# D.T1.2.1. Low carbon/low energy plan

Version n.1

## Tirana International Airport

12/2022

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## EXECUTIVE SUMMARY

Climate change is one of the greatest challenges facing the world and climate action is one of the key priorities on today airport agendas. It is needed to safeguard the viability of the airport industry. The most significant Greenhouse Gas (GHG) associated with activities at an airport is CO2. Since 2008, Airports Council International (ACI) EUROPE and its members have been working to reduce their carbon emissions, supported by the Airport Carbon Accreditation programme.

In line with global and regional commitments and national priorities, Albania has approved a National Climate Change Strategy and corresponding national mitigation and adaptation plans since July 2019.

The air transport with priorities related to impacts and mitigation and adaptation of climate action including aviation and airport practices are addressed as modernisation programmes worldwide have set ambitious environmental objectives to reverse the adverse effects of air transport on the environment.

Since 2011 Tirana International Airport (TIA) has addressed the challenge of climate change by assessing and reducing carbon emissions from its operations covering emission sources identified under Scope 1, Scope 2 that are owned/under direct control of Tirana International Airport. The carbon footprint methodology for Tirana International Airport meets the requirements of the ACA Scheme at the level 1" Mapping and the level 2 "Reduction" obtaining the ACI Carbon Accreditation Certificate level 2.

TIA total own carbon footprint in the last three years is in the range of 1100-1400 tonnes and the carbon emission per traffic unit is in the range of 0.4-0.5 kg. There has been approx.37% and 18 % improvement in Co2eq per passenger comparing data 2019 and 2021 with 2011 and with an average relative carbon emission of 0.49 per traffic unit. This is commendable and well managed.

In 2021, the total carbon footprint accounting for scope 1 and scope 2 CO2 emissions for Tirana International Airport under direct airport control amounts 1363 tCO2 and together with process emissions 1449 tCO2 accounting for about 4% of the total airport scope 1,2,3 carbon emissions that amount 36998 tCO2 with the largest contribution from aircraft traffic movements and second landside ground access accounting for the 94%.

Based on the carbon footprint calculation the largest CO2 emissions source for Tirana International Airport is the Scope 1 CO2 emissions source, where the most significant contributor is the Carbon put in the atmosphere by diesel consumption for all fleet vehicles including ground service equipment's and the second most significant contributor is the diesel consumption by stationary sources for heating in terminal building. These are defined as areas where mitigation efforts for reduction should be focused mostly. The Scope 2 contributor is the purchased electricity, though it has to be noticed that most electricity in Albania is produced in hydropower plants and is therefore carbon-neutral meanwhile in terms of availability of resource and efficiency and cost effectiveness mitigation efforts should be carried out also.

A summary of planning and implementation actions grouped by scope and detailed sources is based on actual TIA set of targets as well as best practices tailored applicable for Tirana International Airport.

TIA Carbon Management Plan shall be reviewed and updated especially setting future targets and action plans and establishing and leading stakeholder airport plan.

A new energy efficiency assessment for existing buildings, facilities and systems as lately expanded by new construction is recommended in order to detail and estimate further actions plan contributing to low energy demand and low carbon emissions as a Guidance on Reducing Emissions before Offsetting for TIA.

There are examples of reduction initiatives provided in this document and they are suggestions but do not represent an exhaustive list and could therefore be used by TIA as well airports in Albania as a starting point for considering their own measures.

The key driver for airports to reduce their emissions is to maintain their licence to grow and operate, but it also builds on Environment Social and Governance programmes and results in financial savings from energy efficiency.

# 1 INTRODUCTION

## 1.1 GENERAL INFORMATION

This report is carried out to be in compliance with contracting authority Albanian Civil Aviation Authority (ACAA) requirements with reference Solar SOLAR_PROJECT/SERVICE CONTRACT/WP1 T1.2.1 “Analysis of carbon emissions in TIA airport”.

For developing the carbon footprint methodology for Tirana International Airport the following best practices guidelines are used as basis:

- The ACI Europe’s Airport Carbon Accreditation Documentation and Guidance (ACA Scheme) latest issues.
- The greenhouse gas (GHG) protocol published by the world business council for sustainable development and the world resources latest issues
- ISO 14064:1
- Solar Project documents/criteria, any partner methodology documentations
- ACAA documents/criteria on the matter
- ICAO Action Plan on CO2 Emission reduction in Albania, June 2021

This report is in complementary of “Analyses of Carbon Emissions in TIA Airport” prepared for the year 2021 covering the period 1 January to 31 December 2021.

To carry out the report contacts and meetings with ACAA and TIA responsible staff are carried out and analyses of data and documents as provided by TIA, research desk and calculation tools, and literature, regulatory framework. Best available data used and, where assumptions were necessary are clearly documented.

## 1.2 PURPOSE OF THIS REPORT

This report has been prepared for the purpose of carrying out the Deliverable/Task 2.1.1 in frame of Solar project:

### 1.2.1 *Low carbon/low energy plan*

Assist ACCA to carry out the "Reduction" step of Airport Carbon Accreditation, which requires carbon management and progress towards a reduced carbon footprint for Tirana International Airport through analysis of possible carbon management measures for better energy efficiency based on best practices tailored and applicable for Tirana International Airport.

- analyses of policies and practices of TIA on energy matter;
- energy demand reduction and switch to green energy sources;
- clean energy supply – combined heat & power, renewable energy sources (on-site or off-site);
- low energy design – standards for refurbishment and new build, compulsory inclusion of carbon reduction studies in all new projects;
- options for alternative fuel airport vehicles (electric, hybrid, hydrogen, LPG, etc);
- staff communications and engagement plans.

Provision of the Low carbon/low energy plan carrying out an analysis of the current and future energy and carbon management for Tirana International Airport.

## 1.3 IDENTIFICATION OF AIRPORT INVENTORIES AND AIRPORT CARBON ACCREDITATION

According to *the ACA Airport Carbon Accreditation*, the airport company claims responsibility for emissions from Scopes 1 and 2, whereas Scope 3 emissions are upstream or downstream sources in conjunction with the company's activities.

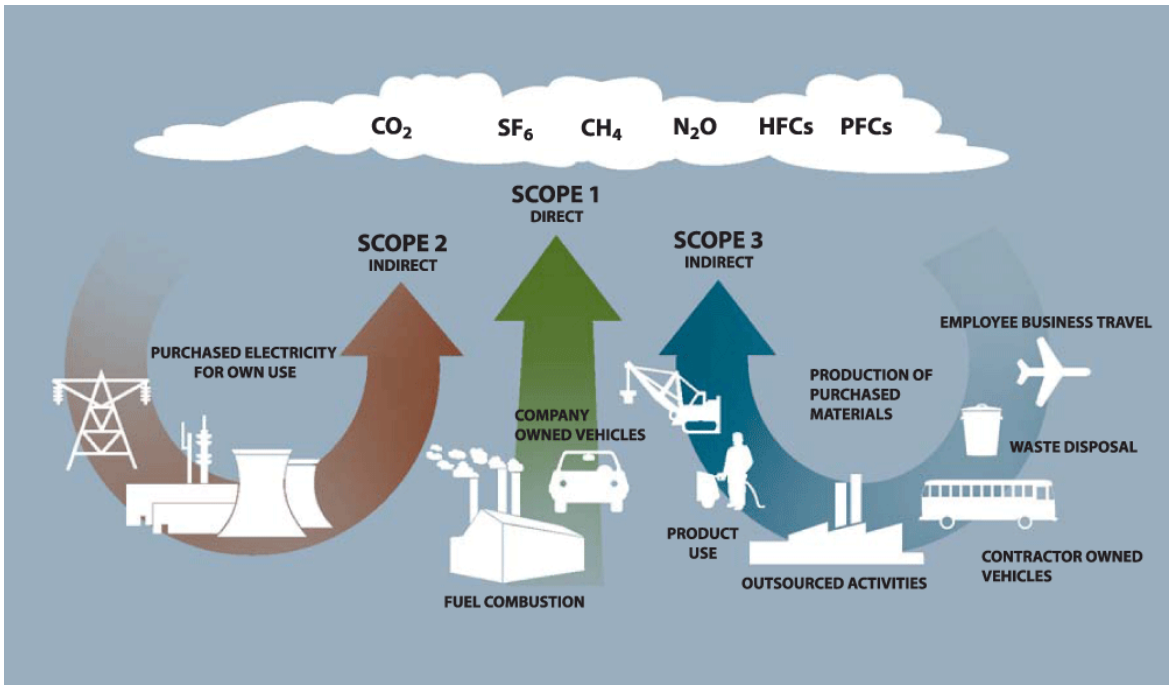


*Figure 1: Emission and emission sources for three scopes*

**Scope 1:** Direct emissions from airport-owned or controlled sources. Examples include airport-owned power plants that burn fossil fuel, conventional vehicles that use gasoline;

**Scope 2:** Indirect emissions from the consumption of purchased energy (electricity, heat, etc.);

**Scope 3:** Indirect emissions that the airport does not control but can influence. Examples include tenant emissions, on-airport aircraft emissions (typically, after an aircraft is parked on the apron), emissions from passenger vehicles arriving or departing the airport, and emissions from waste disposal and processing.

