

The ATR logo is displayed in a stylized orange font. The background of the entire slide features a scenic view of a tropical coastline with turquoise water, green hills, and a small town, with a large propeller from an aircraft visible on the left side.

**ATR**

**Turboprop  
market forecast  
2022-2041**

# **Delivering Sustainable Connections**

into life



# Preface

The past two years have been a challenging time for the entire aviation industry.

As borders closed and supply chains ground to a halt, turboprops stepped up to the global challenge. They became the lifeline to local communities around the world delivering vaccines and other essential goods.

Two years on and aircraft are back in the sky. As we return to the “new normal”, the aviation industry is refocusing its attention on perennial challenges.

Decarbonising aviation is top of the agenda for the industry, while innovation will likely come to market from the turboprop sector in the near-future. Similarly, turboprops will prove to be a key entry point for disruptive technologies helping to drive forward the aviation industry.

Human behaviour has also changed in the past two years: the way we work, shop and travel. Hybrid working and digital technologies are shifting established travel paradigms. E-commerce adoption is boosting demand for regional freighters.

Looking 20 years ahead remains as challenging as it ever was. Drawing on our expertise and data, however, this report maps future trends that suggest positive changes to shape our industry for the better.



**MANAUS**

BRAZIL



**216**

AIRPORTS OVER **475** SERVED BY **ATR**  
IN LATIN AMERICA & CARIBBEAN

## Table of contents

**04**

Executive summary

**09**

Connecting sustainably

**27**

Regional forecast

**40**

Freighter

**46**

Methodology

**ATR**



**BORA BORA**

FRENCH POLYNESIA



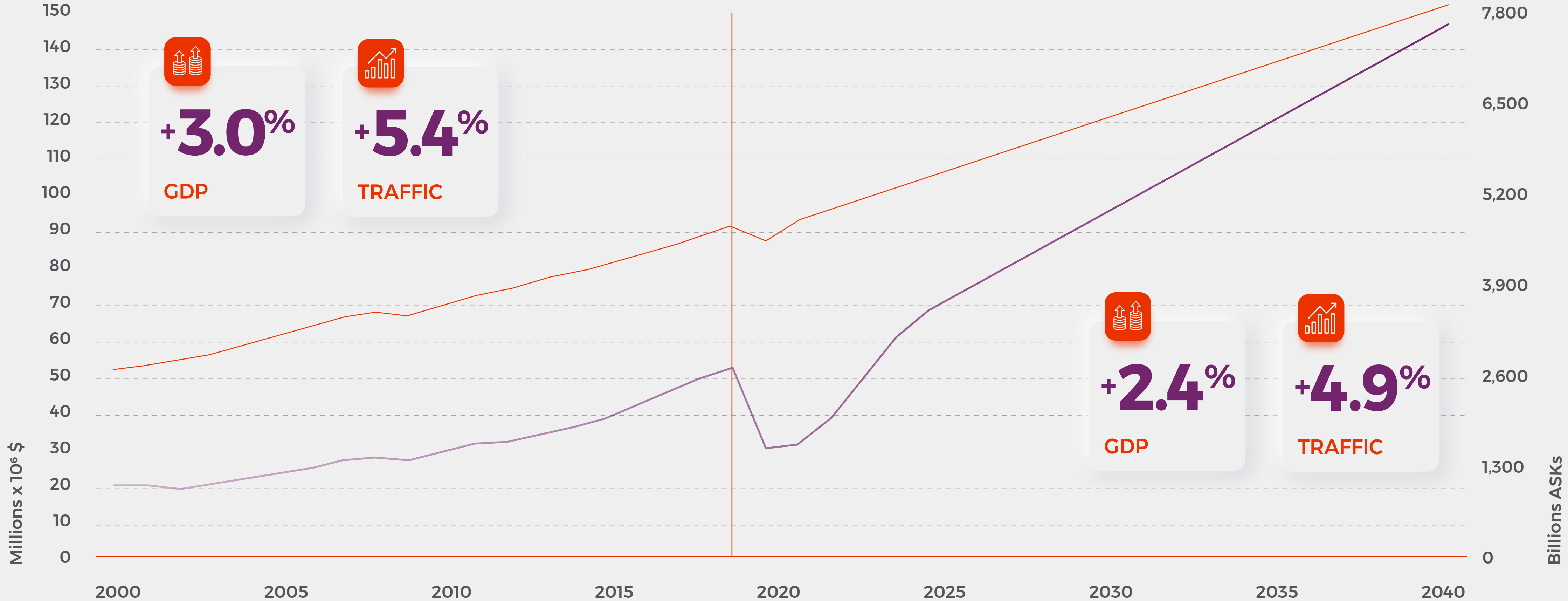
**495**

AIRPORTS OVER **940** SERVED BY **ATR**  
IN ASIA PACIFIC (EXCLUDING CHINA)

