



ICAO

ENVIRONMENT

States' Action Plans Seminar

Environment & Aviation In Lebanon (State Action Plan)

By : Dr. ALI ELCHAAR

Acting Head of General Climate Division
Directorate General of Civil Aviation
CORSIA & SAP National Focal Point

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Objectives

- ✓ **Know Lebanon & Beirut – RHIA**
- ✓ **Aviation History in Lebanon**
- ✓ **Air transport in Lebanon**
- ✓ **Aviation and Environment in Lebanon**
- ✓ **Lebanon Action Plan Goals**
- ✓ **CORSIA implementation in Lebanon**
- ✓ **SWOT Analysis.**
- ✓ **Summing Up and Future Steps**



Do you know **LEBANON**, really!

Located on the Eastern Coast of the Mediterranean Sea Basin.

Latitude 33,10 – 34,40 N

Longitude 35,15 – 36,10 E

- ✓ Area 10,452 Km² ; Population = 6 millions
- ✓ 2/5 of its area is mountainous
- ✓ Highest mountain peak 3,086 m
- ✓ Mean mountain height ~ 550 m

Rainfall:

Coast: 800 mm

Mountains: 900 to 1650 mm

Bekaa : 250 to 650 mm





Aviation History – BRHIA (1913 – Present)



The First Lebanese pilot was Yousef Akkar...

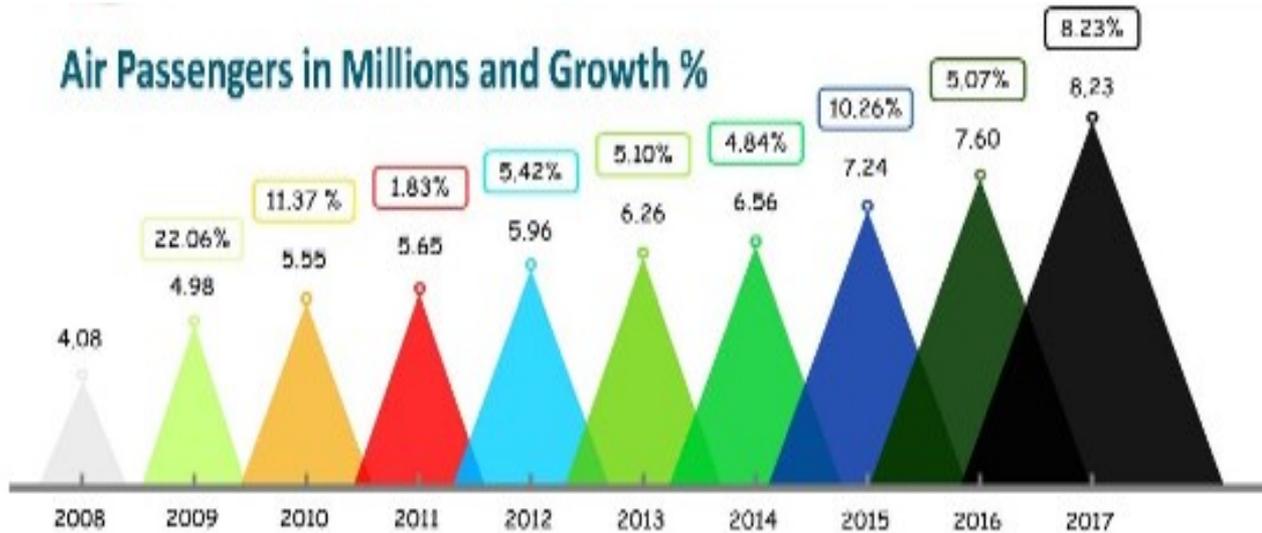
Learned Aviation to be Certified in 1927..

Lebanon was the first country in the Middle East that experienced and tasted the aviation when a French pilot “Jules Vedrines” landed in Beirut; just a year before the First World War.



