Assessing Capacity Expansion of Rome Airports

Meeting with users of Fiumicino and Ciampino airports
in the framework of annual consultations (EU Directive 2009/12)

25 JUNE 2021

THE CAREPORT

ADR Aeroporti di Roma

Agenda

1. Introduction
2. Current operations & FCO South Completion Plan
3. Traffic forecast
4. Medium and long term capacity expansion
5. Ciampino Airport
6. Next steps

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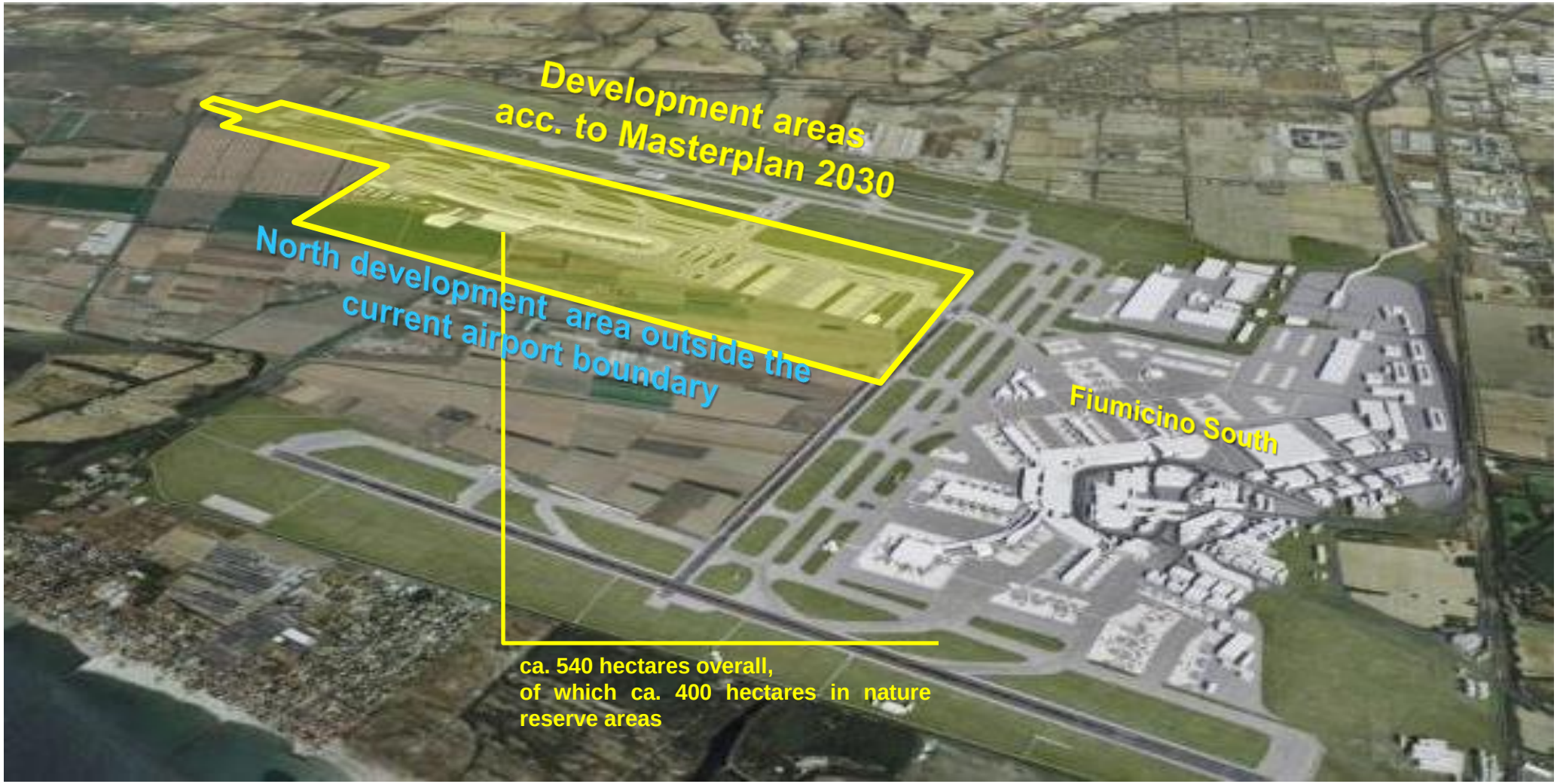
FCO North Development Plan, unapproved by Environmental Ministry



Key industry trends and implications for Fiumicino expansion plan

Over the last decade **significant changes in key industry trends** have affected the entire aviation sector modifying demand through a higher connection efficiency and a **rise both in number of seats per aircraft and in average load factor**.

At the same time, the technological and operational progress in airport processes has made it possible to use existing facilities more efficiently, as confirmed by **IATA's extensive review of planning and design reference standards.**

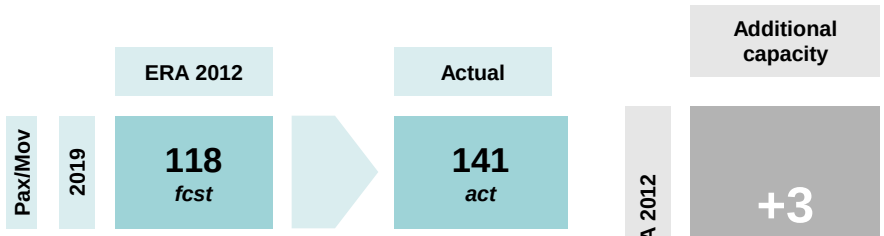
All these factors have led to a reassessment of capacity requirements.

	Key industry trends…	… affecting FCO capacity expansion
Traffic Movements	▪ **Strong increase in pax/mov** compared to the 2012 forecast ▪ This trend is also expected to continue in coming years due to an increase in the average aircraft size	▪ **Downsizing of additional airside capacity compared to initial forecasts**
Dimensional standards for terminal planning and design	▪ **Review of IATA dimensional standards** for terminal design – transition from reference standard LoS A (2004 Manual) to LoS C=Optimum (2014 Manual)	▪ Re-assessment of **total terminal area required** to guarantee an excellent level of service at FCO

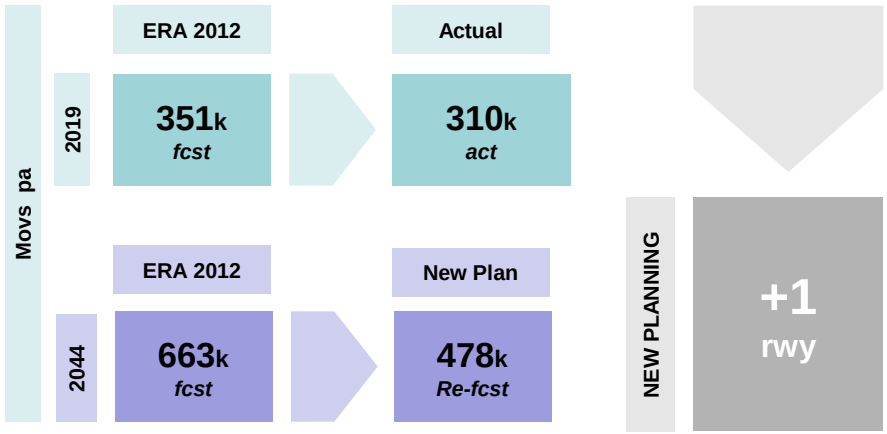
Key industry trends | Recent trends in aircraft movement

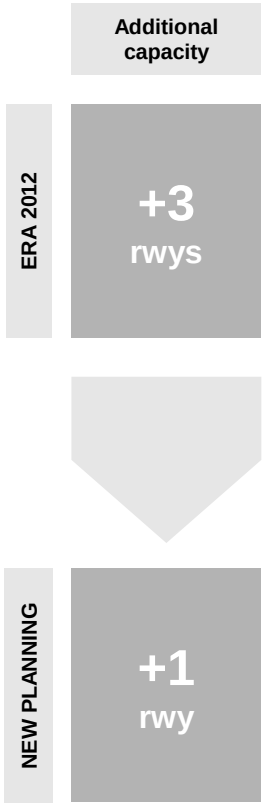
Evolution of aircraft movement

Pax/mov



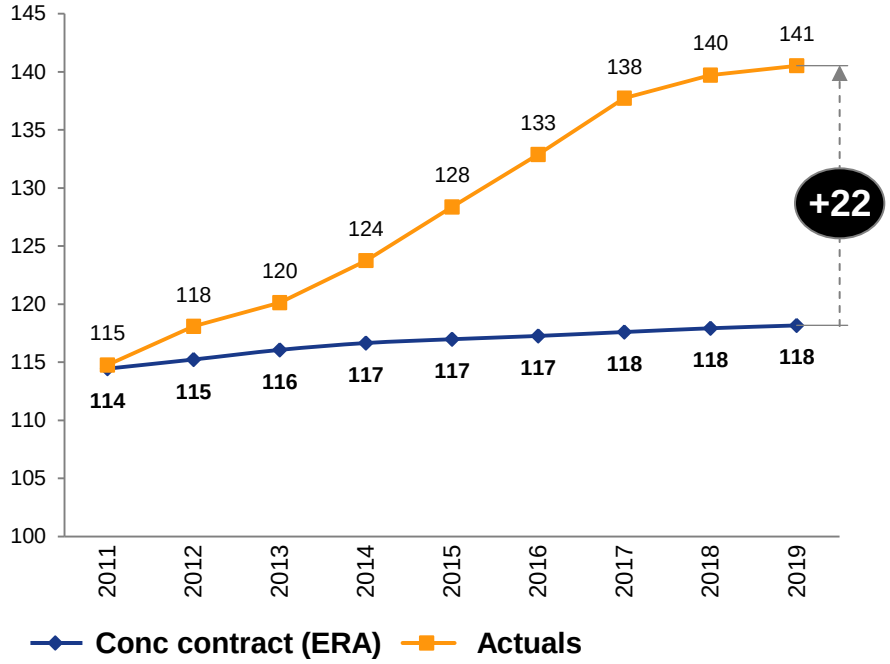
Aircraft ATM





Pax/mov: forecast in 2012 Concession Contract vs actuals

Pax/mov



The increase in load factor and number of seats per movement has led to a reduction in movements, thus making it possible to handle traffic volumes expected by 2044 with only one additional runway

Key industry trends | Reassessing dimensional standards for terminal design

IATA's reassessment of dimensional standards makes it possible to manage the same passenger flow expected by 2044 in a smaller overall surface area while guaranteeing a level of service in line with the quality standards achieved by FCO in recent years.

Previous IATA Standard (2004; ADRM IX)

LOS mq/TPHP	DA	A
D		25
C	25,1	35
B	35,1	45
A	45,1	60
A CHANGI	60	

ESTRATTO ADRM IX

Legend

A Excellent level of service; condition of free flow; excellent level of comfort.

B High level of service; condition of stable flow; very few delays; high level of comfort.

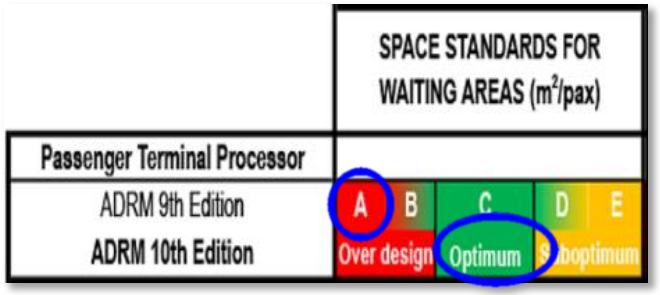
C Good level of service; condition of stable flow; acceptable delays; good level of comfort.

D Adequate level of service; condition of unstable flow; acceptable delays for short periods of time; adequate level of comfort.

E Inadequate level of service; condition of unstable flow; unacceptable delays; inadequate level of comfort.

Development Plan foreseen in the 2012 concession contract based on IATA LoS A

Updated IATA Standard (2014; ADRM X)



ESTRATTO ADRM X

Level of Service	Space
Overdesign	Excessive or empty space.
Optimum	Sufficient space to accommodate the necessary functions in a comfortable environment.
Suboptimum	Crowded and uncomfortable.

AdR's new plan envisions a LoS C = Optimum (ie. sqm/TPHP reduction of around 50% vs LoS A)

Distinctive elements in ADR's assessment of capacity expansion: Sustainability

- **Drastic reduction in land consumption**: the project would require the acquisition of a total of 267 hectares, of which only 150 hectares would be in the State Reserve (about 70% less than in the previous project) and would make it possible to give 85 hectares back to the local community in the area South of the current airport grounds, near the archaeological area of the port of Emperor Claudius
- **Acoustic footprint reduction**: noise reduction in the urbanised areas of Fiumicino and Isola Sacra, by gradually limiting the use of runway 1 and displacing the South threshold
- **"Under one roof" layout**, in continuity with current terminals: the project foresees the construction of terminals and piers in continuity with current terminals, featuring a harmonic architectural development, enabling **simpler transits** and making it possible to **achieve a modular design of the construction** (and to adjust annual investment accordingly) to better match traffic evolution
- **Tariff sustainability to support the development of Fiumicino Hub**: although the investment in the terminal is comparable in terms of absolute money value to the previous plan (guaranteeing adequate service levels in line with current IATA standards), the modular design of the infrastructures and the operational efficiency achieved thanks to the "under-one-roof" approach make it possible to attain the competitive tariff level necessary for airport's operations' commercial sustainability
- **Effective and sustainable accessibility through the following development drivers**:
  - Dynamic mobility modelling with macroscopic simulations for the vast area and detailed simulations for the airport grounds (microsimulations), calibrated with data from various systems
  - Definition of alternative rail and road access routes from Rome and upgrading of current routes
  - Railway maintenance and shared development approach with RFI (Rete Ferroviaria Italiana)

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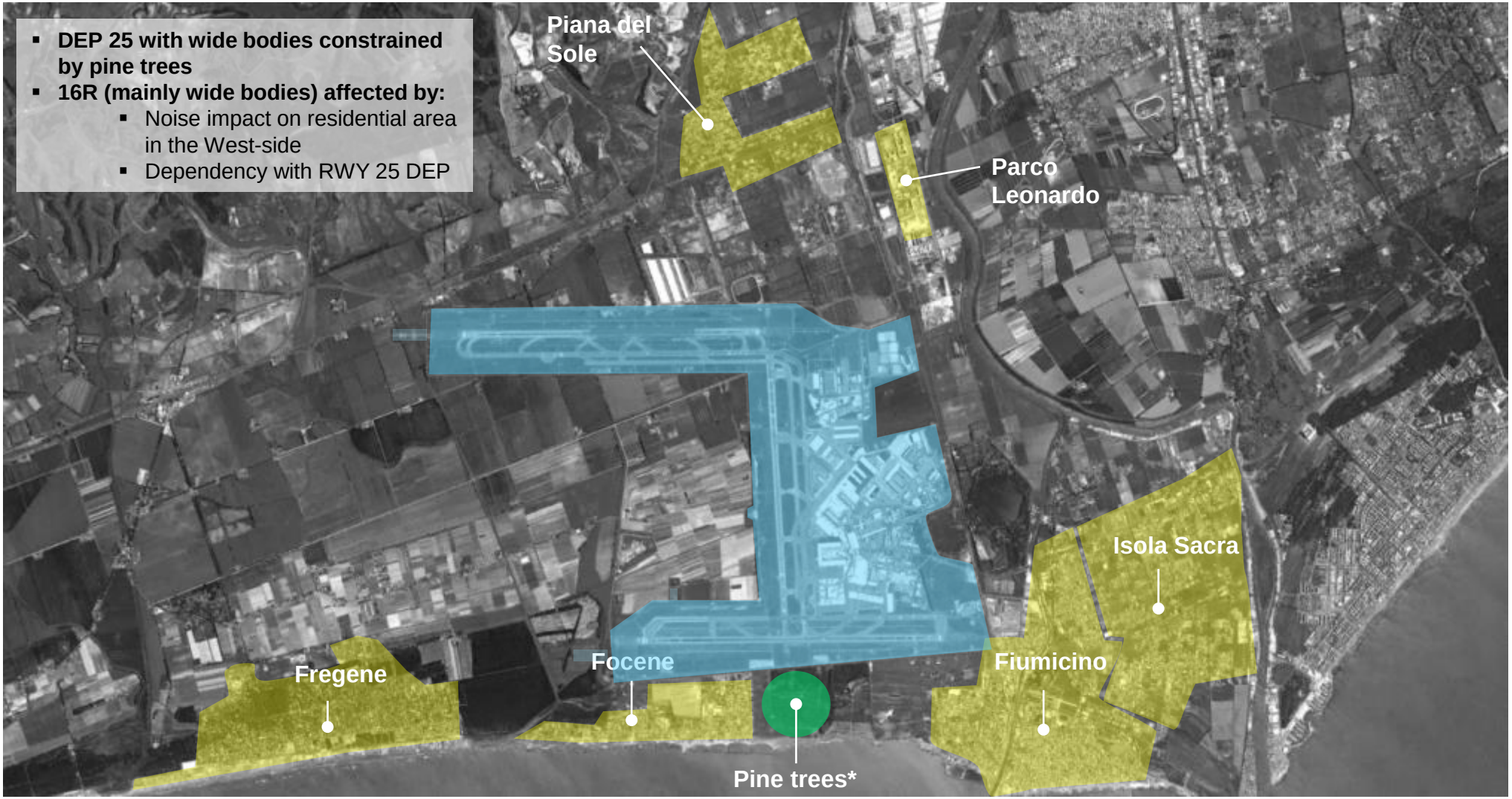
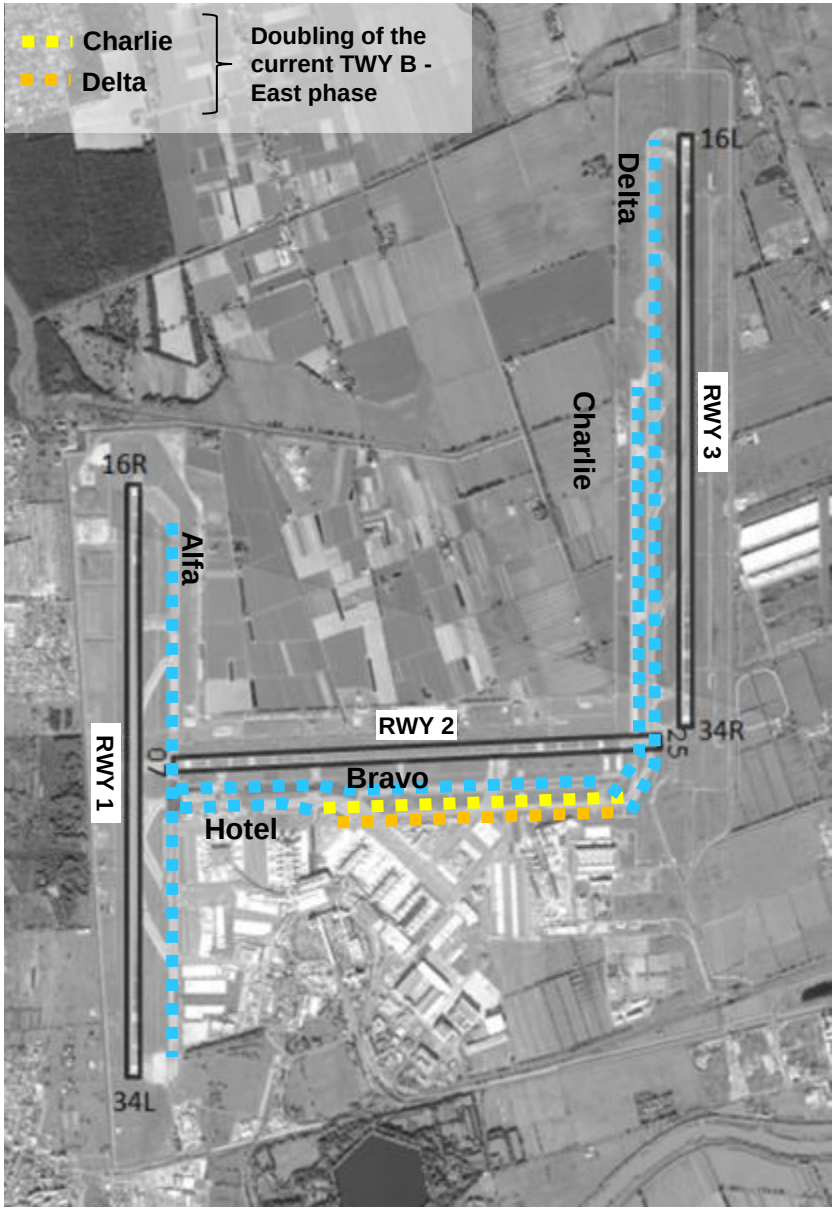
Airport surrounding environment

Rome Fiumicino airport is surrounded by several residential areas.



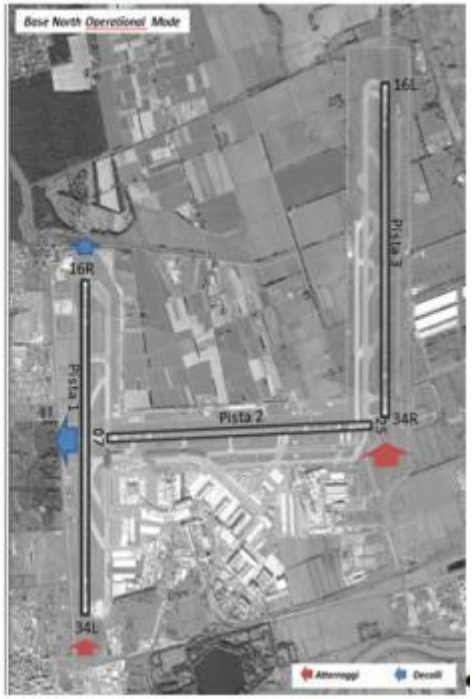
** Protected area: Riserva Naturale Statale del Litorale Romano*

Airside operations



TRAFFIC 2019	
PAX	43,5 MPPA
MOVS	310k
PAX/MOV	141

INFRASTRUCTURE	
RWYs	3
TWY // RWY	5
Stands	127 / 135 (CARGO not-included +3/2)
Loading Bridge	35/36%
Declared Capacity Hub-in	**90 movs/h = 54 arr + 36 dep**
Declared Capacity Hub-out	**90 movs/h = 36 arr + 54 dep**

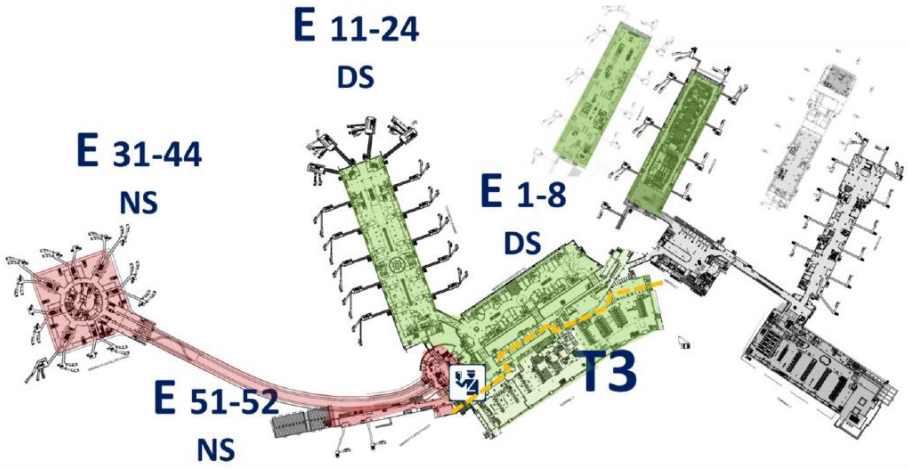


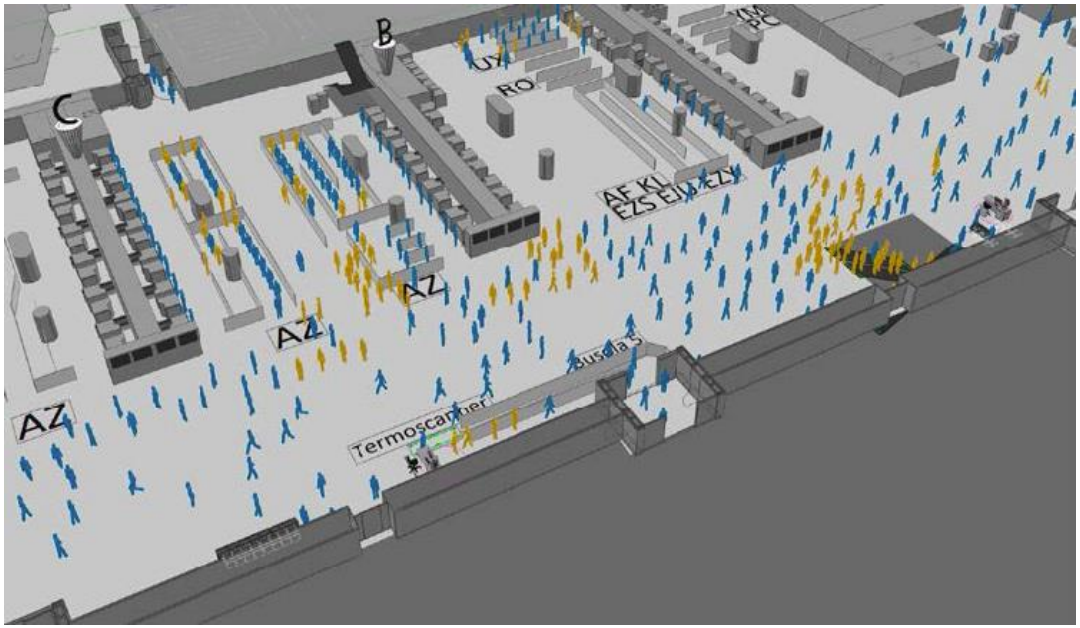
Terminal operations under Covid 19 traffic and restrictions

The pandemic has impacted terminal operations forcing AdR to:

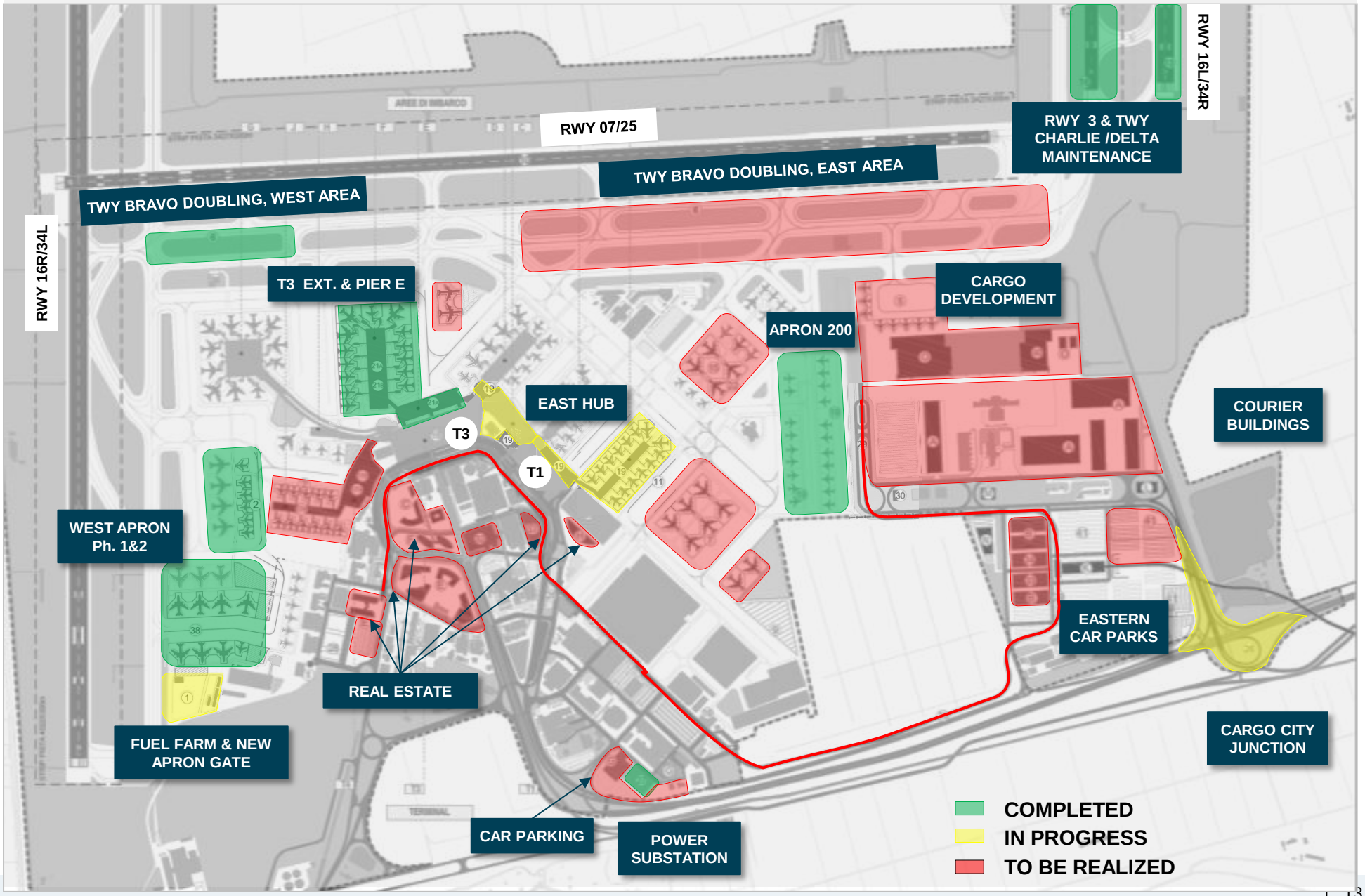
- ✓ **rethink infrastructure capacity** in order to comply with **social distancing requirements** of 1 m between passengers by using
  - ✓ **static simulations** in boarding areas and at baggage reclaim belts;
  - ✓ **dynamic simulations** in the check-in hall.
- ✓ define a **variety of terminal configurations, to be flexible according to traffic demand;**
- ✓ **constantly monitor traffic volumes** and related capacity saturation since March 2020.