### 1.4 DATA GATHERING

According to TIA, data to calculate the carbon footprint of Tirana International Airport are maintained and provided.

All data used to carry out trends and analyses of performance on carbon emissions are provided by TIA shpk. Best available data has been used and, where assumptions have been necessary, these have been clearly documented.

# 2 TRANSPORT EMISSIONS

## 2.1 GLOBAL CONTEXT FOR AIR TRANSPORT WITH PRIORITIES RELATED TO MITIGATION AND ADAPTATION OF CLIMATE ACTION

Climate change is one of the greatest challenges facing the world. Scientists are observing changes in the Earth's climate in every region and across the whole climate system. According to the latest Intergovernmental Panel on Climate Change (IPCC) Report (https://www.ipcc.ch/), emissions of Greenhouse Gases from human activities are responsible for approximately 1.1°C of warming from pre-industrial levels. The report provides new estimates of the risks of crossing the global warming level of 1.5°C in the coming decades and finds that unless there are immediate, rapid and large-scale reductions in Greenhouse Gas emissions, limiting global warming to close to 1.5°C or even 2°C, as per the goals of the Paris Agreement, will be beyond reach. Stabilizing the climate will require strong, rapid and sustained reductions in Greenhouse Gas emissions, and ultimately Net Zero Greenhouse Gas emissions.

Aviation modernization programs worldwide have set ambitious environmental objectives to reverse the adverse effects of air transport on the environment. One example of this is Europe's airlines, who have committed to decarbonize air transport and accelerate their efforts to make Europe the world's first carbon neutral continent by 2050 through the reduction of carbon dioxide (CO2) emissions in absolute terms, and through CO2 mitigation.

As reported in the 2021 White Paper, CO2 and non-CO2 emissions from aviation are estimated to account for about 3% of the EU's total greenhouse gas emissions and 13% of all transport related emissions. Furthermore, flight numbers increased by approximately 38% between 2010 and 2019, with expected long-term growth globally.

To decarbonize its operations and meet the Paris Agreement's objective of containing global warming, the airport of the future will have to leverage everything at its disposal. From more sustainable building materials to hydrogen-powered aircraft, there are described the solutions that are already helping to reduce the carbon footprint of airports to achieve the goal of "zero net carbon dioxide emissions" by 2050.

The challenge of decarbonizing an airport's activities goes far beyond its ground infrastructure. For airports, it is a question of measuring greenhouse gas emissions throughout the airport value chain and working to reduce them concomitantly. The airport's direct emissions (known as scope 1), of course, but also the direct emissions linked to its energy consumption (scope 2). And finally, and this is undoubtedly what has the greatest impact, the indirect emissions, both upstream and downstream (scope 3). In the latter case, for example, it is necessary to use incentives to get airlines, passengers, service providers and airport partners to change their habits and reduce their carbon emissions.

## 2.2 National Context With Priorities Related To Mitigation And Adaptation Of Climate Action

In line with global and regional commitments and national priorities, Albania has made progress on climate change mitigation and adaptation. In 2014, the Albanian government established the Inter Ministerial Working Group on Climate Change (IMWGCC), which coordinates all institutions involved in climate change processes and facilitates the integration of climate change into relevant new and existing policies, programs, and activities. In July 2019, Albania approved a National Climate Change Strategy and corresponding national mitigation and adaptation plans. The country has implemented several mitigation and adaptation projects and studies. There is currently a law "On climate change" which acts as the United Nation Climate Change Conference (UNFCCC) implementation law in Albania and covers requirements under the EU Emissions Trading System (ETS) Directive. This law requires all relevant ministries to mainstream climate change mitigation and adaptation issues into their legislation. There is a draft Decision of the Council of Ministers (DCM) "On monitoring and reporting GHG emissions and other information relevant to climate change at the national level".

Besides the EU integration efforts and agenda, Albania is an active participant in multilateral organisations and agreements. Albania is a signatory Party of the United Nations Framework Convention on Climate Change (UNFCCC), which was ratified by the Albanian Parliament in 1994. In April 2016, Albania signed the Paris Agreement. In December 2017, the Albanian Parliament unanimously approved a resolution confirming the country's commitment to Agenda 2030 and achievement of the Sustainable Development Goals.

Albania submitted its first Nationally Determined Contribution (NDC) in November 2015, with the commitment to reduce carbon dioxide (CO2) emissions compared to the baseline scenario in the period of 2016 and 2030 by 11.5%, or 708 kt CO2 emission reduction in 2030". Suggested mitigation measures include increased use of renewable energy, building insulation, more efficient industrial boilers and increasing biofuel use in transport. The scope was limited in terms of both gases and sectors.

The Albania Revised NDC (submitted to the UNFCCC on 12th October 2021) presents further improvements such: covers gases other than CO2, covers all emission sectors, considers potential ways for enhancing the country's climate ambition, and includes climate change adaptation measures especially related to coastal areas.

## 3 AVIATION EMISSIONS: CLIMATE CHANGE IMPACTS: REDUCTION CO2 AND MORE

Looking at the main environmental impacts associated with different phases of flight, approximately 90% of emissions occur higher than 3,000 feet above the ground, whilst the remaining 10% are emitted during taxi, take-off, initial climb, approach, and landing.

Figure 2 illustrates the environmental impacts associated with aircraft operations during each phase of flight. While some pollutants such as $CO_2$, unburnt hydrocarbons (HC), soot and sulphur oxides ($SO_X$) impact the environment along the entire flight, others do not always occur (contrails) or their adverse effects are prevalent closer to the ground (aircraft noise, carbon monoxide (CO) and Nitrogen oxides ($NO_X$).

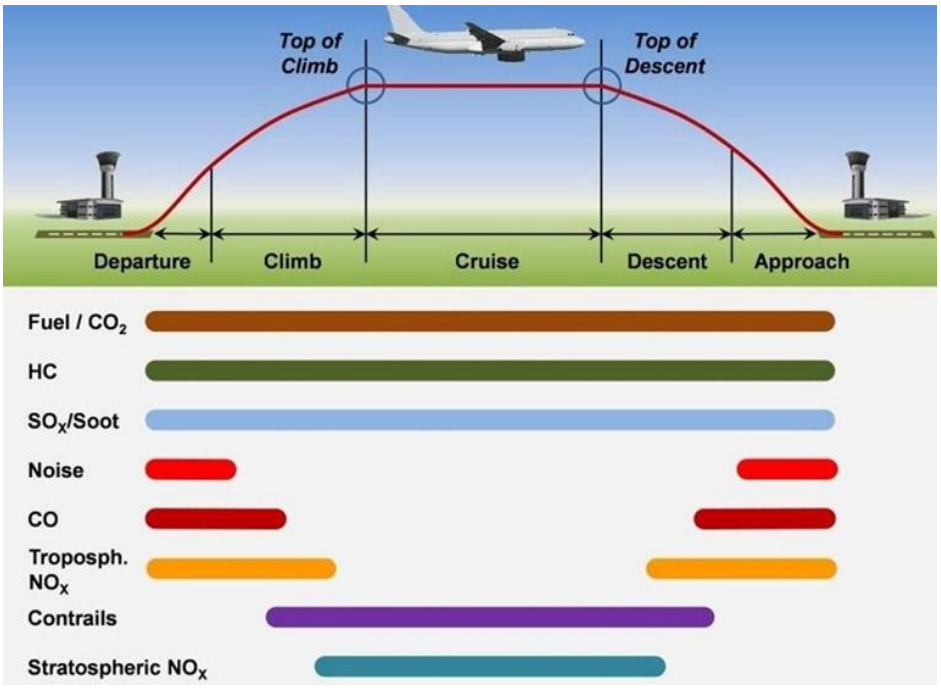


*Figure 2: Environmental impacts associated with aircraft operations at different phase of flight*

$CO_2$ is the primary greenhouse gas emitted through aviation activity, and has an overall warming effect by absorbing heat that would otherwise be lost to space. During aircraft flight, excess $CO_2$ emissions are often caused by aircraft that divert from the planned trajectory resulting in more inefficient routes being flown. This could be due to adverse weather, avoidance of 'Danger Areas', the need to maintain minimum separation, lack of capacity leading to diversions, or the avoidance of relatively high route charges. When comparing the gate-to-gate actual trajectories of all European flights in 2017 against their unimpeded trajectories, there is an additional 5.8% of $CO_2$ emissions at European level.