# EXECUTIVE SUMMARY

# Regional market traffic evolution

Route creation drives growth



Regional Market: up to 900NM and up to 300 daily seats each way per carrier

● WORLD GDP (REAL) ● REGIONAL ASKS



# Aircraft demand for new route creation

Developing markets lead network expansion



**35%**

of 2041 activity comes from new routes



**+860**

aircraft demand to serve new routes

**17%**

**8%**

**9%**

**5%**

**27%**

**34%**

Asia Pacific (ex. China) **295**

China **235**

North America **140**

Europe & CIS **75**

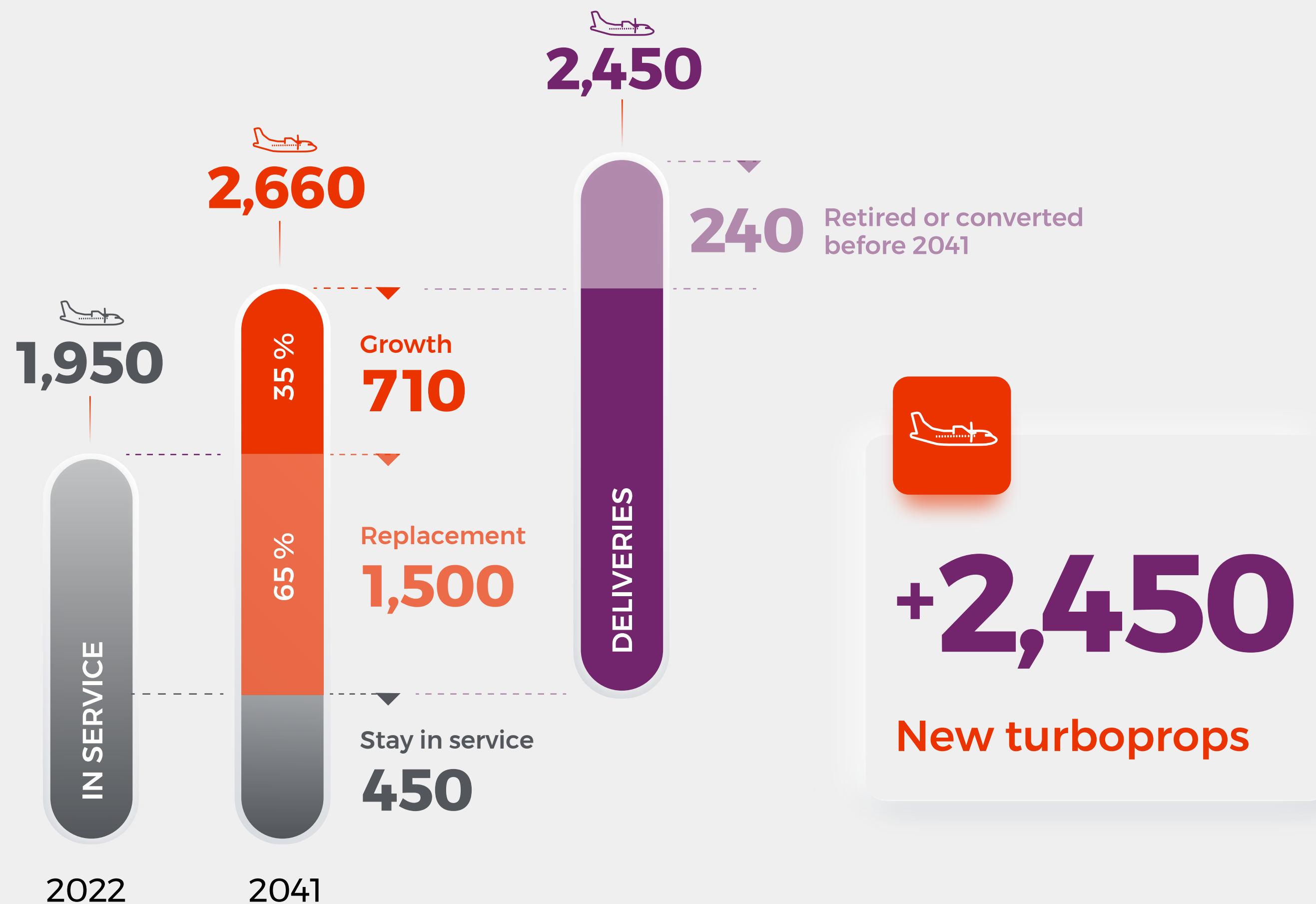
Latin America & Caribbean **70**

Africa & Middle East **45**

**ATR**

# Turboprop demand

New deliveries focusing on replacement of current aged fleet



In the next 20 years we expect the global turboprop demand to reach around 2,450 aircraft. This signals a good return to business as we come out of what has been a challenging time for the entire aviation industry.

Two years down the line regional aviation is close to making a full recovery. Despite this, the growth potential lost during the pandemic continues to influence our 20-year projections.

During this time many older aircraft retired but the average age of the turboprop fleet continued to increase. Consequently, aircraft replacement will be a primary driver of demand over the next two decades, accounting for 1,500 new aircraft in service in 2041.

However, our forecast is based on current regulatory and technological environments. In reality, the market context is changing rapidly.

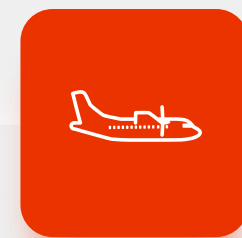
Increasing fuel prices and carbon taxation; the EU's Taxonomy Regulations combined with greater passenger demand for lower emission travel, means in future the aviation industry will naturally favour low-carbon emitting aircraft, such as turboprops.