In the next months AdR will maintain **a flexible approach, adjusting operative/capacity configurations** in accordance with **Terminal 1 and 3 ongoing revamping projects**.

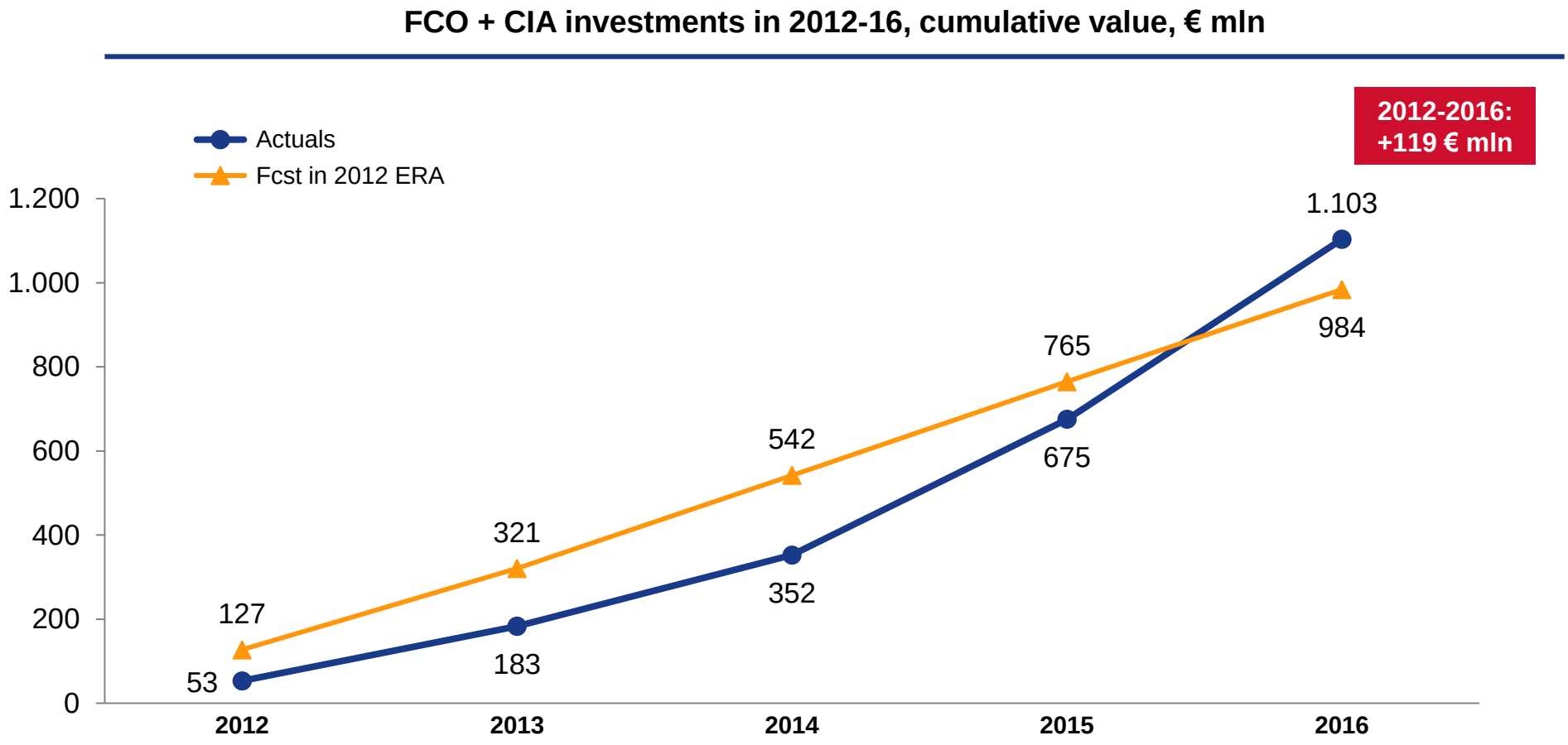




Fiumicino South: state of works

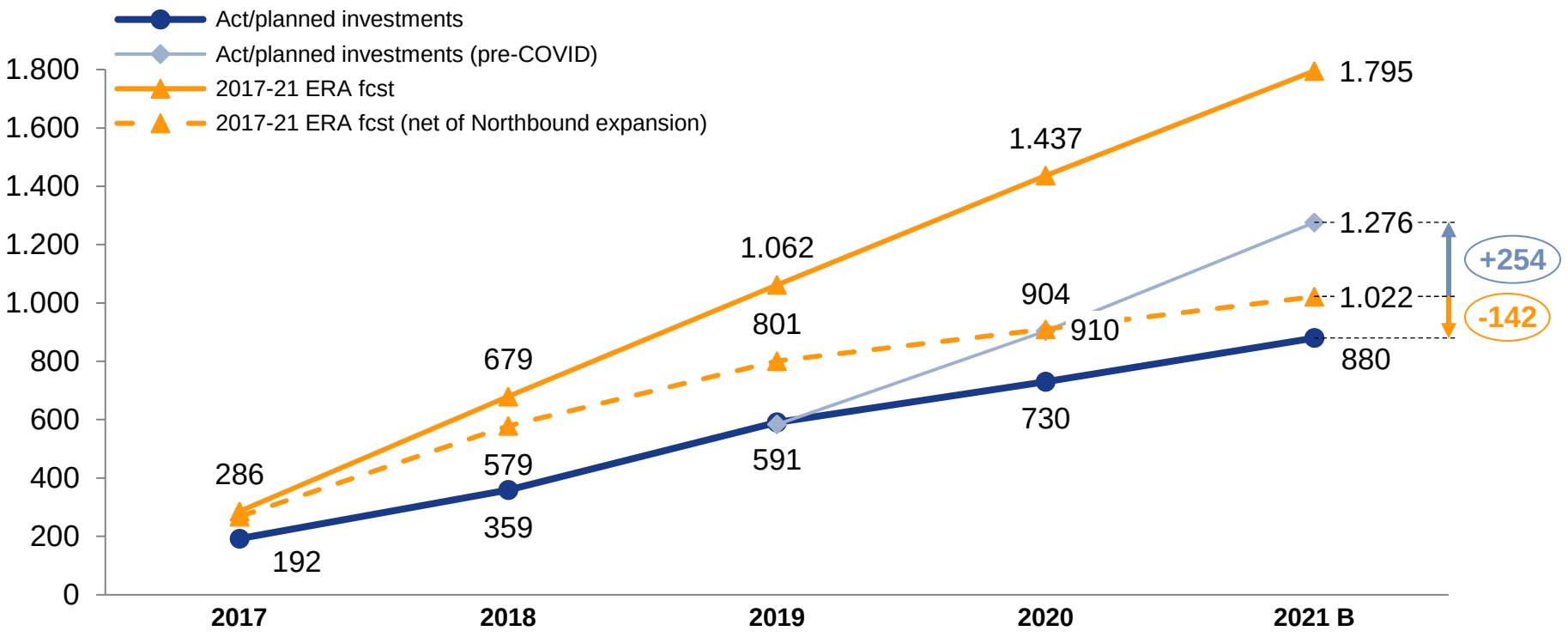


1st period 2012-2016: investments ~ €1,1 billion



In 2017-21 additional investiments worth approx. ~ €0,9 billion

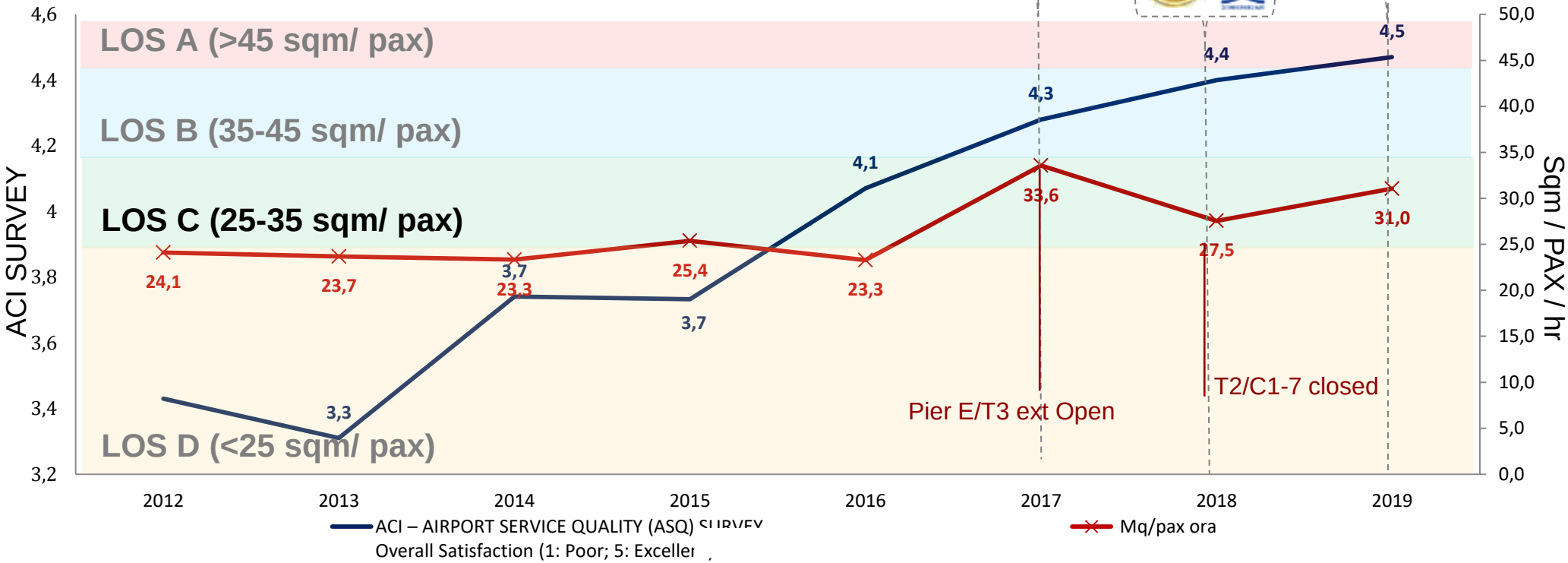
FCO + CIA investments in 2017-21, cumulative value, € mln



Net of spending for the previously planned Northbound expansion, in the 2017-21 5-yr period ADR has accomplished capex worth approx. €0,9 billion, ie. € 142 mln lower than originally planned (mainly due to COVID emergency)

Evolution of Level of Service and passenger experience | 2012-19 comparison

Since 2017, Fiumicino has been consistently confirmed as one of the **best and most award-winning airports in Europe**. Key to these goals was the **focus on customer experience** and positioning in the **"Optimum" range of IATA levels of service** for passenger terminal areas.



* LoS calculated by comparing the gross sqm of operating levels with the **TPHP 2012-2019**. The LoS is higher than that adopted for the sizing of the infrastructures, since the system is not saturated

Recognition of Customer Excellence

SUSTAINABILITY

RECOGNIZED BY UNWTO World Tourism Organization FOR ITS LEADERSHIP IN SUSTAINABILITY AND COMMITMENT TO RESPONSIBLE TRAVEL

Fiumicino is the first airport gaining an accreditation for its leadership in sustainability by United Nations

BEST AIRPORT AWARD (AIRPORTS > 25 MIL. PAX / YEAR)

ACI EUROPE

16th ACI EUROPE AWARDS

15th ACI EUROPE AWARDS

ACI EUROPE AWARDS

SKYTRAX – 5 STARS Covid 19, 4 stars world's most improved airport

COVID-19 AIRPORT RATING SKYTRAX

4 STAR AIRPORT SKYTRAX

WORLD AIRPORT AWARDS WINNER SKYTRAX 2018

WORLD'S MOST IMPROVED AIRPORT

BEST AIRPORT IN EUROPE (AIRPORTS > 40 MIL- PAX / YEAR)

ASQ 2020 CUSTOMER EXPERIENCE AWARD WINNER

ASQ 2019 CUSTOMER EXPERIENCE AWARD WINNER

ASQ 2018 CUSTOMER EXPERIENCE AWARD WINNER

ASQ AIRPORTS COUNCIL INTERNATIONAL 2017 WINNER

COVID-19 SAFETY CERTIFICATIONS

COVID-19 AIRPORT RATING SKYTRAX

RINA BIOSAFETY TRUST CERTIFICATION MANAGEMENT SYSTEM

AIRPORT HEALTH ACCREDITATION ACI AIRPORTS COUNCIL INTERNATIONAL ACCREDITED

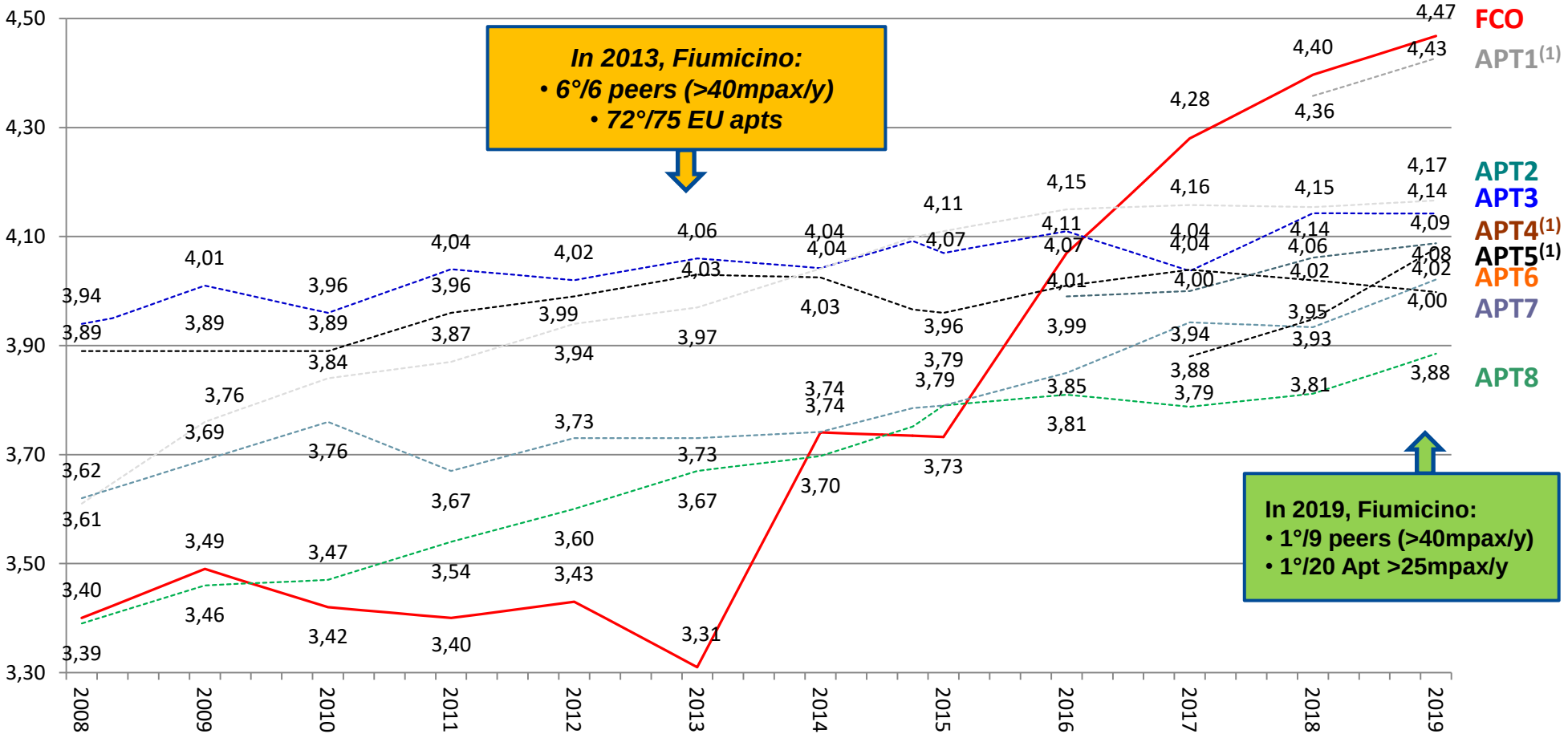
SAFE GUARD

Fiumicino is the first airport gaining «5 stars» Skytrax rating

Recognition of Customer Excellence

ACI World – "Airport Service Quality": European airports with > 40M passengers "Overall Satisfaction" Index 2008-2020 FY

Scale: from 1 («Poor») to 5 («*Excellent*»).

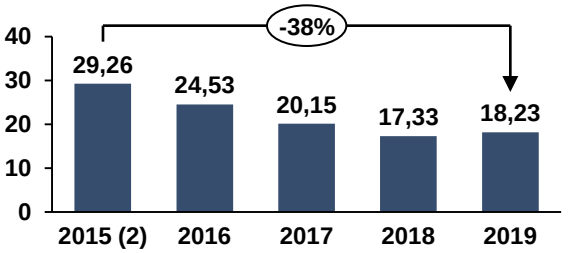


9 European hubs: Amsterdam, Barcelona, London Gatwick, London Heathrow, Madrid, Moscow Sheremetyevo, Munich, Paris Charles de Gaulle, Rome FCO

Customer Excellence Recognition

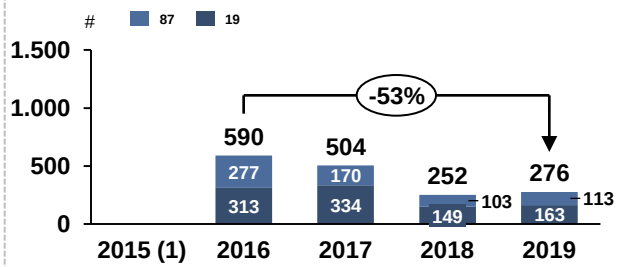
The achieved improvements are attributable to an extensive action plan, which was launched 5 years ago, aiming to high levels of performance in the core processes

First baggage delivery (min,sec)



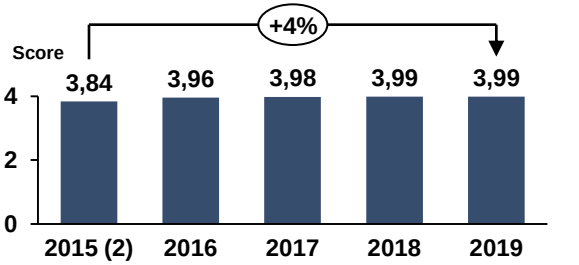
Time of first bag delivery on belt (airside) in 90% of cases

Airport delay code D15



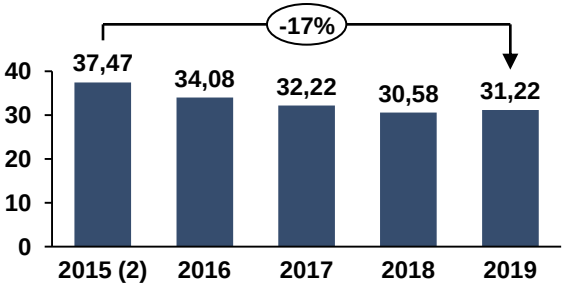
Delay code number for departing flights, of airport's liability: 19 PRM – 87 Airport facilites

Quality delivered at toilets



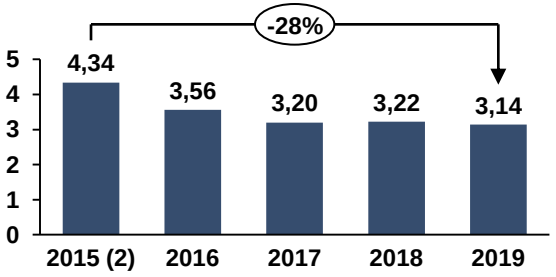
Score related to cleanliness inside toilets, through on-site measurements. Scale: 1 to 4

Last baggage delivery (min, sec)



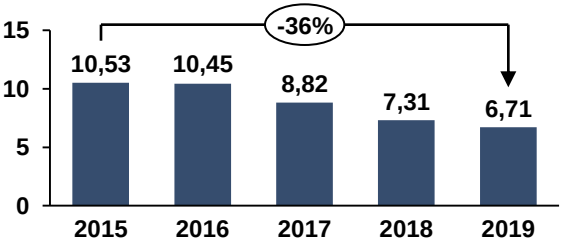
Time of last bag delivery on belt (airside) in 90% of cases

Security control (min, sec)



Queue waiting time at security control in 90% of cases

Mishandled baggage



*Number of mishandled bags * 1000 / total departing pax*

Quality Plan for 2022-2026: main factors underlying ADR's proposal 1/2

Level of excellence in operational performance and pax satisfaction

In the last five years, thanks to the Quality Plan and to all stakeholders (Enac, State Authorities, Carriers, Handlers, others), ADR has achieved excellent performance levels as highlighted by awards from the main institutions and rating companies in the industry

As a result, the challenge for the next five years will be to maintain the achieved level of performance despite the growing complexities of managing traffic restart and the issues outlined below

Infrastructure development works on Terminals and boarding areas

Over the next 5 years, an extensive renovation plan will be carried out in both terminal and boarding areas significantly affecting pax in terms of

- unavailable circulation areas
- unavailability of airport resources (check-in desks, baggage reclaim belts...)
- constant changes in wayfinding information in order to adapt routes to the progress of construction work

In particular construction works will involve:

- Restructuring and upgrading of Terminal 3: all levels (arrivals, departures and mezzanine)
- Front portion and extension of the Terminal «boarding hub D» (Departure/transit passport area)
- Restructuring and regulatory upgrading of piers «B» and «D» and of boarding area «C»; end of works at pier «A»

Quality Plan for 2022-2026: main factors underlying ADR's proposal 2/2

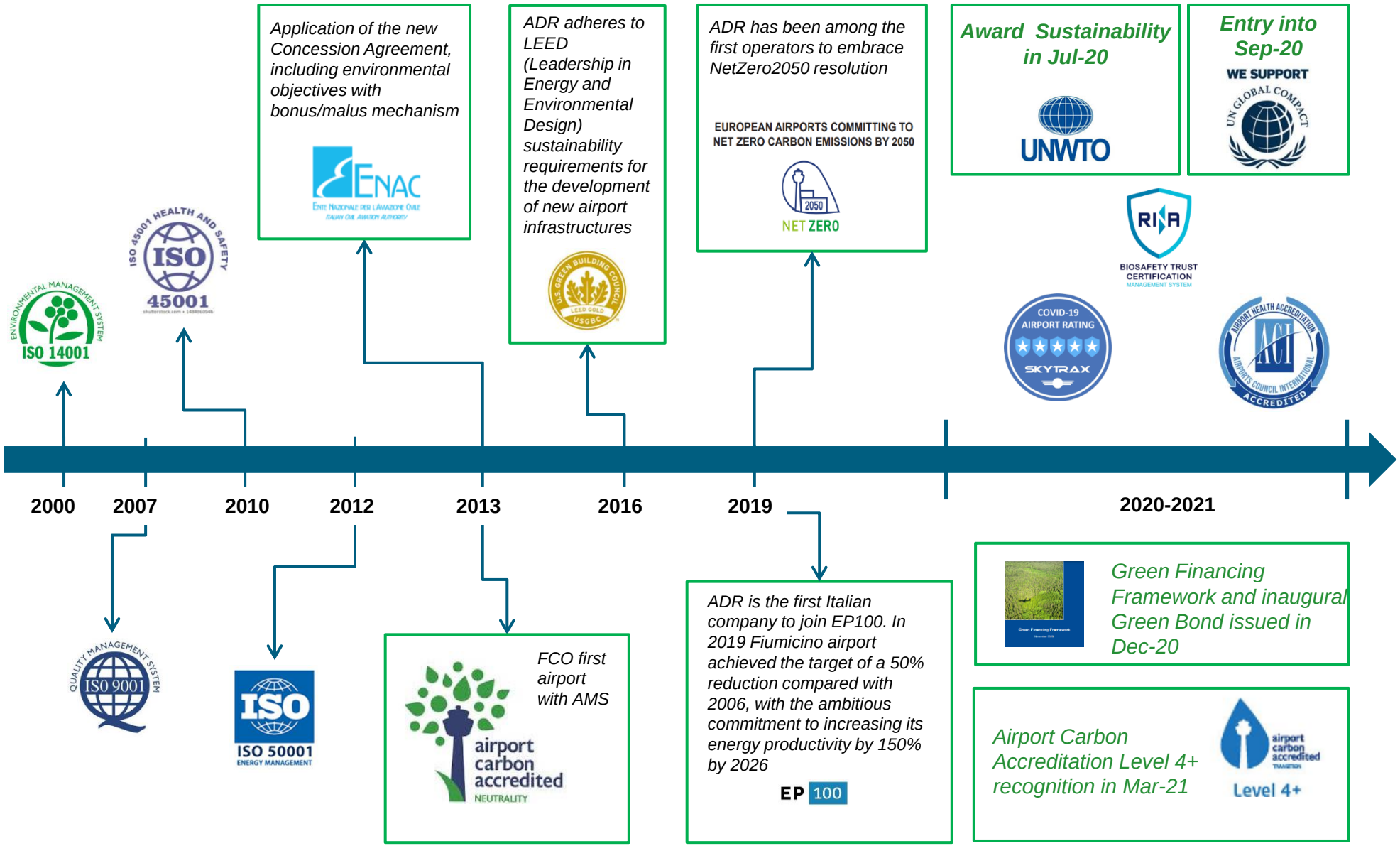
Entry into force of the new Schengen border management system (Entry Exit System)

- As of May 2022, the new Schengen border management system "Entry Exit System"(EES) will come into force. The European Commission's Smart Borders project aims at modernizing border management and increasing the security of the Schengen area. The EES is intended to electronically register the entry and exit of third-country nationals and automatically calculate the length of stay in the Schengen area. The system replaces current manual procedures (stamping of travel documents). It will make it easier to detect irregular migration (in particular the so-called overstayers) and to identify undocumented travellers more effectively during controls within the Schengen area, not least by means of biometric identifiers (facial image and four fingerprints).
- The impact of the new procedure for third-country nationals entering the Schengen borders at the airport will be significant in terms of process time, dedicated areas, technological adaptations as well as customer experience.

