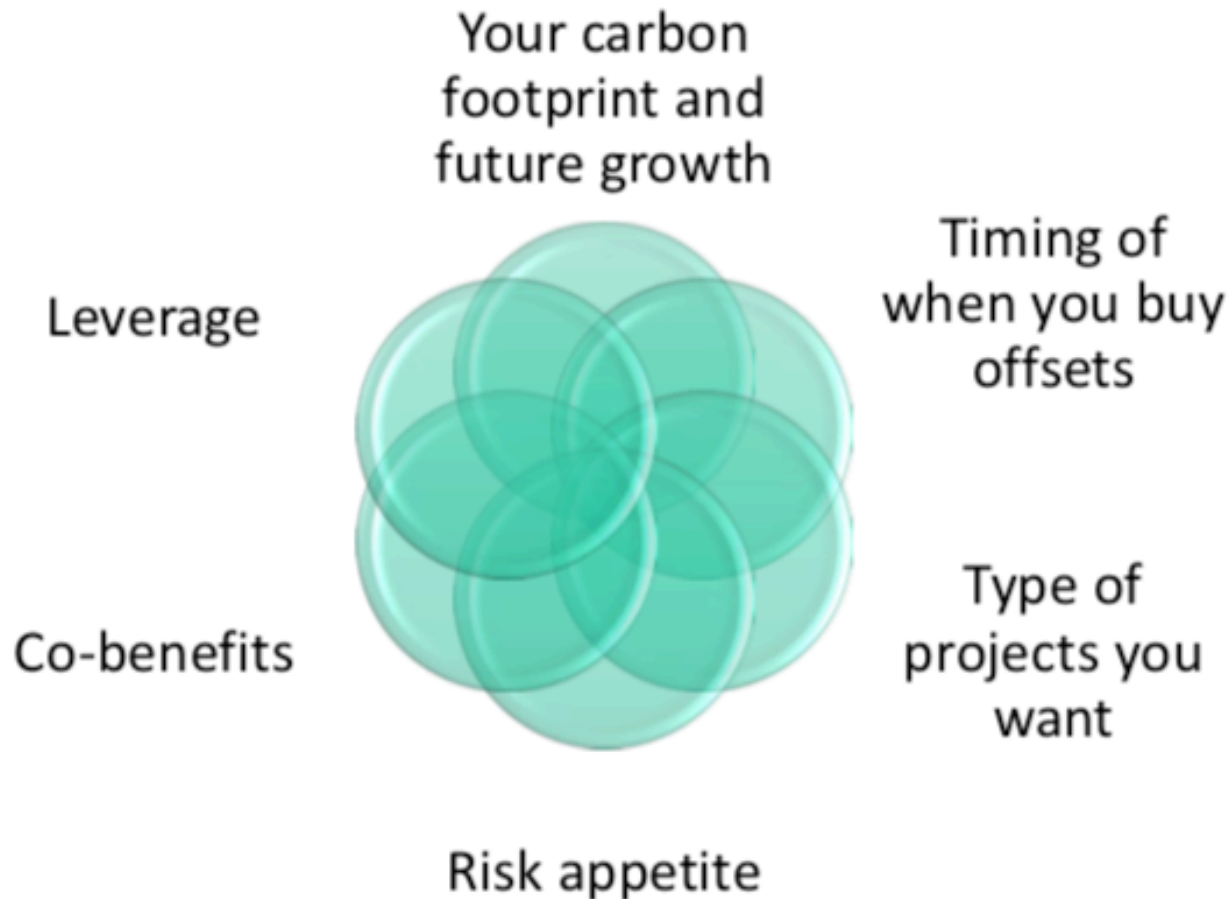
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Source: IATA

Example of Potential Strategy to Position for CORSIA Mechanism

- It is unclear what types of offset credits will be allowed under the CORSIA mechanism
- GS VERs, VCS VERs and CERs could potentially be accepted
- CERs are currently trading around ~0.30 €/t, VERs at similar or little higher prices
- Thus a portfolio of high quality Offset Credits can be purchased at relatively low cost
- If these Credits will not be accepted, they can be sold back to the market or used for voluntary offsetting (for example passenger emissions)

