



3rd Humanitarian Aviation Environmental Summit

Kenya's Actions on Aviation Environmental Protection

Presentation by Winstone Gicheru

13-14 November 2024

Outline of the Presentation

- **KCAA**
- **Driving Policy**
- **Environmental Protection at KCAA**
- ***Kenya's Action Plan for the Reduction of CO₂ Gas Emissions in Aviation Sector***
- **Carbon Offsetting and Reduction Scheme for International Aviation(CORSIA)**
- **Sustainable Aviation Fuel Development In Kenya (SAF)**
- **Solar at the Gate at Moi International Airport Status**
- **State Action Plan Implementations Report 2015-2020**
- **Key Take away**

Kenya Civil Aviation Authority (KCAA)

- Authority's mandate- derived from the Civil Aviation Act No. 21 of 2013 and the Civil Aviation (Amendment) Act 2016
- The vision of the Authority is to be 'a vibrant, safe, secure and sustainable civil aviation system
- mission is "to manage, promote and develop a sustainable, safe and secure civil aviation system through effective oversight, economic regulation of air transport, provision of air navigation services and delivery of quality training."

Driving Policy

- The Civil Aviation Act No. 21 of 2013 and the Civil Aviation (Amendment) Act 2016
- ICAO Assembly Resolutions
- The Climate Change Act, 2016
- Environment Management and Coordination Act No. 8 of 1999 (amended EMCA Act 2015),
- Climate Change (Carbon Markets) Regulations, 2024.

41st Session of the ICAO Assembly-2022

Resolutions on Environmental Protection from the 41st Session of the ICAO Assembly(October 2022).

- **Resolution A41-20: - noise and local air quality**
- **Resolution A41-21: - Climate change**
- **Resolution A41-22: - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)**

Resolution A41-21: - Climate change

- -Resolved that States and relevant organizations will work through ICAO to achieve a global annual average fuel efficiency improvement of 2 per cent until 2020 and an aspirational global fuel efficiency improvement rate of 2 per cent per annum from 2021 to 2050
- Requires States to prepare or update action plans and submit them to ICAO as soon as possible and review them once every three years , in order that ICAO can continue to compile the quantified information in relation to achieving the global aspirational goals,

Resolution A41-22: - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

- Determined CORSIA to be the only global market-based measure applying to CO₂ emissions from international aviation so as to avoid a possible patchwork of duplicative State or regional MBMs, thus ensuring that international aviation CO₂ emissions should be accounted for only once;
- Requested Member States to take the necessary action to ensure that national policies and regulatory frameworks are established for the compliance and enforcement of the CORSIA, in accordance with the timeline by Annex 16, Volume IV;

Kenya Climate Change Act No. 11 of 2016

- In its Section 15(5), the Kenya Climate Change Act No. 11 of 2016 defines the duties of the public sector relating to climate change, stating in particular that each **state department and national government public entity** shall report on sectoral greenhouse gas emissions for the national inventory and designate a unit with adequate staff and financial resources and appoint a senior officer as head of the unit to coordinate the **mainstreaming of the climate change action plan** and other climate change statutory functions and mandates into sectoral strategies for implementation.

Kenya 's Aviation Net Zero Commitments

**Implementation of
The Climate Change
(Amendment) Act,
2023**

Implementation of
ICAO Annex 16 on
Environmental
protection by
developing relevant
regulations.

Created an Aviation
environmental
protection
**department in
KCAA**

Development,
implementation and
review of **State
Action plan for the
environment.**

Kenya decided to
**voluntarily
participate in the
CORSIA** scheme
with effect from
2021 to 2023.

Approved the Climate Change
**Carbon Market regulations
2024**

In the spirit of the ICAO no
Country Left Behind initiative,
Kenya has assisted other African
States in **capacity building under
ACT - CORSIA** implementation in
Collaboration with UK CAA

SAF Ambassador in The Clean
Skies for Tomorrow **SAF Policy
tool Kit** (signed at Cop26)

Signatory to the **2015
Paris Agreement**

Action plan

Action plan is a tool that a State can use to showcase and communicate both at the national and international level, our efforts to address their CO₂ emissions from both international and domestic aviation. In addition, through the development of an action plan, Kenya could:

- a) better understand the share and projections of international aviation CO₂ emissions;
- b) experience enhanced cooperation between all aviation stakeholders that can positively reflect on their operational areas;
- c) identify the most relevant mitigation actions;
- d) streamline policies;

Action plan cont..

- e) enhance stakeholders' support and understanding for policy decisions;
- f) establish cross-sectoral partnerships;
- g) promote capacity building;
- h) multiply the environmental effects of mitigation measures;
- i) facilitate technology transfer; and
- j) identify assistance needs

Action plan Cont..



3rd ACTION PLAN FOR CO₂ EMISSIONS REDUCTION IN THE AVIATION SECTOR 2022-2028

- The action plan was completed and Approved the director general on 22 September 2022
- The action plan was forwarded to ICAO before the 22 September 2022