Expiry of Ramp Handlers limitation

- In the course of 2023, the period of limitation of Ramp Handlers, which began on 18 May 2016, will expire at Fiumicino. This limitation has had significant benefits on the quality of services experienced both by passengers and airlines in terms of: Passenger disembarkation times; Turnaround; Punctuality of departing flights; Baggage reclaim; fleet maintenance and care.

ADR's efforts for environmental protection: activities and key facts so far



ADR's commitment to sustainability 1/2

RESPONSE TO THE COVID-19 PANDEMIC

- ADR is keeping in place all internationally recognized containment measures, such as:
  - The reengineering of all airport processes to meet health safety requirements for passenger and workers
  - The creation of **Italy's largest vaccination centre** (1,500 sqm) with a capacity of over 3,000 vaccines/day

ZERO CO2

- In 2020 ADR undertook a programme to reach **zero CO2 emissions level by 2030** Rome airports are the first European airports to obtain ACA 4+ certification
- Ongoing main projects:
  - **construction of two large m**ulti-megawatt photovoltaic plants **at the airport**
  - the Smart Airport project aimed at making SAFs (Sustainable Aviation Fuels) available at the airports
  - development of a capillary network of recharging points for electric vehicles

GREEN INFRASTR-UCTURE

- ADR plans, designs and builds infrastructures in compliance with i**nternational "sustainability" certification protocols** (e.g. LEED protocol gold level for Ciampino General Aviation Terminal, Fiumicino Pier A and the Hubtown real estate project) in order to contain the environmental footprint
- By 2030 over 60% of Terminal infrastructures shall be built or renovated according to the highest international sustainability standards (**LEED and BREEAM**)

ADR's commitment to sustainability 2/2

CIRCULAR ECONOMY

- ADR intends to become a **zero-waste airport** and to reduce the amount of waste produced by each passenger by 10% of the 2019 value by 2030
- Organic waste is treated in a **composting plant** within the airport and workwear is created using the plastic from the bottles
- Circularity includes **sustainable management** of water resources, building materials and land reuse

COUNTRY'S DEVELOP-MENT ENGINE

- The Rome airport system is an **engine for the development of the country** and the territory surrounding the airports from an economic, environmental and social point of view
- In 2020 ADR successfully issued its first "green bond" worth €300 million
- In 2020 ADR undertook the reclamation of a severely-degraded area with a high value-to-nature
- ***Issuance of ADR Sustainability Linked Bond worth €500 million***

€53.9bn
Total value created (direct, indirect and related businesses)

392k
Employed people (direct indirect and related businesses)

3.1%
Percentage of the total regional GDP produced by AdR (direct business)

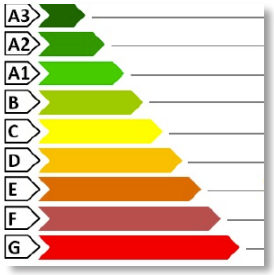
129k
Employed people in the region (equal to 4.3% of the total of the Lazio region)

PEOPLE

- **People** are at the centre of ADR's development strategy
- ADR's policy of continuous improvement of service quality is constantly updated considering the changes in operations imposed by Covid-19, to guarantee health protection for passengers and staff
- Several initiatives to support, engage and listen to employees in order to consolidate an even greater proximity to its people

Leed & Breeam | Standards within new infrastructures and renovations

Renovation projects will be carried out to improve the building shell and facilities in order to attain LEED / BREEAM standards incl. on the existing boarding gates A1-10, A31-A51 and office towers 1, 2.

A		New infrastructures with a defined and clear-cut boundary	New construction
		Renovation of space managed by third parties (VIP areas, retail, F&B)	Commercial interiors
B		Infrastructures (hall check-in, bag delivery, etc)	Breeam in Use
		Other infrastructures without a defined and clear-cut boundary	Breeam in Use
C		Other areas	Pre-assessment (based on project and legal) Energy certification provided by a third party

AdR the first and to date the only airport in Europe to achieve ACA 4+

AIRPORTS CARBON ACCREDITATION MAP

As at the end of 2020, around 340 airports in the world were certified by the ACA (out of about 18k globally), 167 of which are based in Europe, including all the largest airports

# of European Airports in the Level[1]		Accredited Airports in Europe
1 airport system in Europe (ROME); 3 Globally	**Level 4+** *Transition*	Aeroporti di Roma
None	**Level 4** *Transformation*	
50 (in 16 countries)	**Level 3+** *Neutrality*	Gatwick, London City, Copenhagen, Schiphol, Milan
18 (in 9 countries)	**Level 3** *Optimisation*	Heathrow, Paris-ADP, Vienna, Zurich
40 (in 19 countries)	**Level 2** *Reduction*	Edinburg, Malta, Lisbon, Aberdeen, Bologna, Torino
57 (in 16 countries)	**Level 1** *Mapping*	Stockholm, Istanbul, Luton

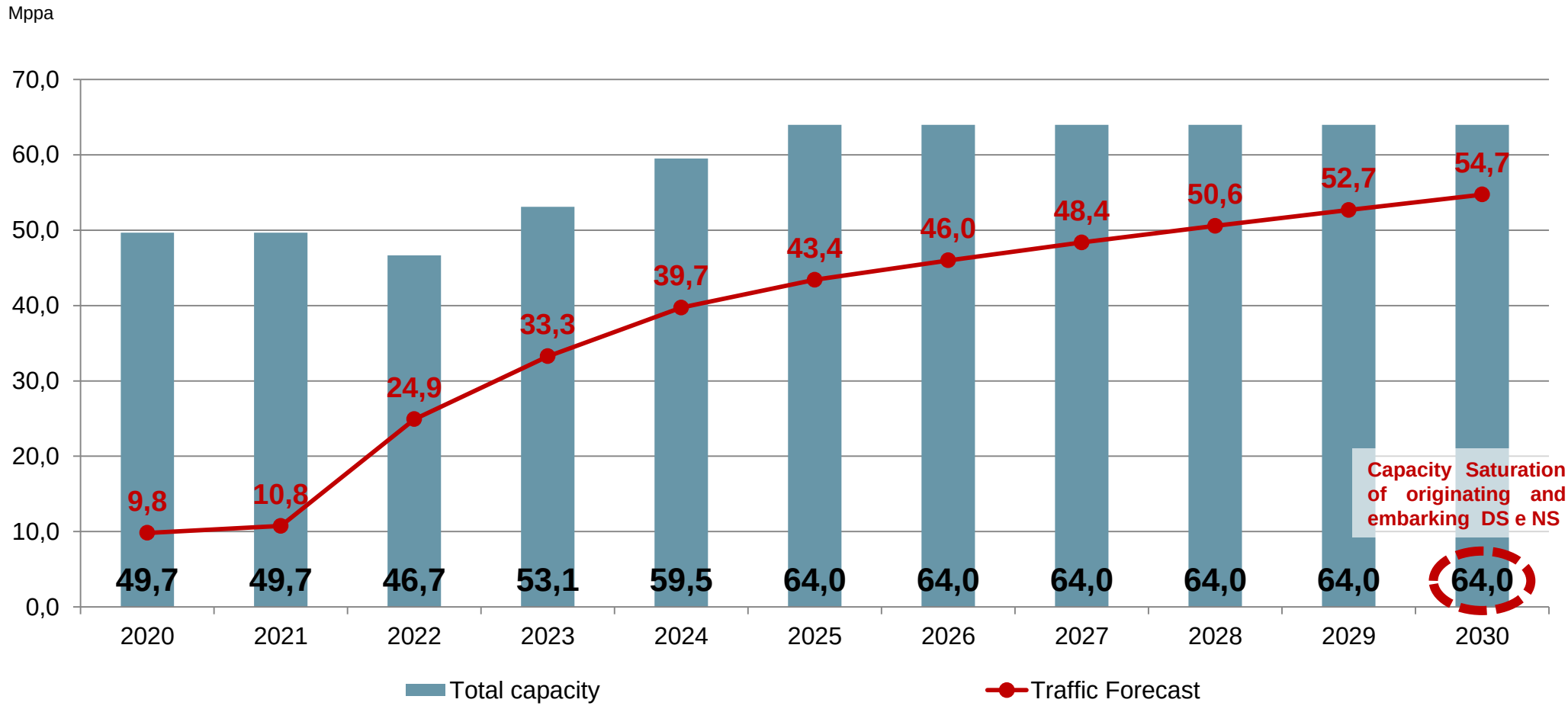
In March 2021, Rome airports became the first in Europe to achieve ACA Level 4+ "Transition" (only 3 cities globally)

-

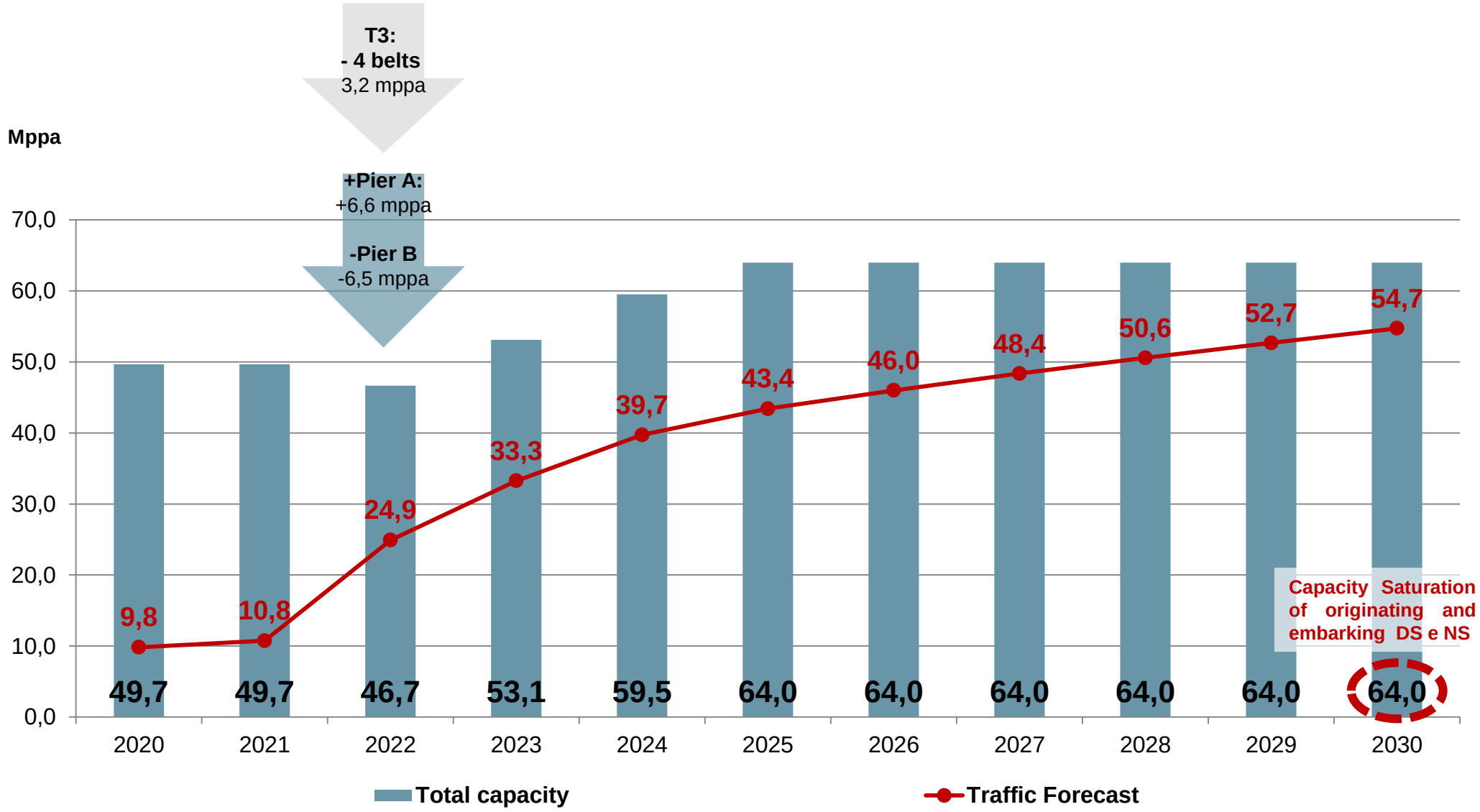
In 2020, Level 4 and 4+ have been added to the ACA to align it with the objectives of the Paris Agreement

Source: https://www.airportcarbonaccredited.org/participants *(1) As of 17th April 2020*

FCO South Completion Plan: terminal capacity up to 2030



FCO South Completion Program: terminal capacity up to 2030



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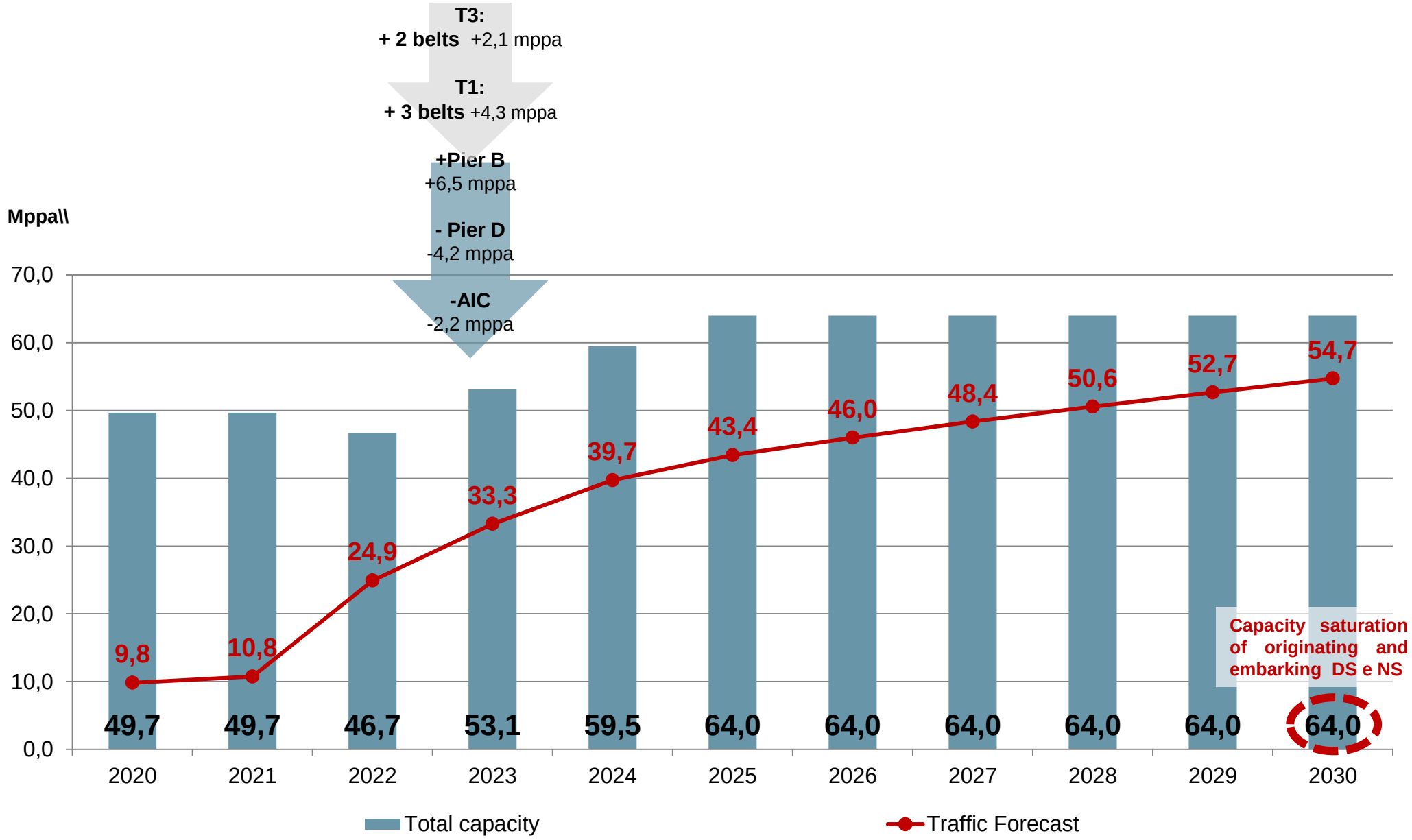
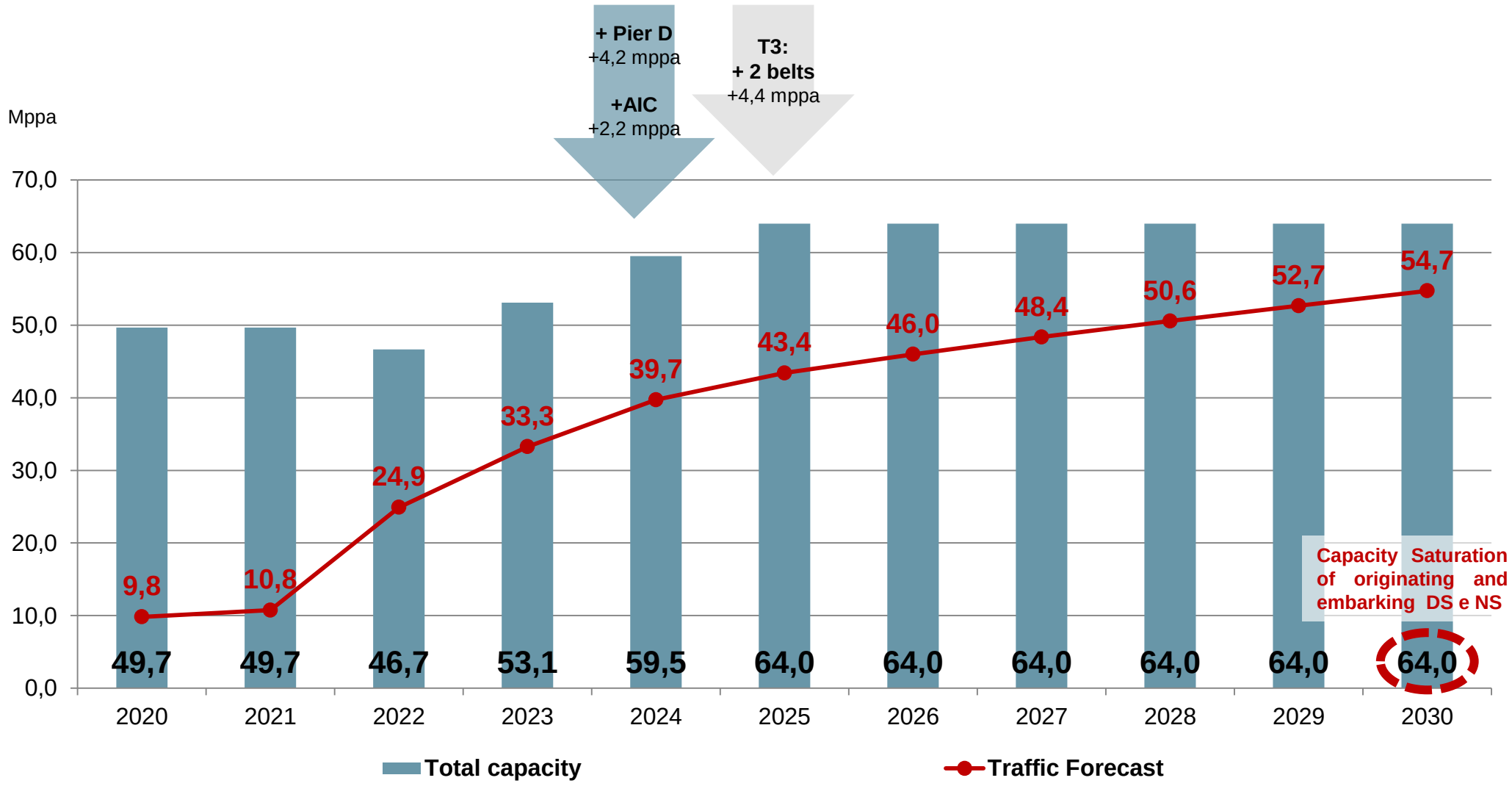


FCO South Completion Program: terminal capacity up to 2030



T1 | East Terminal System

See Schedule A: 3.4 – Works for FCO Sud Terminal

DESCRIPTION OF WORKS:

The development of the East Terminal System includes:

- construction of new Pier A, with **23 gates of which 13 with PLB;**
- North extension of Terminal 1, to create a **new departure lounge**;
- West extension of Terminal 1, with **Security check point area**, **3 additional baggage reclaim belts**;
- Boarding area C renovation, with 7 bus gates.