Figure 3 presents excess $CO_2$ emissions for an average flight in Europe in 2017, broken down into different phases of flight.

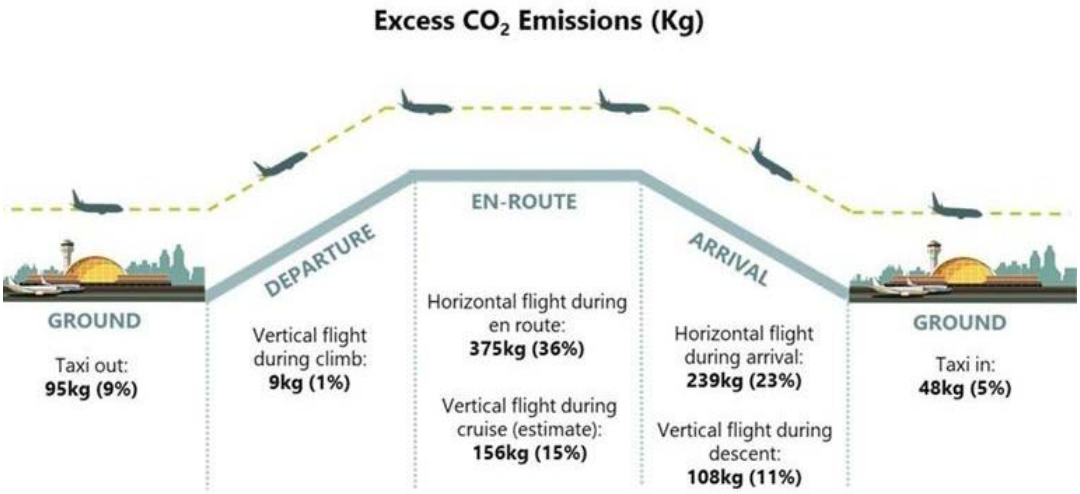


*Figure 3: Gate to gate excess Co2 emissions (kg) in 2017 for an average flight in Europe*

Reducing absolute and excess $CO_2$ emissions is a key focus for the aviation industry, but what about non-$CO_2$ emissions? The European Aviation Safety Agency (EASA) argues in a recent report that non-$CO_2$ climate impacts from aviation activities are at least as important as those of $CO_2$ emissions.

Of biggest concern around airports is the increasing level of Nitrogen dioxide ($NO_2$) at ground level, generated from NOx emissions caused by surface traffic, aircraft and airport operations. The net effect of these tropospheric nitrous gases is a warming influence, caused by the production of ozone in the lower atmosphere. At higher altitude, NOx is thought to damage the stratospheric ozone layer which is the protective layer that filters out harmful radiation from the sun.

Particles in the air at ground level, including hydrocarbons, soot and sulfates also impact climate change. Whilst sulfates reflect the sun's rays causing a cooling effect, soot absorbs heat resulting in black carbon ice crystal nuclei, which together with hydrocarbon particles, produce contrail-induced cirrus clouds which have a serious warming effect, up to three times that of $CO_2$. According to the Environmental and Energy Study Institute in the USA, the collective influence of cirrus clouds, produced by thousands of flights, is so large today that it exceeds the total warming influence of all of the $CO_2$ emitted by aircraft since the beginning of powered flight.

Not only do these air pollutants impact climate change, but they also have a significant effect on human health, particularly in urban areas. The most harmful pollutants are particulate matter, $NO_2$ and ground level ozone, originating from aircraft engines, ground operations, surface access road transport and airport on-site energy generation and heating.
Focusing efforts to reduce emissions closer to the ground will have health benefits and will help in the battle against climate change, ultimately contributing to the net zero target. For both airports

and Air Navigation Service Providers (ANSPs), however, emissions from aircraft count as indirect "Scope 3" emissions. Naturally, these are far more difficult to reduce than direct (Scope 1 and 2) emissions because tackling them involves a great deal of external collaboration with third parties including airlines, other airports and/or ANSPs and often local communities.
Below are given some proven solutions.

***Tackling aircraft emissions***

Incentivisation of efficient aircraft operations during take-off and landing is one of the most effective ways to help reduce emissions close to the ground. Continuous Climb Operations (CCO) and Continuous Descent Operations (CDO) are the optimal climb and descent procedures to be followed by all aircraft when departing from, and arriving at, an airport in unrestricted airspace. These profiles are flown in a low drag configuration, minimizing fuel burn whilst simultaneously reducing gaseous emissions and noise. A EUROCONTROL CCO-CDO study undertaken in 2018 identified that optimization of CCO-CDO in Europe could result in fuel savings of up to 340,000 tons of fuel per year, equating to more than 1 million tons of $CO_2$. The removal of inefficient level flight segments at intermediate altitudes means that aircraft spend more time at fuel-efficient higher cruising levels, thus lowering emissions. Figure 4 illustrates an optimum CDO approach (green) versus a non-optimal approach (orange).

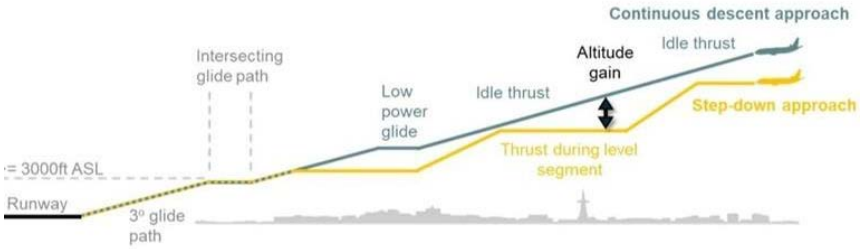


*Figure 4: Optimal CDO Approach (Green) versus and example non optimal approach (orange)*

Pollutant emissions from aircraft at ground level are increasing with aircraft movements. Ground operation $CO_2$ emissions are small compared to air operations; however, they are still significant and play their role in contributing emissions to the environment. Material reductions can be achieved, estimated to be in the order of 20% per movement for ground-based aircraft activity today with potential for even greater efficiency improvements in the future.

It is well known that aircraft engines during taxiing produce forward thrust, even at idle or minimal power settings. By shutting down one engine during the taxi-in, or by starting the second engine at an advanced stage of the taxi-out for take-off, there is potential to reduce fuel burn, $CO_2$ emissions, and harmful emissions to health. For taxi-in operations a fuel burn saving of between 20-40% per aircraft movement has been estimated.

Today, aviation jet fuels are used in APUs to power on board electrical systems, run air circulation and conditioning systems, and supply bleed air for starting the main engines. Ground based

systems which use grid electricity generated at higher efficiency and with a much lower carbon intensity, can be used as an alternative to APUs to supply electrical and air conditioning loads. Substituting APUs with airport-based systems is estimated to reduce emissions by up to 40%. Operational predictability is key - reduced holding at holding points and optimal throughput at the runway means that less time is spent burning excess fuel. One method to improve such predictability is the adoption of a Departure Manager (DMAN) - a planning system designed to improve departure flows at airports by calculating the Target Take Off Time (TTOT) and Target Start-up Approval Time (TSAT) for each flight. In combination with Airport Collaborative Decision making (A-CDM), this tool can help reduce needless delays and unnecessary fuel burn, ultimately reducing aviation emissions.

It will take many steps, across multiple topics to tackle aircraft emissions. Managing capacity, implementing CCO/CDOs and achieving operational predictability are part of the mix. Further development and innovation in frame of EC-funded Horizon 2020 Green Airport programmes focuses on data driven intermodal services, circular economy at airports and carbon sequestration.