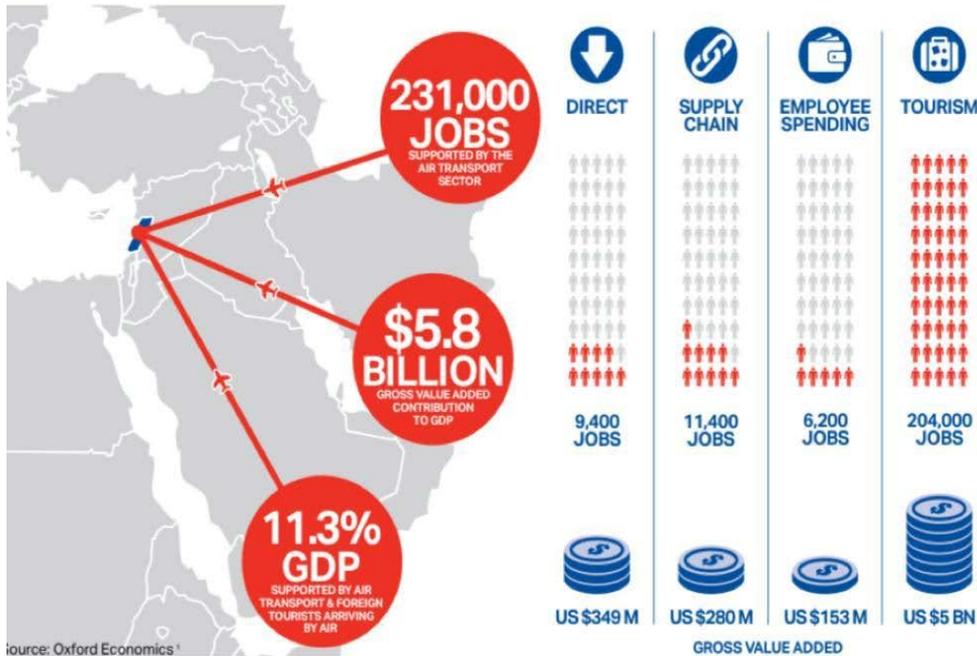
Air transport in Lebanon

Air Passengers in Millions and Growth %

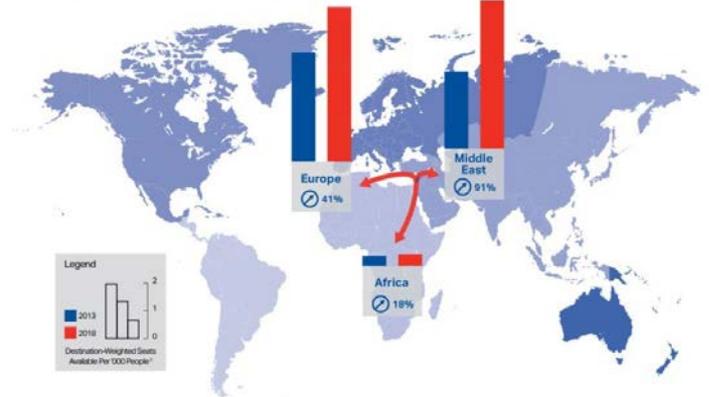


Air Transport in Lebanon

Air Transport as key drivers of global economic growth (IATA)



Map of Lebanon's air connectivity, by its largest markets (segment basis)⁴



Map of Lebanon's air connectivity by its largest markets (IATA)



1. Develop a better **understanding** of the share and projections of international aviation CO₂ emissions;
2. Enhanced **cooperation** between all aviation stakeholders that can positively reflect on their operational areas;
3. Identification of the most relevant **mitigation** actions;
4. **Streamlining** of policies;
5. Enhancing stakeholders' **support and understanding** for policy decisions;



6. Establishment of cross-sectoral **partnerships**;
7. Promotion of **capacity building**;
8. Multiplication of the **environmental effects** of mitigation measures;
9. Facilitation of **technology transfer**; and
10. Identification of **assistance needs**.

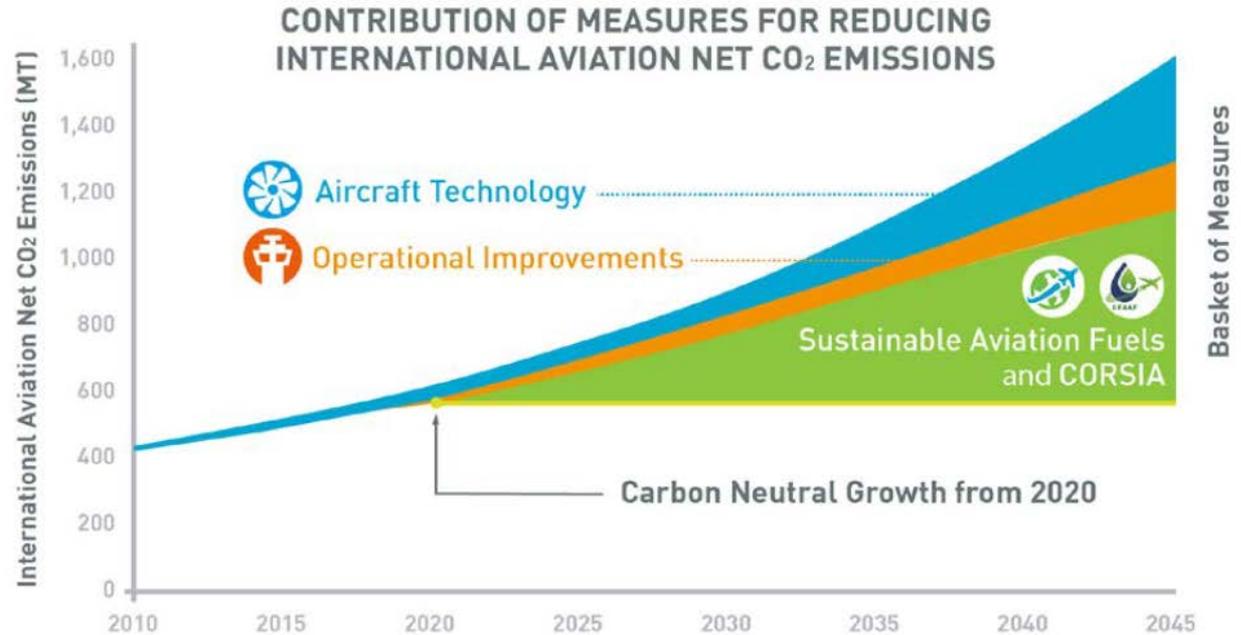
Purpose (State Action Plan)

☐ For State:

Opportunity to identify measures that will improve fuel efficiency and reduce emissions.