EXPECTED BENEFITS

- **Greater capacity of the Domestic-Schengen departures system**
- **Greater capacity of the terminal's departure (check-in hall, security, immigration transits) and arrival subsystems (baggage claim room)**
- **Better passenger services and perceived quality**

STATUS and AMOUNTS

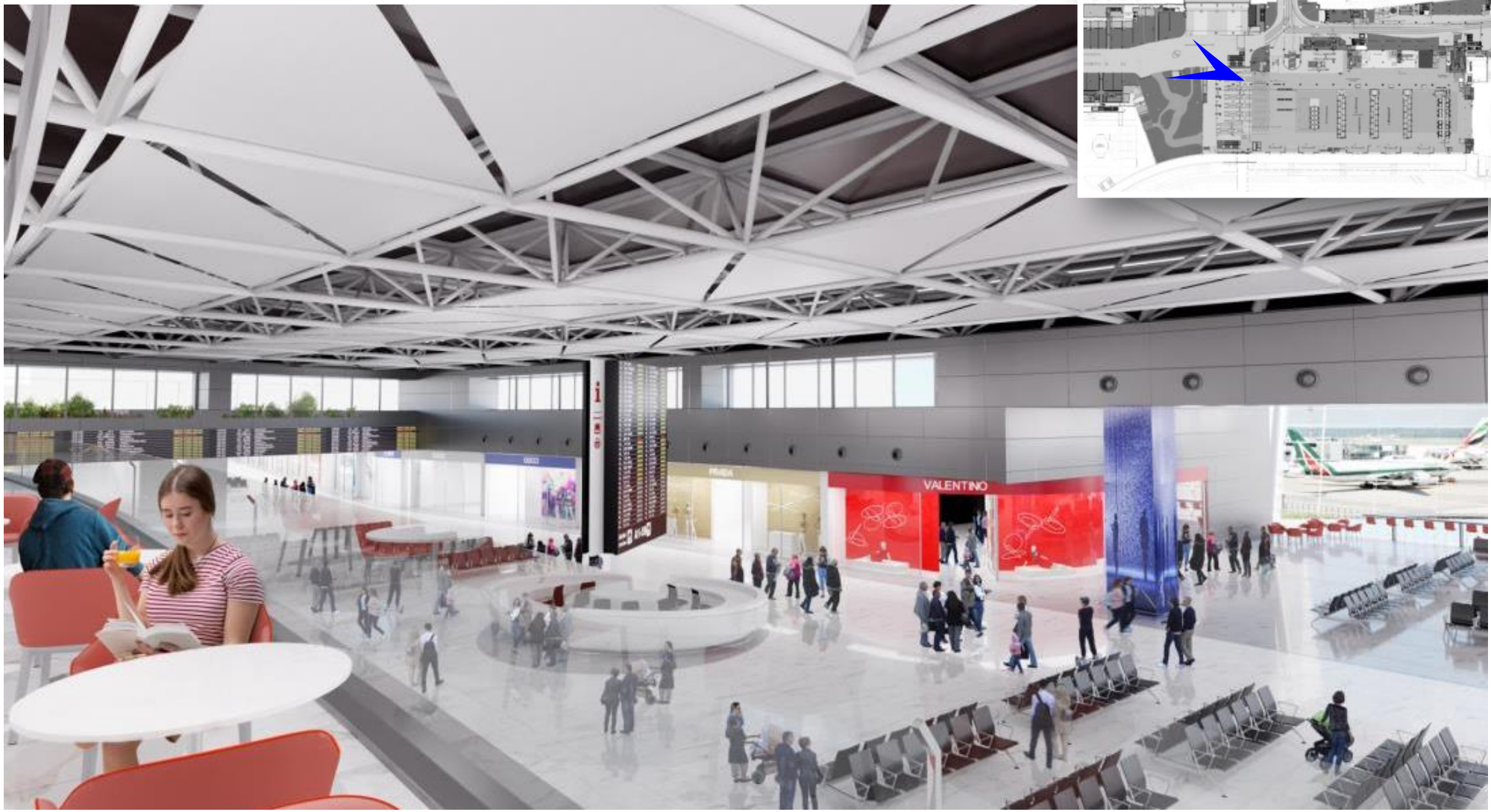
In progress

2020 actual	2021 forecast	2022-2026 estimate
48.5 M€	66.9 M€	90.2 M€

T1 | East Terminal System | New airside plaza

T1 | East Terminal System | New airside plaza and mezzanine food court

T1 | East Terminal System | View from food court over the airside plaza



T1 | East Terminal System | View from food court over the airside plaza

T1 | East Terminal System | New pier A

T3 | Departures and arrivals refurbishment

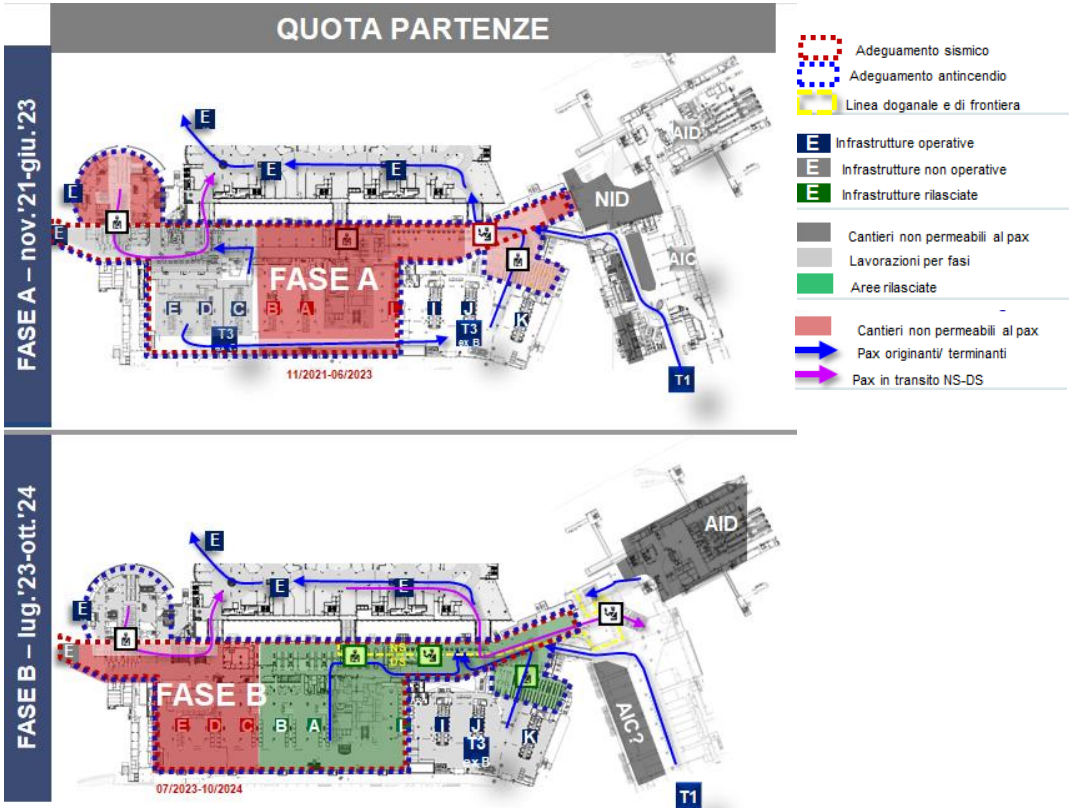
DESCRIPTION OF WORKS:

Terminal 3 is going to be completely renovated at **all operative levels**.

Main objective: upgrade of concrete **structures** according to new seismic rules, upgrade of the **fire prevention system**

Capacity: refurbishment and upgrade of **baggage claim belts, check-in desk and hall**; **security lane upgrade for** USA flights.

Works will be organized **in two different phases, according to traffic forecast and capacity**



EXPECTED BENEFITS

- **Capacity enhancement: baggage reclaim, security and check-in**
- **Environmental quality and architecture enhancement**
- **Compliance to Italian regulations**

STATUS and AMOUNTS

Design in progress

2020 actual	2021 forecast	2022-2026 estimate
7.4 M€	9.4 M€	141.7 M€

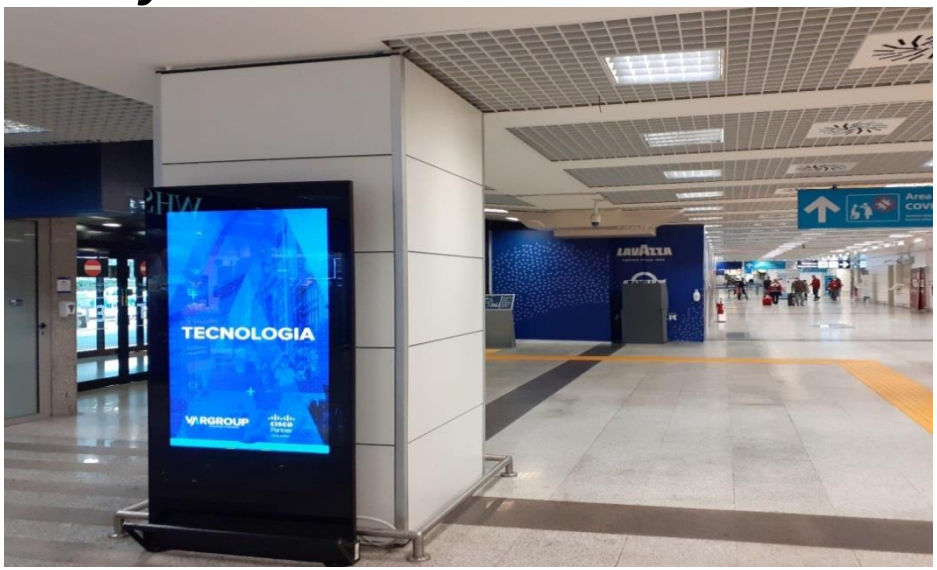
T3 | Departures refurbishment

today

tomorrow

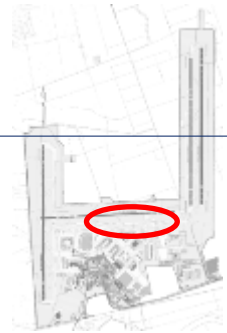
T3 | Arrivals refurbishment

today



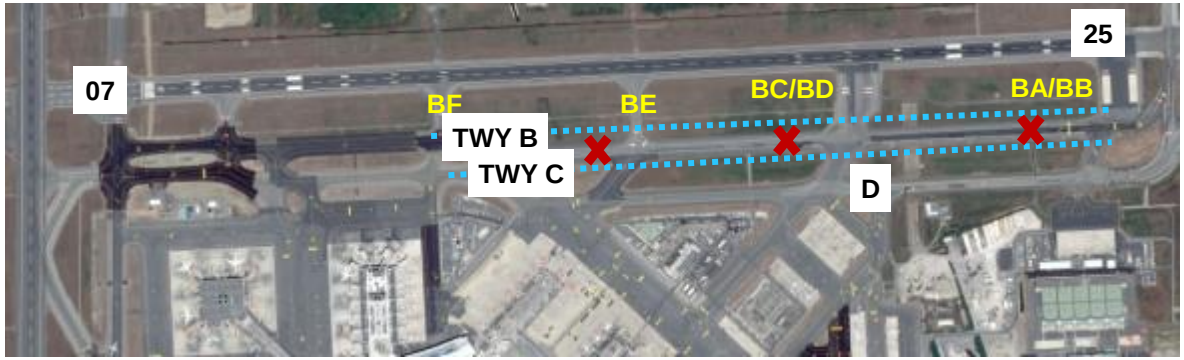
tomorrow

Doubling of taxiway Bravo | East area



DESCRIPTION OF WORKS:

- Demolition of the existing Bravo taxiway, in the **section between TWY BA and TWY BF**
- Construction of two new taxiways parallel to runway 07/25, called Bravo and Charlie, in place of the current Bravo taxiway
- Taxiway **visual aids systems** and extension of rainwater drainage network



See Schedule A: 2.5 – Flight Infrastructure Works for FCO Sud

EXPECTED BENEFITS

- **Performance improvement of the infrastructure in terms of flexibility, punctuality and reliability**
- **Improvement of aircraft ground circulation, reducing waiting times and consequently fuel consumption and pollution due to aircraft**

STATUS and AMOUNTS

Design in progress

2020 actual	2021 forecast	2022-2026 estimate
- M€	- M€	50.4 M€

Agenda

1. Introduction
2. Current operations & FCO South Completion Plan
3. **Traffic Forecast**
4. Medium and long term capacity expansion
5. Ciampino Airport
6. Next steps

Forecasting approach

1 Short Medium Term

(1-5 years)

- In the short-term, the offer of carriers is the main driver for traffic development alongside the strategy/positioning of the airlines
- In the medium-term, forecasts are adjusted to reflect the evolution of the competitive scenario
- The methodology considers also the changes in the market, for instance high speed train competition or higher penetration of LCCs across Italy/Europe

+

2 Long Term

(>5 years)

- The long-term forecast approach is based on the ICAO methodology (Manual of Air Traffic Forecasting) considering the main techniques:
  - *Time-series analysis*: methods are largely based on the assumption that historical patterns will continue and determine the trend in traffic development. In the context of medium-term or long-term forecasting, a traffic trend represents the development in traffic over many years, isolating short-term fluctuations
  - *Econometric analysis*: multiple regression analysis to project of air travel demand based on relevant variables: GDP per region, demography, touristic flows and macro-economic variables
  - *Industry forecast;* utilization of ACI, IATA, Airbus and Boeing outlook

1 Short-term forecast: international industry consensus

Comparison of traffic forecast (% of recovery of 2019 volumes)

		2021	2022	2023	2024	2025
ACI AIRPORTS COUNCIL INTERNATIONAL AT3 (Apr21 | Pax)	**BEST**	44%	77%	91%	101%	105%
	BASE	36%	64%	85%	95%	100%
	WORST	28%	48%	70%	79%	90%
EUROCONTROL (Mag21 | Mov)	**BEST**	52%	85%	99%	108%	
	BASE	44%	71%	83%	95%	
	WORST	36%	54%	62%	70%	
IATA (Mag21 | Pax)		52%	88%	105%		

2019 volumes recovery

- Significant uncertainty still surrounds the recovery of the aviation industry
- Three scenarios are used to look at the potential recovery trajectory using the following assumptions:

  +/- effectiveness of vaccine against new virus variants

  +/- speed of deployment of vaccine amongst population, reaching herd immunity (70%)

  +/- coordinated European approach facilitating a safe free movement inside EU (Digital green certificate)

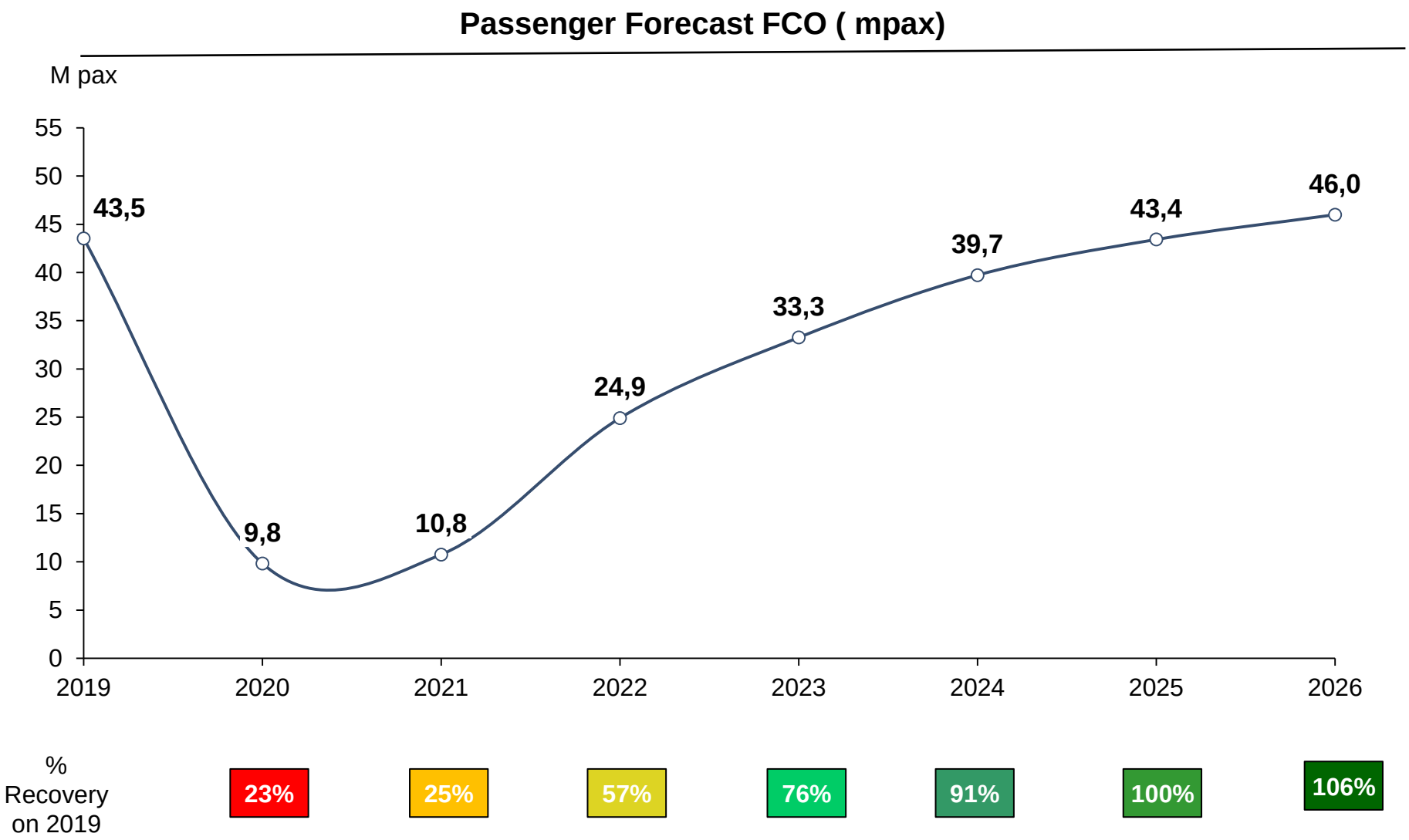
  +/- reduction in demand to fly for business travellers

1 Short-term forecast: bottom-up approach for FCO

	Traffic type		Route networks		Purposes of travel		
	Local	*Connecting*	*Trunk*	*Thin*	*Business*	*Leisure*	*VFR/Other*
% 2019	*(76%)*	*(24%)*	*(69%)*	*(31%)*	*(20%)*	*(66%)*	*(14%)*
Domestic	▪ Quick recovery on routes with higher volumes of Local traffic ▪ Less on traffic to Northern Italy due to high speed rail competition ▪ Local European traffic will have an accelerated recovery compared to short/medium haul of Extra-European volumes		▪ Historic routes with high traffic volumes will see a quick recovery compared to routes with low volumes and high connecting traffic		▪ Leisure and VFR are the clusters where is expected a quick recover of traffic vs. Business, where video conference mode will continue to limit the frequency of travel		
International			▪ Higher recovery to main European hubs leveraging the beyond traffic to long haul destinations		▪ European Leisure traffic to / from the main European destinations will continue to represent the main driver traffic recovery, with lower volumes vs. pre-Covid period		
Intercontinental	▪ Long Haul market strongly impacted by Covid in the short term also on Local flows		▪ Routes with high volumes of Local traffic will resume earlier than routes with low volumes and with strong connecting traffic		▪ Intercontinental Leisure markets with higher Local volumes will guide the gradual recovery, not all the Long Haul Business traffic will recover in the short-medium term the volumes pre-Covid period		

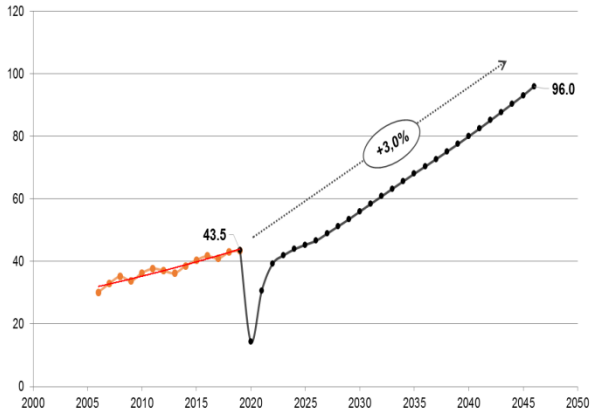
Low recovery **Quick recovery**

1 Short-term forecast: passengers in 2021-2026



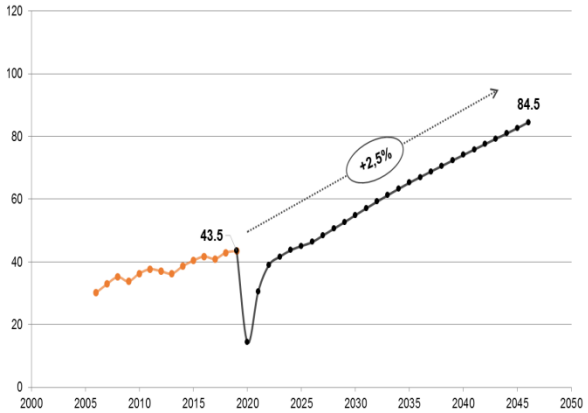
2 Long-term forecast: ICAO methodology

Time-series analysis



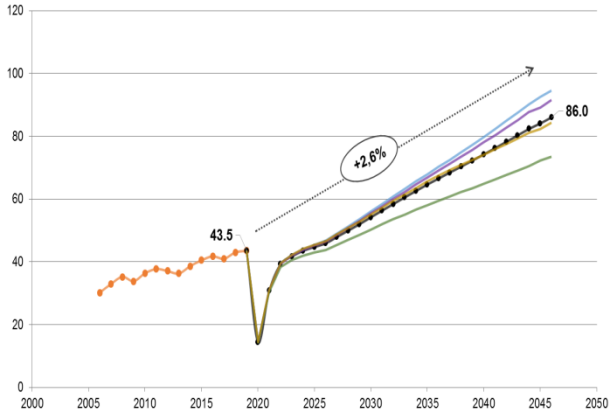
- **Analysis of the historical data for the 2000-2019 period**
- **Identified the linear function that best models the data**
- **The robustness of the outcome has been verified** through calculating the R^2 coefficient (which expresses a good representativeness of the data when its value nears 1)

Econometric analysis



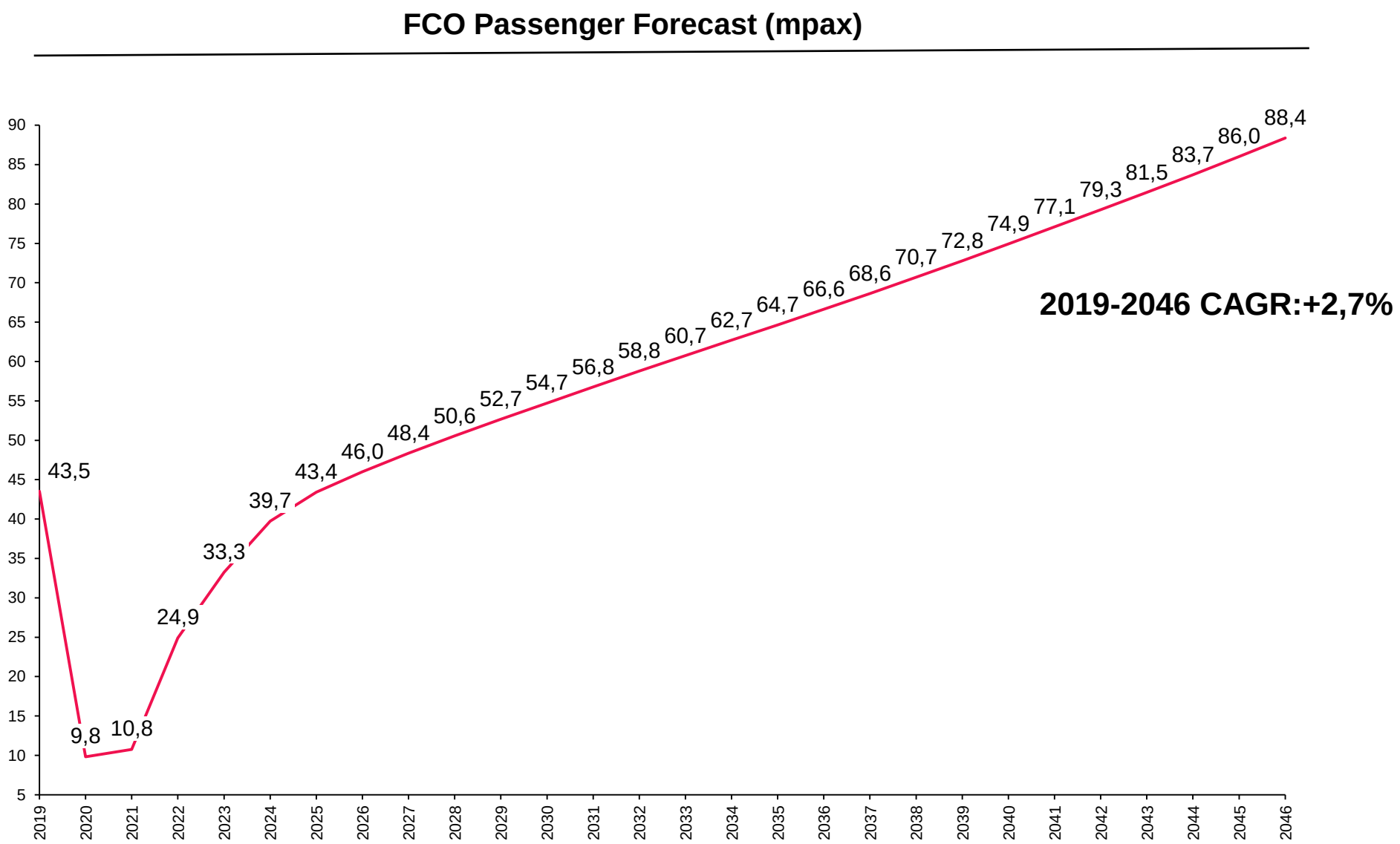
- Selected variables which have proved significant for the robustness of the econometric model
- Traffic flows between regions correlated with GDP
- Also considered expected evolution of touristic flows to/from Italy

Market & Industry forecast



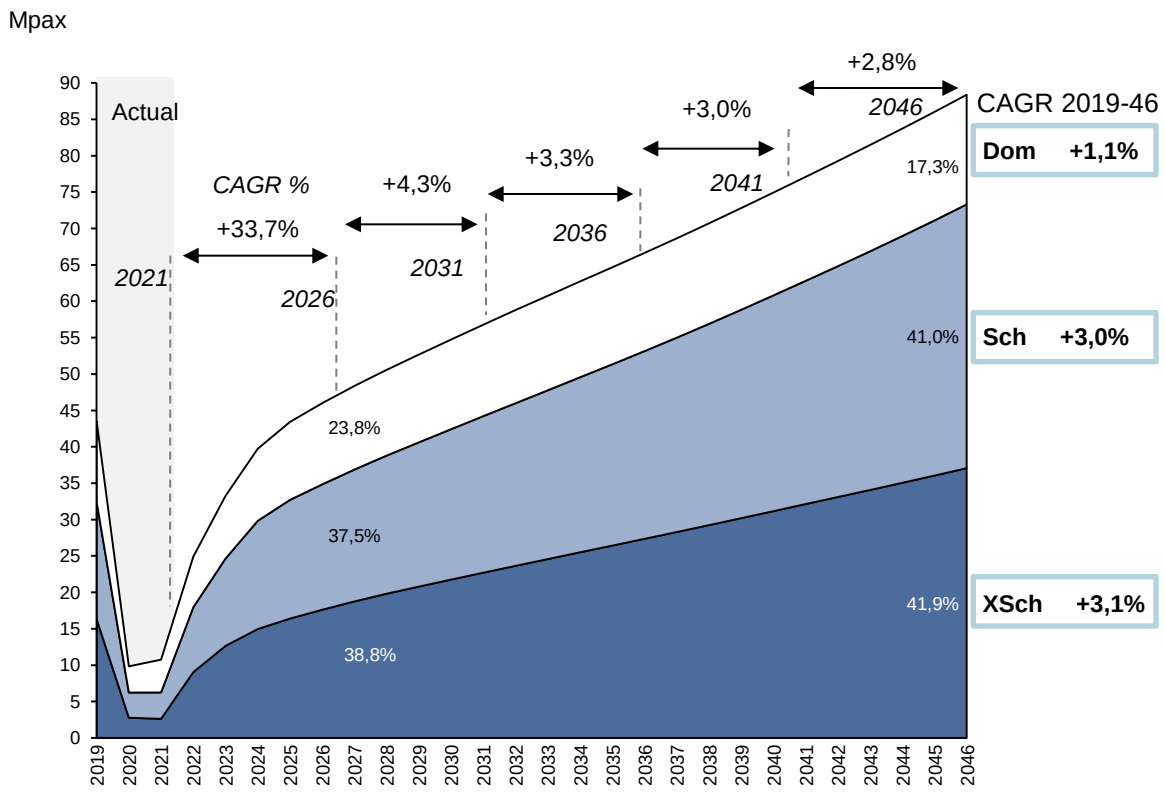
- **Applied growth rates** in forecasts on the air transport market **carried out by the main international organizations and associations** (**IATA, BOEING, AIRBUS, ACI Europe)**

2 Long-term forecast: FCO passengers (1/2)



2 Long-term forecast: FCO passengers (2/2)

FCO Passenger Forecast (mpax)



DOM	11,1	4,5	11,2	12,6	13,5	14,3	15,1
SCH	16,1	3,6	17,2	21,5	25,8	30,7	36,2
XSCH	16,3	2,6	17,6	22,7	27,4	32,1	37,1
TOT	43,5	10,8	46,0	56,8	66,6	77,1	88,4

- **Decrease in domestic market share** on total volumes, in particular where there is competition of High Speed Rail

  The trend in the DOM sector shows negative growth at an average annual rate of -1,0% (CAGR 2006-2019)

- **Sustained growth of the international sector**

  In 2019 74,5% of international destinations. Since 2006 the INT sector has recorded significant growth at +4,8% average annual

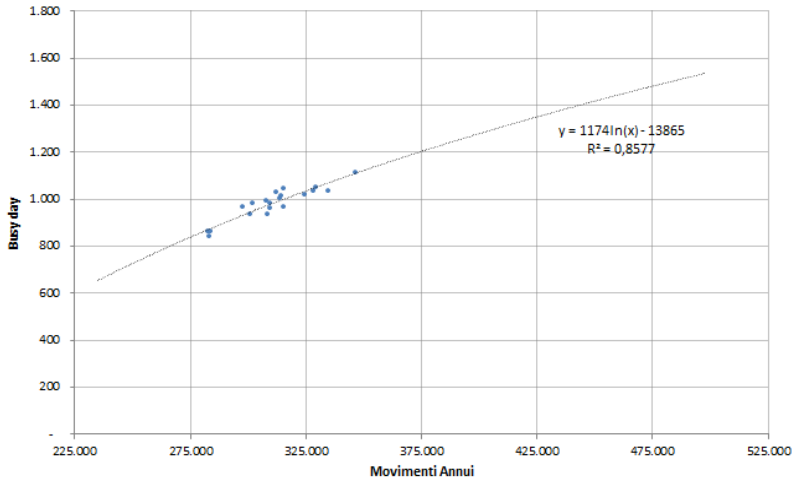
- **Important growth of the EXTRA EU segment and in particular of the long-range Extra Schengen**

  The growth of non-EU traffic was significant with an average annual growth rate of + 5,7% from 2006 to 2019. In the three-year period 2016-2019 CAGR was significantly higher at 8,4%

2046 Scenario: Busy Day and TPHM

BUSY DAY

1. Historical data analysis (period 2000-2019): annual traffic volume and busy day
2. When determining the **correlation between the two variables "busy day" and "annual traffic volumes"**, time has not been taken into account as a factor affecting the shape of the curve
3. The displayed logarithmic curve is used to **define the busy day based on the annual traffic forecast**.