New, disruptive technologies, coming onstream in the next decade, will also bring turboprops to the forefront of the aviation industry

Looking forward we are confident that turboprops will expand their market attractiveness and exceed the 2,450 aircraft forecast.

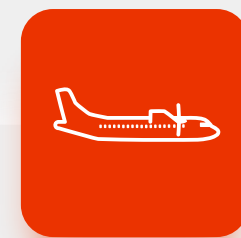
# Turboprop demand by region

Turboprop deliveries



620

40-60 seats



1,830

61-80 seats



240



325



400



280



230



975

Asia Pacific (ex. China)

975

Latin America & Caribbean

325

North America

240

Europe & CIS

400

China

280

Africa & Middle East

230

ATR



**KILIMANJARO**

TANZANIA



**170**

AIRPORTS OVER **480** SERVED BY **ATR**  
IN AFRICA AND MIDDLE EAST

# CONNECTING SUSTAINABLY

# Connecting the world responsibly

Turboprops driving growth sustainably and efficiently

## Regional aviation plays a vital role in driving economic growth and transforming lives around the world.

From the largest cities to the most remote regions, regional air travel connects people, communities and businesses in an innovative, sustainable and modern way.

As we look to the future it is imperative that the industry contributes to the 2050 net zero carbon emission commitment to remain a powerful catalyst of economic recovery and growth.

Sustainable Aviation Fuel (SAF) and new disruptive technologies will play a big role in this journey. SAF is the intermediate opportunity to decarbonize in the short to medium term. Disruptive technology will be the solution in the long run.



Crucially, turboprops will play an increasingly important role as a leading-edge platform for testing and bringing to market disruptive technologies.