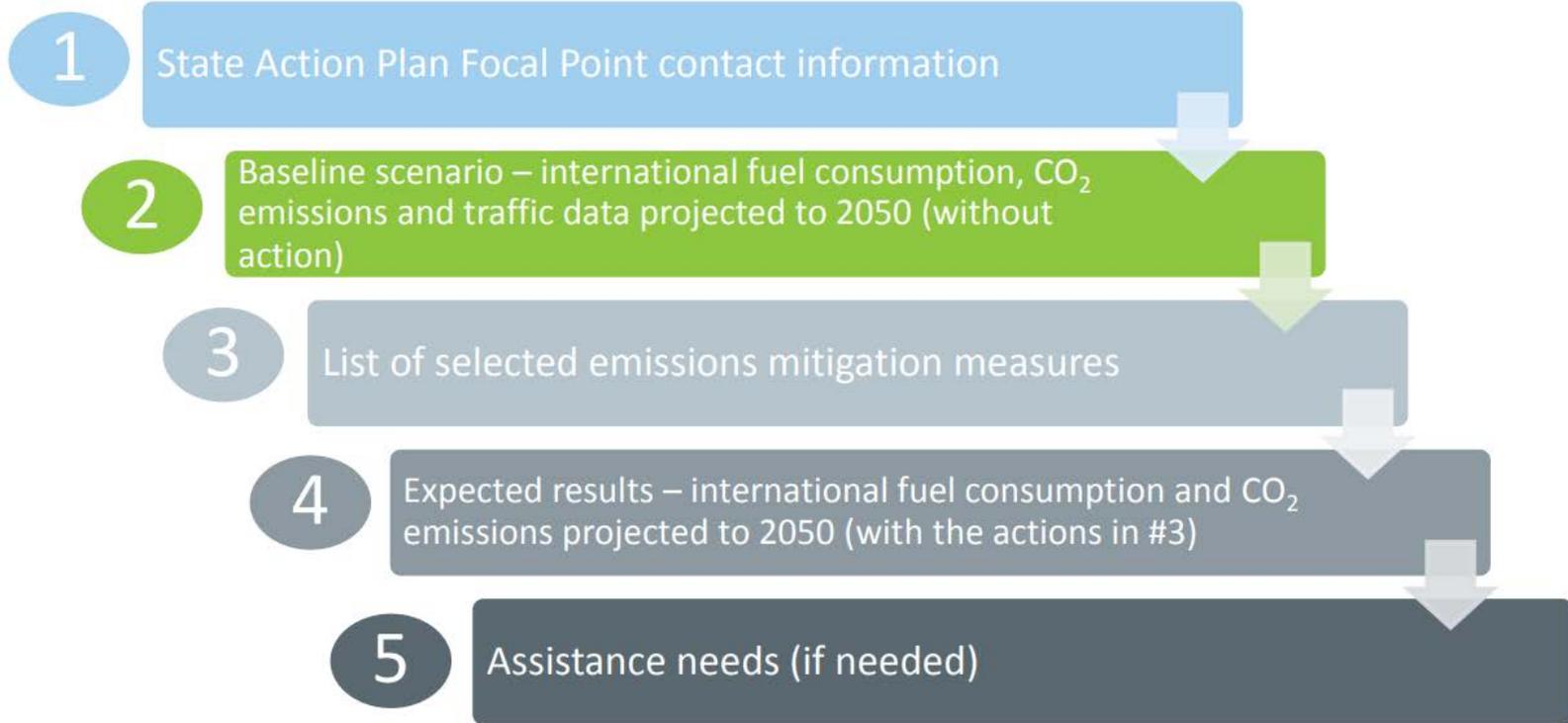
☐ For ICAO:

Assess future progress toward the achievement of ICAO global aspirational goals..





State Action Plan Minimum Contents



- **The State:**
 - Designates a State Action Plan Focal Point and communicates their contact information to ICAO
- **The Focal Point:**
 - Coordinates with ICAO
 - Establishes a National Action Plan Team
 - Develops the State Action Plan and submits the document to ICAO



The Action Plan Focal point

- The Focal Point is the only person authorized to submit the Action Plan and to access the ICAO APER website
- The Focal point plays a critical role in the successful development of an Action Plan. He/She:
 - Drives various interests towards a common goal – State Action Plan
 - Possess the leadership skills to get people on-board and motivate them
 - Is a “do-er”
 - Is typically a member of the CAA / DGCA

The Role of the Focal Point:

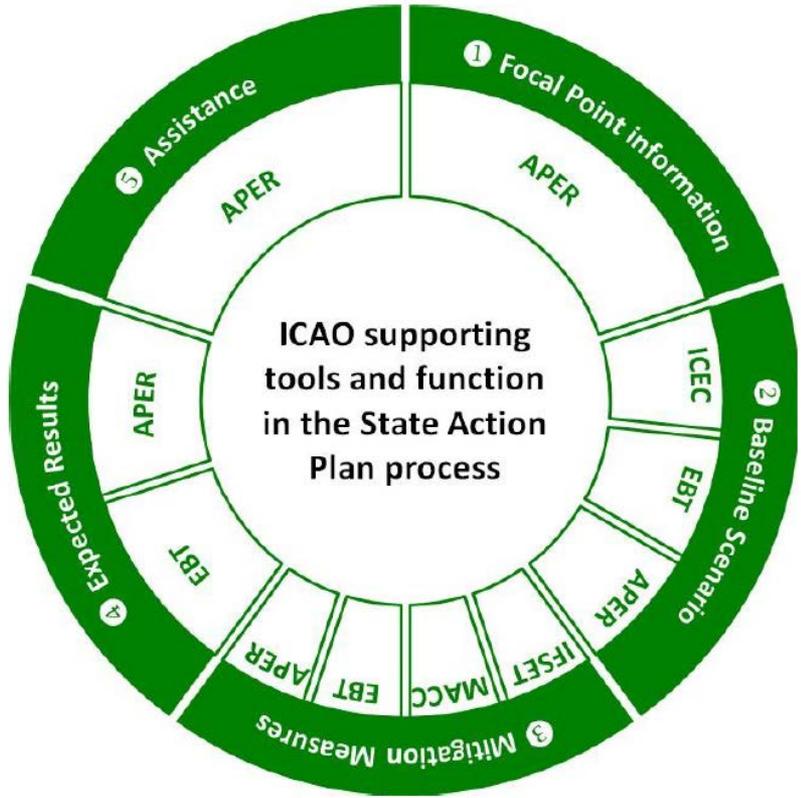
- Lead the development of the SAP.
- Coordinate Amongst Stakeholders.
- Connect with ICAO.



