

2011



Flight Efficiency Plan

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INTRODUCTION

The need to have fuel savings both to reduce aviation operating costs and to achieve a lower environmental impact requires a global rationalisation of air traffic that is recognised by all the aviation stakeholders. To address this essential need, CANSO, IATA and EUROCONTROL – in a close partnership along with ANSPs, airlines, airports – have identified five action points that the international aviation community is called to share and implement with the cooperation of each stakeholder.

The air traffic control plays a key role in this context. ENAV has always studied and prepared solutions that contribute to fly safely and efficiently.

The new deployments that ENAV has finalized or is developing for the next few years are designed to optimize air traffic management and to reduce flight time. On this track, and in consideration of the international guidelines, in early 2009 ENAV published its first “Flight Efficiency Plan” (FEP) – followed by a second edition in 2010 – to deliver in the Italian airspace an air navigation system at the leading edge.

ENAV has monitored the FEP actions which have become structural achievements. Most of the planned actions have been carried out. In about three years they have led up to cumulative savings of miles and time. After a massive air traffic decrease in 2009, in 2010 there has been a strong recovery, especially during the summer season, that has proportionally boosted the expected results beyond expectations. The efficiency level already achieved results in lower targets for the future, however the 2011 target will be challenging as well.

ENAV has in place several initiatives including cooperation and sharing of operational suggestions with the users channeled through: the Customer Care activity, regular meetings with the Airlines operators and the improvement of Air Traffic Controller Flight Efficiency awareness. The Information sharing with the users gave an important feed-back over the benefits that this kind of service provided.

This third edition of ENAV’s Flight Efficiency Plan wants to keep on identifying solutions which, while respecting safety and capacity requirements, represent a contribution to having a cost reduction of flights and a decrease of the environmental impact due to the greenhouse effect.

TARGETS

ENAV's Flight Efficiency Plan aims to describe, in a concise and prompt way, the activities planned for the three-year period 2011-2013 while giving a contribution to improving the efficiency of flights.

Willing to achieve the objectives of rationalization and improvement, this plan includes about fifty actions which are clustered in five main areas :

- 1) Airspace design "en-route", 5 actions;
- 2) Airspace and network availability, 9 actions;
- 3) Design and use of TMA, about 20 actions;
- 4) Airport operations, 8 actions;
- 5) ATCOs awareness as regards flight efficiency.

FEP 2011 targets

Through the interventions planned in 2011, the estimated savings are of:

Km	1.340.000
Kg Fuel	9.400.000
Kg CO2	29.610.000

The international aeronautical community is dealing with the evaluation of the performances, with particular reference to flight efficiency, to build a coherent system of metrics and performance indicators.

The implementations started in 2008 and have been finalized in 2010. Hereunder are the savings they implied:

	FEP 2010 targets	FEP 2010 outcomes	FEP 2008-2010 outcomes
km	2.282.500	2.560.000	8.700.000
Kg fuel	16.875.000	13.100.000	55.500.000
kg CO2	55.156.250	41.265.000	175.000.000

In the following pages there is an estimation of the obtainable savings for each area of improvement.



Several interventions of reorganization of the Italian airspace have been made since 2008. The design of many shorter routes has reduced mileage and flying time with indisputable savings.

A short list of main actions addressed in 2008-2010 are shown in the chart below as well as the simplifications and rationalizations foreseen up to 2013. Most of them are also integrated in the framework of the Blue Med FAB initiative and will be progressively introduced in the time period 2011-2013.

