



**MINISTÈRE
CHARGÉ
DES TRANSPORTS**

*Liberté
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direction
générale
de l'Aviation
civile

AIRPORT ADAPTATION TO CLIMATE CHANGE: METHODOLOGY AND CHALLENGES

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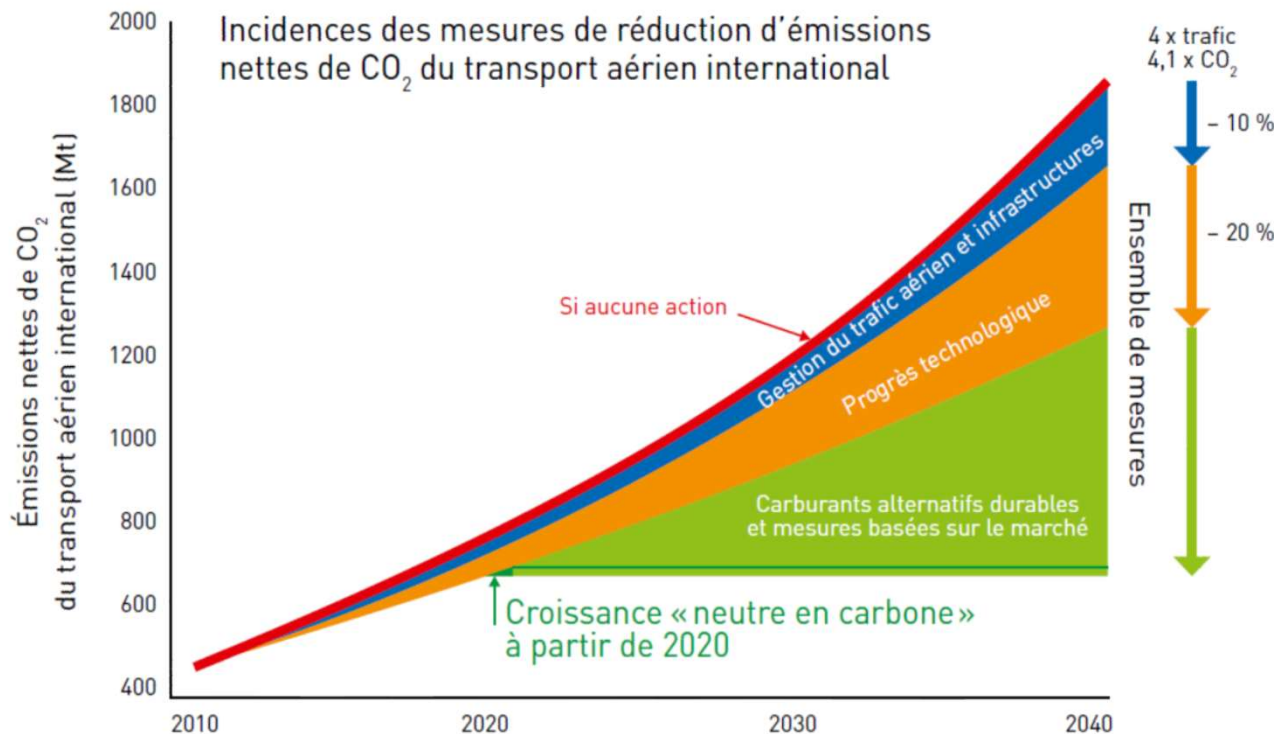
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- 1. The aviation sector, committed in decarbonisation: 4 levers**
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The aviation sector, committed in decarbonisation: 4 levers




Technical performance
(aerodynamics, engines, hydrogen-powered / electric / hybrid aircraft, etc.)