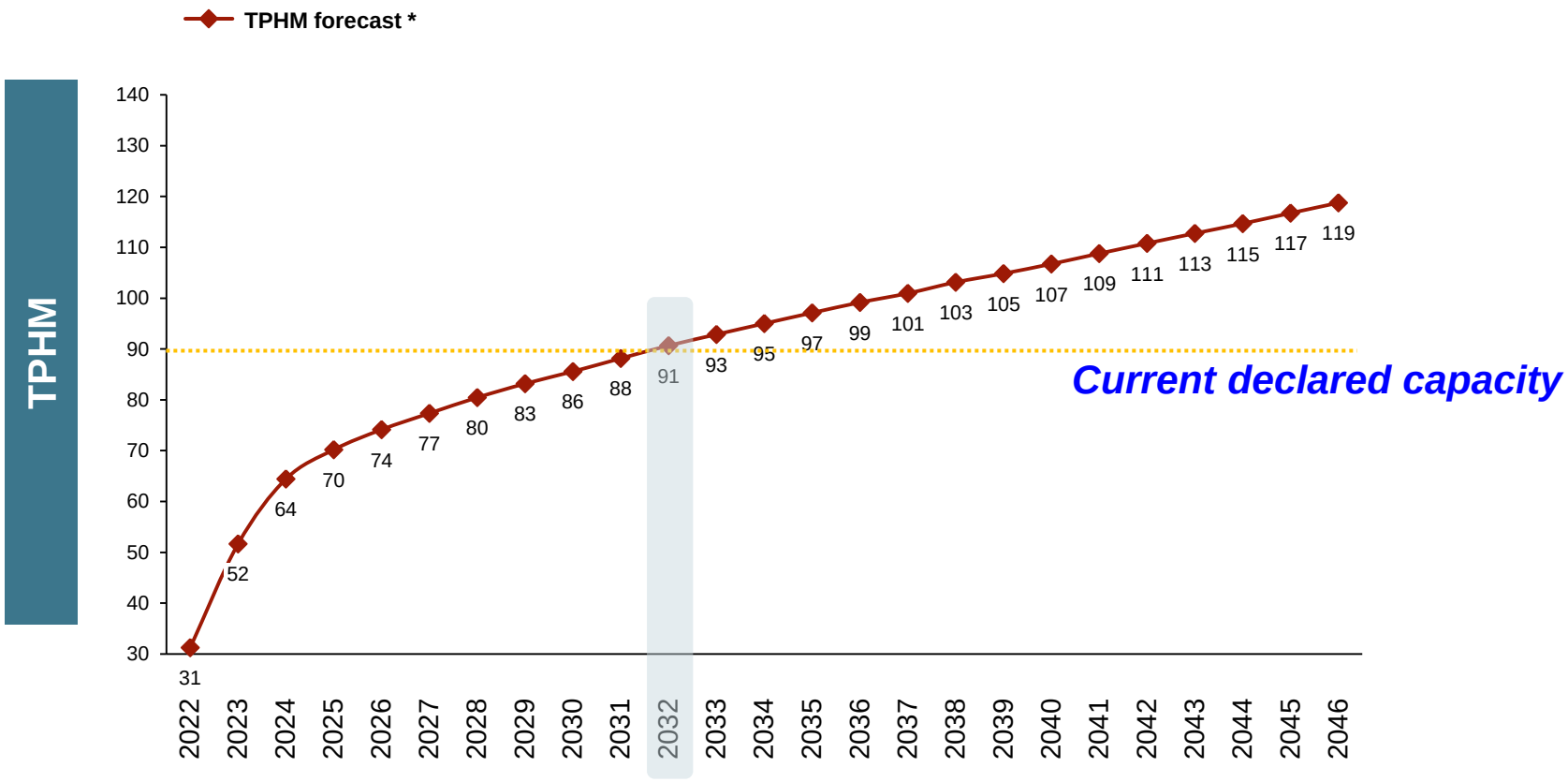
TPHM

1. Historical data analysis (period 2000-2019): busy day and TPHM
2. The correlation ratio between busy day and TPHM is equal to 7-8%
3. The average percentage is applied to the busy day forecast in order to determine the TPHM forecast.

Year	Busy day	TPHM	TPHM / Busy day
2000	843	71	8,42%
2001	860	65	7,56%
2002	862	71	8,24%
2003	935	80	8,56%
2004	959	74	7,72%
2005	937	74	7,90%
2006	968	73	7,54%
2007	1.037	81	7,81%
2008	1.111	83	7,47%
2009	1.019	79	7,75%

Year	Busy day	TPHM	TPHM / Busy day
2010	1.049	78	7,44%
2011	1.035	80	7,73%
2012	1.005	81	8,06%
2013	981	75	7,65%
2014	1.030	74	7,18%
2015	1.046	75	7,17%
2016	1.013	75	7,40%
2017	967	74	7,65%
2018	992	78	7,86%
2019	988	72	7,29%

Airside | TPHM forecast: new RWY in operations by 2032



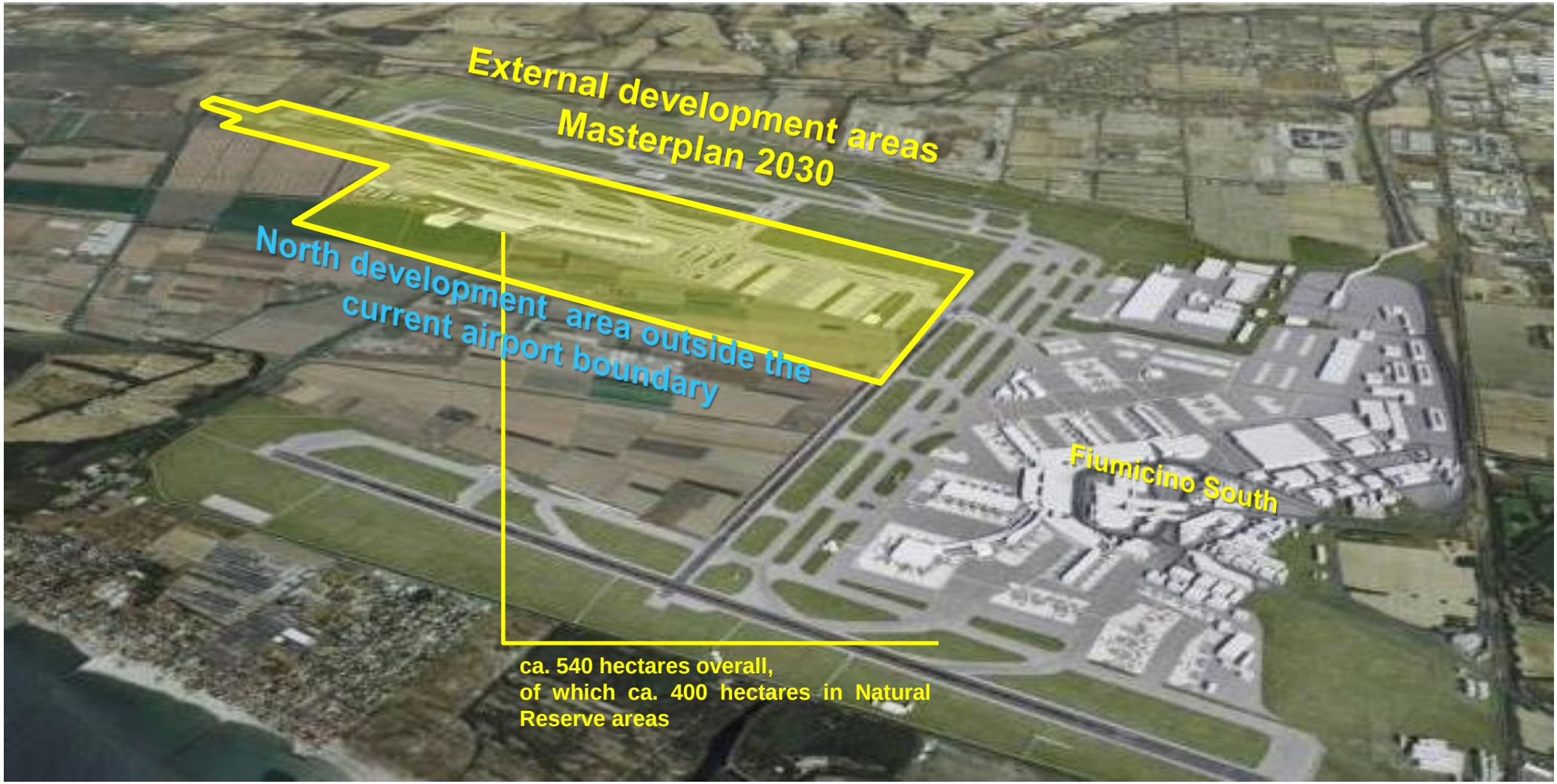
* TPHM – Typical Peak Hour Movement (IATA definitions)

According to traffic forecast, the TPHM will reach the airside's current declared capacity by 2032

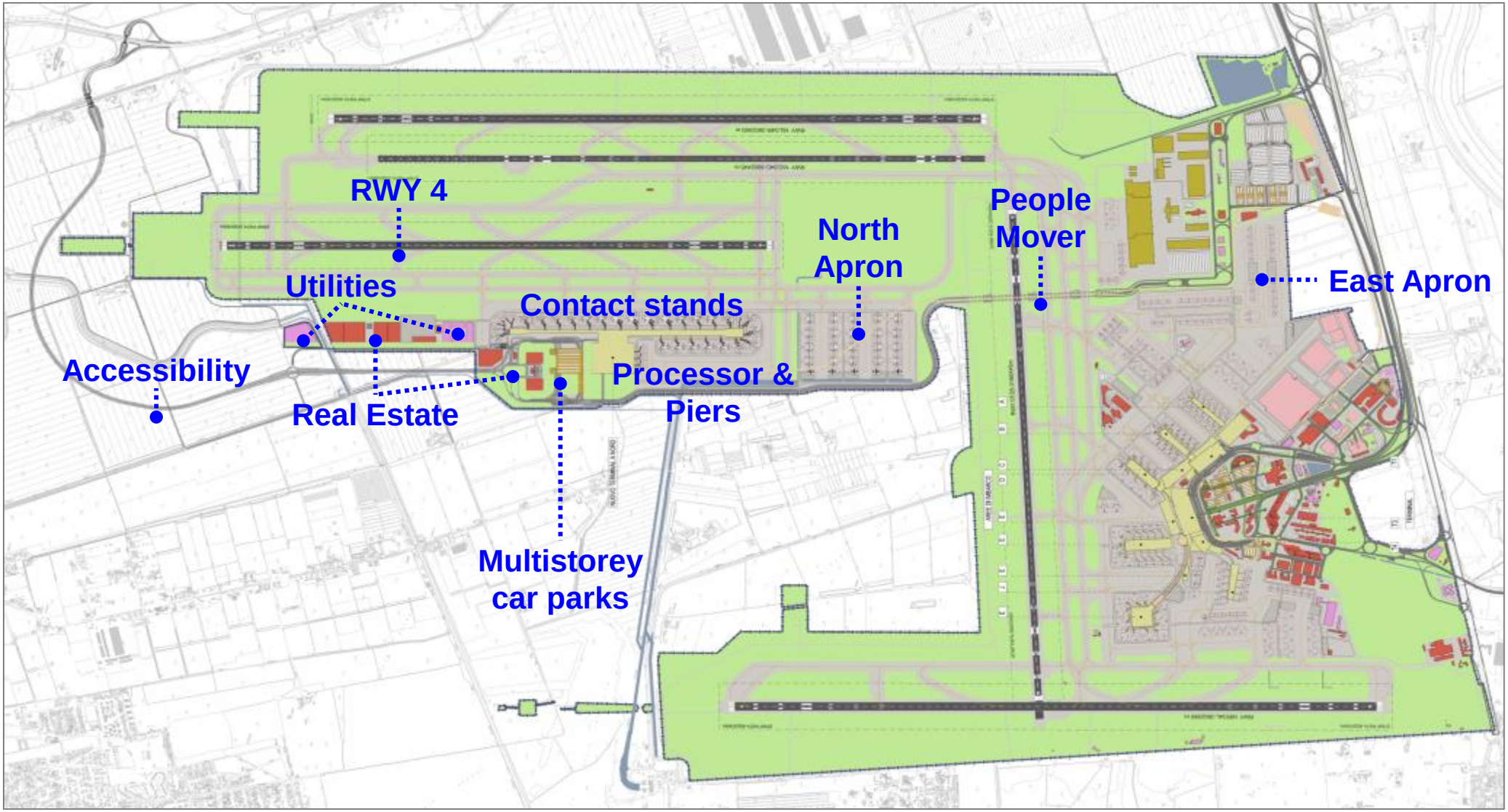
Agenda

1. Introduction
2. Current operations & FCO South Completion Plan
3. Traffic Forecast
4. **Medium and long term capacity expansion**
5. Ciampino Airport
6. Next steps

FCO North Development Plan, unapproved by the Ministry for the Environment



FCO North Development Plan | General framework



Long Term Development Masterplan | Main drivers

Long Term Development Masterplan | Demand triggers

To ensure properly planned additional capacity at Fiumicino, AdR has identified the following main triggers:

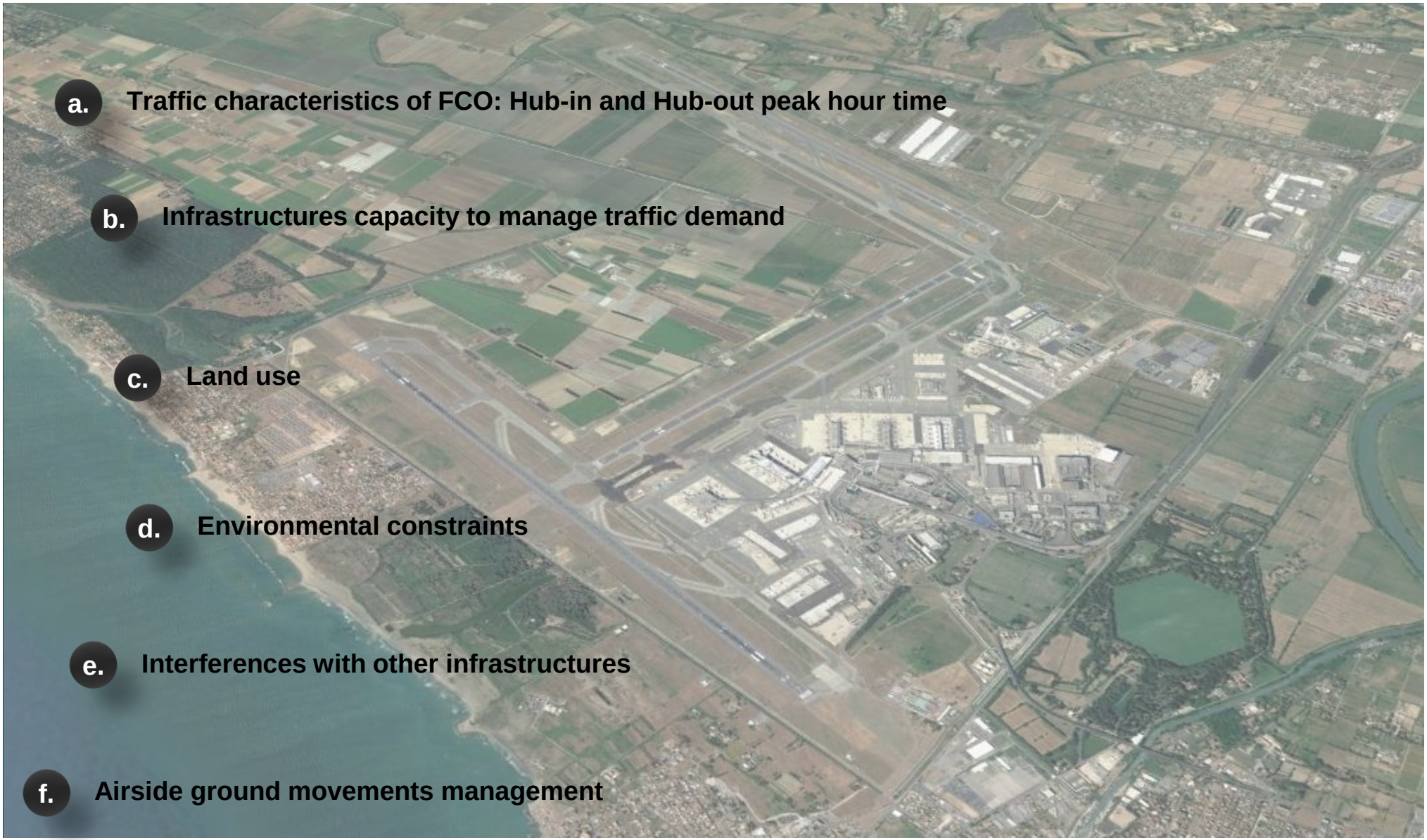
	FCO SOUTH CAPACITY AT COMPLETION	REQUIREMENT AT MEDIUM/LONG TERM	
ATM/H	90	119	Demand exceeds capacity
MPPA	64	88	Demand exceeds capacity

AdR's target is to identify a development layout allowing each system capacity to meet demand until the end of concession (up to 120 atm/h and up to 88MPPA), with a special focus on each critical subsystem threshold (check-in, boarding areas, baggage reclaim belts, etc.)

Therefore, AdR has analysed **several alternatives** based on the following **milestones**:

1. **Land use**
2. **Modular Building**
3. **Operations and MCT**
4. **Current infrastructures' efficiency enhancement**

Airside capacity development | Main drivers for runway location

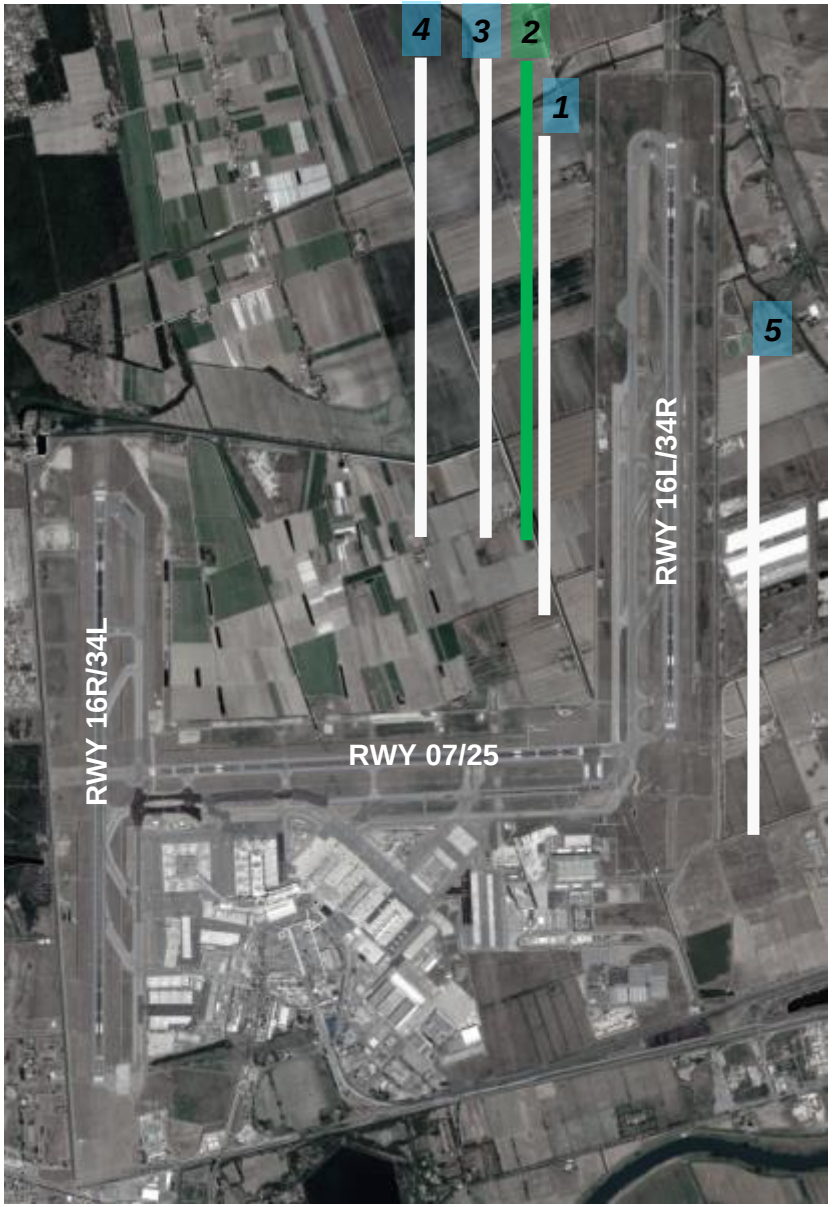


Airside capacity development | Main alternatives for runway location

- **As various analysed alternatives indicate, the location of new RWY is confirmed parallel to RWY 16L/34R**

1. 760m West RWY 16L/34R
2. 820m West RWY 16L/34R
3. 1.035m West RWY 16L/34R
4. 1.500m West RWY 16L/34R
5. 520m East RWY 16L/34R

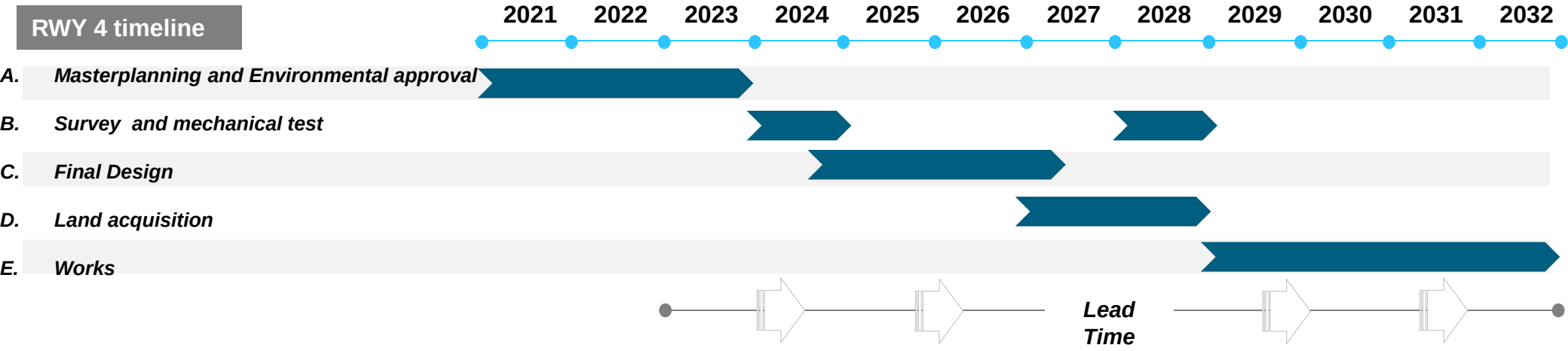
820m



For the new RWY location Alternative 2 is preferred: compliant with segregate and simultaneous usage of existing Rwy 16L/34R and independent ops from 07/25

Airside development | Runway 4 timeline and demand trigger

RWY 4 timeline



Demand trigger – IATA Best Practice

$$Trigger = \frac{Design\ Capacity}{(1 + CAGR)^{Lead\ Time}}$$

- **Design capacity**: current declared airside capacity **= 90 mov/h**
- **CAGR**: Comp. Annual Growth Rate referred to traffic movement forecast **= 1,8%**
- **Lead Time**: number of years from the time when the trigger is reached and when new infrastructures enter into operation **= 10 years**

RWY 4 demand trigger

75

Historical TPHM

- *2019: 72 mov/h*
- *2018: 78 mov/h*
- *2017: 74 mov/h*
- *2016: 75 mov/h*
- *2015: 75 mov/h*

- **AdR constantly monitors the airside demand trigger and fine-tunes the ongoing planning exercise in order to have new runway available when traffic demand approaches existing max capacity.**
- **Runway 4 has been postponed according to traffic demand considering the necessary time until the new infrastructure could enter into operation.**

RWY 4 option as proposed: independent of RWYs 1 and 2, segregate from RWY 3

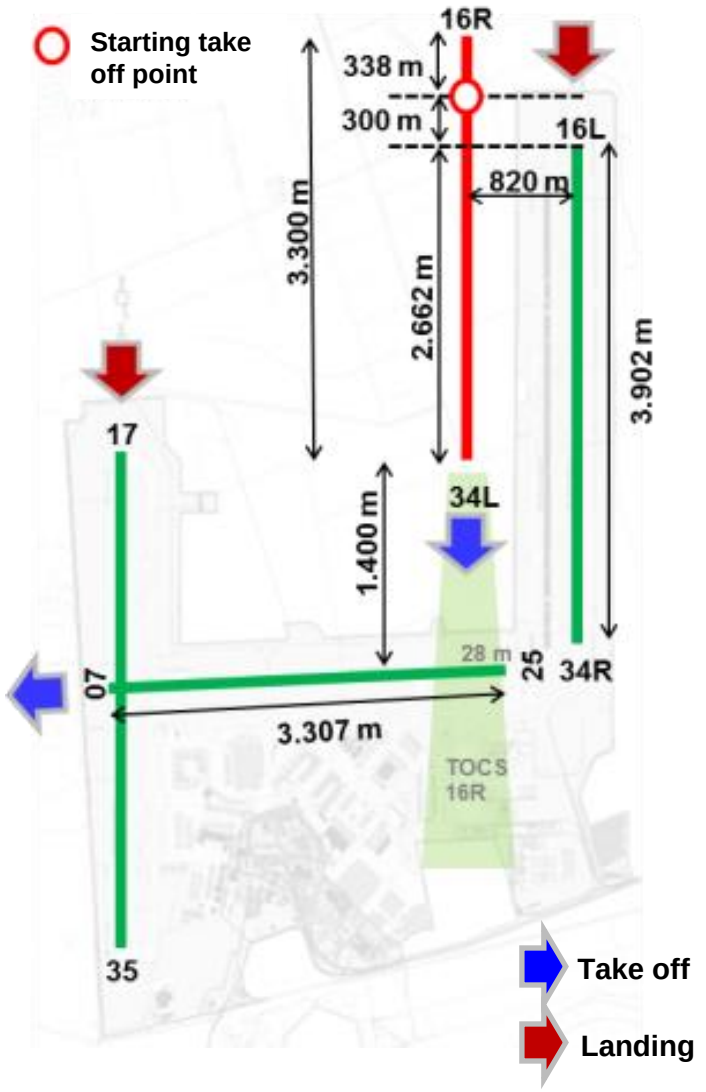
SOUTH OPERATIONAL MODE:

- **RWY 1** used for **landing;**
- **RWY 2 preferentially** used for **take off;**
- **RWY 3 preferentially** used for **landing;**
- **RWY 4** used for **independent take off of NB and for A330-200 and A340-200 with MTOW (start point A – 2960m).** In case of WB aircraft with gross weight needing a longer TORA, take off would be performed from the head of RWY16R; in this case take-offs from RWY 4 are dependent on aircraft approach to RWY 3.