2008 - 2010 achieved

2008 – Implementation of new routes, extensions, realignments: 5 implementations

2009 – Implementation of new routes, extensions, realignments: 11 implementations

2010 – Implementation of new routes, extensions, realignments: 18 implementations

2010 – Reorganization of route network portion over ALG area

2010 – Reorganization of route network portion over Verona area





2011/2013 planned

2011 – Doubling ATS route L5/UL5
2011 – Realignment of ATS route N/UN737
2011 – Implementation of ATS route UQ58 segment to serve LICC/LICZ
2011 – Reorganization of route network portion over BZO area
2012/2013 – Reorganization of route network portion over FRZ area

All of the solutions identified in the “Airspace design” phase and implemented during the last three years, helped to shorten the planned routes hence implying the following fuel savings:

	FEP 2010 targets	FEP 2010 outcomes	FEP 2008-2010 outcomes
km	830.000	1.818.000	4.235.000
Kg fuel	2.700.000	5.160.000	13.150.000
kg CO2	8.505.000	16.250.000	41.470.000

FEP 2011 targets

Through the interventions planned in 2011 the estimated savings are of:

km	1.100.000
Kg fuel	3.250.000
kg CO2	10.237.500





Manifold actions are planned for the years 2011-2013 to simplify the network, increase its capacity and improve the use of airspace.

The Route Availability Document (RAD) and Profile Tuning Restrictions (PTRs), which integrate route structure, ATFCM requirements and ATC operational constraints, are updated on a regular basis with the aim to both optimize the network and to better balance capacity and efficiency.

Hereunder is the list of the main actions undertaken during the last three years and those that progressively will be introduced in the time period 2011-2013.

2008 - 2010 achieved

2008 - Raising 2000ft of level capping for city-pairs:

- LIM* to LIEA/EO
- LIM* to LIRN
- LIML to LIRF
- LIRF to LIML

2009 - Removal of Level Capping for bidirectional domestic city-pairs :

- LIB* to/fm LIP*; LIB* to/fm LIE* and LIM* to/fm LIB*

2009 - Raising 2000ft of Level Capping for city-pairs:

- LIP* to LIR*, to LIM*, to LS*(except LSZA)& LFL*;
- LIR* to LIM*, to LIP*
- LS*(except LSZA)& LFL* to LIP*
- LIRN to LIM*
- LIM* to LIEE/ED/ET

2009 - Implementation of dedicated night-time direct routings (2200-0400 UTC):

- 27 DCTs

2010 - Implementation of dedicated night time direct routings (2200-0400 UTC):

- 17 DCTs Adriatic Routings

2010 - Implementation of dedicated direct routings, H24:

- 7 DCTs



2011 planned

Raising 2000ft of Level Capping for bidirectional domestic city-pairs:

→ LIB* to/fm LIC (except LICG/LICD)*, to/fm LIR*, to/fm LIBP

Raising 2000ft of Level Capping for bidirectional domestic city-pairs:

→ LIE*to/fm LIC (except LICG/LICD)*;

→ LIR*(except LIRQ/RP)to/fm LIC (except LICG/LICD)

Raising 2000ft of Level Capping for traffic from Zagreb ACC area dest LIRA/LIRF/LIRN

2012/2013 planned

Network optimization on the basis of traffic demand

Raising further 2000ft of level capping for city-pair LIRF-LIML via UQ704

Free - Route during night time

The DCTs implemented in 2010 have not been extensively used by the users, but the solutions proposed in previous years have continued to offer great advantages, in particular the raising and the removal of level cappings which have partially balanced the scarce utilization of Adriatic DCTs. As a result, there have been the following CO2 savings:

	FEP 2010 targets	FEP 2010 outcomes	FEP 2008-2010 outcomes
km	295.000	21.250	470.000
Kg fuel	950.000	530.000	13.845.000
kg CO2	2.992.500	1.670.000	43.615.000

FEP 2011 targets

Through the interventions planned in 2011, the estimated savings are of:

Kg fuel	3.350.000
kg CO2	10.552.500



DESIGN AND USE OF TERMINAL AREAS

All the completed or yet to be implemented activities and changes foreseen by ENAV, are designed to optimize traffic management and to reduce flight distance and time. In the terminal areas this result is reached through a rational and efficient use of airspace by means of introduction and/or modification of the new SIDs/STARs and reorganisation of CTRs.

In March 2011 the Precision Area NAVigation will be introduced in the national Italian airspace and an ad hoc AIC will be published. The first SID/STAR PRNAV procedures will be in force by autumn 2011.