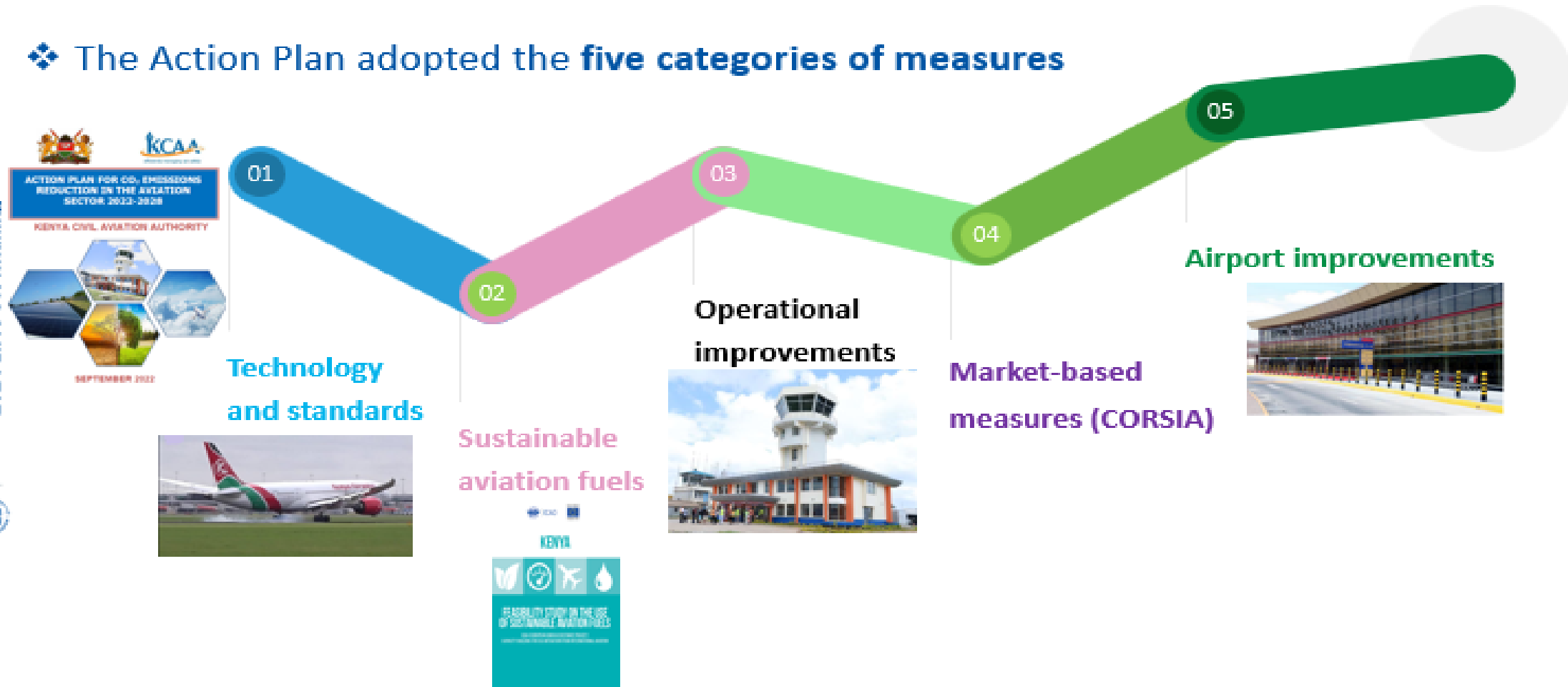
ACTION PLAN FOR CO₂ EMISSIONS REDUCTION IN THE AVIATION SECTOR 2022-2028

KENYA CIVIL AVIATION AUTHORITY



3rd ACTION PLAN FOR CO₂ EMISSIONS REDUCTION IN THE AVIATION SECTOR 2022-2028

- ❖ Prepared and Submitted the Action Plan in **Line with ICAO Resolution A40-18** and sets an aspirational goal to improve fuel efficiency at average annual rate of 2 percent from 2021 to 2050.
- ❖ The Action Plan adopted the **five categories of measures**



Composition of the AEWG

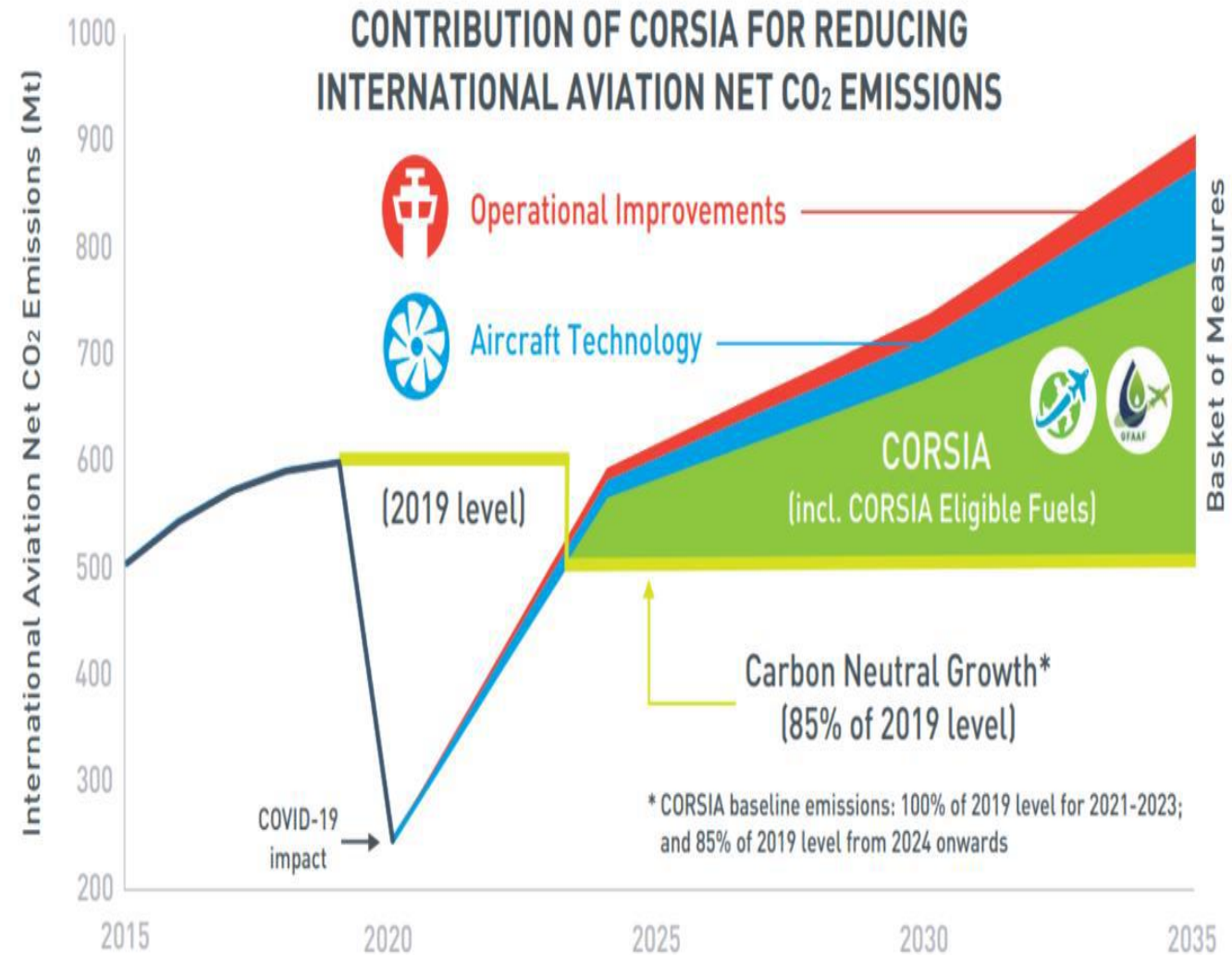
- Kenya Civil Aviation Authority (ANSP and Regulator)
- Ministry of Transport
- National Environment Management Authority (NEMA)
- Ministry of Environment
- Kenya Airports Authority
- Meteorology Department
- Department of Defence