NORTH OPERATIONAL MODE:

- **RWY1** used for **landing;**
- **RWY 2 preferentially** used for **take off;**
- **RWY 3 preferentially** used for **landing;**
- **RWY 4** used for **independent take off** for NB and WB aircraft **with no restriction**

The new RWY4 would make it possible to use **RWY1**, **limited to arrival peak slot, only** for aircraft **landing and to use RWY 2 (removal of obstacles in the «Coccia di Morto» area) and RWY 4 for take off**



Runways' use rules | Departures and arrivals peak

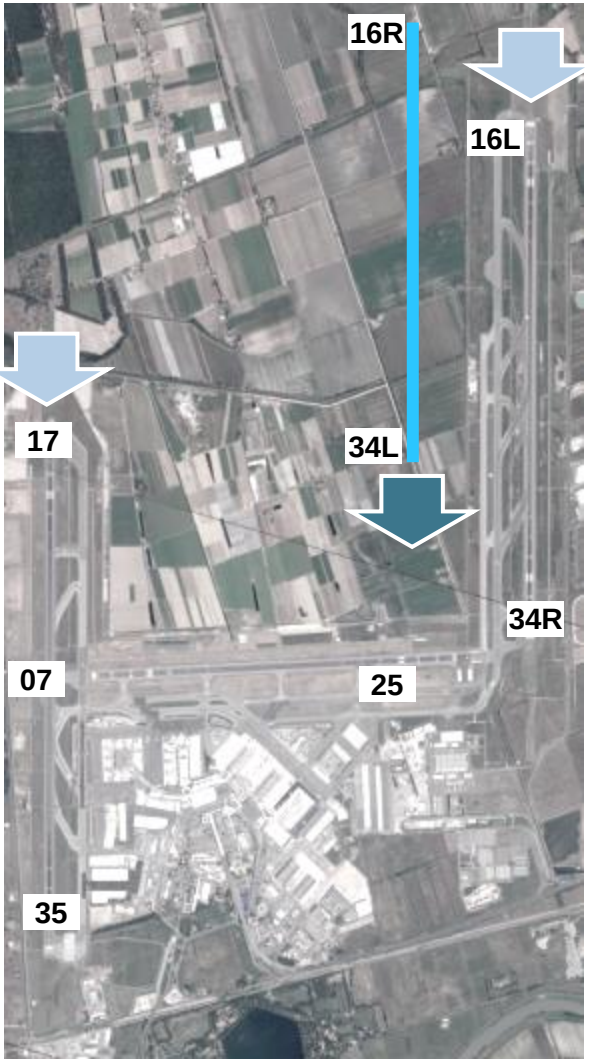
Departure peak

- RWY 2 and RWY 4 for take off
- RWY 3 for landing

Arrival

Departure

Arrival peak



- RWY 1 and RWY 3 for landing
- RWY for take off

Arrival

Departure

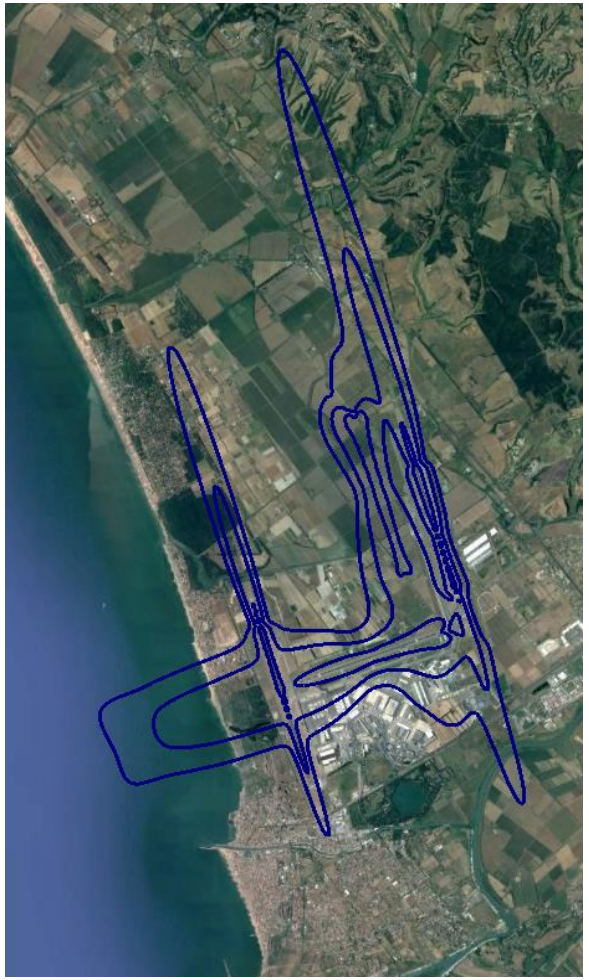
RWY 4 is fundamental to shift noise contour far from residential areas

Simulation of noise contour with 1.500 flights per day with and without the new runway 4

**Layout without RWY 4,
Purely theoretical, unachievable**

LVA	People	LVA	People
60-65	11.090	65-70	4.367

**Layout with RWY 4,
achievable**



LVA	People	LVA	People
60-65	2.246	65-70	663

Comparing the two scenarios, **without the new runway 4, +12.548 people will be exposed to the aeronautical noise**:

- **8.844 people in Zone A (LVA 60-65 dB)**
- **3.704 people in Zone B (LVA 65-70 dB)**

(*census round 2011*)

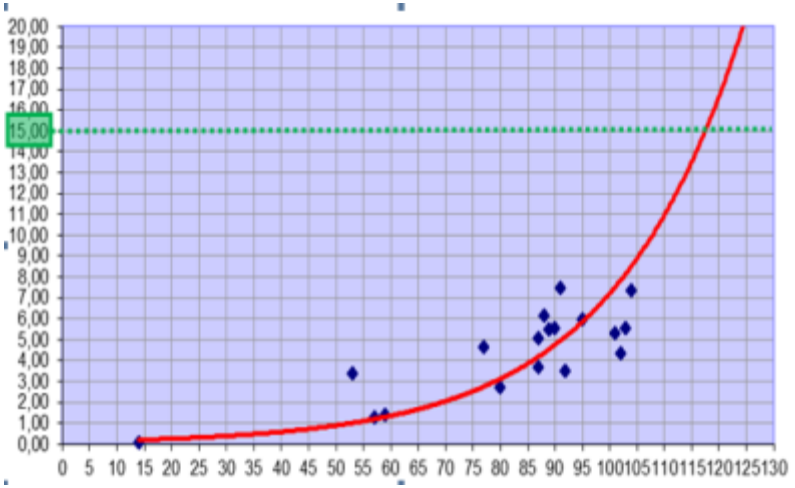
Airside capacity dynamic simulation with Simmod

Maximum capacity of the airside system is defined by the logarithmic curve shown in the graph where a maximum delay threshold of 15 minutes is assumed.

Maximum capacity of the airside system has been determined by means of an exponential estimation setting a maximum delay threshold of 15 minutes.

The identified capacity should not be understood as a value expressing a limit of the system, but as an indicator of an optimal level of service.

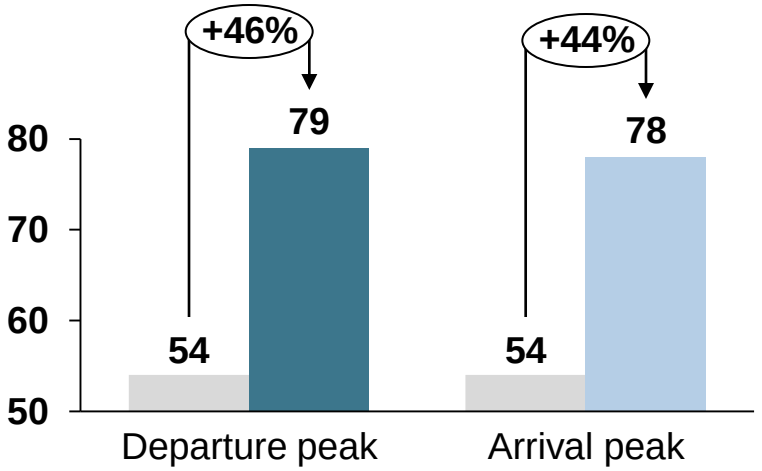
The previously defined capacity estimate was further verified by increasing the traffic sample in the peak departure and arrival times until the arrival/departure pair was defined within the maximum average delay threshold of 15 minutes.



The development layout (RWY 4 and aircract stand system on the East side) allows a percentage increase in capacity of approx. 50% in the two time peaks.

	Arrival [mov/h]	*Departure [mov/h]*	*Total Mov. [mov/h]*	*% increase*
Departure Peak	35	79	**114**	**+46% depart.**
Arrival Peak	78	36	**114**	**+44% arr.**

The simulation does not consider the potential optimization of flight procedures such as: HIRO, reduction of minimum separation, RECAT EU, TBS



ADR is working with Enav to verify future airside capacity. Starting from current traffic, forecast traffic and allocation rules, considering airspace and flights procedures, the assessment will define the maximum throughput of the airside system

Industry reference and international best practices

	BEST PRACTICE / HIGHLIGHTS	IMPLICATIONS FOR THE NEW MASTERPLAN PROPOSAL
General planning strategy	***Airlines and ground handlers are increasingly looking for self-service options to drive capacity and efficiency***	• More balance in effectiveness and efficiency • More flexibly phased expansion based on triggers and lower environmental impact • Under-one-roof terminal concept • Airline allocation must be performed after consultation with operators
Ground access and car park assessment		• Shift of the centre of gravity away from railway station • Road access is adequate and balanced • Railway proposals are adequate and balanced
Passenger terminal	***Fewer, larger, more integrated terminals are more efficient (economies of scale), and single under-one-roof terminal concept is considered positive thanks to operational synergies with the existing terminals.***	• Better airside-terminal integration • Optimized functional segmentation • Design based on «Optimum» Level of Service (LoS) • Spaces are appropriately sized • Possible additional capacity at the end of planning horizon • Location of emigration allows optimization of commercial opportunities
Cargo strategy	***FCO has a high potential in terms of catchment area, which could be acquired***	• Cargo facilities and operation are balanced • Cargo location is appropriate and allows enough capacity for current needs and growth.

Terminal capacity evolution

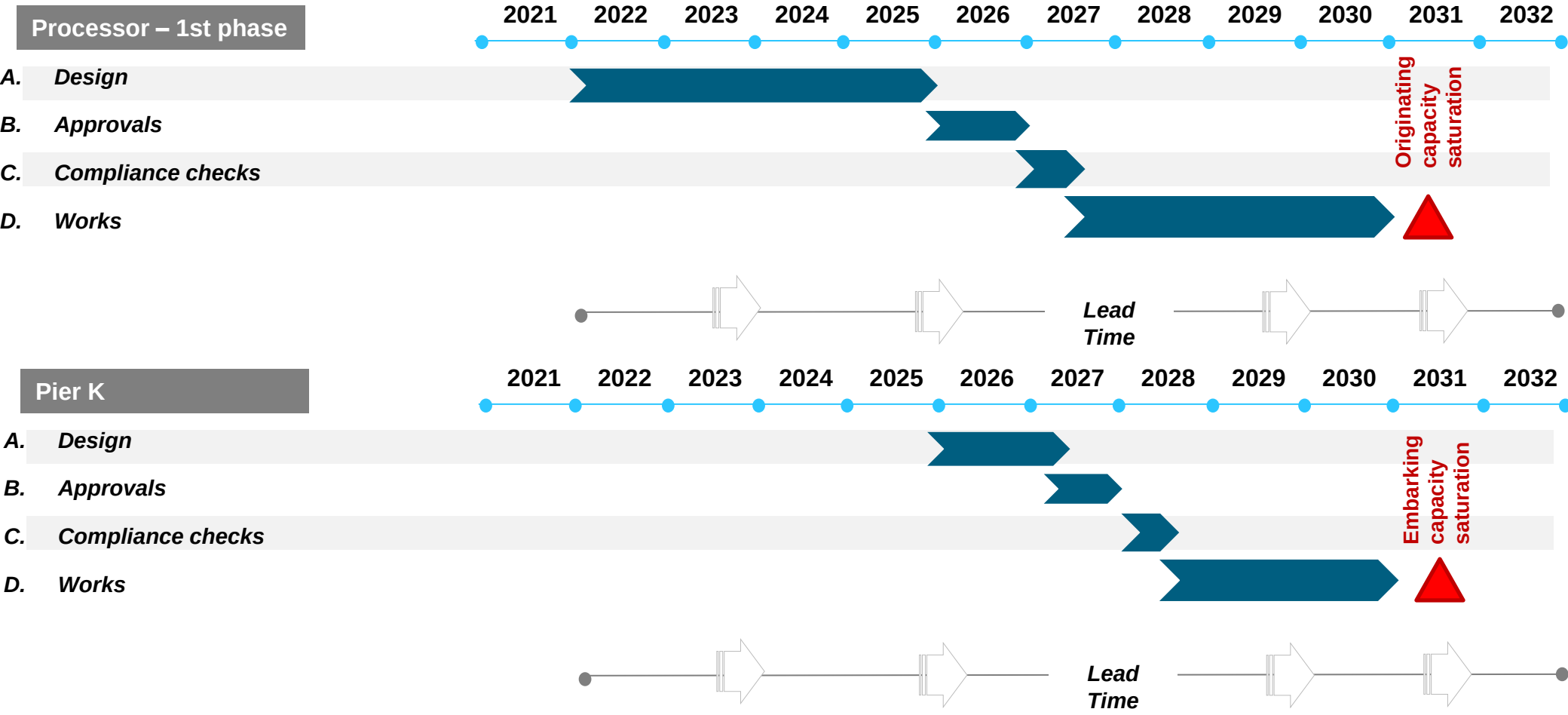
- **In 2030** Fiumicino South terminal system **will reach a total passenger capacity of 64 million passengers per year**, with **check-in and boarding subsystems** reaching saturation according to current traffic forecasts.
- In **2031 the first phase of development** will enter into operation (first module of East Terminal, Pier K, boarding area D switch to NS), reaching a total system capacity of **81 M passengers**.
- By **2035 check-in and extra Schengen subsystems will reach saturation**, according to current traffic forecasts.
- By **2036** the second part of the terminal and pier L will be completed. The global capacity of Fiumicino will thus reach a capacity of almost 97M passengers.
- Finally, a **third phase** of development is planned which, with the construction of the third pier M, will make it possible to exceed the capacity of 100 M total passengers.

The system will thus respond to the evolution of traffic demand reaching the year 2046 with a capacity of 97 M passengers, for a total expected number of passengers equal to 88 M.

The main triggers are explained below:

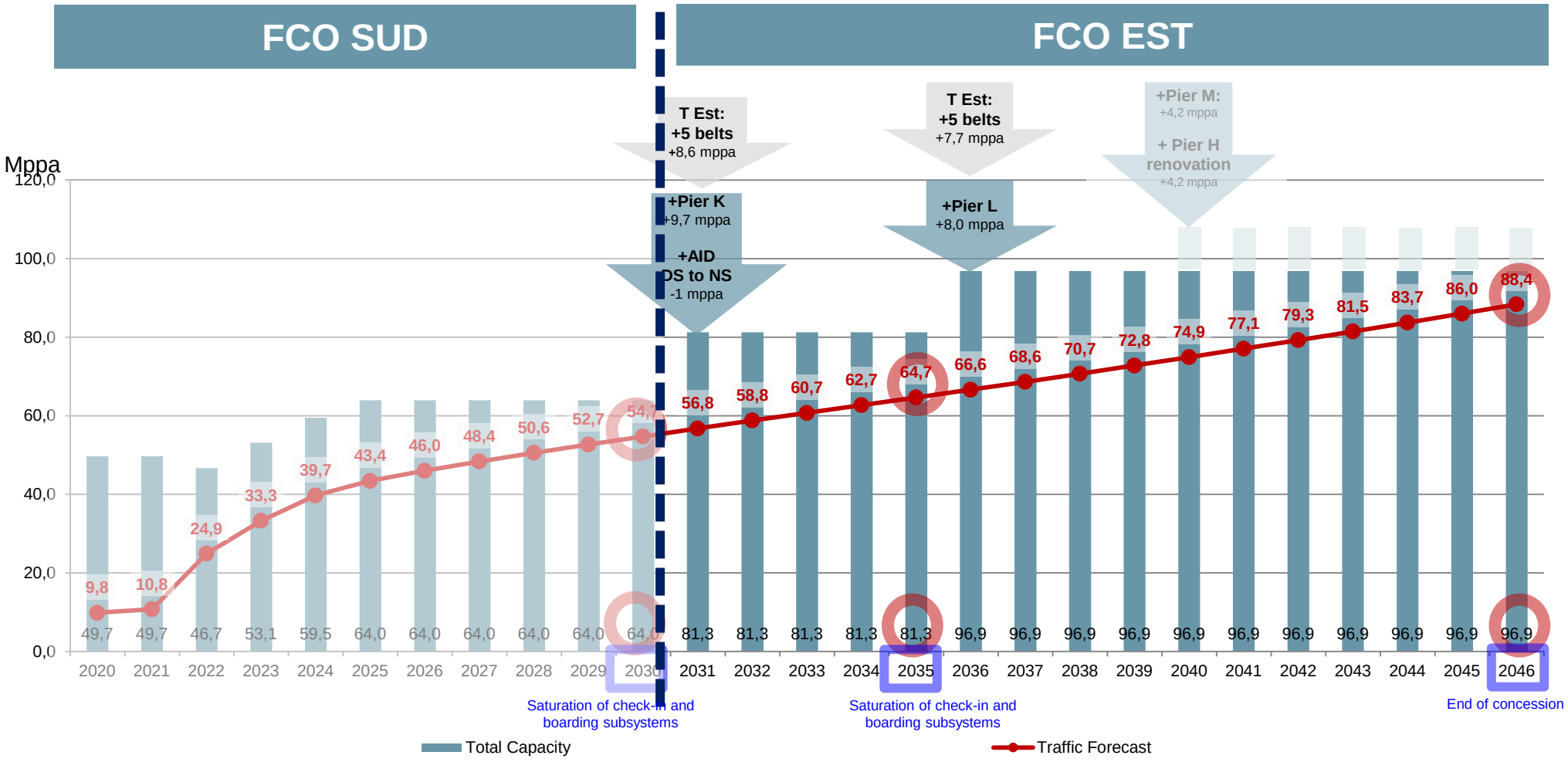
- **2031:** traditional check-in and Non Schengen boarding capacity reach saturation → **1st phase**
- **2036:** Non Schengen boardings and traditional check-in capacity reach saturation → **2nd phase**

Terminal development: timeline and demand trigger



- ADR are monitoring airside trigger and updating the investment plan to open new processor and new pier when traffic demand meets maximimum capacity.
- Processor and Pier K had been postponed according to traffic demand.
- It is important to develop the airport masterplan to obtain environmental approval in time to build the new infrastructure.

Terminal capacity evolution | Total Capacity 2020-2046



Terminal expansion | FCO North unapproved Development Plan

GREEN FIELD NORTH TERMINAL

- **Green field outside the current airport boundary (North)**
- Ideal in case of strong alliance shifting
- Terminal very close to runway: minimize taxitime
- Long **distance from current** Terminal area
- Duplication of systems and functions

Terminal expansion | Analysis of alternatives outside airport boundary

GREEN FIELD NORTH TERMINAL DISCARDED

GREEN FIELD EAST TERMINAL

- **Grey field outside the current airport boundary (East)**
- Ideal in case of strong alliance shifting
- Terminal very close to runway: minimize taxitime
- **Far distance** from current Terminal area
- Duplication of systems and functions
- CAPEX intensive also for relocation of existing buildings

Terminal expansion | Analysis of alternatives within airport boundary: cargo area

GREEN FIELD NORTH TERMINAL DISCARDED

GREEN FIELD EAST TERMINAL DISCARDED

BROWN FIELD TERMINAL AT CARGO CITY

- **Brown field solution**
- Needs **to recover Cargo City system** between South and East terminal subsystems (approx. 25 hectares)
- **Interference** with runway system
- **Terminal far** from current area
- **Duplication of systems** and functions

Terminal expansion | Analysis of alternatives within airport boundary: technical area

GREEN FIELD NORTH TERMINAL — DISCARDED

GREEN FIELD EAST TERMINAL — DISCARDED

BROWN FIELD TERMINAL AT CARGO CITY — DISCARDED

BROWN FIELD TERMINAL AT MRO AREA

- **Brown field**, building on the current airport boundary
- **Recovery of MRO** at «Pianabella»
- **Close to current Terminal** area
- **Possible synergy** with systems and functions

Terminal expansion | Analysis of alternatives regarding Pianabella area

GREEN FIELD NORTH / EAST TERMINAL — DISCARDED

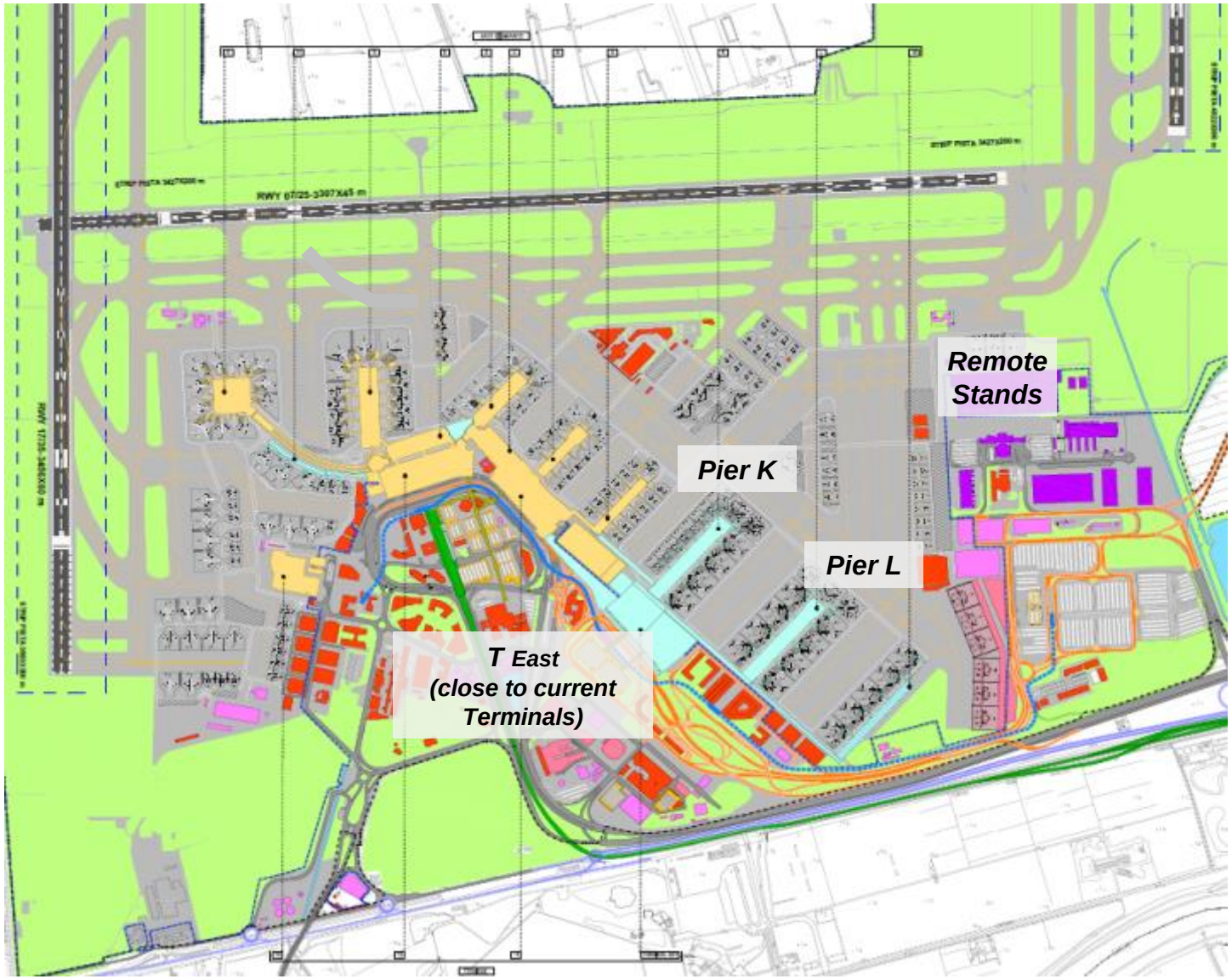
BROWN FIELD TERMINAL AT CARGO CITY — DISCARDED

BROWN FIELD TERMINAL AT MRO AREA

BROWN FIELD TERMINAL AT PIANABELLA

- **Recovery of MRO in West area**
- Terminal far from the current area, **needs a tunnel with an automated people mover at the airside and a landside people mover**
- **Interference with take off & approach procedures**
- **Duplication of systems** and functions