Whenever feasible, the new approach procedures will be designed with the aim to reduce miles and in line with the Continuous Descent Operations concept. CDOs procedures will be gradually phased in. In a first implementation stage they will be performed during night time only.

The charts below report both the results achieved in the last three years and the main projects planned up to 2013 that set out to improve efficiency of flights in the terminal areas.

2008 - 2010 achieved

2008 – Reorganization of Palermo CTR and related linked procedures, including RNAV STARs

2009 – Reorganization of the Ancona CTR

2009 – Reorganization of Bologna, Bergamo, and Napoli CTRs and related linked procedures, including RNAV STARs

2009 – Implementation of RNAV approach procedures for Alghero airport

2010 – Reorganization of Parma and Venezia Airports Initial Climb Procedures and SIDs

2010 – Cuneo Airport Implementation of new SIDs

2010 – Reorganization of SIDs for Fiumicino and Palermo airports





2011 - 2013 planned

Autumn 2011 – Implementations of P-RNAV SIDs/STARs in:

- Milano TMA and
- Verona, Bologna, Venezia, Palermo, Olbia, Napoli, Genova CTRs

Winter/Spring 2012 – Implementations of P-RNAV SIDs/STARs in Roma TMA

Spring 2012 – CDOs procedures in: Fiumicino, Linate, Malpensa and Venezia CTRs

Autumn 2012 – CDOs procedures will be gradually introduced in others CTRs

For the years 2008 - 2010 all of the implemented solutions have helped traffic to save up to 4.000.000 kilometres in the terminal area.

	FEP 2010 targets	FEP 2010 outcomes	FEP 2008-2010 outcomes
km	1.157.500	722.300	4.000.000
Kg fuel	3.625.000	2.085.800	11.050.000
kg CO2	11.418.750	6.570.300	34.820.000

FEP 2011 targets

Through the provisions planned in 2011 estimated savings are of:

km	240.000
Kg fuel	700.000
kg CO2	2.100.000





The Airport Collaborative Decision Making (A-CDM) is the key activity to improve the efficiency of the segment of flight operations in airports. It allows to optimize the departure sequence times and taxi time (-in and -out)

In the major airports managed by ENAV, a system of automatic data exchange is already available and it represents an enabling factor for the reduction of apron and taxiway congestion

ENAV's goal is to contribute to the reduction of an average of one minute taxi time per movement, calculated on all the movements from 2008 up to 2011.

Hereunder is the list of main actions undertaken in the three-year period 2008-2010 and those that progressively will be introduced in 2011-2013.

2008 - 2010 achieved

Optimization and automation of the Apron Management Service of Malpensa, Linate, Bergamo, Torino, Bologna, Venezia, Napoli and Palermo

Extension of the automation of the Apron Management Service at Genova, Firenze, Olbia, Bari, Catania and Lamezia airports.





2011 - 2013 achieved

Fiumicino, Malpensa, Linate, Venezia Airports - Implementation of A-CDM

Extension of the automation of the Apron Management Service for, Cagliari, Alghero, Brescia and Trieste airports

The complexity of monitoring taxi time reductions for all the airports run by ENAV led to focus on 9 airports in 2008/9 and on 11 airports in 2010. Monitoring is going on to progressively include other airports. Within three years there has been an average improvement of about 50 seconds per movement.

For the 11 airports considered taxi-out time savings in 2010 have been an average of about 26 seconds per movement. For the initial 9 airports in 2010 the performance was even better, with a reduction of about 31 seconds.

	2010 Outcomes <i>11 airports monitored</i>	2008/2009 Outcomes <i>9 airports monitored</i>
Minutes Taxi time	400.000	660.000
Kg fuel	5.300.000	12.150.000
kg CO2	16.750.000	38.280.000

2011 targets

Since 2008 the air fleets have become more fuel efficient. For this reason the estimated target for 2011, as valued in the first FEP edition, needs to be downturned. The planned implementations, when fully deployed, will imply estimated savings in the order of:

Minutes Taxi time	3.300.000
Kg fuel	43.000.000
kg CO2	135.000.000





One of the five cornerstones of this plan is to raise air traffic controllers' awareness since they can give a mighty contribution for fuel savings both to in flight and on ground operations.