- National Airlines:
 - Kenya Airways
 - SAX/540
 - Air Kenya
 - ALS
 - African Express Airways
- Kenya Association of Air Operators
- Ground Handlers

Carbon Offsetting and Reduction Scheme for International Aviation(CORSIA)

- CORSIA is a global market-based measure designed to offset international CO₂ aviation emissions
- In 2016, the International Civil Aviation Organization (ICAO) adopted the **Carbon Offsetting and Reduction Scheme for International Aviation** (CORSIA) to address CO₂ emissions from international aviation.
- The target is to stabilize the levels of the GHG emissions from 2020 onwards with a **baseline that is 85%** of the emissions generated in 2019.
- Offsetting of CO₂ emissions will be achieved through the acquisition and cancellation of emissions units from the global market by aeroplane operators.



Phased Implementation

128 States of international aviation activity) to participate in the pilot phase
(As of 1 August 2024)



Second phase participation criteria:

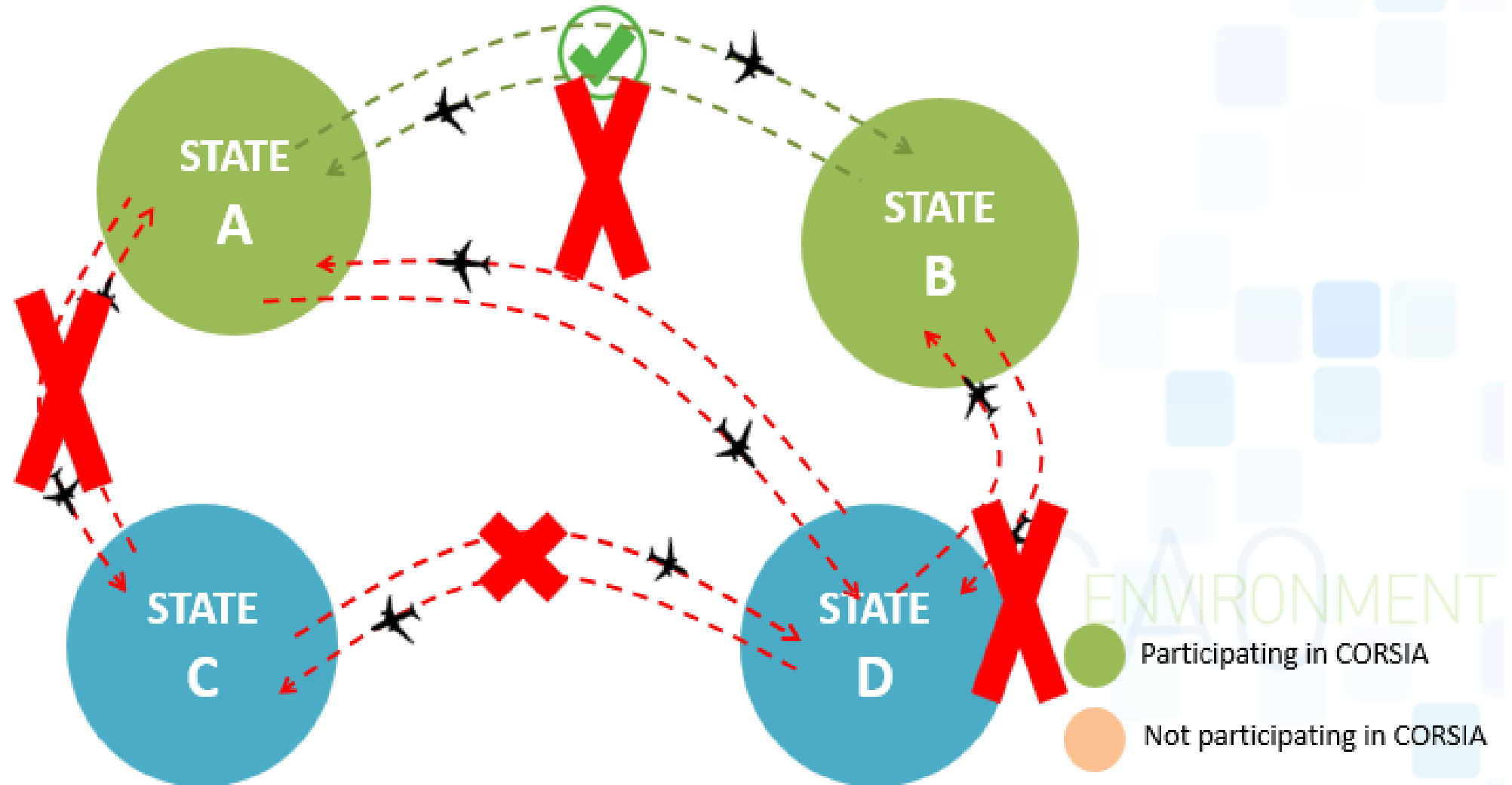
- 90% of global RTK
- 0.5% of RTK

Exemptions:

- LDCs, LLDCs, SIDS

All Member States are encouraged to participate in the pilot and first phase of the CORSIA