# 4 AIRPORT SUSTAINABILITY: CLIMATE CHANGE IMPACTS: REDUCTION CO2 AND MORE

## 4.1 AIRPORT EMISSION SOURCES AND ACTIVITIES

Activities at the airport release emissions of various substances into the air. The air quality around the airport can be affected by several different sources of pollution. They are usually grouped in four categories of which three are of special interest for airport operations. These three sources and associated activities are listed in the Table.

| **1. Aircraft** | |
|---|---|
| Aircraft main engines | Emission during the landing and take-off cycle with approach, landing roll, taxi- in, taxi-out, take-off, initial climb and final climb |
| Aircraft APU | Auxiliary power unit for production of electricity, pre-conditioned air and bleed- air (for main engine start) |
| Brake and tire wear | Abrasion of brakes and tyres during landing and taxiing |
| **2. Handling** | |
| GSE | Ground support equipment for the service of the aircraft (e.g. tugs, GPU, stairs, belt loaders, high-loaders, etc) |
| Service vehicles | Vehicles servicing aircraft but also circulating on the airside road system (e.g. catering trucks, fuelling trucks, passenger busses, line maintenance, baggage and cargo tractors) |
| Aircraft re-fuelling | Evaporation through aircraft fuel tanks (vents) or from related systems |
| De-icing | Aircraft de-icing with ADF |
| **3. Infrastructure** | |
| Energy production | Power plants, furnaces, photovoltaics etc to produce heat (and cold) for airport infrastructure |
| Emergency generators | Combustion engines to produce emergency energy |
| Aircraft maintenance | Aircraft service facilities, including engine run-ups |
| Airfield maintenance | Maintenance of green areas (lawn mowers) or hard surfaces (sweeper trucks) and surface de-icing |
| Fuel | Storage, distribution and handling of fuel in fuel farms |



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| | |
|---|---|
| Fire training | Aircraft fire fighting and rescue training |
| Construction | Civil engineering or infrastructure construction activities |

*Table 1: Airport emission sources and activities*

The challenge of decarbonizing an airport's activities goes far beyond its ground infrastructure. For airports, it is a question of measuring greenhouse gas emissions throughout the airport value chain and working to reduce them concomitantly. The airport's direct emissions (known as scope 1), of course, but also the direct emissions linked to its energy consumption (scope 2). And finally, and this is undoubtedly what has the greatest impact, the indirect emissions, both upstream and downstream (scope 3). In the latter case, for example, it is necessary to use incentives to get airlines, passengers, service providers and airport partners to change their habits and reduce their carbon emissions.

### 4.2 Reducing Direct Emissions From Airports

**Designing and operating airports with lower greenhouse gas emissions**

Building the airport of the future means choosing building materials with a lower environmental impact for terminals, hangars, runways, etc., from the outset.

As today practices show there are airport built using recycled materials and eco-design approach as practised in the island of Baltra, in the Galapagos archipelago, Lyon airport.

Further, the choice of more efficient, low-carbon heating and ventilation systems, less energy-intensive LED lighting, and a fleet of 100% electric vehicles: everything counts.

Turning airports into sources of renewable energy Airports occupy large areas that can be used for infrastructure to produce renewable energy.

### 4.3 Reduce Airports' Indirect Emissions Across The Value Chain

**Replace jet fuel with greener fuels**

Biofuels made from renewable raw materials such as waste cooking oil or animal fat reduce greenhouse gas emissions by 80% compared to conventional petroleum-based aircraft fuel. Clermont-Ferrand and London Gatwick airports already offer this to airlines.. Another promising candidate for the energy transition in aviation is green hydrogen. Although the technological challenges have not yet all been met – hydrogen is bulkier than aircraft fuel and means aircraft tank size and architecture need to be rethought – it is estimated that hydrogen-powered aircraft will be flying by 2035. And the increase in partnerships on a global scale, between public and private players in the sector (gas industry, es well. For rts, this means that the infrastructure will be completely ogen.

**aircraft on the ground**

Even if fuel consumption is lower on the ground, it can still be reduced by optimising taxiing and apron equipment. To achieve this, airports are offering new services and encouraging airlines to change their



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practices. For example, an aircraft can consume up to 300 kilos of aircraft fuel between the apron and the runway when both engines are running. A possible solution is to switch off half of the engines to move the plane on the ground. The “taxibot”, a service already provided by some airports, remains the most effective solution for limiting emissions on the ground and optimising taxiing time. The aircraft is attached to an electric vehicle which moves it to the runway or boarding gate, thus avoiding significant fuel consumption. And even when the aircraft is standing, keeping the on-board system and air-conditioning working and firing up the engines drains a lot of aircraft fuel from the tanks. To address this, many airports have parking stands that allow aircraft to be powered with external electricity and air conditioning.

Supporting the airport sector in its transformation also requires encouraging airport users, both passengers and employees, to adopt responsible behaviour. The development of multimodal hubs to encourage access to public transport, and the provision of charging stations for electric or hydrogen vehicles are some of the incentives already in place.

**Sequester residual incompressible H2 emissions**

When it is no longer possible to reduce $CO_2$ emissions, they can be sequestered by patches of forest: these are called forest carbon sinks.

### 4.4 DECARBONISATION MEASURES PER CATEGORY TOWARDS NET ZERO CARBON

The main measures taken by airports to reduce emissions and reach Net Zero Carbon are presented below, based on the seven decarbonisation categories detailed in the ACI World Long Term Carbon Goal Study.

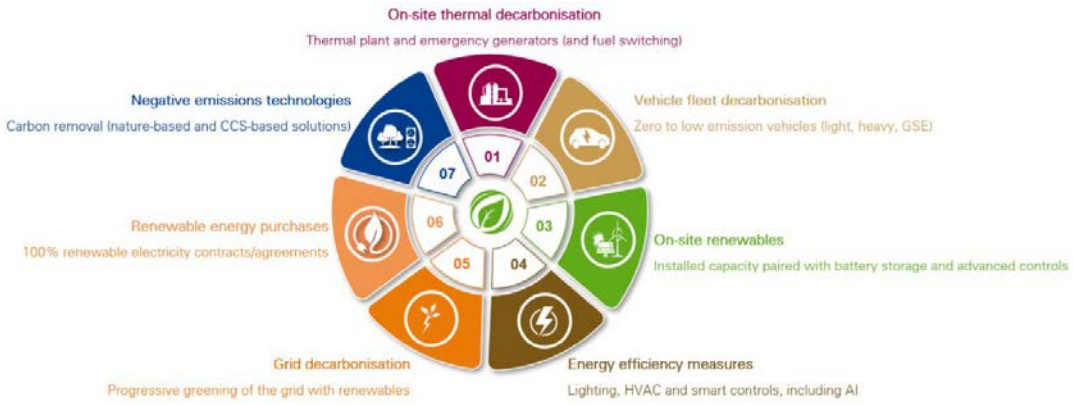


*Figure 5: Decarbonisation Measures per Category*

| |
|---|
| **On-site Thermal Decarbonisation**<br>**This category refers to the decarbonisation of thermal plants and emergency generators at airports, including fuel switching** |
| **Vehicle Fleet Decarbonisation**<br>**This category covers the conversion of vehicle fleets (light, heavy, GSE) to zero or low emission vehicles.** |
| **On-site Renewables**<br>**This category refers to on-site use of renewable energy sources for electricity generation and heating/cooling purposes, including battery storage and advanced controls where relevant.** |
| **Energy Efficiency Measures**<br>**This category includes measures aiming to reduce the airport's energy consumption, in particular through improved lighting and HVAC systems, achieved for instance through smart controls and AI.** |
| **Grid Decarbonisation and Renewable Energy Purchases**<br>**This category covers the procurement of green electricity, either from the grid or through dedicated contracts/agreements.** |
| **Negative Emissions Technologies**<br>**This category includes nature-based and technology-based solutions for carbon removal.** |
| **Offsetting (interim measure)**<br>**This category refers to CO2 emissions reductions (including through avoided emissions) in other organisation/sectors through the purchase of offset credits. It is seen as an interim measure only, because offsetting** |

# 5 AIRPORT CARBON ACCREDITATION

## 5.1 GENERAL REQUIREMENTS AIRPORT CARBON ACCREDITATION

To help airports achieve emissions reductions, Airport Council International (ACI) launched in 2009 the voluntary programme “Airport Carbon Accreditation”.

The aim of Airport Carbon Accreditation is to encourage and enable airports to implement best practices in carbon management and achieve emissions reductions. Airport Carbon Accreditation focuses on CO2 emissions, as they comprise the large majority of airport emissions. Independent third-party verification by an approved verifier is an essential component of the programme.