Alternative #1



Minimal configuration*

159stands: 90LB + 69REM

Of which EAST area TOT. 22WB + 18NB
- **Pier K: 6 WB + 10 NB**
- **Pier L: 11 WB**
- **Pier M: 5 WB**
- **Remote: 8NB**

** Not incl. further possible developments at Pier H*

Maximum configuration *

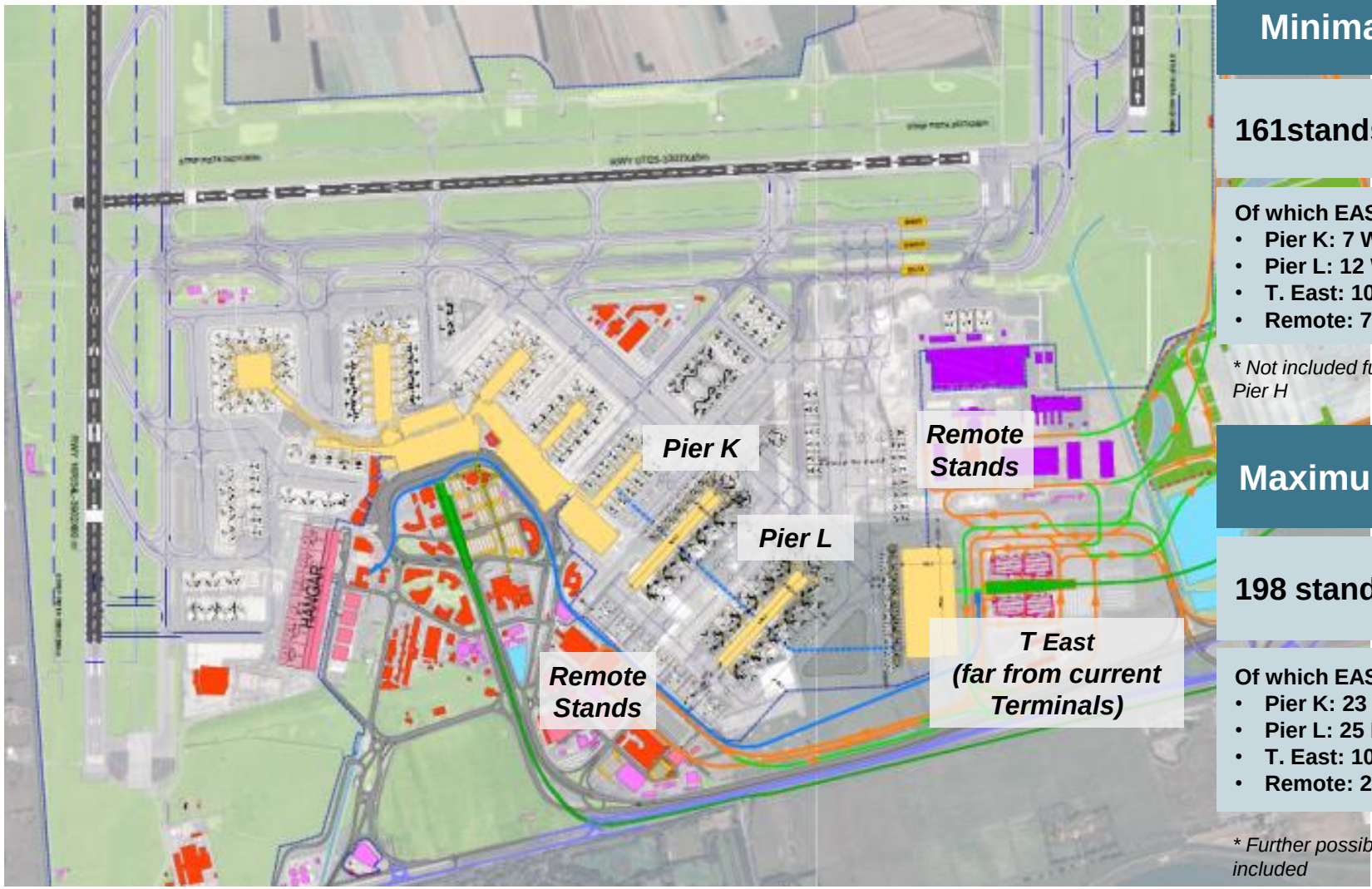
191 stands: 115LB + 76REM

Of which EAST area TOT. 61 NB
- **Pier K: 21 NB**
- **Pier L: 22 NB**
- **Pier M: 10 NB**
- **Remote: 8 NB**

** Not included further possible developments at Pier H*

Single Hub configuration allows an **under-one-roof experience**, ensures through **proper carriers' allocation** (mainly point-to-point flights to the east) **operations flexibility** and **shorter connection** times.

Alternative #2



Minimal configuration*

161stands: 97LB + 64REM

Of which EAST area TOT. 26WB + 28NB
- **Pier K: 7 WB + 9 NB**
- **Pier L: 12 WB + 1 NB**
- **T. East: 10 NB**
- **Remote: 7 WB + 8 NB**

** Not included further possible developments on Pier H*

Maximum configuration *

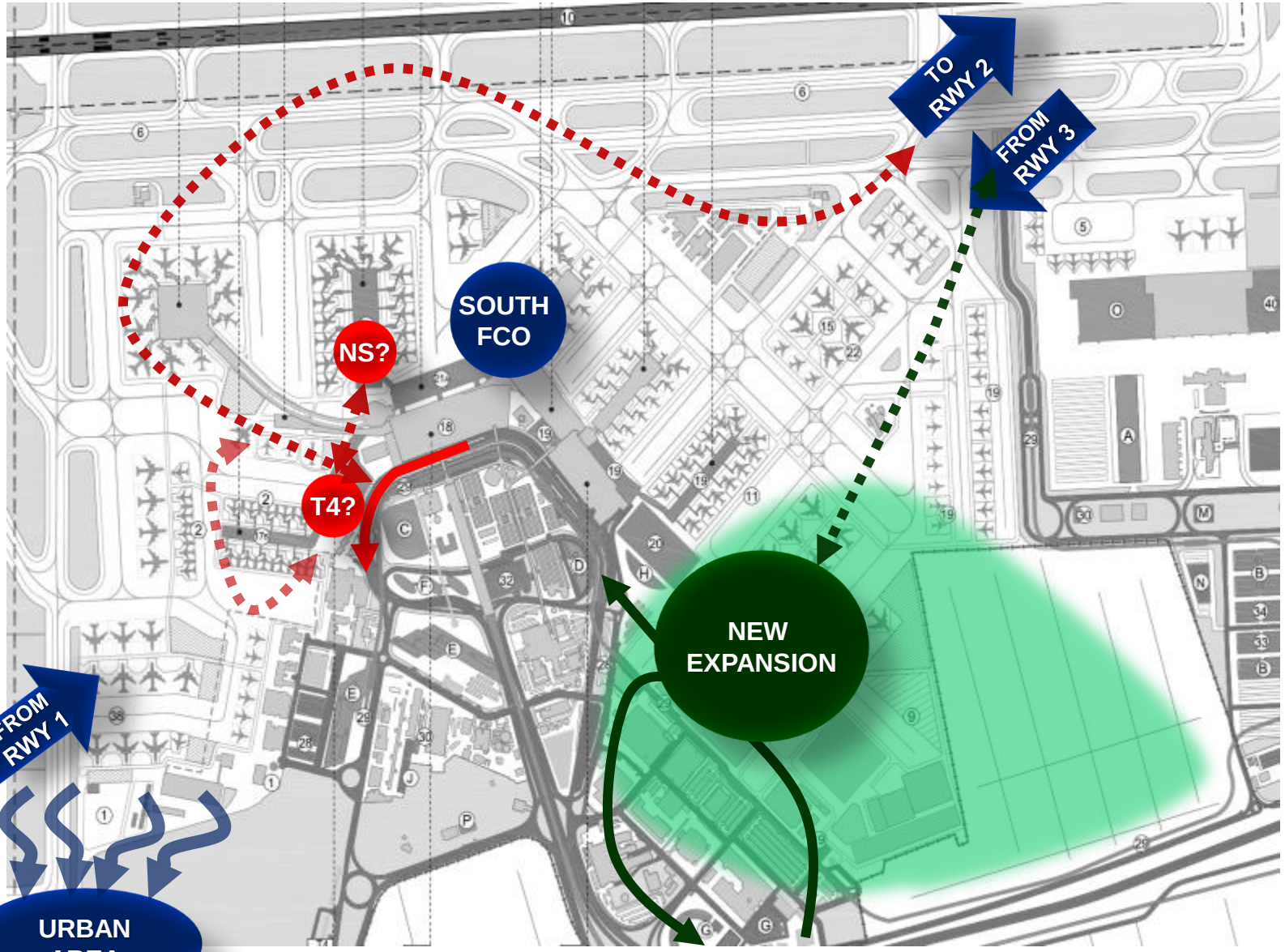
198 stands: 120LB + 78REM

Of which EAST area TOT. 80 NB
- **Pier K: 23 NB**
- **Pier L: 25 NB**
- **T. East: 10 NB**
- **Remote: 22 NB**

** Further possible developments on Pier H not included*

Single Hub configuration through an underground airside people mover, which **reduces flexibility and modularity**: all people mover path should be **built at "time 0" to allow connection between East and South**, with considerable **investments and management costs**. People mover makes **flow and connecting times higher than Alternative 1.**

Fiumicino South: Terminal system capacity expansion program



Completion Plan approved by ENAC **included Terminal 4**, as an **additional processor to achieve 64Mpax/a**.

We believe that T4 underestimates some threats:

- **airside** operations **complexity**;
- **terminal** operation **inefficiency**;
- Curbside **congestion due to limited exit road dimension**

To achieve **the same capacity targets, ADR proposes:**

- **Extension of T3** to the West over the Protocol Terminal;
- Renovation **of all T3 subsystems, at dep and arr level**
- Upgrading of **check-in desk at T1**

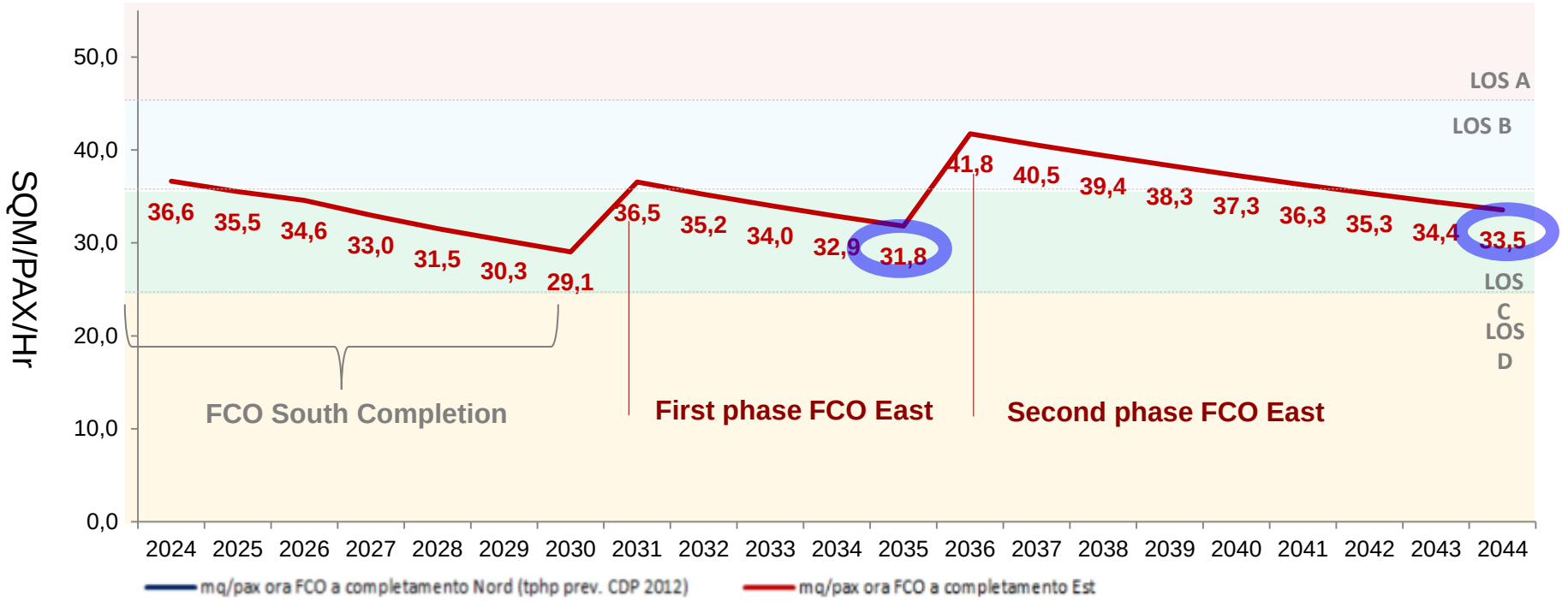
Medium and long term capacity targets will be pursued and achieved via a **modular-approach in the new East expansion area**

Level of service and passenger experience to the end of the concession

Terminal subsystems were **sized according to the expected traffic and considering the LEVEL OF SERVICE "Optimum"**

Evolution of the terminal surfaces (entire airport) **and expected traffic:** currently FCO provides for a comfort level of **31 sqm/pax**, **falling within the "Optimum**" range, and will reach a level of **33 sqm / pax** at the end of the concession.

Sqm/pax hour of FCO at East completion

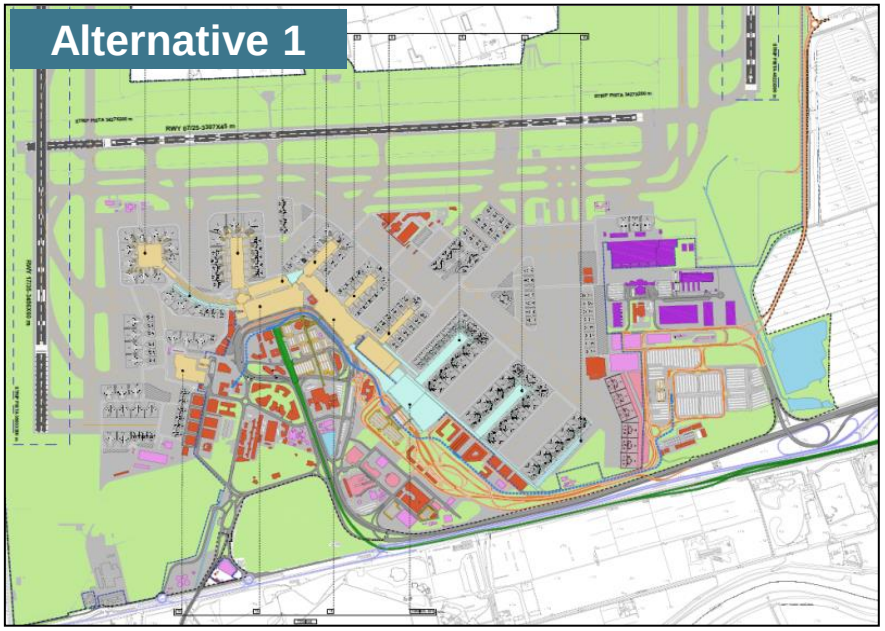


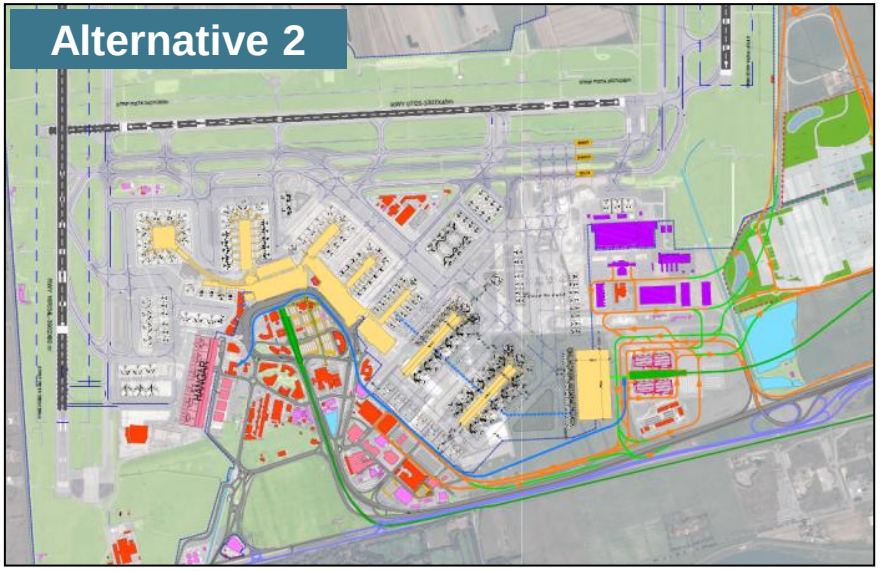
"**Optimum**" level of service until the end of the Concession

This approach was used when dimensioning the single subsystems

* South + East FCO curve: gross operating area, compared to TPHP 2019 evolution according to the forecast trend of the Masterplan

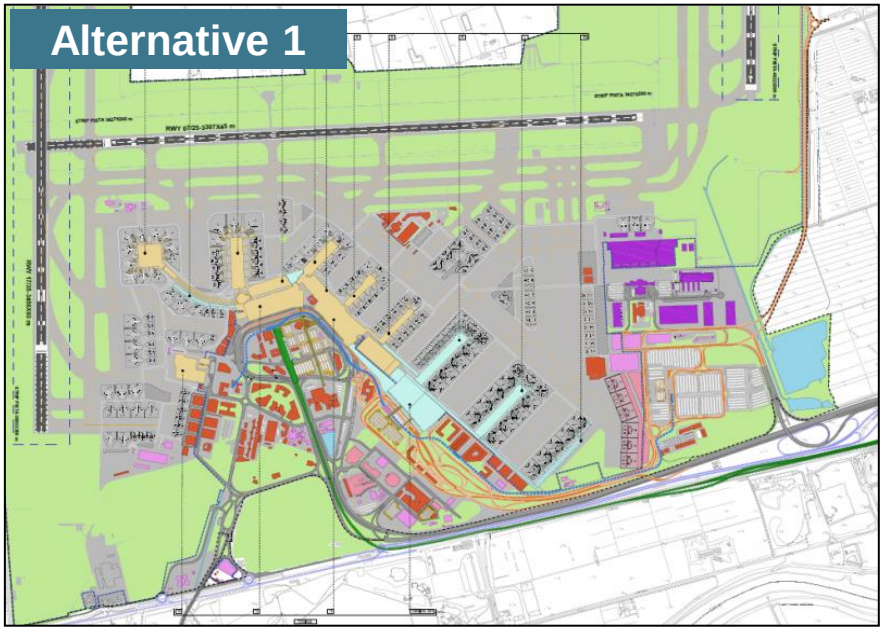
Comparative analysis of alternatives #1 and #2

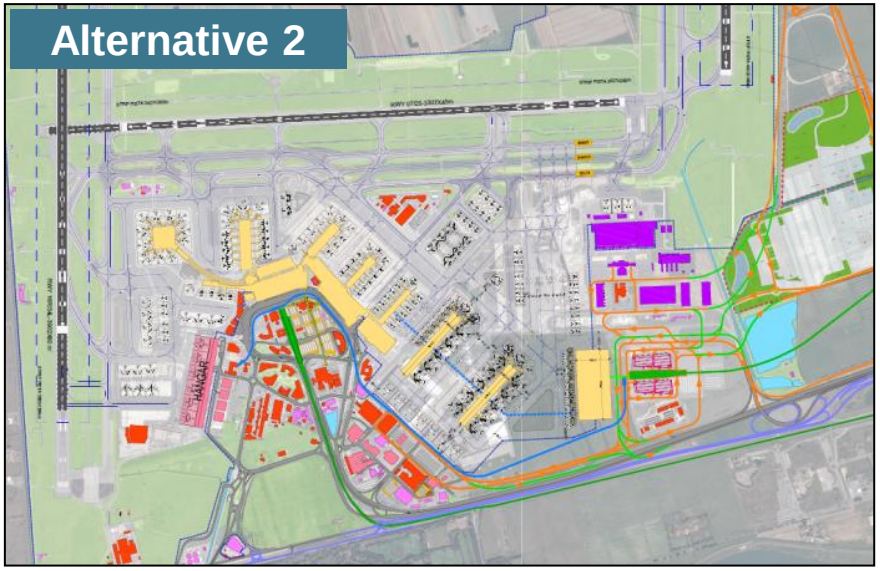




MAIN DRIVERS	SCORES	
	Alternative1	Alternative2
Capacity improvement		
• **MPax/year**	**+39,0**	**+41,0**
Feasibility/modularity (terminal)		
• Alt.#2 needs from 1st Phase higher CAPEX due to people mover (**airside by tunnel**)		
Minimum Connecting Time (terminal)		
• Alt.#1 Pier short distance from processor, **"under one roof"** • Alt.#2 Long path, people mover, low flexibility use		**+30%**
Sustainability		
• Geotechnical **soil features and amount of excavated** soil due to the tunnel with automated people mover		

Comparative analysis of alternatives #1 and #2

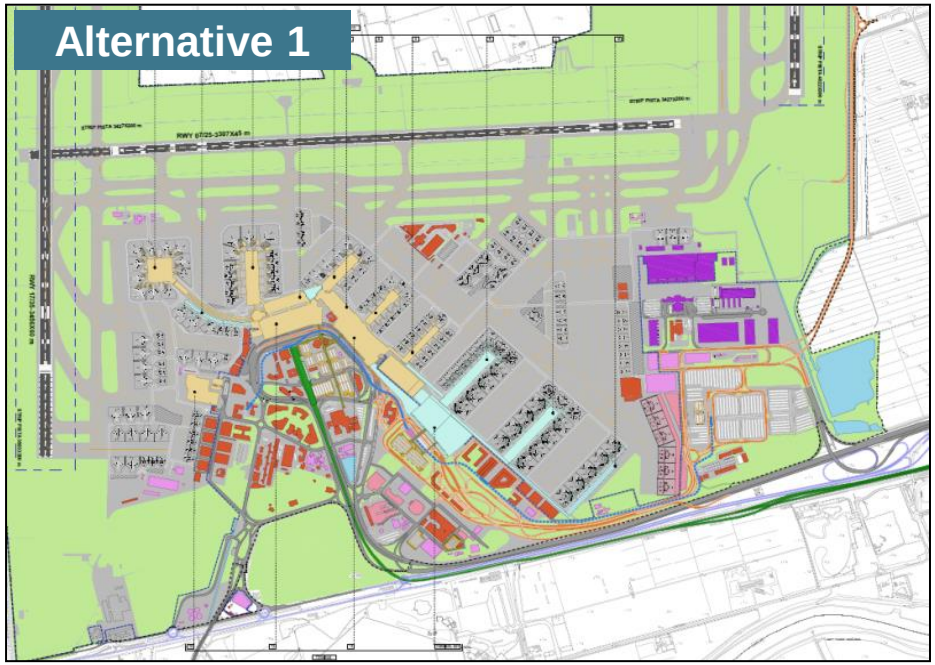




MAIN DRIVERS	SCORES	
	Alternative1	Alternative2
Ground transportation and accessibility		
• Alt.#1: One trail station, shorter distance between Terminals, more flexibility in case of disruption • Alt.#2: Longer distance between Terminals, higher CAPEX		
Business Continuity		
• Breakdown of people mover connection system, higher impact with the operations		
Airside performance		
• Similar achievable maximum capacity : +119 ATM/h		
Capex impact		
• Alt.#2: Higher cost for connection by tunnel, replacement and relocation of car parks and technical area (west+east), landside people mover		+1Billion€

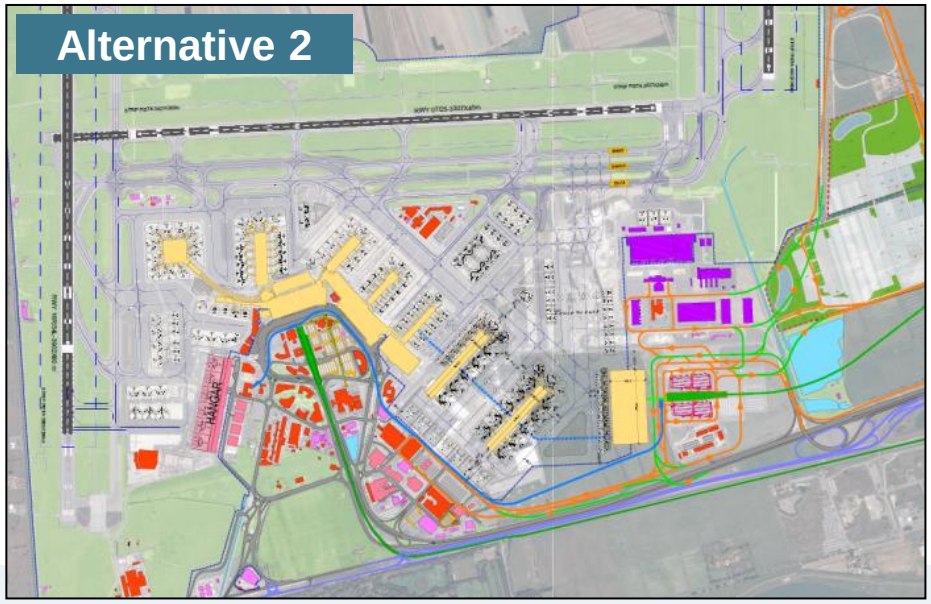
Focus on ground transportation: alternative analysis