Emissions Coverage: Route-based Approach



MRV Requirements:

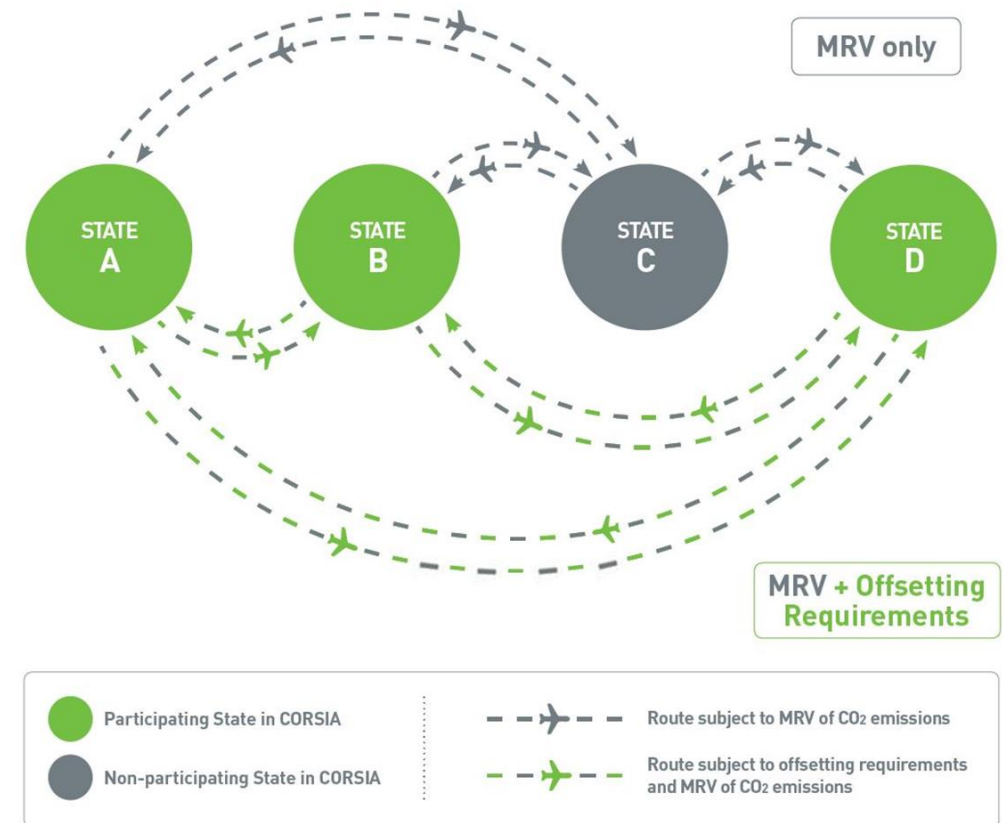
- From the use of an aeroplane with a maximum certificated take-off mass of greater than 5,700 kg
- Conducting international operations on or after 1 January 2019
- An operator that produces annual CO₂ emissions greater than 10,000 tonnes
- With the exception of:
 - Humanitarian, medical and firefighting operations

Monitoring, Reporting and Verification

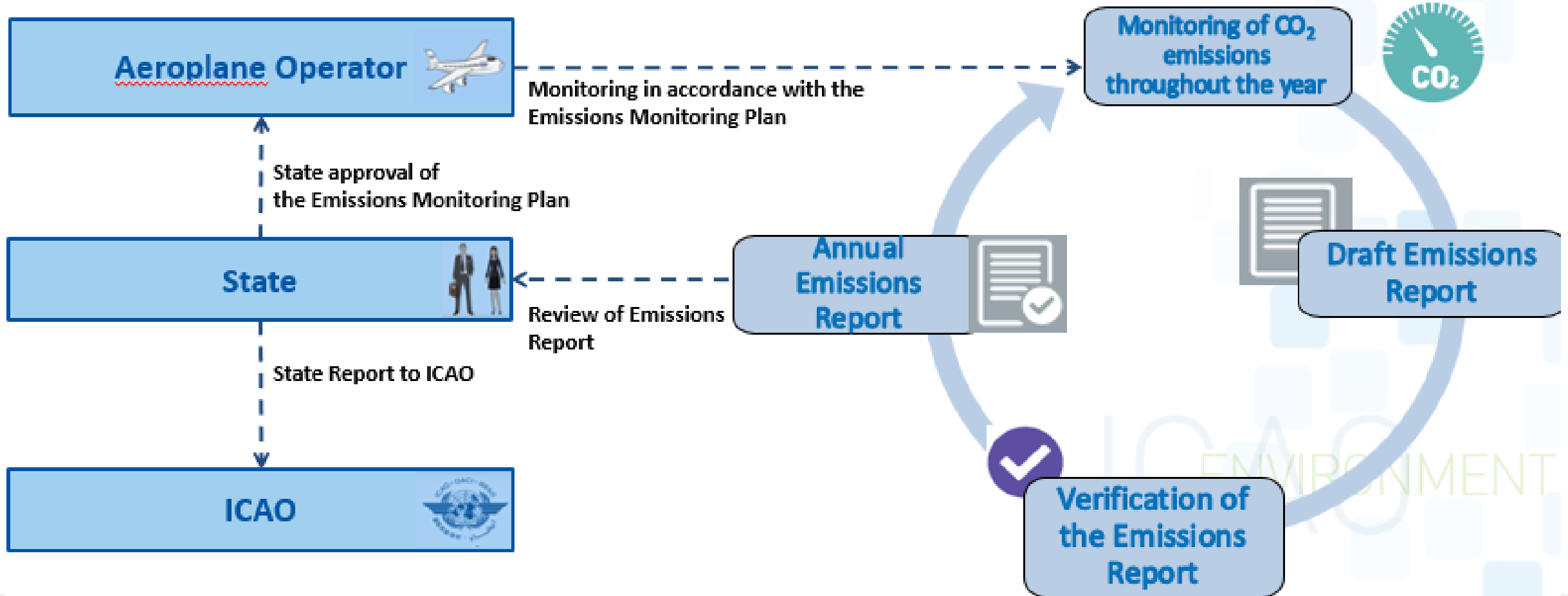
- **Monitoring, Reporting and Verification (MRV) is the backbone for the successful implementation of CORSIA, which requires:**
 - Reliable information on CO₂ emissions, and on compliance with offsetting requirements

ALL ICAO MEMBER STATES with aeroplane operators conducting international flights are required to monitor, report and verify CO₂ emissions from these flights every year from 2019, independent of their participation in CORSIA.