ICAO Tracker



CO₂ Emissions Reduction Initiatives

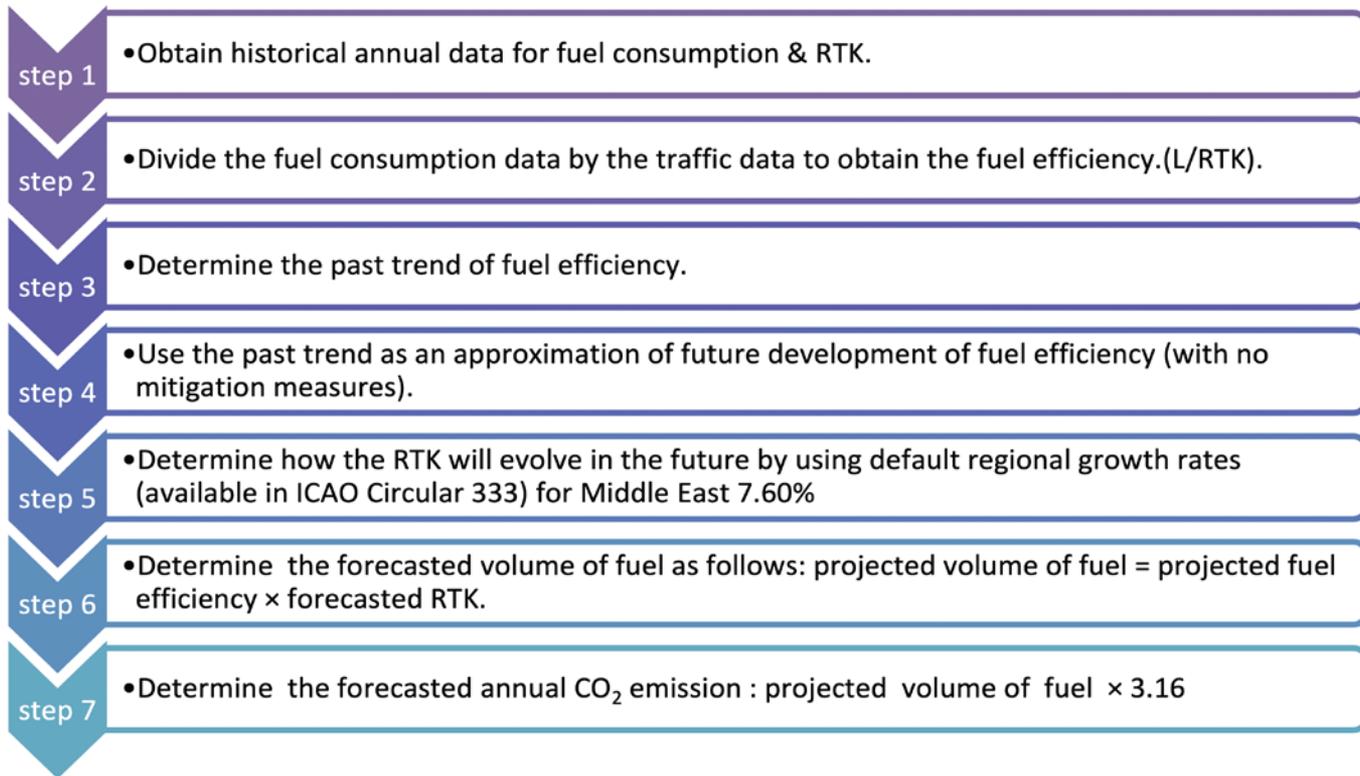


Lebanon's Action Plan On Reducing CO₂ Emissions From International Aviation



| Contact Information | Baseline (Without Action) | List of selected measures | Expected Results | Assistance Needs |
|---------------------|---------------------------|---------------------------|------------------|------------------|
| ✓ Done | ✓ Done | ✓ Done | ✓ Done | ✓ Done |

Lebanon will intend to adopt its SAP at the first of June 2022 on Qualitative & Quantitative Basis



Baseline Scenario Examples

Depending on the availability of historical data, three different methods (depending on the size of the fleet) can be applied for generating a baseline scenario:

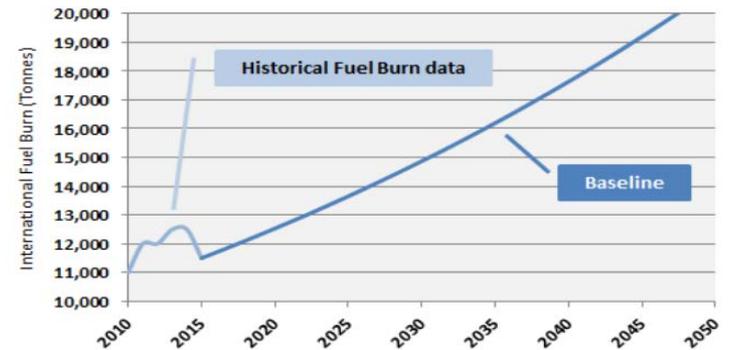
a) *Method A*. The State has a current fleet size of no more than ten aircraft.

b) *Method B*. The State has a current fleet size of more than ten aircraft, and has access to data for at least two years.

c) *Method C*. The State has a current fleet size of more than ten aircraft, and has access to data for a single year only.