The principles of flight efficiency and their environmental implications were planned to be part of all the trainings and updating for ATCOs ever since ENAV's first FEP in 2009. Currently they are included in both the training plans and report cards of ab-initio and advanced courses of the ATCOs' students of ENAV's Academy as well as in the ATCOs continuation training courses.

Flight efficiency principles have been presented also during managerial workshops.

2009 - 2010 achieved

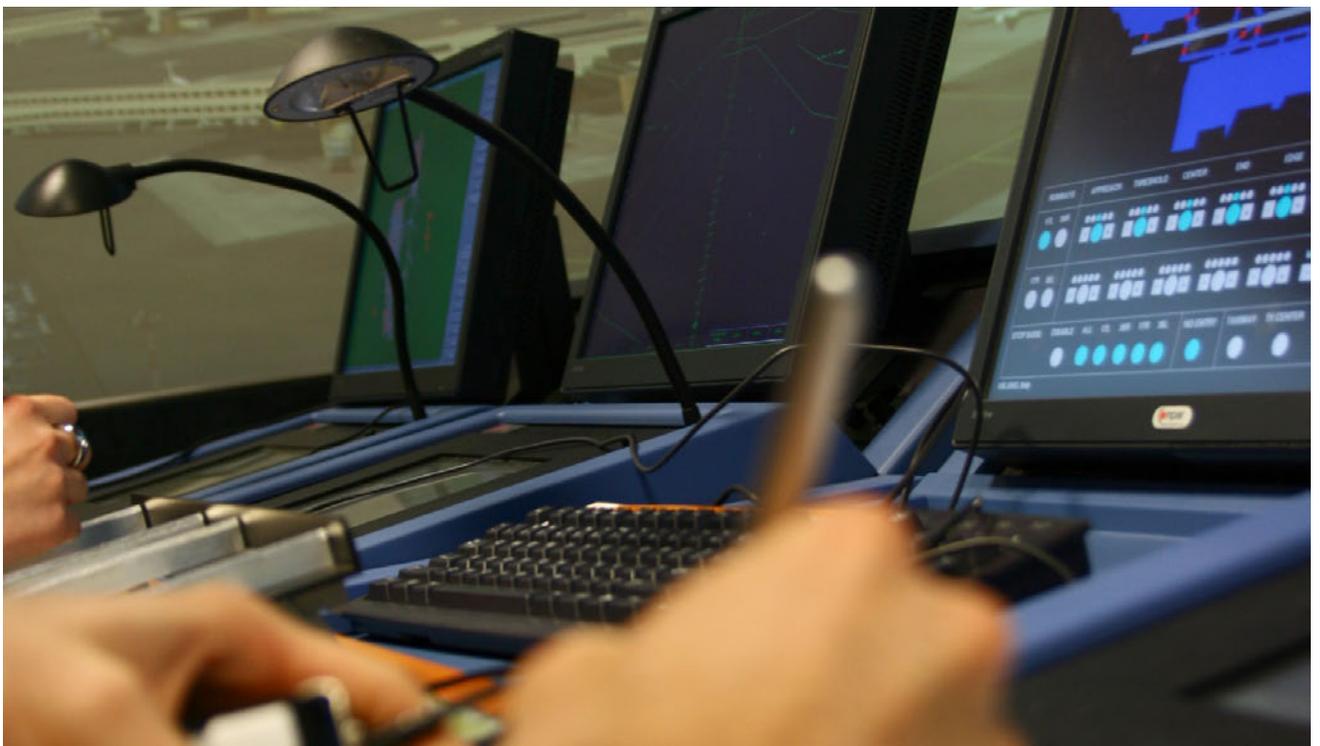
220 ab initio ATCOs students and 125 advanced ones have followed a module on flight efficiency.

1650 hours on flight efficiency were provided in the framework of ATCOs continuous training during 2010.