ICAO MEMBER STATES PARTICIPATING IN CORSIA need to ensure that their aeroplane operators comply with the CORSIA offsetting requirements every three years (starting in 2021), in addition to annual CO₂ MRV.



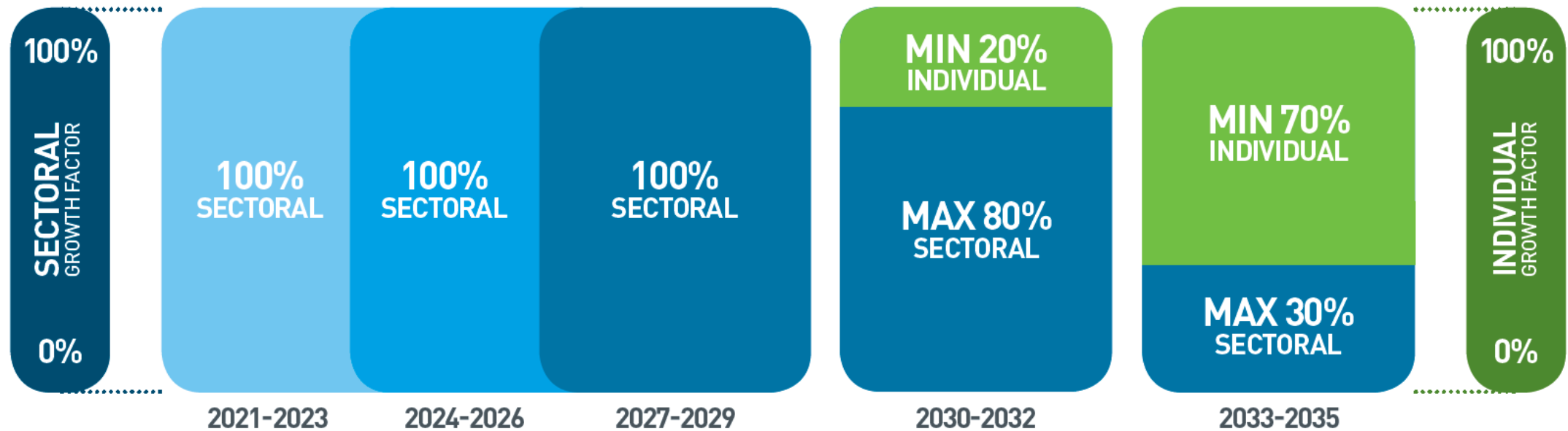
Monitoring, Reporting and Verification (MRV) of CO₂ Emissions – Annual MRV Cycle



Offsetting Requirements

$$\text{Operator's annual emissions} \times \text{Growth Factor} = \text{CO}_2 \text{ offset requirements}$$

The Growth Factor changes every year taking into account both the sectoral and the individual operator's emissions growth. The Growth Factor is the percent increase in the amount of emissions from the baseline to a given future year, and is calculated by ICAO.



Offsetting Requirements

How offsetting requirements under CORSIA are met

$$\text{Operator's Annual CO}_2 \text{ Offsetting Requirements} = \text{Operator's Annual CO}_2 \text{ Emissions subject to Offsetting Requirements} \times \text{Growth Factor}^*$$

After the **calculation of the offsetting requirements** to be attributed to an aeroplane operator (see above):

- The operator reports the use of **CORSIA Eligible Fuels (Sustainable Aviations Fuels and Lower Carbon Fuels)** for the compliance period.)
- The **operator purchases and cancels eligible emissions units equivalent** to final offsetting requirement for the compliance period.



The operator reporting the use of CORSIA eligible Fuels will be able to **reduce its CO₂ Offsetting requirements.**

New Entrants

- New entrant (aeroplane operator) is exempted from CORSIA offsetting requirements for the first 3 years or until its annual emissions exceed 0.1% of total 2020 CO₂ emissions from international flights, whichever comes first.
- Example: Operators A and B start operations in year 2022 as shown in the table below. According to the paragraph above, Operator A will have offsetting requirements in 2025, and Operator B in 2024

Operator	Emissions (% of total emissions in 2020)			
	2022	2023	2024	2025
A	0.02	0.04	0.06	0.08
B	0.06	0.11	0.16	0.21