Doc 9988 Chapter 3
APER, EBT, ICEC

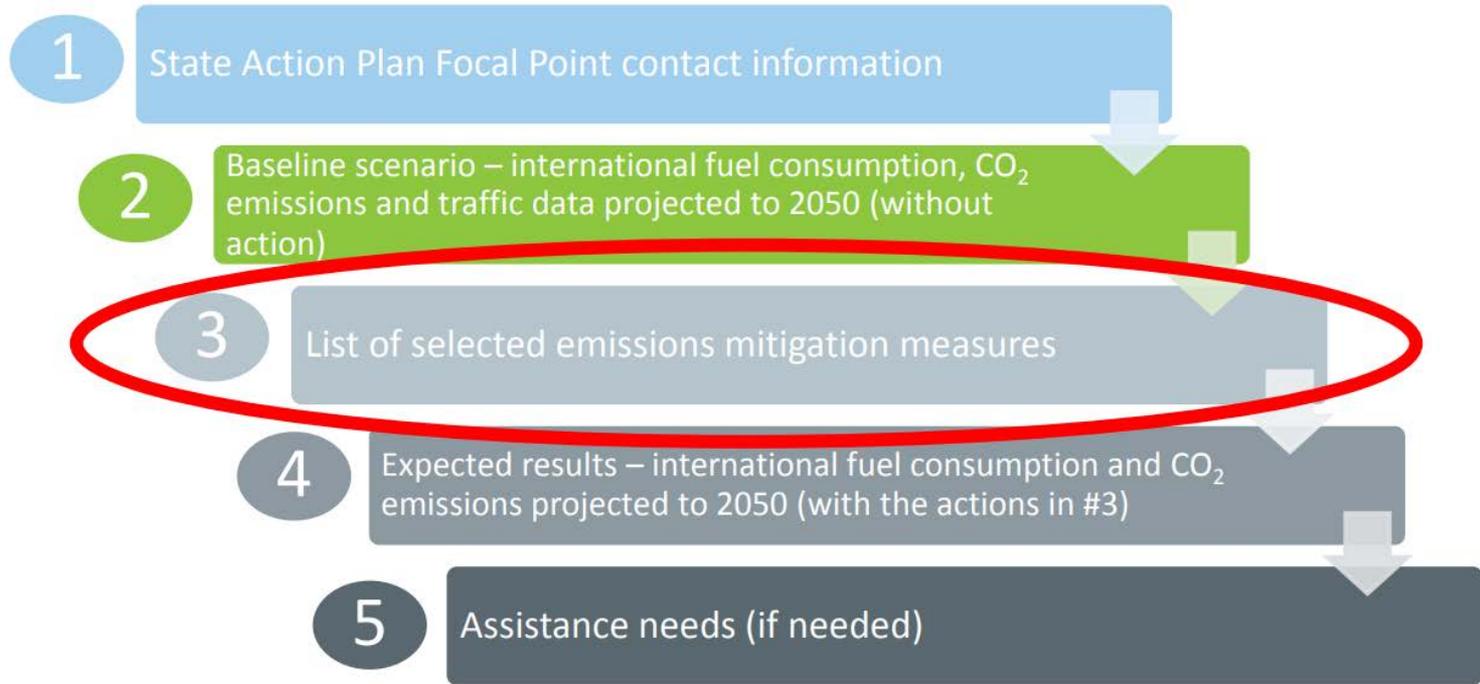
| Year | Example | | |
|------|-----------------|--------------------|-----------------|
| | Historical Data | | Fuel efficiency |
| | RTK * ('000) | Fuel Burn (tonnes) | |
| 2010 | 25'000 | 11'000 | 0.440 |
| 2011 | 30'000 | 12'000 | 0.400 |
| 2012 | 32'000 | 12'000 | 0.375 |
| 2013 | 33'000 | 12'500 | 0.379 |
| 2014 | 32'000 | 12'500 | 0.391 |
| 2015 | 30'000 | 11'500 | 0.383 |





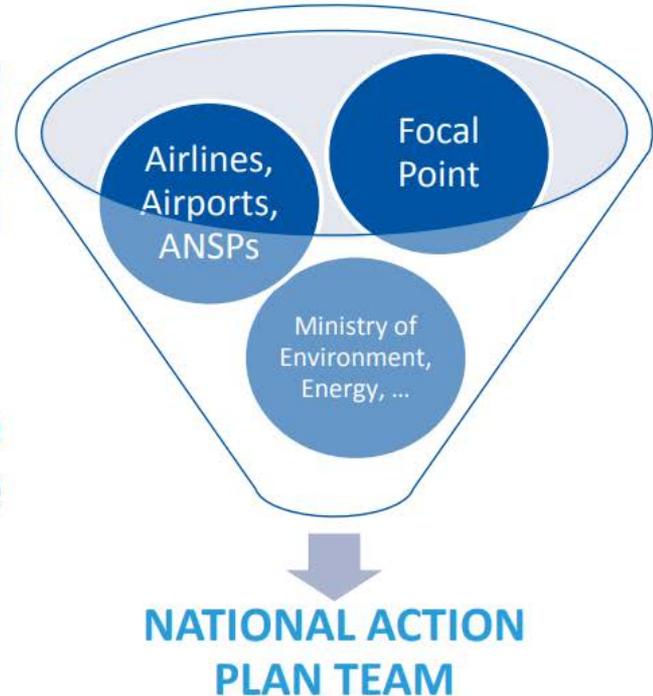
- ✓ Lebanon used the ICAO “**Method B, Case 1**”
- ✓ As, Lebanon has fleet size of more than 10 aircraft and data available for at least two years (Doc. 9988, Chapter 3; Clause: 3.4.10).