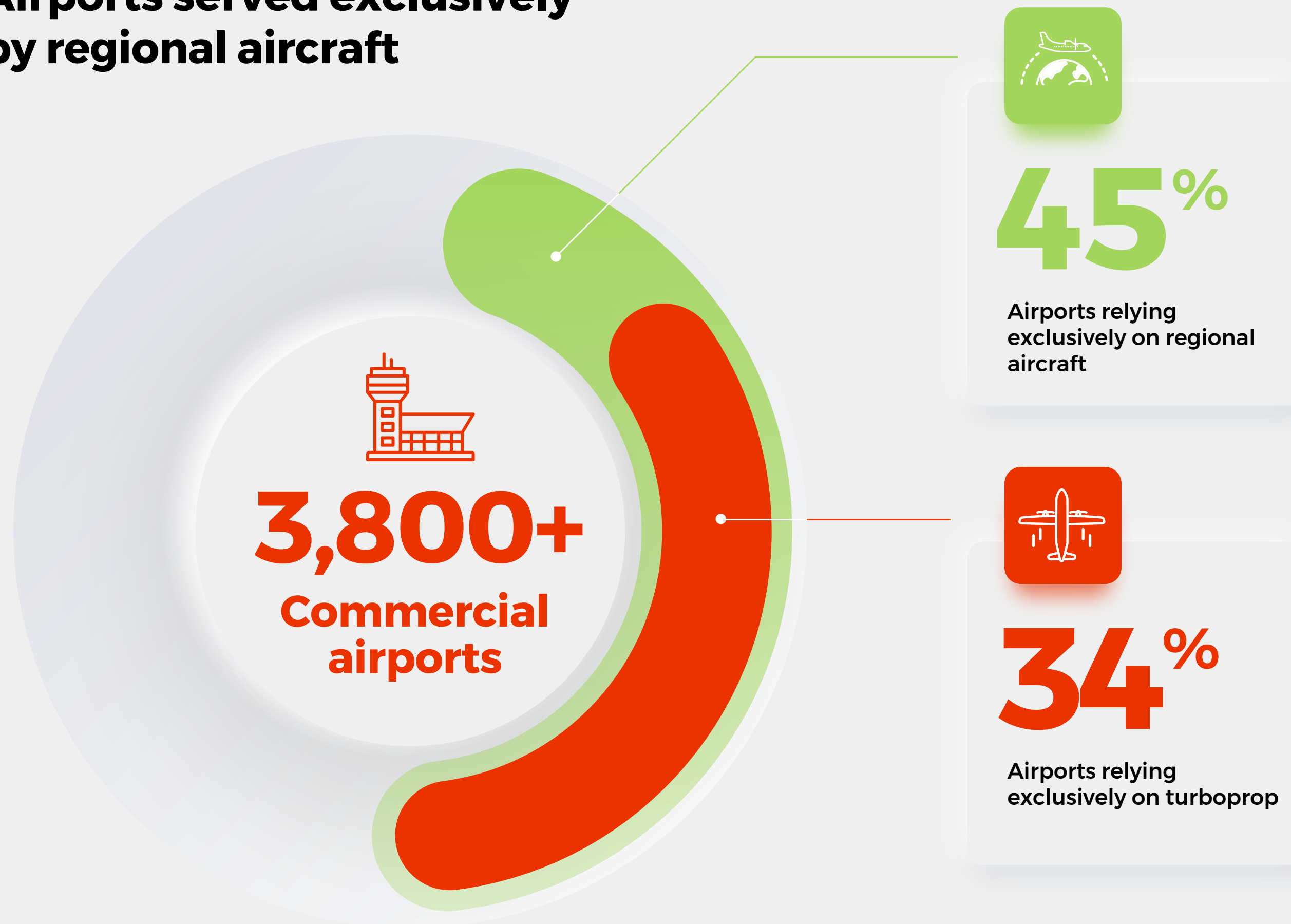
However, we recognise climate change is happening today and we need to act now. Turboprops actively address the climate challenge by operating efficiently on regional routes.

From minimizing emissions to enabling more direct flights and enabling essential regional connectivity. All these factors are driving a resurgence of turboprop programs and market interest – helping communities around the world thrive.