Technical Exemptions

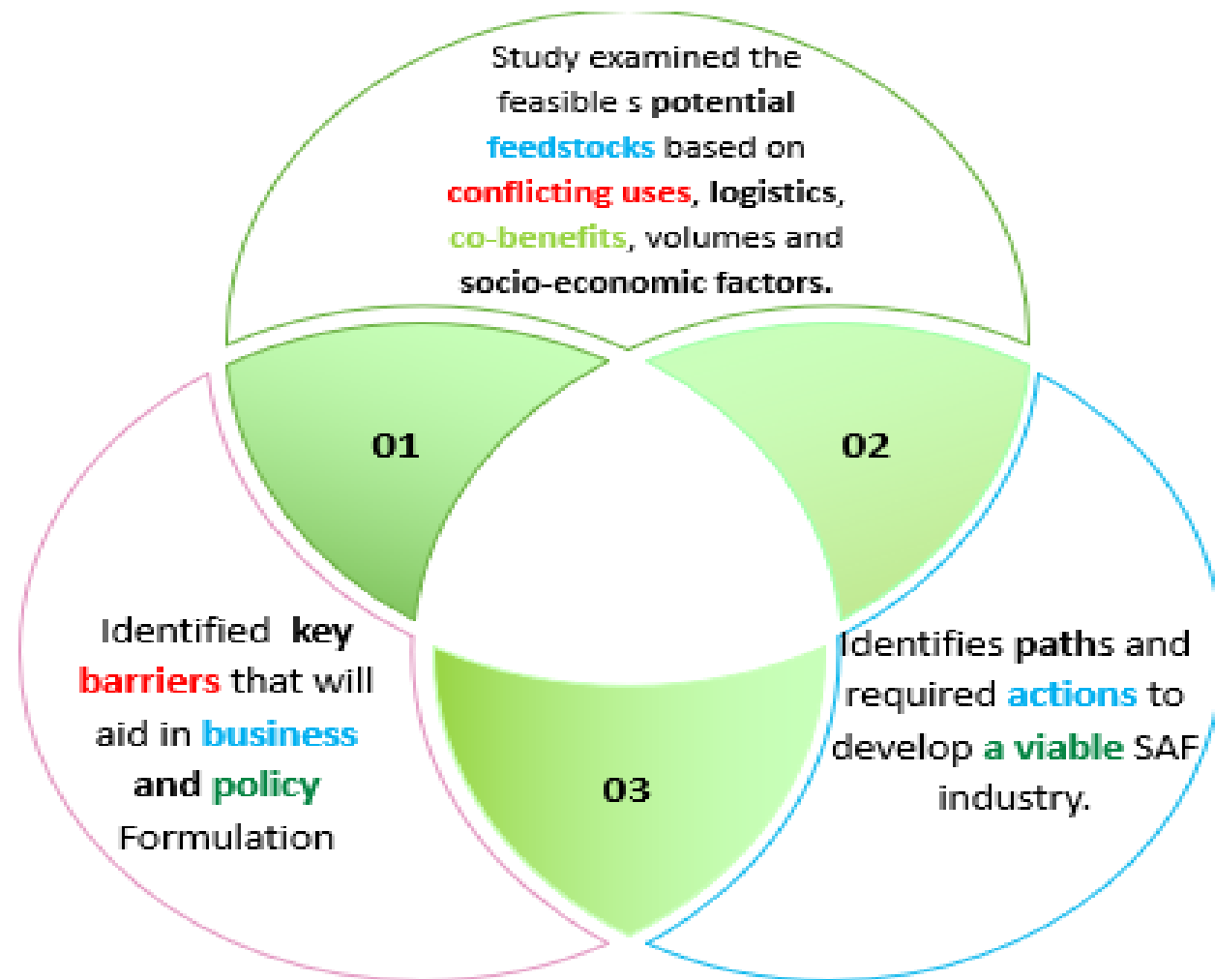
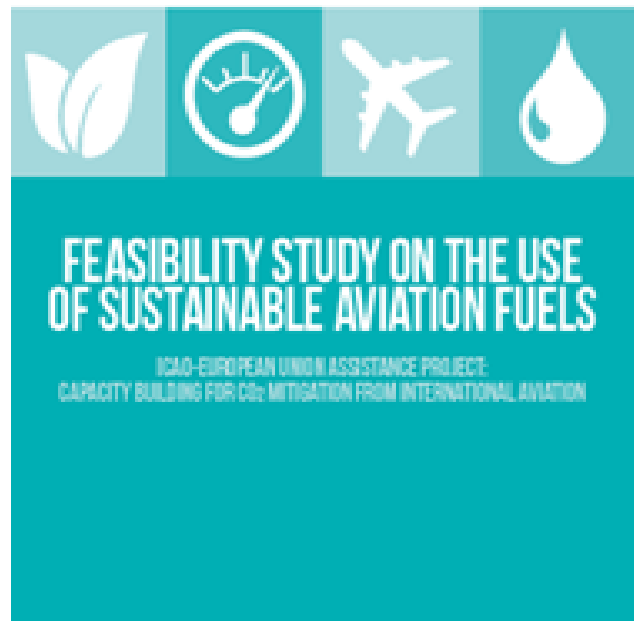
- Outside CORSIA scope:
 - Emissions from aeroplane operators emitting less than 10 000 metric tonnes of CO₂ emissions from international aviation per year
 - Emissions from aircraft with less than 5 700 kg of Maximum Take Off Mass (MTOM)
 - Emissions from humanitarian, medical and firefighting operations

Results from SAF feasibility Study report

The SAF Feasibility Study was done in 2018 under ICAO-EU assistance Project



KENYA



https://www.icao.int/environmental-protection/Documents/FeasabilityStudy_Kenya_Report-Web.pdf

Kenya SAF Status

RESULTS FROM SAF FEASIBILITY STUDIES REPORT 2018_ SAF RECOMMENDATION

Used Cooking Oil (UCO)

- Large volumes – high growth/energy dense
- Proven conversion technologies/can utilise existing petroleum infrastructure
- Sustainable/waste does not compete with food/improved environmental outcomes

Sugar Cane Tops

- Large volumes/NOT energy dense/region limited
- Conversion technologies still to be commercialised/some conversion tech certified
- Sustainable - does not compete with food/reward for farmer
- Medium to long term option requiring further study

Municipal Solid Waste

- Very large volumes/Not energy dense
- Conversion technologies still to be commercialised/some conversion tech certified
- Sustainable - does not compete with food/social and environmental outcomes
- Medium to long term option requiring further study