According ACA programme airports can participate at one of four progressively stringent levels of accreditation: 1. Mapping; 2. Reduction; 3. Optimization; and 4. Transformation. In addition, airports at Level 3 and 4 can choose to offset their residual emissions, thereby achieving Level 3+ (Neutrality) and 4+ (Transition) respectively.

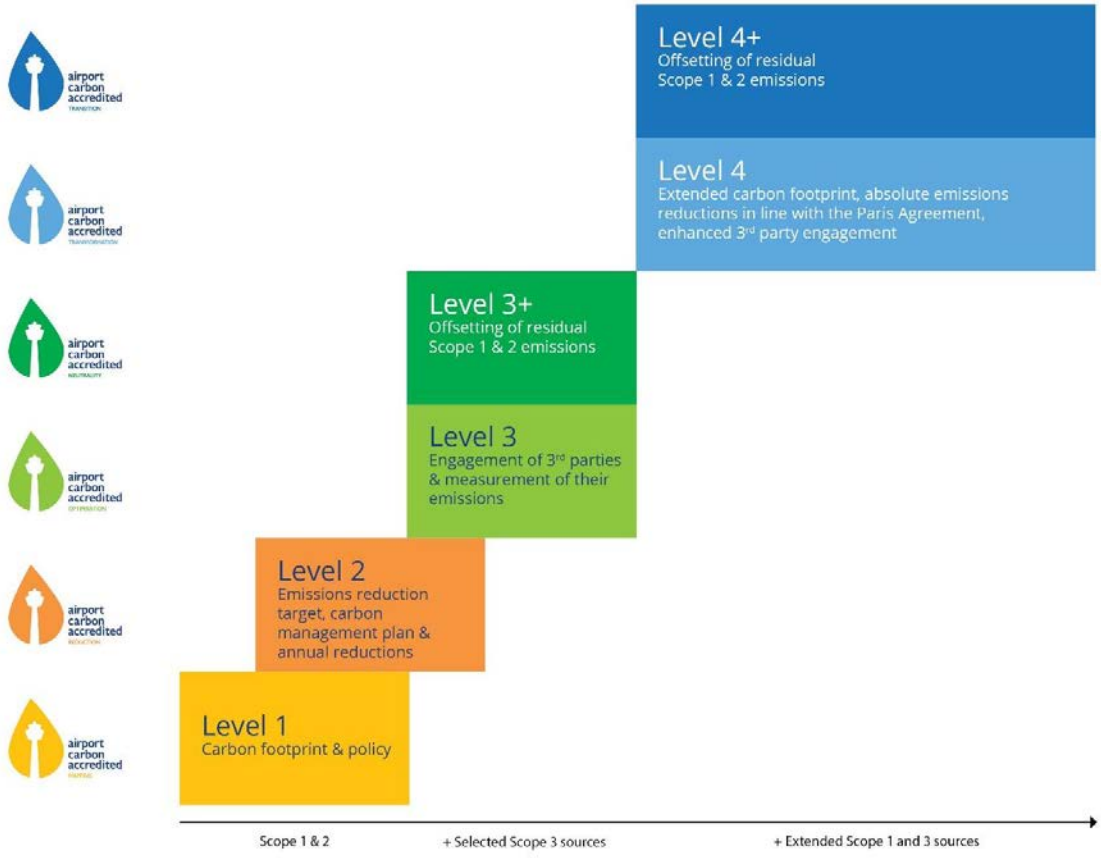


*Figure 6: Main Requirements of Airport Carbon Accreditation*

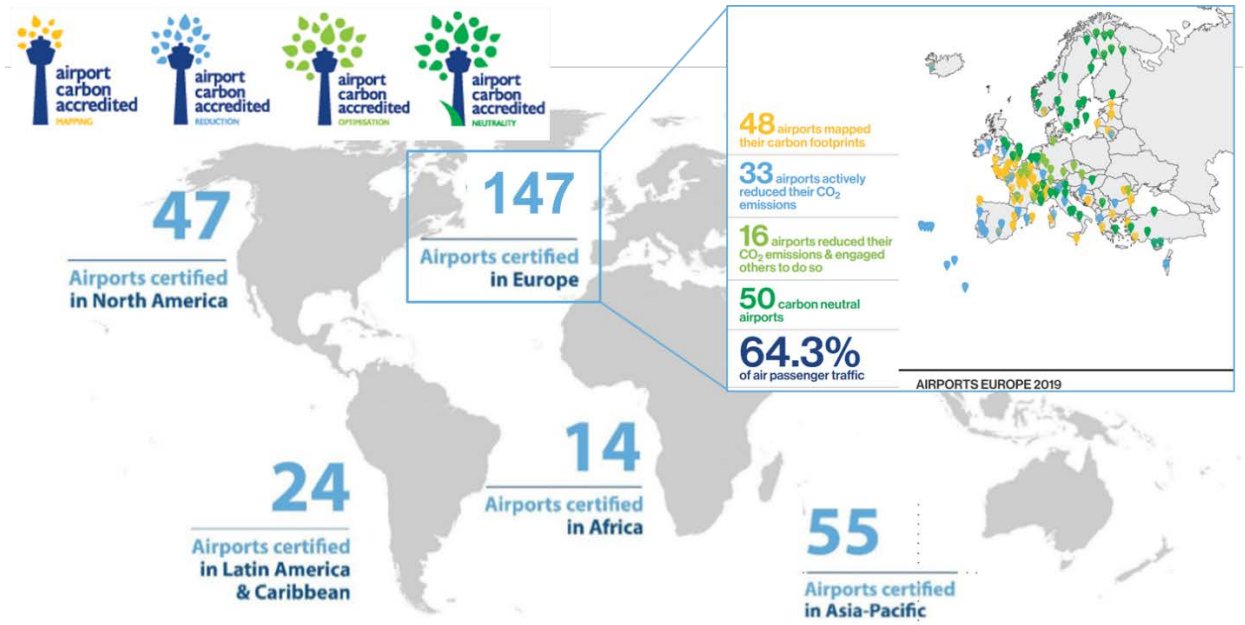


*Figure 7: Airport Carbon Accreditation Levels and Accredited Airports. TIA is part of Airports certified in Europe.*

### 5.2 MAPPING FOR ESTIMATION OF CARBON FOOTPRINT

It is structured according to four increasingly stringent levels of accreditation.

1. 'Mapping'.
2. 'Reduction'.
3. 'Optimisation' and
4. 'Neutrality'.

The carbon footprint covering a 12-month period is a key component of Airport Carbon Accreditation. Typical airport emissions sources are outlined in Figure 8.


*Figure 8: Overview of Scopes & Emissions*

According ACA programme airports shall submit their carbon footprint data using, or in line with, the worksheets provided by the GHG Protocol, ISO 14064-1, ACI's Airport Carbon and Emissions Reporting Tool (ACERT) or an appropriate combination of these tools. Airports may use different tools and emissions factors that may be more up to date (e.g., emission factors published by the country's relevant authority, emission factors calculated by the airport).

## 5.3 THE EMISSION REDUCTION AND OPTIMISATION

### 5.3.1 *Emission reduction targets*

For Levels 2 and above, emission reduction targets have to be formulated and signed off.

| Targets criteria/ Levels | Level 2 (Reduction), Level 3 (Optimisation) Level 3+(Neutrality) | Level 4 (Transformation) Level 4+ (Transition) |
|---|---|---|
| **Target type** | Absolute or intensity target using either passenger numbers, traffic units or kg of cargo. | Absolute targets only. |
| **Target scope** | Scope 1 and 2 emissions. | Scope 1 and 2 emissions (mandatory). Scope 3 emissions (voluntary) including one or more sources representing >10% of total Scope 1, 2 & 3 emissions (excluding LTO and cruise) and over which the airport exercises significant influence. |
| **Target amount** | No specific reduction amount is required. | Target reductions shall be in line with the IPCC 1.5°C pathway (wherever possible) or the 2°C pathway but can also be more ambitious. |
| **Baseline year** | Baseline shall be chosen by the airport. | Airports shall use the baseline year of 2010, where possible. |
| **Target date** | No specific target date is required. Targets shall not be year-on-year, but further reaching into the future, however no specific length is required. | Target dates should fall on the middle or the end of the decade (e.g. 2030 or 2035). Long term targets shall reach at least 10 years into the future but can be as far off as 2050. If the long-term target is greater than 15 years into the future, airports shall set interim milestone: generally 10-15 years into the future. |
| **Emissions trajectory** | No emissions trajectory required | Airports must define the emissions trajectory from their current application year to their long-term target (via any interim milestone). |
| **Achieving targets** | Airports must be able to show emissions reductions against the three-year rolling average for the specific target type they have selected (e.g. absolute or intensity). | Airports shall meet the long-term targets and interim milestone set. Achievement is assessed through the submission of the airport's carbon footprint for the milestone/target year. |
| **Demonstrating progress** | Airports do not have to show progress against a trajectory. | Emissions will be compared to airports' trajectories every other renewal cycle (6 years). Airports' emissions in that year can deviate from the trajectory by up to 15%. |