SAP & Minimum Contents

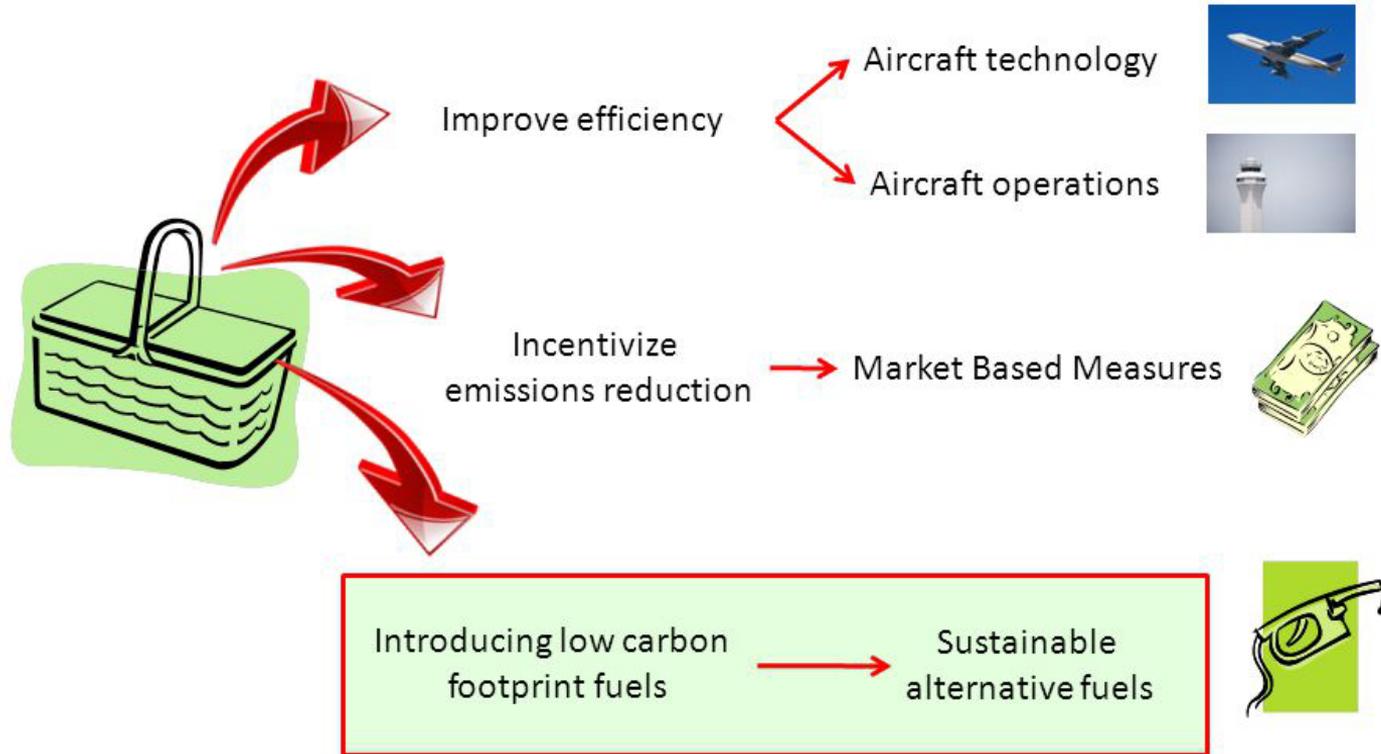


Selection of Mitigation Measures

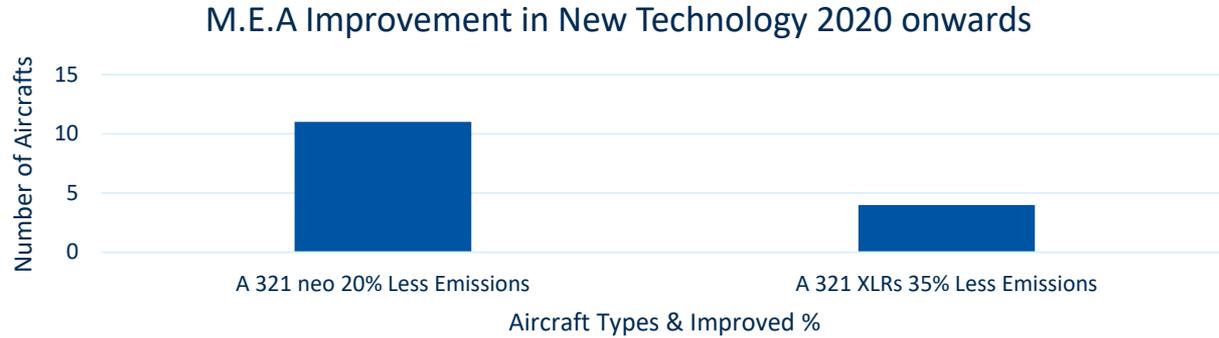
- The Focal Point should always work in collaboration with the **National Action Plan Team**
- **Context** is key for the selection of appropriate mitigation measures



Basket of Measures



Mitigations in Lebanon (Fleet Renewal)



Serial number 10,000. is the third A321neo to join the MEA fleet.