2011 - 2012 planned

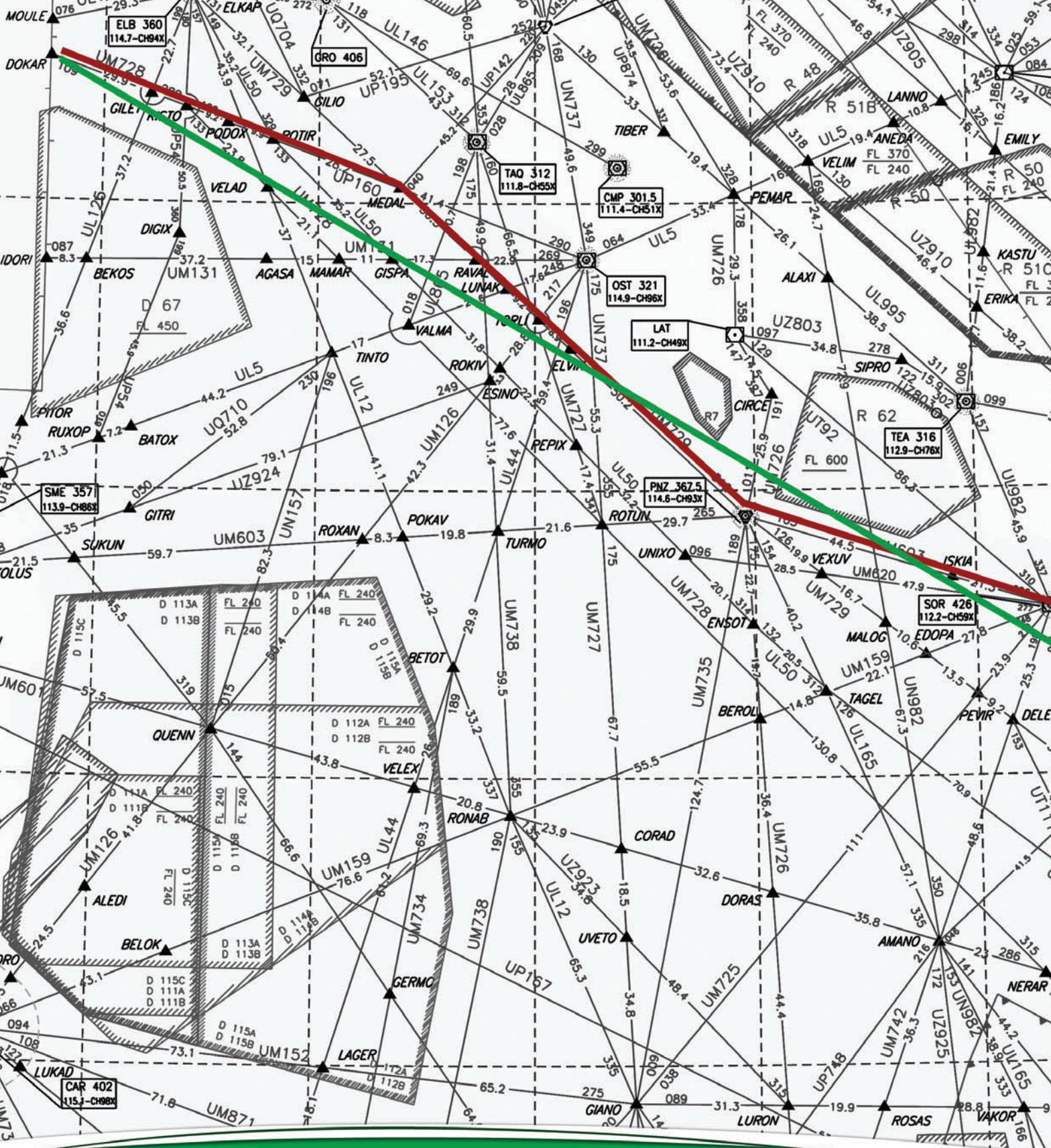
2011/2012 – 291 ab initio ATCOs students and 128 advanced ones will follow a module on flight efficiency. In the whole the instructive occurrences will be 496.

2011 – ATCOs continuation training will include 1500 hours focused on flight efficiency.





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