*Table 2: Summary of Requirements for Setting and Achieving Emissions Reduction Targets*

### 5.3.2 *The Carbon Management*

At Levels 2 and above, an airport shall develop a Carbon Management Plan. The purpose of the Plan is to demonstrate the meaningful efforts by the airport to reduce its emissions in line with the set target and policy statement. As a minimum, the Plan shall cover Scope 1 and 2 emissions as they have been defined in the carbon footprint. After its initial development, the Plan shall be updated at least every three years. A Carbon Management Plan shall contain at least the following parts:

- Responsibility, resource allocation, and organisational structure;
- Carbon management initiatives;
- Implementation plan;
- Communication, awareness, and training;
- Self-assessment/auditing.

For Levels 4 and 4+, it should in addition contain the long-term target set by the airport, as well as the associated emissions trajectory.

### 5.3.3 *The Stakeholder Management*

Stakeholders represent an important component of airport efforts to manage greenhouse gas emissions. Stakeholders include operational and service companies, such as airlines, ground handlers, cargo handlers, catering companies, waste management contractors, public and local transport operators, passengers, decision makers, planners, employees, tenants, retailers, cargo operators, civil works and other contractors. Airports at Levels 3 and 3+ shall formulate a Stakeholder Engagement Plan, while airports at Levels 4 and 4+ shall develop a more demanding Stakeholder Partnership Plan. A summary of the respective requirements for stakeholder management is presented in Table 3.

| **STAKEHOLDER MANAGEMENT** | **Level 3 (Optimisation)**<br>**Level 3+ (Neutrality)** | **Level 4 (Transformation)**<br>**Level 4+ (Transition)** |
|---|---|---|
| **Title** | Stakeholder Engagement Plan | Stakeholder Partnership Plan |
| **Purpose** | On-going dialogue, sharing of best practices, and promoting cooperation with stakeholders with the aim of reducing emissions from major stakeholder operations. | Actively driving third parties at the airport towards delivering emissions reductions themselves either through their own reduction plans or through measures initiated by the airport operator. |
| **Emission reduction objectives for stakeholders** | No | Yes (absolute or relative) |
| **Reporting** | Yes, for initial accreditation and every renewal. | |
| **Minimum Information** | Description of stakeholders, allocation of responsibilities for engaging with key stakeholders, evidence of engagement and outcomes, implementation plan. | Inclusion of all stakeholders that are responsible for a significant contribution to the Scope 3 footprint, setting of emissions reduction objectives for stakeholders, carbon reduction plans/measures directly taken by the stakeholders with airport |

| | | |
|---|---|---|
| | | contribution or defined by the airport operator. |
| **Revisions** | After its initial development, the Plan shall be revised at least every three years. The revised Plan shall include updated information about stakeholders, joint initiatives, achievement of emission reductions, updated objective setting, training and awareness, etc. | |
| **Verification** | Confirmation from the airport's verifier is required (in accordance with the verification timelines defined in Section 10.3) that a Plan has been formulated and implemented. | |

*Table 3: Stakeholder Management*

### 5.4 THE OFFSETTING

In order to achieve Level 3+ (Neutrality) and Level 4+ (Transition), airports shall compensate for their Scope 1 and 2 residual emissions as well as Scope 3 airport staff business travel emissions that cannot be reduced by other means by purchasing offsets. A dedicated Offsetting Manual has been developed to inform and guide airports in relation to offsetting instruments, to establish requirements and recommendations as well as to provide practical support through dedicated offset procurement guidelines. The Offsetting Manual is available on the programme website.

### 5.5 THE VERIFICATION

Independent third-party verification is an essential requirement for all levels of *Airport Carbon Accreditation*. The primary aim of independent third-party verification is to provide confidence that the reported information, statements, and plans represent a faithful, true, and fair account of an airport's efforts.

### 5.6 DESIGNING AND OPERATING AIRPORTS WITH LOWER GREENHOUSE GAS EMISSIONS

In general, the airport management can make a difference in public relations taking positive action in environmental issues. Apart from cost savings that's why airports around the globe are improving their environmental performance considerably by reducing the use of resources and energy and lowering emissions.

Designing a sustainable airport system with less environmental impacts and nuisances is an asset for any airport management with a vision for a better future and making the airport area a "greener" place to live and visit. In doing so the management can save money and improve their track record with neighbours at the same time. Creating added value is not only about monetary benefits that attribute to cost savings, but also in the well-being of people in the region in the long run.

There is a wide range of carbon management initiatives that an airport can consider, including:

- Improved energy efficiency.
- Use of low carbon energy sources on site.
- Procurement of green electricity (e.g., RECs).

ACI's Guidance Manual: Airport Greenhouse Gas Emissions Management (2009) provides some useful examples, including the following:

- Modernisation of power, heating and cooling plants.
- Generation, use or purchase of electricity from renewable sources.
- Design, inclusion or retrofitting of "smart" and energy efficient buildings and component technologies, including double glazing, window tinting, variable shading, natural lighting, LED (light emitting diode) lighting, absorption-cycle refrigeration, and heat recovery power generation. LEED and BREEAM building certification programmes can provide guidance.
- Modernisation of vehicles and GSE, and use of alternative fuels for buses, cars and other air and land side vehicles, including compressed natural gas, hydrogen, electric, and hybrid vehicles.
- Driver education on fuel conserving driving and implementation of no-idling policy.
- Solid waste management that includes recycling and composting.
- Provision of public transport and rapid transit to/from the airport including buses, light rail and trains.
- Educational campaigns (or using by-laws) to reduce vehicle idling, individual passenger drop-off and pick-up, etc.
- Encouragement of alternative fuel or hybrid taxis, rental and other cars using incentives such as priority queuing, parking cost reduction and priority parking areas.

Additional resources for carbon management initiatives could include ATAG's Aviation Climate Solutions (2015), ACRP's

Below are some of the best practices which can be considered to further improve Local Air quality and reduction of carbon emissions:

- Energy saving and clean technology can achieve substantial reduction in air emissions
- Reduction in natural gas / oil / electricity consumption will result in lower greenhouse gas emissions from airports
- Use ozone-free air conditioning systems and CO2 sensors to control HVAC systems. For example, Hyderabad airport replaced all office air conditioning system to ozone free and saved more than 30% on energy.
- Greening of airport vehicle fleet by operating them on alternative fuels such as electricity, natural gas, bio diesel etc. For example, Nice airport is nearing 100% electric buses on airside.
- Limit CO2 emissions by replacing kerosene APU's with electrical ground power units (GPU's) that do not emit exhaust gases on the spot. For example, Barcelona El Prat Airport mandates use of electrical GPU's and pre-conditioned air from two minutes after the aircraft arrives at a terminal gate until five minutes before it leaves, which saves almost 58,000 tonnes of CO2 per

year. Other Spanish airports with mandatory use include: A Coruña, Madrid-Barajas, Alicante-Elche, Fuerteventura, Gran Canaria, La Palma, Lanzarote, Palma de Mallorca, Tenerife Norte, Tenerife Sur, and Vigo. See Figure

- Provide efficient and clean public transport systems to service the airport.