Operational progress (flight plans and optimized trajectories)

Sustainable aviation fuels

Market measures

Airports' main risks

- 
- Changes in take-off distances during periods of high temperatures
 - Increased physical strain of working
 - Rising temperatures in terminals and control towers
 - Accelerated deterioration of airport pavements, weakening of the ground



Mayotte, december 2024



- Flooding
- inundation of runways or terminals
- Collapse of coastal infrastructure



- Deterioration of buildings
- Pressure on water resources
- Risk of fire



Waterlogging, flooding or landslides causing disruption or even a halt to traffic



- Projection of loose objects
- Crosswinds relative to the runway
- Partial or total destruction of buildings
- Increased risk of FOD

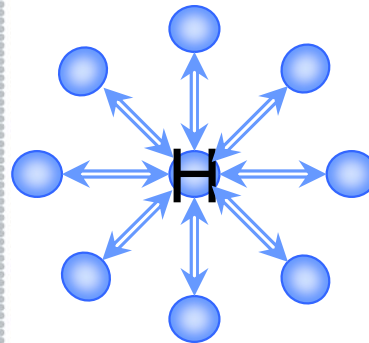
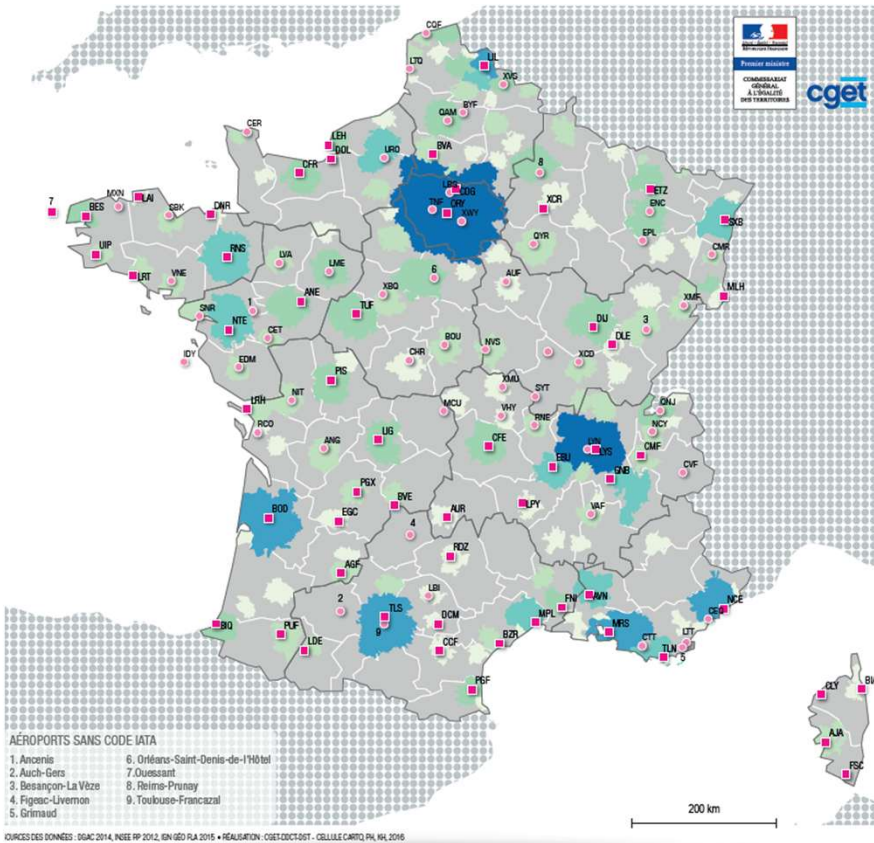


Dubai, avril 2024



- Changes in bird species and their ranges in the vicinity of the aerodrome
- The spread of invasive alien species

Airports: links in a high-value service chain




A high density

Hubs & Point-to-point services

**Opening up isolated areas,
connectivity and territorial
continuity**

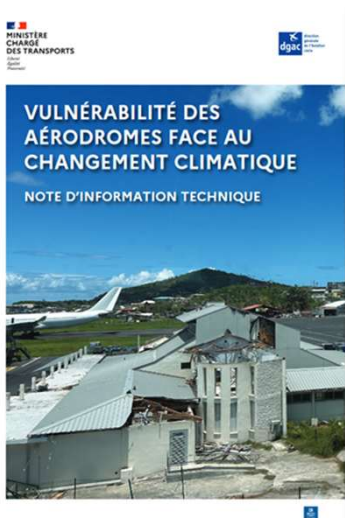
**Business, healthcare, freight,
civil security, military operations,
training...**