Alternative 1



	Features
Accessibility by road	• **Separate access** for current system and new East Area • **Redundancy** of the access system, and sufficient buffer in case of disruption on the curbside or along the A91 motorway • **Shorter distance** between terminals
Accessibility by rail	• **Just one train station** for all services (regional, express and high speed) • **Max flexibility** • **Redundancy** of routes and services

Alternative 2



	Features
Accessibility by road	• **Separate access** for current system and new East Area • Common access to the new terminal and Cargo city • Last mile of the A91 with fewer flows than alternative 1 • Less buffer in case of disruption on the curbside or along the A91 motorway than Alt.#1 • **Longer distance** between terminals
Accessibility by rail	• **Redundancy** of routes and services • Two stations with different services • **Higher capex** for airside people mover and for roads (more viaducts on poor soil) • Higher capex for Railway stations than Alt.#1

Railway accessibility development

New sustainable accessibility through the enhancement and diversification of the itineraries

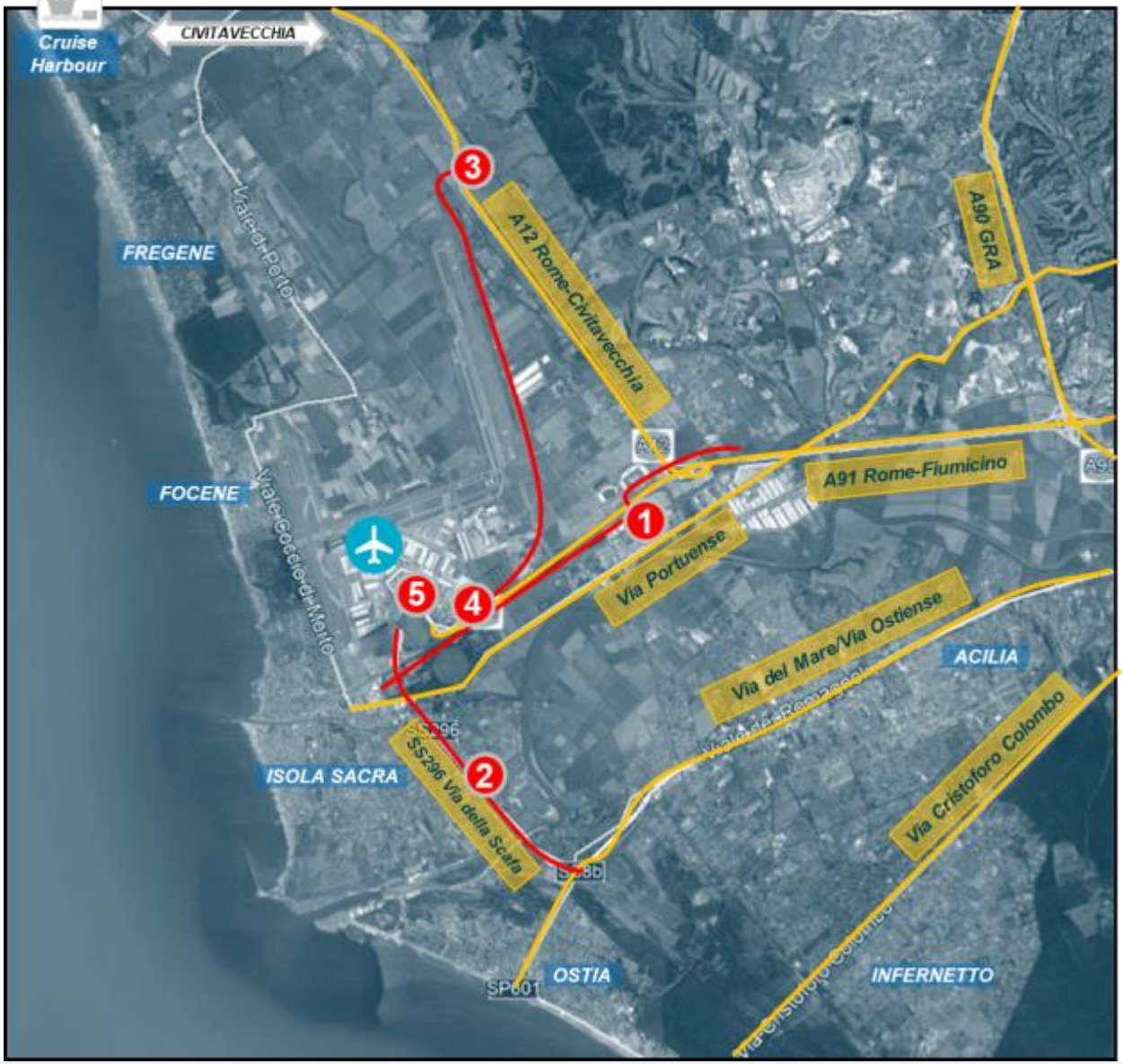
TARGET	SOLUTIONS	WORKS
Increase the demand for rail transport to the airport	**Extend** the catchment area	**Connections** between the Tyrrhenian line and the FL5 regional line
Support the growth of airport demand	**Strengthen** the railway service	**Doubling of the FL1 regional line** between Ponte Galeria and FCO
Ensure access by rail to the new Terminal	**Implement** rapid and efficient internal mobility systems	**Construction of a People Mover** between the current railway station and the future East Terminal
Ensure accessibility to the airport also in case of disruption	**Create** alternative itineraries	**Creation of two additional railway tracks** in the railway station

1. Connections between the Tyrrhenian line and the FL5 regional line
2. Doubling of the FL1 regional line
3. Creation of two additional railway tracks in the railway station

Road accessibility development

Guarantee good levels of service by creating dedicated accesses to airport infrastructures, separating flows and creating alternative routes

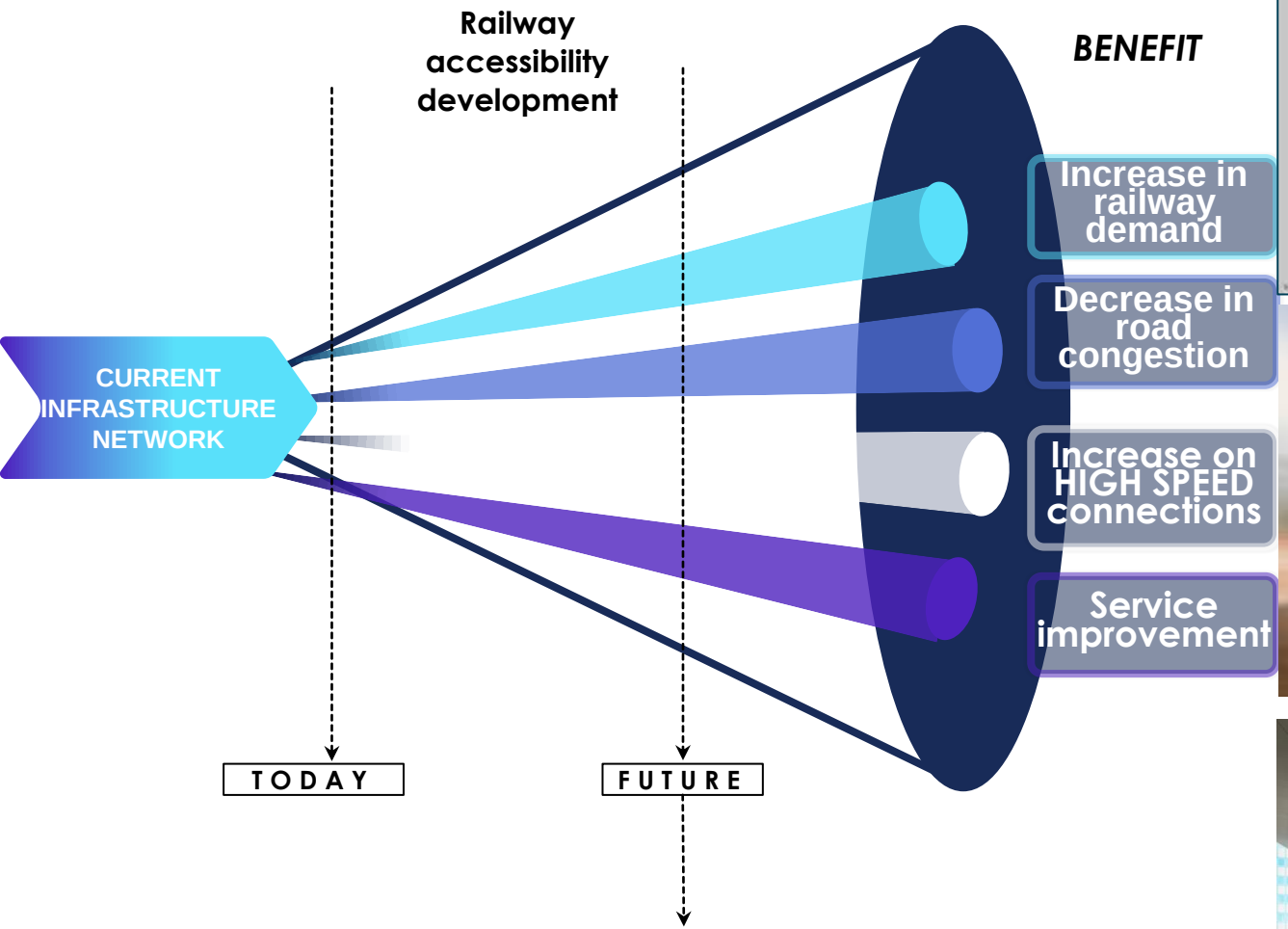
TARGET	SOLUTIONS	WORKS
Support the growth of airport demand	Dedicating the A91 for the exclusive use of airport traffic and improve access from the south	Completion of complanari roads up to the town of Fiumicino
Ensure road access to the new Terminal	**Diversify** access to distribute flows	Transformation of via della Scafa into a high speed road
Ensure accessibility to the airport without compromising the mobility of the Roman coast	Create **alternative itineraries**	Viability of connection A12-Area Est
		Infrastructure provided for access to the East Terminal
		Expansion of the departures viaduct in front of the current terminals



1. Completion of complanari roads up to the town of Fiumicino
2. Transformation of via della Scafa into a high speed road
3. Viability of connection A12-Area Est
4. Infrastructure provided for access to the East Terminal
5. Expansion of the departures viaduct in front of the current terminals

Railway accessibility development

Long term benefits



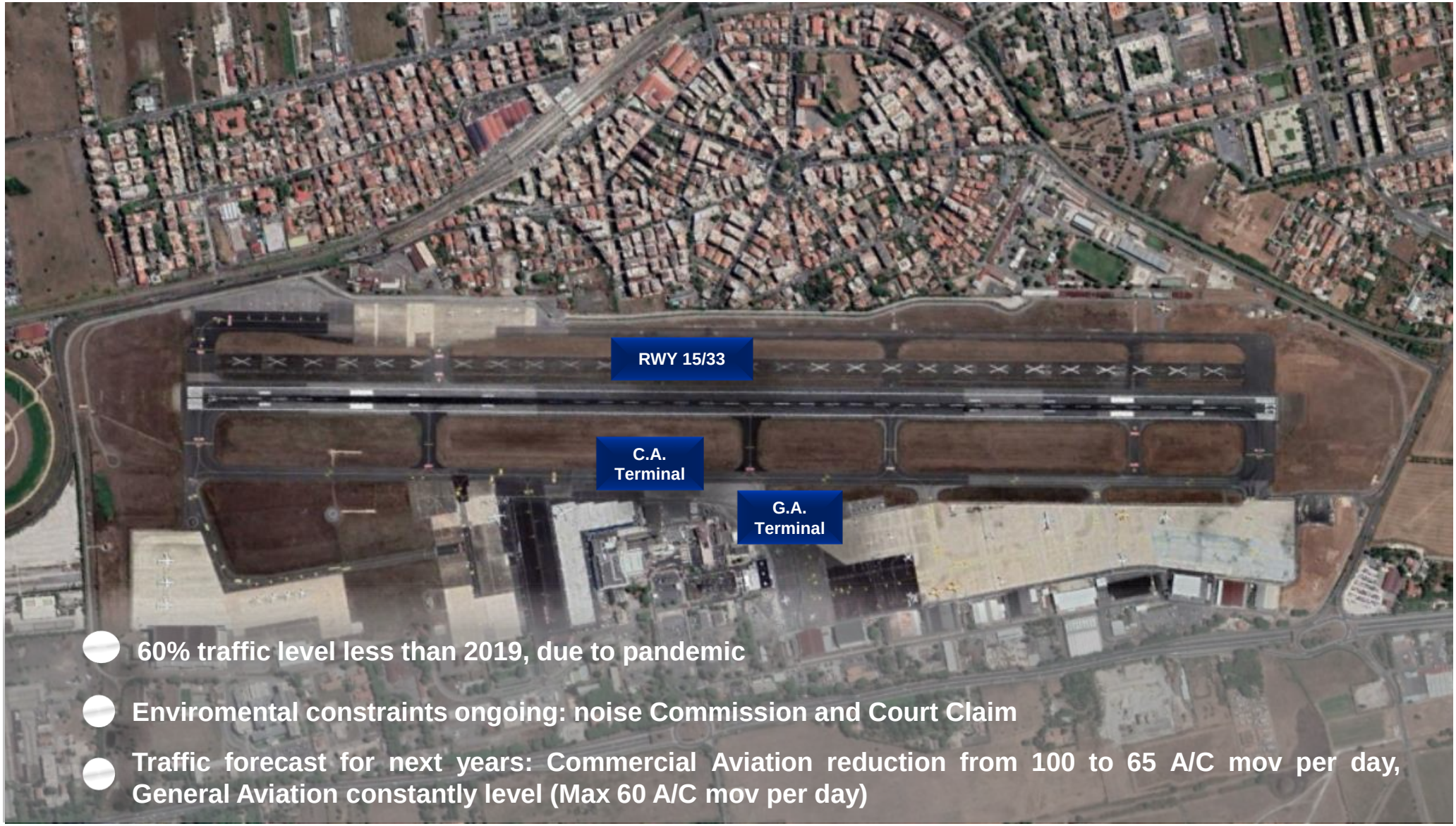
Change in modal split

	Private	Public
CURRENT	74%	26%
LONG TERM	***49%***	***51%***

Agenda

1. Introduction
2. Current operations & FCO South Completion Plan
3. Traffic Forecast
4. Medium and long term capacity expansion
5. **Ciampino Airport**
6. Next steps

Current status and operations



- 60% traffic level less than 2019, due to pandemic
- Enviromental constraints ongoing: noise Commission and Court Claim
- Traffic forecast for next years: Commercial Aviation reduction from 100 to 65 A/C mov per day, General Aviation constantly level (Max 60 A/C mov per day)

Main investments completed and planned

Complete

TERMINAL & AIRSIDE

- ✓ Terminal refurbishment
- ✓ Apron refurbishment: Commercial Aviation, 100 & 200 areas
- ✓ General Aviation 300 and Golf Areas
- ✓ Apron Hooks for Golf and 400 areas

In-Progress

TERMINAL & AIRSIDE

- ✓ Design in progress -> seismic and fire prevention works
- ✓ Maintenance and compliance works -> new approach lighting system for RWY 33 (SALS), no entry and stop bar on taxiway links to runway.

Agenda

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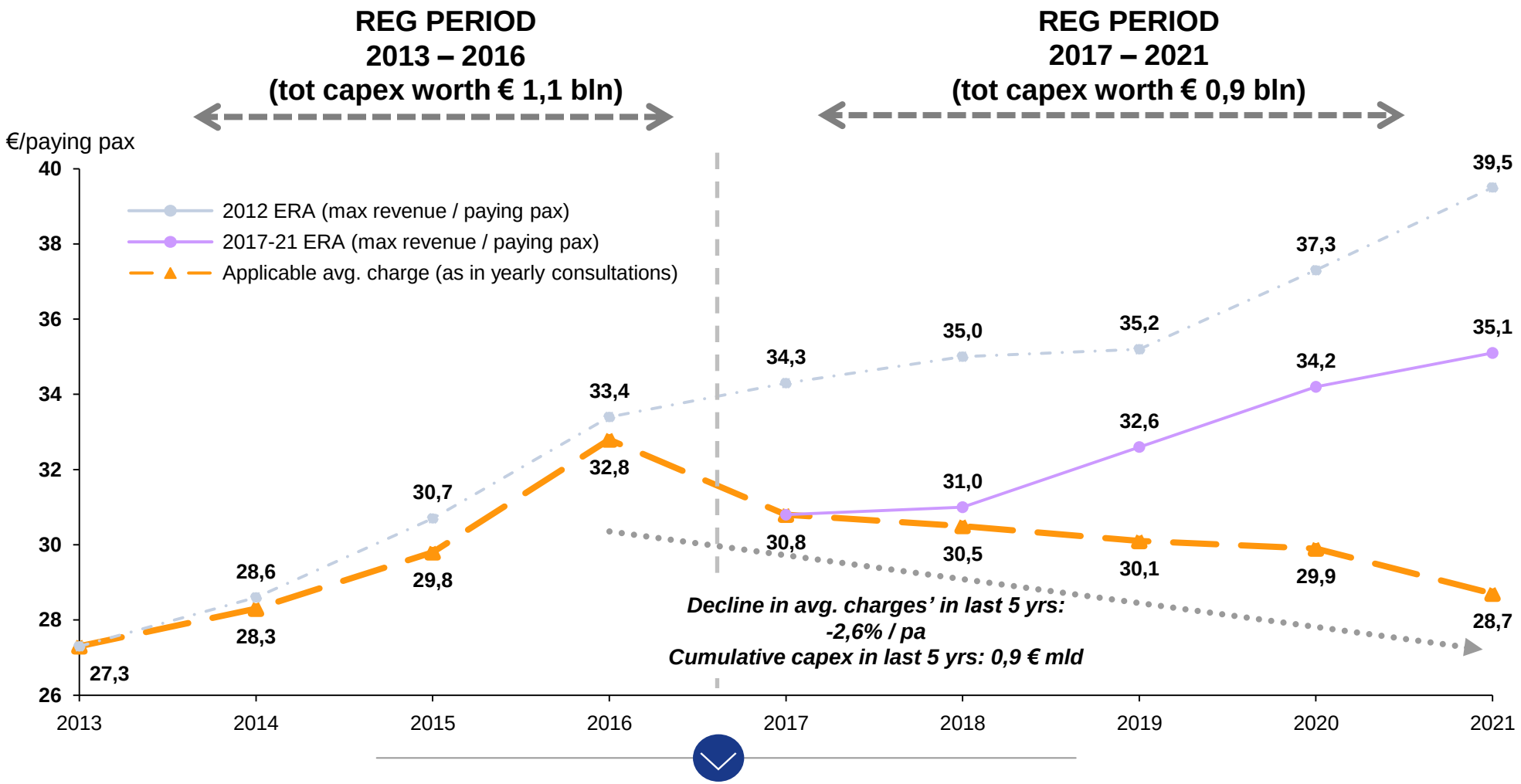
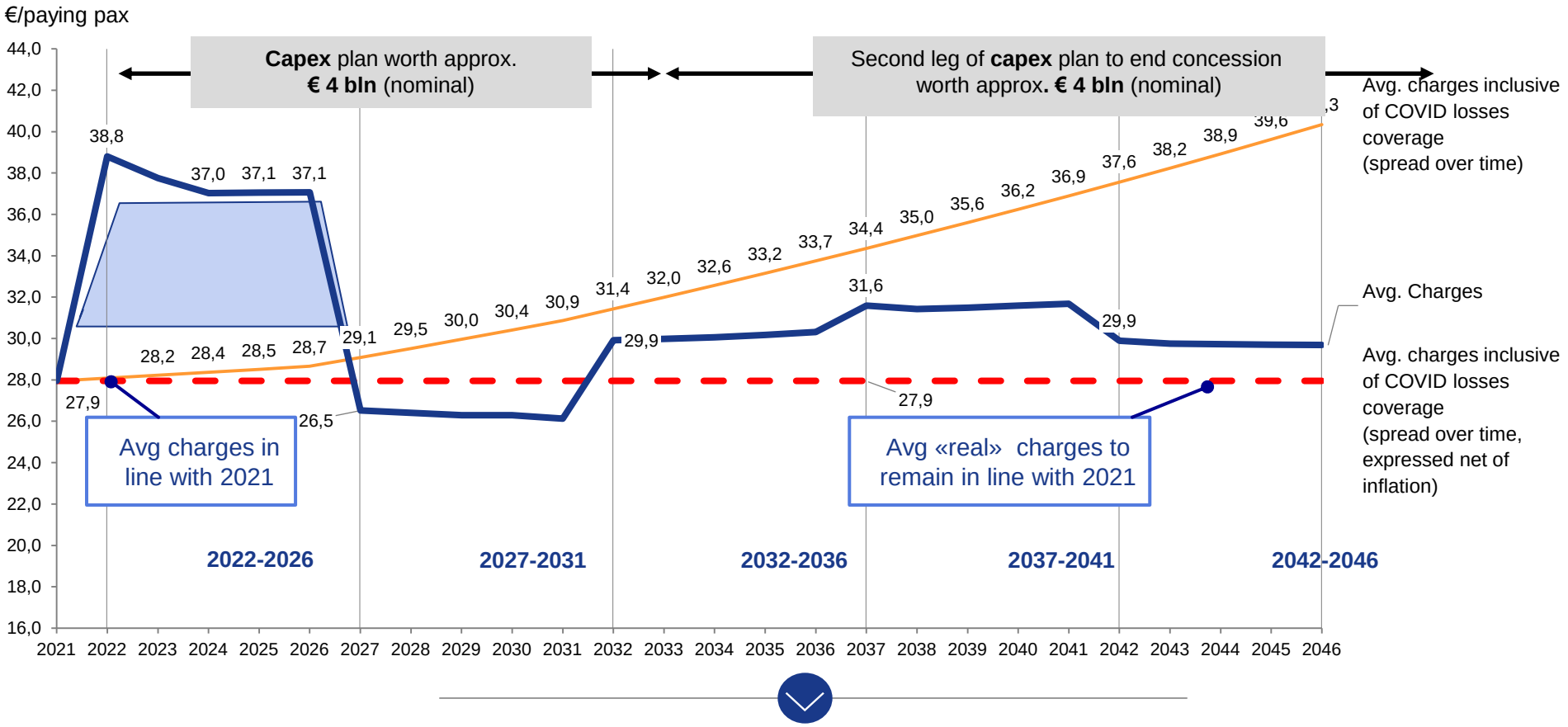
Average regulated charges down since 2016 while covering airport's costs on further € 1 bln investments



- **ADR's regulatory settlement allows for cost recovery on actual (NOT planned) capex spending, with yearly adjustments to re-align fcst/actuals upon ENAC's scrutiny**
- **Avg. charges for regulated services always lower than ERA forecasts (Economic Regulation Agreement) and constantly reducing between 2016 and 2021**

FCO: average charges, forecast evolution

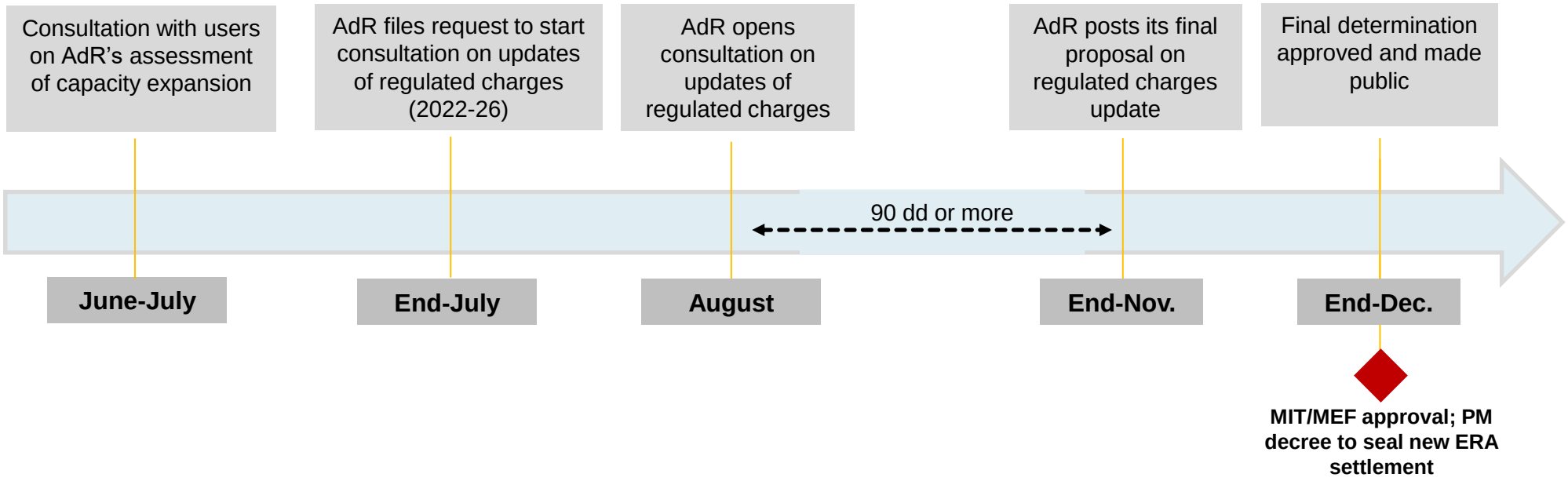
Forecast evolution(s) of avg. regulated charges [FCO, € / paying pax]*



ADR aims to ensure FCO's pricing sustainability through a flexible tariff evolution leveraging off operations' efficiency, expected rise in traffic volumes and over time a re-distribution of part of the allowable costs within the framework of the existing sector regulations

* Avg. charges net of regulated real estate

Regulated charges for 2022-26, next steps



- **Limited time window to perform all duties for updating regulated charges to represent an udated cost correlation**
- **However, AdR remains committed to doing so and does not consider other options (ie. «freeze» of current regulated charges) with a view that a new, clear settlement of the «regulation agreement» represents significant value for all airport's stakeholders on enhanced transparency/predictability**

Soon back for more …