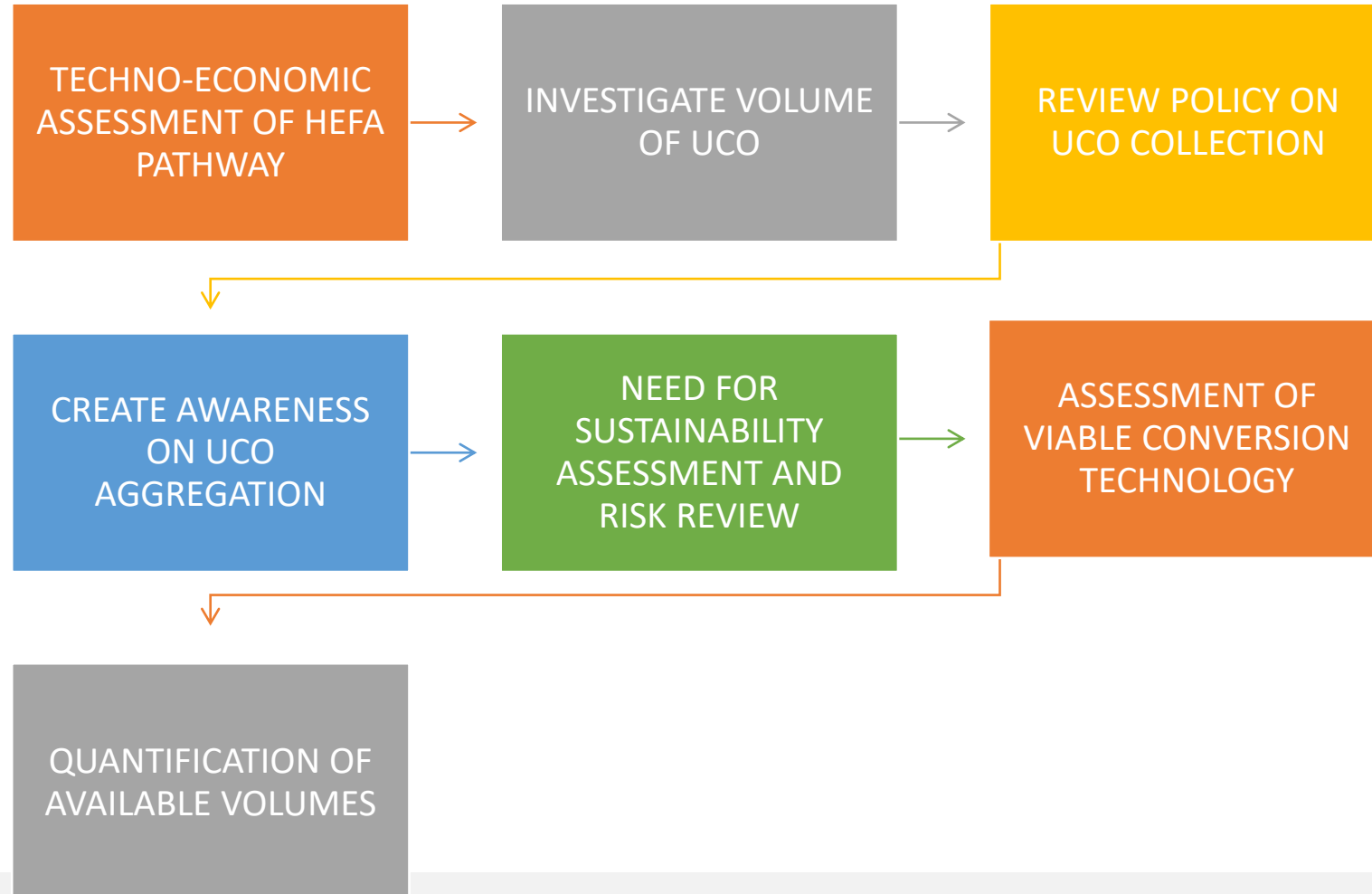
Water Hyacinth

- Medium to large volumes possible/region limited/low energy density/hi moisture
- Would help solve significant social, environmental and economic issues
- Difficult to harvest and process
- Long term option requiring in-depth study

Lesson Learnt

RESULTS FROM SAF FEASIBILITY STUDIES REPORT 2018 CONT.

FURTHER STUDIES RECOMMENDED FOR
USED COOKING OIL



SAF Development Priority Actions

The following are the Key priority Actions/Collaborations for SAF development in Kenya

Development of **National SAF policy**

Develop SAF National **Strategy and Roadmap**

Review of **incentive policy** to increase production of SAF

Capital investment to scale up SAF production

Capacity building through technical training to experts and Knowledge transfer.

Support **SAF pilot** project development

Support and collaborate in SAF through **research and development.**

Creation of **stakeholder** awareness & Working Groups

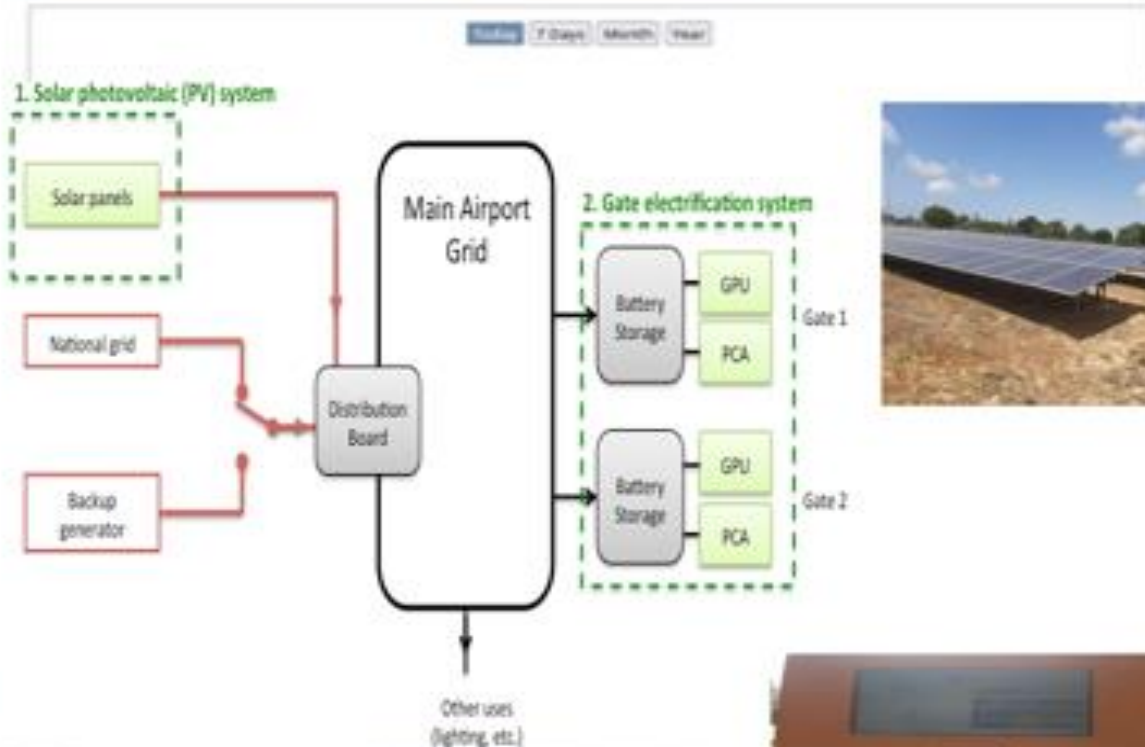
Establishment of local, **Regional and international partnerships** to Scale up SAF developments