**Wealth creation (e.g. Study by
INSEE and the Paris CDG
consortium)**

 **Aéroport commercial**

 **Aéroport d'aviation d'affaires et d'aviation générale**

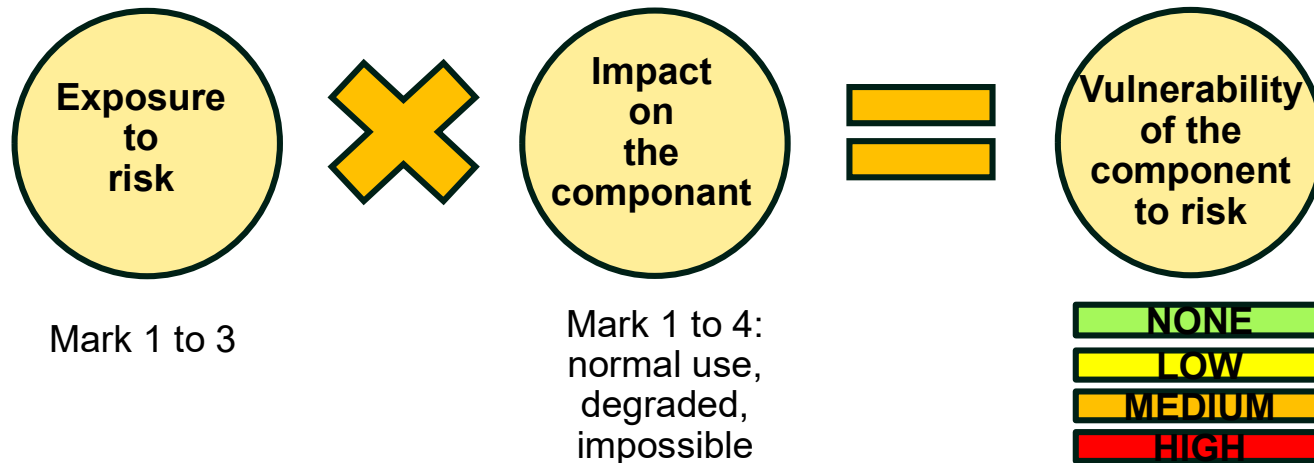
A DGAC tool to assess the climate risks, and a first step in an overall adaptation strategy



STAC study on the preliminary assessment of the vulnerability of mainland aerodromes to climate change by 2100

2012: Establishment of VULCLIM as part of PNACC 1

2024: Collaboration with Météo France, updating of exposure maps using TRACC



The 3rd national climate change adaptation plan



Measure 30 of the PNACC 3: 'Ensuring the resilience of transport and mobility'

Letters sent in June and July 2024 by the ministers responsible for the ecological transition, finance and transport to around 50 public-sector companies in the energy and transport sectors, including the following airports:

| | |
|--|----------------------------|
| Aéroports de Paris (Charles de Gaulle, Orly, Le Bourget) | Marseille-Provence |
| Lyon-Saint-Exupéry | Toulouse-Blagnac |
| Nice-Côte d'Azur | Montpellier-Méditerranée |
| Bordeaux-Mérignac | Strasbourg-Entzheim |
| La Réunion Roland-Garros | La Martinique Aimé Césaire |
| La Guadeloupe Maryse Condé | |

Deadlines:

End of 2024 – Q1 2025: completion of the vulnerability assessment, draft action plan, and estimate of adaptation costs

End of 2025: adaptation plan with costed proposals for infrastructure and services

A task force for a collaborative approach

TASK FORCE

- Union of French Airports (UAF & FA), Réunion-Roland Garros Airport
- DGAC Internal

METHODOLOGY

- Requirements from the government (deadlines, scope of the study, data)
- Feedback from airports

TOOLS

- VULCLIM
- Internal airport data (strategic plan, business continuity plan, socio-economic studies, life cycle assessment of infrastructure, etc.)