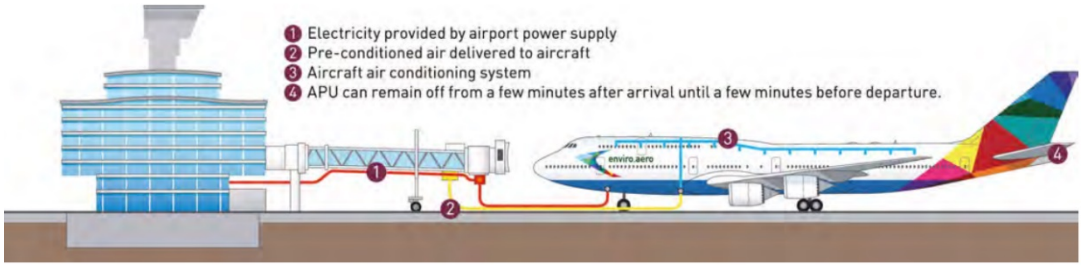


*Figure 9: Schematic diagram on fixed electrical ground power and pre-conditioned air delivery system*

# 6 FUTURE LOW CARBON/ LOW ENERGY ACTION

In this chapter is summarised a set of aspects, targets and measures for carbon management and better energy efficiency based on TIA set up targets as well as best practices tailored and applicable for Tirana International Airport.

In the near future, as traffic is growing, TIA airport could aim to move to the level of 'Optimisation' (Level 3) which requires an airport to actively reduce emissions under its control and engage with its stakeholders to support them in their emissions management.

Nevertheless, predicted air traffic growth and passenger and cargo transport will lead to a slight increase in air pollution. The modernization of aircraft fleets and ground vehicles, cleaner engines or even electrically powered, as well as public investment in railway transport will to some extent offset the negative impact of traffic growth on air quality for the ground handling equipment diesel usage grows with the aircraft movements and passenger growth.

Projects like already implemented in TIA such as solar plants installations and installment of electric APU's instead of diesel generators in the new build apron stands will contribute towards carbon emission control and reduce.

For future development, the potential impacts from air emissions should be monitored which TIA has already included in its Environment Action plan and continues monitoring program.

## 6.1 TIA'S ENERGY TARGETS

In the table are summarised a set of aspects, targets and measures for carbon management and better energy efficiency based on TIA set up targets

| Aspects | Targets | Measure/s |
|---|---|---|
| **Cooling / Heating** | Reduction of Diesel consumption for heating and CO2 emissions | Energy efficiency assessment estimating concrete actions – exiting and new facilities such Terminal building, High temperature heat pumps |
| | Reduction of energy consumption | Procurement of new standalone AC with inverters |
| | Reduction of energy consumption | Energy efficiency assessment estimating concrete action on insulation such as baggage belt area, Terminal Building, ceiling, gates |
| **Lighting** | Reduction of electricity consumption | Energy efficiency assessment estimating concrete actions such as |

| Aspects | Targets | Measure/s |
|---|---|---|
| | | adjustment lighting/sensors – Terminal building |
| | Reduction of electricity consumption | Energy efficiency assessment estimating concrete actions such as energy efficient illumination replacements/project |
| **Green energy production** | Production of energy | Energy self-production – Instalment of Photovoltaics in buildings and site |
| **Processes and Materials** | Reduction of paper based forms | Use of software programs for electronic formats, databases such as ERP |
| | Reduction of water consumption | Water saving awareness |
| | Increase Recycling quota<br>Reuse of waste | Recycling of office paper<br>Reuse of waste TIA<br>Recycling of waste TIA and third parties |
| **Procurement** | Green procurement | High energy performance products and new energy efficient facilities, technologies |
| **Energy data collection and control** | Reduction of energy consumption | Extension of metering network and data processing<br>Installation of further electricity metering to tenants |
| **Car fleet fuel Consumption** | Reduction of diesel fuel through environmentally friendly usage | Vehicle idling time instruction |
| | Reduction of diesel fuel using environmentally friendly vehicles | New vehicle fleet (Admin car leasing, GHD)<br>Evaluation for introduction of hybrid, electric cars |
| | Reduction of fuel consumption | Promoting public transport |

| Aspects | Targets | Measure/s |
|---|---|---|
| **Stakeholders** | Reduction of fuel and electricity consumption | Stakeholder engagement Plan/ Third-party engagement in carbon footprint reduction |
| **Strategy** | Reduction of energy consumption<br>Upgrade to ACA level 3 optimization | Employee training (TIA and third parties)<br>Monitoring, Inspection and auditing |

*Table 4: Future TIA's Energy Targets*

### 6.2 SUSTAINABLE ENERGY & CARBON IMPROVEMENT SOLUTIONS

**Reducing Scope 1 and Scope 2 emissions**

During and beyond Concession period, it is recommended to develop a green airport strategy to facilitate the expected growth. And, there is potential for TIA to showcase its environmental excellence through collective airport accreditations. Some possible sustainable solutions which could reduce energy consumption and enables further carbon reductions.

The planning process could also include considerations for future investments and developments of the airport, and how these measures can be implemented into the design, e.g. sustainable construction standards.

- ***Airside electrification***
  - Change to, or increase the use of, electric GSE vehicles and utility systems to prevent emissions.
  - Replacing incandescent lights along taxiways with more efficient LED lights.
  - Switch of apron lights when no airplanes are parking there.
  - Introduction of electric platform vehicles serving aircrafts

- ***Energy efficient terminal building***
  - Develop and use energy saving schemes (smart software, systems and sensors for automated controls, appropriate air-conditioning temperature setting).
  - Equip the main building with dividing meters for the main energy consuming activities.
  - Smart lighting (maximum use of natural daylight in interior spaces, dimming light intensity in off-peak periods and places, occupancy sensors and automated switching, etc.).
  - Commission and install energy efficient cooling (and heating) systems, using variable-frequency pumps and fans, state of the art chillers and boilers.

- Thermal storage systems can store water that is chilled e.g. by means of electrical power at night and use the chilled water during the day — when demand for air-conditioned cooling is greater – and recharge in a continuous or cyclical process.
- Automatic controls to shut-off baggage systems when they are not in use.
- Low energy flight information display monitors.
- Better insulate buildings (double/triple glass, revolving instead of sliding doors, window films).

- ***Other areas***
  - Investigate the use of geothermal power to heat to extension building and or even replace the boilers of the existing terminal building for a geothermal solution.
  - Promoting public transport, installing electric charging poles and introducing zero emission cars for landside passenger transport could also lower total emissions.
  - Financial incentives via lower airport fees for clean aircraft could be another option.

In appendix 1 Table 1 are given a summary of planning and implementation actions grouped by scope and detailed sources is based on actual TIA set of targets as well as best practices tailored applicable for Tirana International Airport serving as a Guidance on Reducing Emissions before Offsetting for TIA.

# 7 CONCLUSIONS & RECOMMENDATIONS

In 2021, the total carbon footprint accounting for scope 1 and scope 2 CO2 emissions for Tirana International Airport under direct airport control amounts 1363 tCO2 and together with process emissions 1449 tCO2 accounting for about 4% of the total airport scope 1,2,3 carbon emissions that amount 36998 tCO2 with the largest contribution from aircraft traffic movements and second landside ground access accounting for the 94%.

TIA own footprint in the last three years is in the range of 1100-1300 tonnes and the carbon emission per traffic unit is in the range of 0.4-0.5 kg. There has been approx.37% and 18 % improvement in Co2eq per passenger comparing data 2019 and 2021 with 2011 and with an average relative carbon emission of 0.49 per traffic unit. This is commendable and well managed.

Based on the carbon footprint calculation the largest CO2 emissions source for Tirana International Airport is the Scope 1 CO2 emissions source, where the most significant contributor is the Carbon put in the atmosphere by diesel consumption for all fleet vehicles including ground service equipment's and the second most significant contributor is the diesel consumption by stationary sources for heating in terminal building. These are defined as areas where mitigation efforts for reduction should be focused mostly. The Scope 2 contributor is the purchased electricity, though it has to be noticed that most electricity in Albania is produced in hydropower plants and is therefore carbon-neutral meanwhile in terms of availability of resource and efficiency mitigation efforts should be carried out also.

***Future actions recommended:***

- A new energy efficiency assessment for existing buildings, facilities and systems as expanded in order to estimate detailed action plan contributing to low energy demand and low carbon emissions.
- TIA Carbon Management Plan shall be reviewed and updated setting future targets and action plans.
- Establishment of stakeholder engagement plan for data collections and coordinating and joint actions maintaining Reduction level and following Optimisation level and reaching carbon neutrality.