Your Portfolio Considerations



declara@ieta.org and e.liese@climatefocus.com

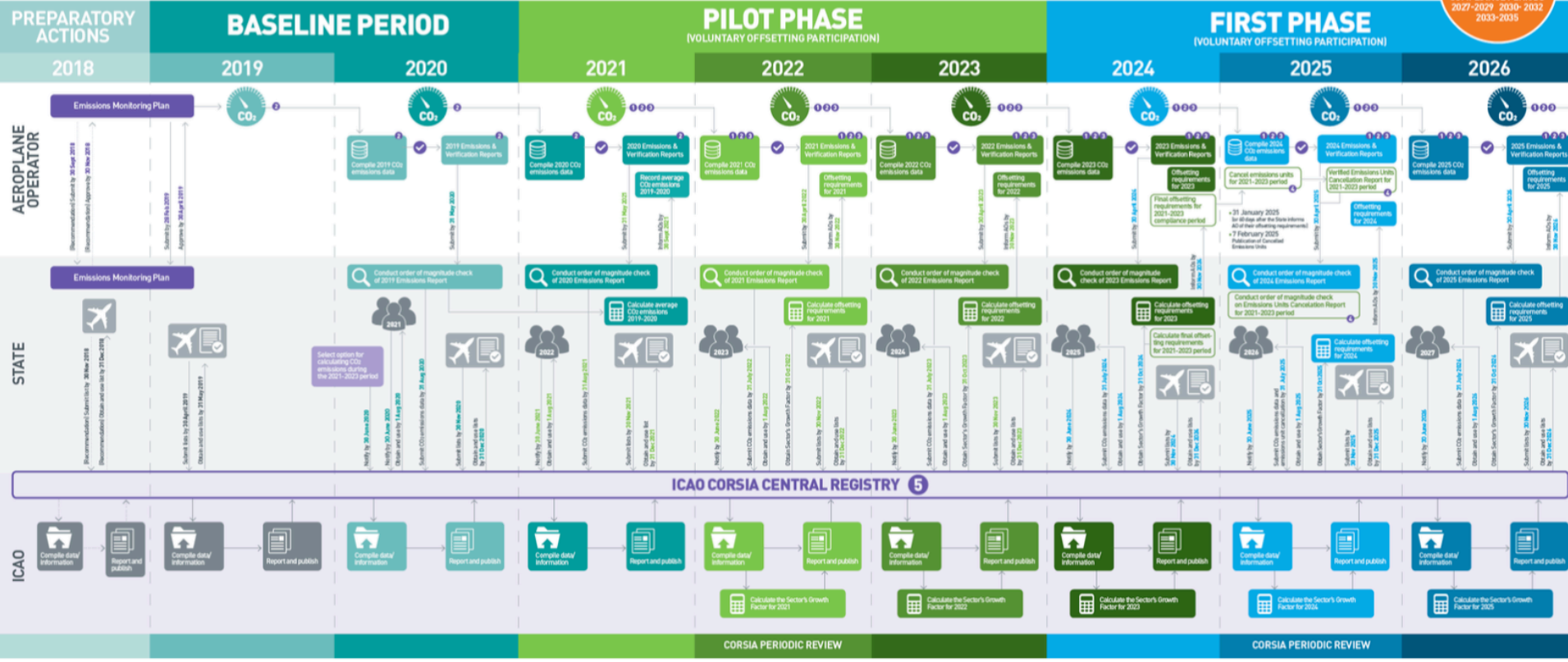


Backup slides

CORSIA compliance cycle

CORSIA PHASED IMPLEMENTATION DIAGRAM

SECOND PHASE
COMPLIANCE PERIODS
2027-2029 2030-2032
2033-2035



Annual Cycle for MRV Activities

Starting on 1 January 2019



Monitoring of CO₂ emissions throughout the year

Monitoring in accordance with EMP

Aeroplane Operator

Operator submits Emissions Monitoring Plan (EMP)

State approves EMP

State

State Report to ICAO

ICAO

Operator and verification body both submit Emissions Report (ER) and Verification Report (VR) to the State

Annual ER

Annual VR

Verification body

Verify ER and develop VR

Develop ER