ACHIEVEMENTS

- Specifications
- Deliverables

KEY CONSIDERATIONS

- Funding
- Time management
- Managing unforeseen choices
- Timeframe for studies
- Monitoring climate projections

3 AIRPORT COMPONENTS

- Infrastructure
- Buildings
- Operations

Findings, investments and a global approach

FINDINGS

- Share feedbacks with other airports
- Vulnerability assessments vary
- Changes in internal governance

INVESTMENTS

- Maintaining a resilient transport infrastructure network (TEN-T policy)
- The European Environment Agency: adaptation investments for the transport sector €7–20 billion per year by 2050
- Airports cost assessments: socio economic aspects and catalytic effects
- Concession framework with non depreciable costs

GLOBAL APPROACH

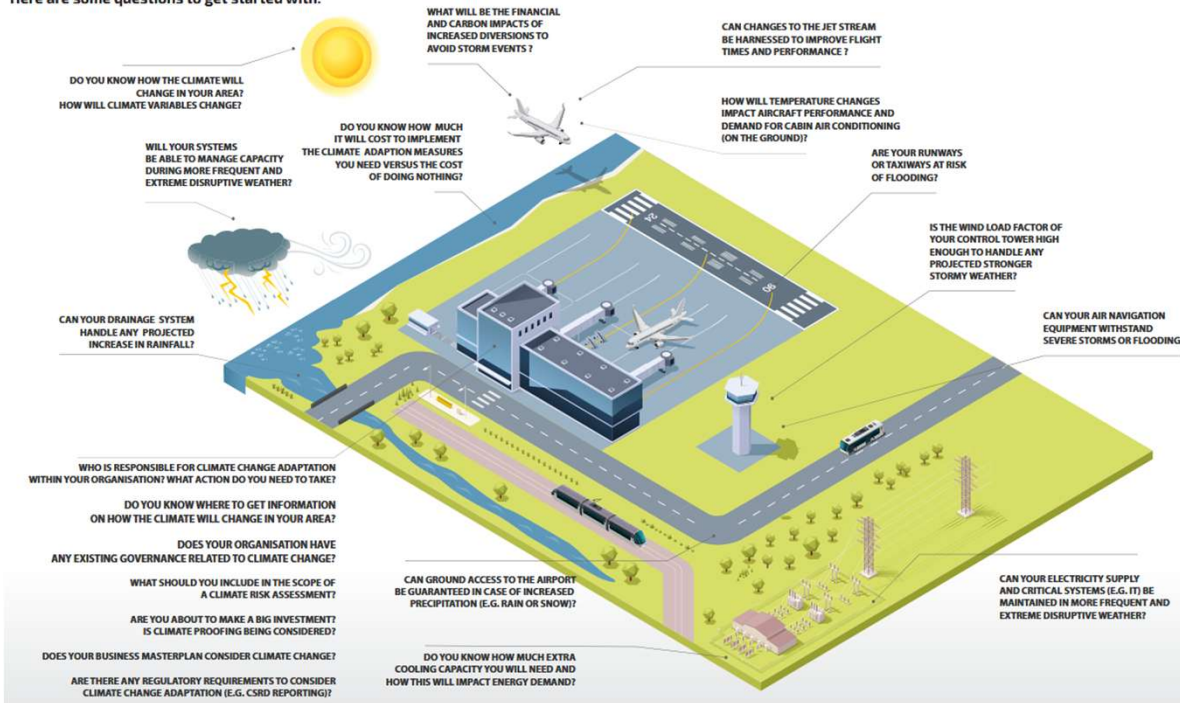
- Key functions and systems (water management, ATC, access...)
- Indicators
- A larger scale (other infrastructure managers, region scale)
- Updating studies and guidelines

Conclusion: key points

Assessing Climate Change Risks for your Organisation

How can you assess whether climate change impacts will be a risk for your organisation?

Here are some questions to get started with.



ESSENTIAL INFRASTRUCTURES FOR GROWTH AND COHESION

VULNERABLES TO CLIMATE CHANGE

A CLOSE LINK: CLIMATE CHANGE & OPERATION

A NEED OF INVESTMENTS (FUNCTIONS & SYSTEMS) AT A NETWORK SCALE