SOLAR AT THE GATE AT MOI INTERNATIONAL AIRPORT STATUS

Funded and implemented in 2019 under ICAO-EU assistance Project where Kenya was a beneficiary State



Project funded by the European Union
EuropeAid/Development Cooperation Instrument
DOI: ENW2013/322-049



System Size: 507kWp

Installation Date: 16/05/2019

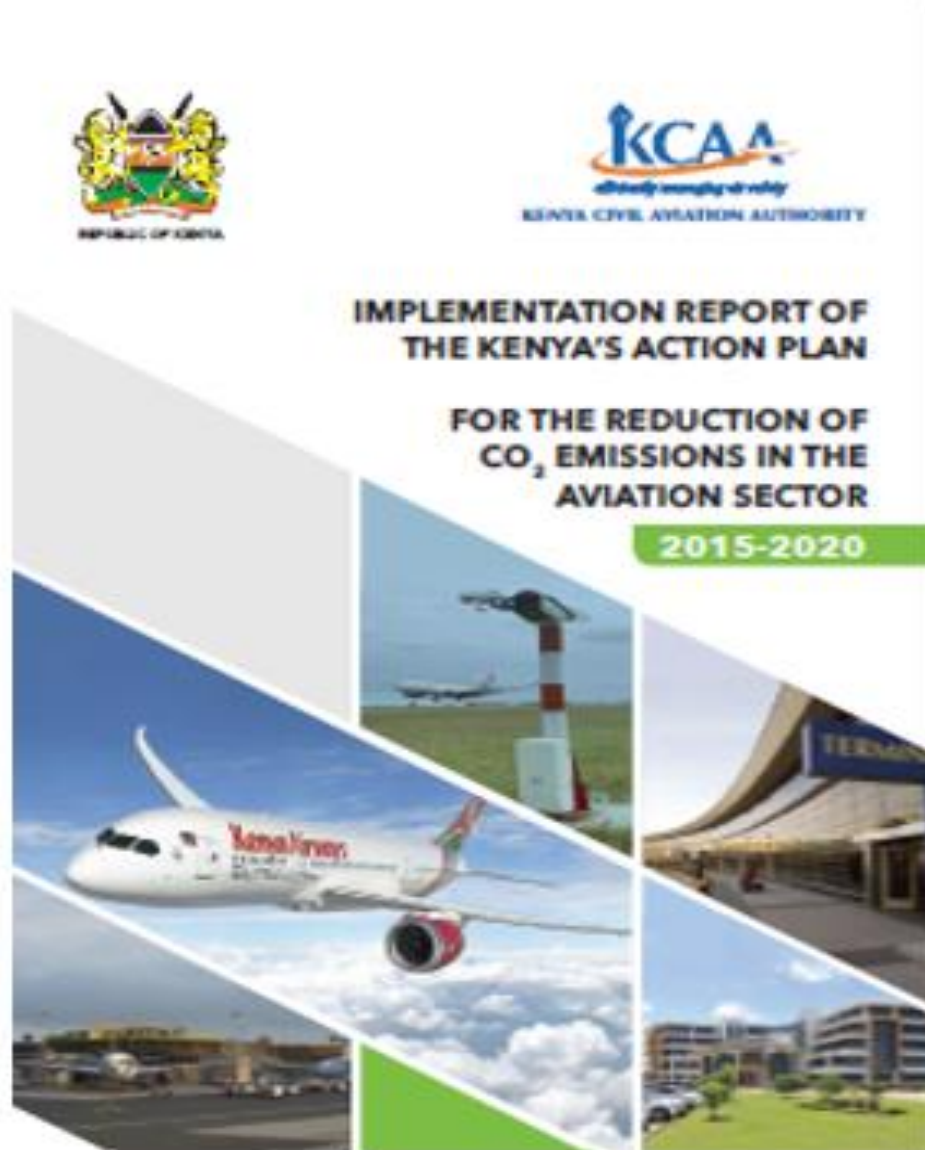


- ✓ The solar-at-gate project **eliminates** CO₂ from aircraft parked at the gate,
- ✓ The solar avoid at least **1,300 tonnes** of CO₂ every year.
- ✓ Generates upto **0.5MW**
- ✓ Airport gate equipment serve more than 2,500 flights per year, demonstrating a concrete solution to reduce aviation carbon emissions.
- ✓ Solar at Gate is a **key innovation** in the effort to mitigate carbon emissions and achievement of LTAG for both Airports and Airlines
- ✓ The Solar Photovoltaic and Gate Electrification System project has a **public display kiosks** for public viewing and **Monitoring** usage and generation



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STATE ACTION PLAN IMPLEMENTATION REPORT 2015-2020



KEY ACHIEVEMENT



The implementation of the Action Plan resulted into the reduction of **1,252,503.78tCO₂e** for the last five years (2015-2020)

Active participation in environmental working group meeting

New airport terminal developed that is green

Fleet renewal by national carrier and Private airlines



Installation of Modern Air navigation Equipment

Installation of Solar Farms in different airports and **ANS station**



Promotion of research on use of Upper airspace

Key Take away



Action Plan is a good **Planning tool** for State in emission reduction



Need for **cooperation** among all Stakeholder



Submission of the **Action Plan to ICAO** and **monitoring** its implementation
Progress is importance



Collaboration among partners i.e. Government, Airline and Private sector



Communication among Stakeholders is important



Data Driven approach for Monitoring the State Action Plans to inform decision making

THANK YOU