20 -35 % more fuel efficient





Action Plan For Noise

- **A) Reduction of Noise at Source:**

Lebanon has adopted ICAO's Annex 16, Vol I and requires all commercial aircraft to be noise certified in accordance with this Annex. Regarding to : Act N. 663, Civil Aviation Safety Act of 2005.

- Regarding environmental protection, article 51 of Act N. 663 states that:

“No aircraft should fly over Lebanon unless it is subject to the provisions of the regulations issued by the Civil Aviation Administration and related to noise, engine smoke, gaseous emission, fuel ventilation and other issues related to environmental protection from aircraft operation.”

- In 2007 the DGAC issued a policy preventing aircraft older than 15 years from being registered in the country. The net effect, in practice, is to prohibit the registration of Chapter 2 aeroplanes.

Mitigations in Lebanon

- **B) Noise abatement operational procedures:**

The Lebanese AIP indicates that noise abatement procedures are in effect at Beirut International Airport, for which purpose runways 21 and 34 have been designated as preferential for takeoff and runways 03 and 16 for landing.

- Minimize the need to fly over densely populated areas, taking advantage of the fact that the airport is situated directly by the sea.

- **C) Operating restrictions:**

There are no operating restrictions and there is no specific national legislation contemplating the establishment of such restrictions.

- **D) Land-use planning and management:**

In the vicinity of Beirut airport there is one Land Use Plan currently in force, since 2004, and another is being drafted for a neighboring area (Not enough).



Mitigations in Lebanon

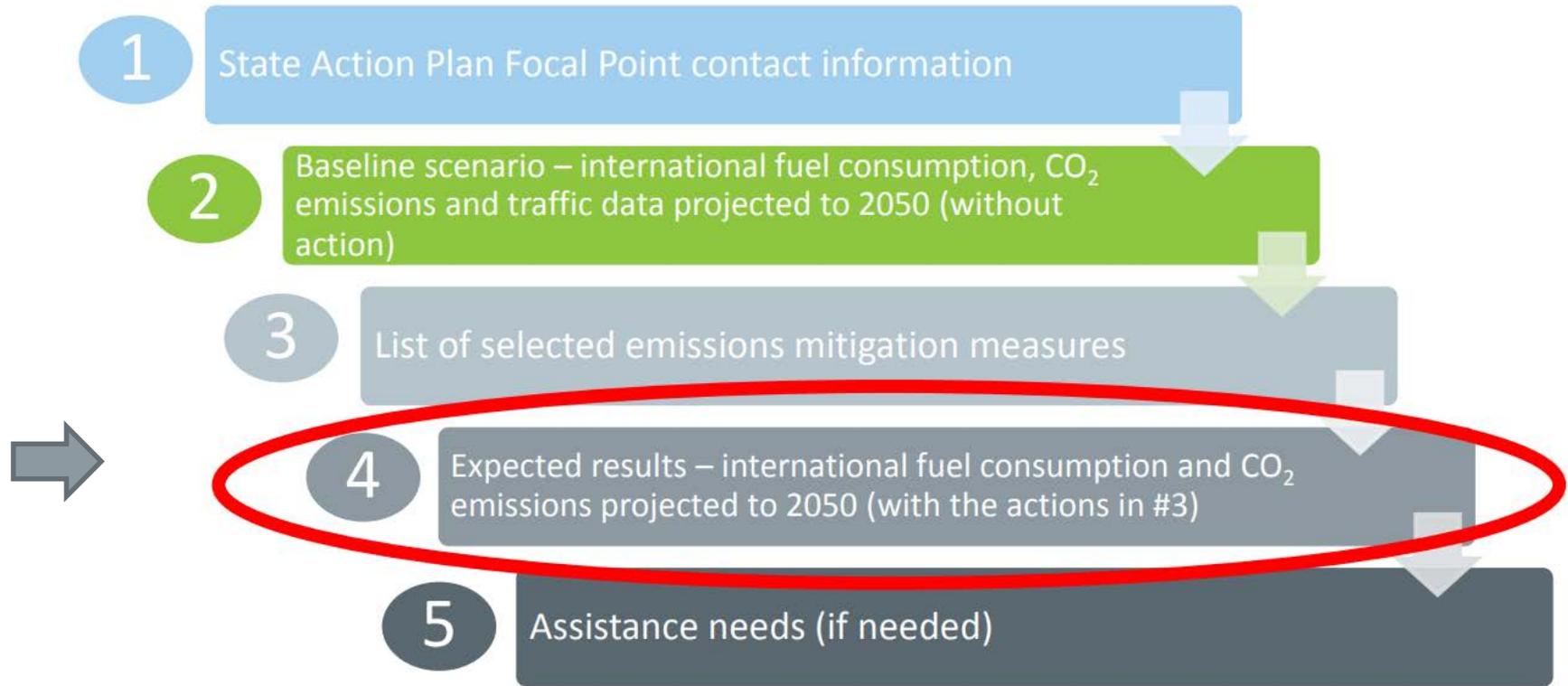


BASKET OF MEASURES

1. The flag carrier MEA continually invests in modernizing its fleet
2. Purchasing 15 Airbus family A320neo family of aircraft (eco-friendly); Reduction of millions of tonnes per year; Minimizing fuel burn.
3. Operational procedures: Single engine taxi in, Using APUs, Shortening the routes and introducing paperless operations
4. Improved Air traffic Management; optimizing the routes....
5. Green Initiatives and Regulatory measures (CORSA – MRV Implementation.....)