## 8 REFERENCES


- Airport's data register compiled by Tirana International Airport SHPK
- Greenhouse Gas (GHG) Protocol, a Corporate Accounting and Reporting Standard published by the World Business Council for Sustainable Development and the World Resources Institute (WRI), www.ghgprotocol.org.
- ACA Scheme Documentation and Guidance (ACA Scheme) Issue 12 November 2020.
- Airport Carbon Accreditation (ACA) Guidance on Reducing Emissions before Offsetting (Issue 1)
- International standard ISO 14064
- ACI mission statement, www.aci.aero
- ACI Policies and Recommended Practices Handbook, guidance document https://www.aci-europe.org
- Tirana International Airport homepage, http://www.tirana-airport.com
- TIA Integrated Management System Manual, 2020
- Energy Carbon Policy, Tirana International Airport, P003 IMS Rev 06, 31.08. 2020
- TIA Carbon Management Plan, PI 003 AMED Rev.2,2019
- TIA Master Plan 2020-2025
- The Fourth National Communication of Albania on Climate Change, September 2022
- ACI's Guidance Manual: Airport Greenhouse Gas Emissions Management (2009)
- ATAG's Aviation Climate Solutions (2015), ACRP's

# 9 APPENDIX 1

*Table 5: Airport Planning and Implementation Stages*

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| **SCOPE** | **GROUP** | **DETAILED SOURCE** | **TECHNICAL** | **OPERATIONAL** | **REGULATORY** | **ECONOMIC** | **OTHER** | **STATUS** | **REASONING** |
| **SCOPE 1** | Stationary Source Combustion Engines Heating | Heating Boiler plant | Feasibility study<br><br>Use of alternative combined energy sources technologies Building insulation improvements | Monitoring consumption per asset | Energy efficiency assessment for existing and new buildings, facilities and systems | Feasibility study<br><br>Use of renewable fuel in combination with high temperature heat pumps | | | Reduction of Diesel consumption for heating and CO2 emissions<br><br>Energy efficiency assessment estimating concrete actions – exiting and new facilities buildings |
| | Stationary Source Combustion Engines Emergency generators (diesel) | Emergency generators (diesel) | | Airfield Lighting (AFL) power supply: installment of UPS backup at | | | | Achieved | Reduction of Diesel consumption for heating and CO2 emissions |

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| **SCOPE** | **GROUP** | **DETAILED SOURCE** | **TECHNICAL** | **OPERATIONAL** | **REGULATORY** | **ECONOMIC** | **OTHER** | **STATUS** | **REASONING** |
| | | | | AFL to replace power from AFL generators | | | | | |
| | Stationary Source Combustion Engines Fire motopumps | Fire motopumps (diesel) | | Monitoring consumption per asset | | | | | Measuring Reduction of Diesel consumption and CO2 emissions adequately |
| | Mobile Source Combustion Engines Fleet vehicles (diesel/gasoline) | Airport owned and leased vehicles used in airside and landside operations /staff travel | | Monitoring consumption per asset | | | Awareness training | | Measuring Reduction of Diesel/Gasoil consumption |
| | Mobile Source Combustion Engines Ground Support Equipment (diesel/gasoline) | Airport owned equipments for the handling and servicing of aircraft in ground | Modernisation of vehicles and GSE. Use of alternative energies ie stationary | Monitoring consumption per asset | | | Awareness training | | Reduction of Diesel/gasoil consumption and CO2 emissions |

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| SCOPE | GROUP | DETAILED SOURCE | TECHNICAL | OPERATIONAL | REGULATORY | ECONOMIC | OTHER | STATUS | REASONING |
| | | | electric ground power units, electric cars | | | | | | |
| | Fire vehicles and equipment (diesel/gasoline) | Fire vehicles and equipment ( | | Monitoring consumption per asset | | | | | |
| | Process Emissions | Water Pumping Station | | Monitoring consumption per asset | | | Awareness training | | To estimate reduction of water consumption and CO2 emissions |
| | Process Emissions | Waste Water Treatment Plant | | Monitoring consumption per asset | | | Awareness training | | To estimate reduction of water consumption and CO2 emissions |
| | Process Emissions | Refrigerant losses | | Monitoring consumption | | | | | To estimate reduction consumption and CO2 emissions |
| | Process Emissions | Anti-icing substances for surface | | Monitoring consumption per asset | | | | | To estimate reduction consumption and CO2 emissions |

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| **SCOPE** | **GROUP** | **DETAILED SOURCE** | **TECHNICAL** | **OPERATIONAL** | **REGULATORY** | **ECONOMIC** | **OTHER** | **STATUS** | **REASONING** |
| | | and aircraft de-icing | | | | | | | |
| | Process Emissions | Leaks from plant particularly fire suppression CO2 | | | | | | | |
| **SCOPE 2** | Purchased Electricity by OSSHE consumed at facilities | Heating/Cooling | Feasibility Study on insulation of Terminal Building ie baggage belt area, ceiling, gates, other buildings insulation improvements | smart software, systems and sensors for automated controls, appropriate air-conditioning temperature setting | Energy efficiency assessment for existing and new buildings, facilities and systems | Procurement of new standalone AC inverters | Better insulate buildings (double/triple glass, revolving instead of sliding doors, window films) | | Reduction of electricity (heating/cooling) consumption for the Terminal and other Buildings |

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| **SCOPE** | **GROUP** | **DETAILED SOURCE** | **TECHNICAL** | **OPERATIONAL** | **REGULATORY** | **ECONOMIC** | **OTHER** | **STATUS** | **REASONING** |
| | | Lighting Buildings/AFL /Outdoor | Energy efficient illumination | Adjustment lighting and new mettering | | | | Pilot project New poles with LED lighting in perimeter fence | Reduction of electricity consumption costs and emissions |
| | Green energy production | | Installement of new photovoltaics | | | | | 1 Mwp installment | Reduction of electricity consumption costs and emissions |
| **SCOPE 3** | Indirect Emissions<br><br>Aircraft | Airlines Aircrafts | Replace jet fuel with greener fuels | Tackling aircraft emissions optimisation of CCO-CDO<br><br>Apron management | Reporting | | Stakeholder management plan | | Lower total emissions Limiting CO2 emissions from aircraft |
| | Passenger surface access | | Promoting public transport, installing electric charging | Encouragement of alternative fuel or hybrid taxis, rental and other cars using incentives such | | | Stakeholder management plan Awareness training | | Lower total emissions |

| PLANNING | | | | | | | | IMPLEMENTATION | |
|---|---|---|---|---|---|---|---|---|---|
| SCOPE | GROUP | DETAILED SOURCE | TECHNICAL | OPERATIONAL | REGULATORY | ECONOMIC | OTHER | STATUS | REASONING |
| | | | poles and introducing zero emission cars for landside passenger transport | as priority queuing, parking cost reduction and priority parking areas | | | | | |
| | Urban waste | | Solid waste management that includes recycling and composting | | | | Stakeholder management plan Awareness training | | Lower total emissions |

urfaces

to be rethought – it is estimated that hydrogen-powered aircraft will be flying by 2035. A
in partnerships on a global scale, between public and private players in the sector
es well. For rts, this means that the infrastructure wi
ogen.

**aircraft on the ground**

Even if fuel consumption is lower on the ground, it can still be reduced by optimising ta
equipment. To achieve this, airports are offering new services and encouraging airlines



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## 10 APPENDIX 2

| | | | |
|---|---|---|---|
| Doc. | P 003 IMS | Energy and Carbon Policy | Tirana International Airport Nënë Tereza |
| Rev. | 06 | | Internal/External |
| Date | 31/08/2020 | | |

**ENERGY AND CARBON POLICY**

Date: 31/08/2020

Climate protection and limited availability of fossil fuels is one of the key aspects of Tirana International Airport´s Energy and Carbon Policy. Energy efficiency, energy saving and reduction of carbon emissions plays a major role in our development and business strategy.

Tirana International Airport has set up and is implementing and maintaining an Energy Management System orientated towards ISO 50001 and based on continuous improvement of energy efficiency and carbon reduction. Setting and reviewing energy and carbon reduction objectives and targets is part of the overall management system and the daily work.

Tirana International Airport will invest into new technologies, will systematically monitor and will promote energy-efficient purchasing of products and services.

The provision and availability of resources and information, and also the involvement of Management and employees, who are required to achieve these objectives, is another important aspect of our policy. Conformity with related Albanian energy and climate change legislation is the basis to achieve the targets set in our Energy and Carbon Management Plan.

Tirana International Airport will guide airport stakeholders towards control and reduction of energy consumption and carbon emissions.

This Energy and Carbon Policy is documented, communicated and published on Tirana International Airport´s website. This Policy will be regularly reviewed and updated as necessary.

Dr. Constantin von Alvensleben
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