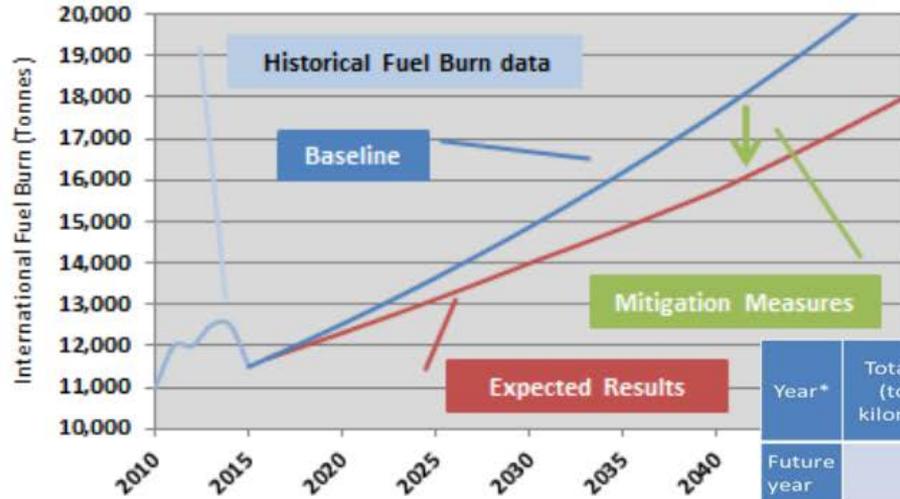


Expected Results





Expected Results



Baseline scenario

List of Mitigation Measures

Expected Results

| Year* | Total RTKs (tonne-kilometres) | International RTKs* (tonne-kilometres) | Total fuel (litres) | International fuel (litres)* | Total CO ₂ emissions (metric tonnes) | International CO ₂ emissions* (metric tonnes) |
|-------------|-------------------------------|--|---------------------|------------------------------|---|--|
| Future year | | | | | | |
| 2020 | | | | | | |
| Future year | | | | | | |
| 2050 | | | | | | |

*Minimum data to be entered.

Note: the future years should match the baseline's future years.

Note: the traffic data (RTK) may not be identical to the baseline. Some measures may enable an increase in traffic or aim to reduce demand.

Summary

□ SAP Preparations (Startup)



- Nomination of SAP Focal Point should be done first (Official letter: State to the ICAO).
- ICAO APER Secure Portal (Username & Password).
- Identify & Coordinate with all the Stakeholders (Internal & External).
- Create Carefully your SAP National Team (Committee including the most relevant stakeholders).
- Read Carefully the ICAO Doc. 9988 & Check all the available ICAO Tools (EBT, MAC, ETC....).

□ SAP Submission (Go ahead)



- Historical Data: Collection & Gathering; then Calculate: (RTK, Fuel Burn, etc....).
- Set up smooth and well-organized SAP Process.
- Create Your Baseline (Without any action).
- Selecting the measures to mitigate CO₂ emissions & improve fuel efficiency ...
- Estimating the expected results from the actions (mitigation measures) selected...
- Publish your State Action Plan...
(Confidentiality; if Needed).
- Update your SAP (ONCE: Each 3 Years).



Complementary Actions: CORSIA

Lebanese airlines Under CORSIA provisions started monitoring Fuel Consumption from all international Flights as per DGCA using official circulations on CORSIA from 1st January 2019 until we officially published our CORSIA LARs within the upcoming months.

- There are seven basic types of air operator registered in Lebanon issued by the DGCA in accordance with specific LAR Parts, till yet, only Middle East Airline (MEA) and its subsidiary company Cedar Executive (CDX) are falling under the CORSIA applicability and currently doing all the required commitments to the CORSIA Annex 16 volume 4 regarding all the MRV requirements, whereas the rest of operators are still emitting below 10.000 tonnes of CO₂ and thus are not required to submit their EMP to DGCA.
- The Air transport in Lebanon is growing and increase but still regarded as small aviation share activities, so the State of Lebanon did not officially express its intention to take part in the scheme till yet, thus, Lebanon is not a participating state in pilot and first state, knowing that participation as mandatory basis in the second phase depending on the Value of its Revenue Tone Kilometer (RTK) aggregated by their Air operator for the year 2018.



• Strengths

- Lebanon adopted ICAO regulations on gas emissions.
- All the aircraft are new environmental friendly (Less emissions).
- Lebanon adopted ICAO regulations on aircraft noise (handling aircraft certification,)
- New policy and Regulations: CORSIA, Others
- Aircrafts elder then 15 years are prohibited to register as a Lebanese aircraft.

• Weaknesses

- No equipment available for emission measurements as required by ICAO.
- Besides MEA, the other Lebanese carriers fly with old polluting aircraft; very small business....
- Within the DGCA no enough personnel, tools or knowledge available to perform noise measurements or calculations....
- Absence of Noise Map.

• Opportunities

- **Act no. 481 will take place LCAA.**
- **R & D are possible.**
- **CORSIA & SAP National Focal point and Team**

• Threats

- **Human resources.**
- **Low Budget for SAP & CORSIA.**
- **No Envirnometal Dept.**
- **No financial independence.**



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Q & A

Thank you