# Connecting local communities

Regional aviation is a lifeline for communities

## Airports served exclusively by regional aircraft

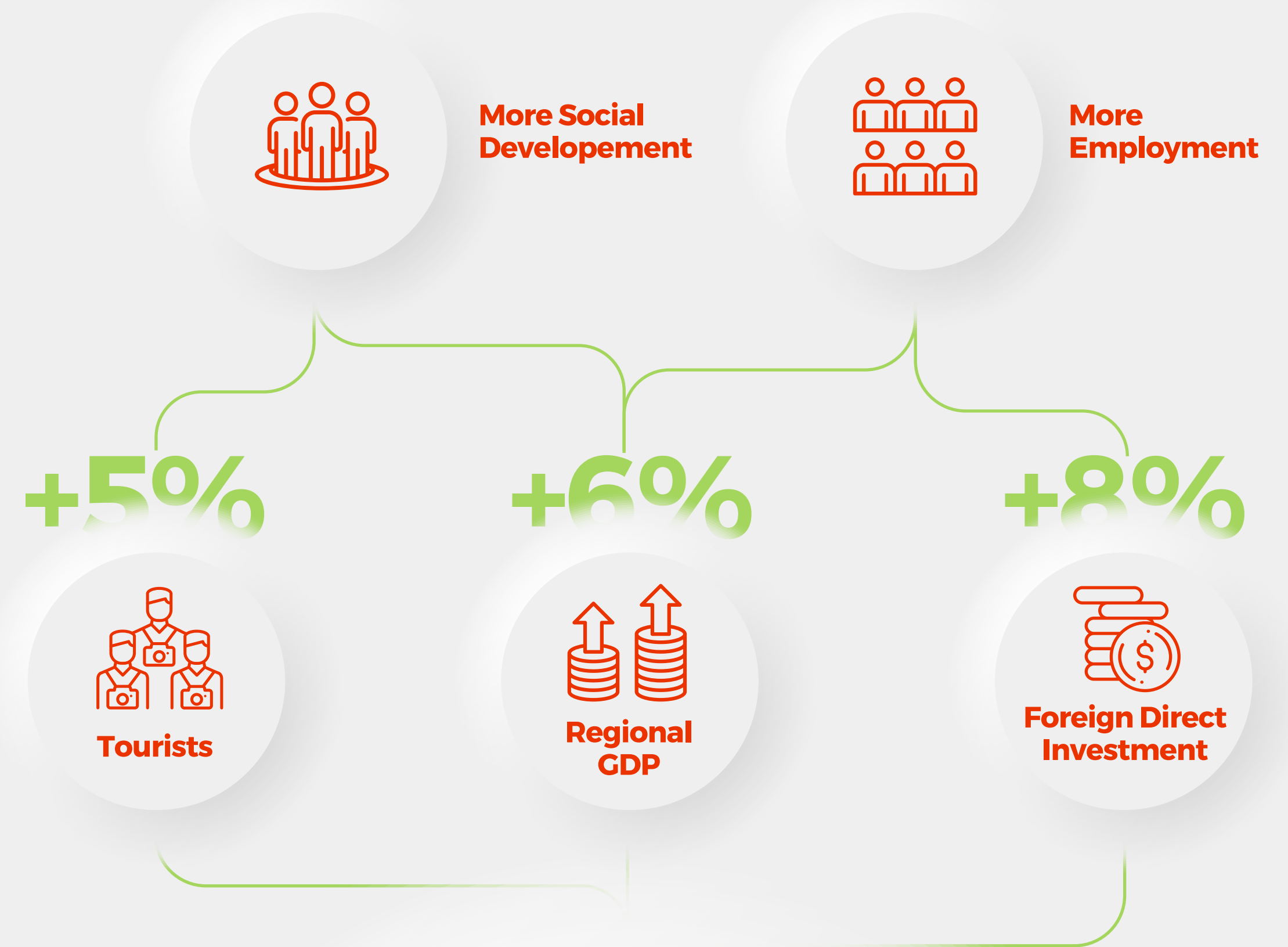


- > As recovery from the Coronavirus pandemic continues, regional aircraft are playing an important role connecting airports on low demand routes or operating challenging airfields.
- > Turboprops specifically have outstanding performance on short runways and in rugged terrain. They are the only aircraft keeping 34% of the airports with scheduled services connected to the outside world.
- > In other instances, some small communities have insufficient demand to sustain routes profitably from their home airport with a module bigger than a turboprop or a regional jet.
- > In fact, a majority of subsidised services are operated by regional aircraft, as smaller modules are more suited to low-demand environments. For example, in the US 96% of Essential Air Services flights have 76 seats or less<sup>1</sup>.

# Regional aviation fosters local economies

## Benefits go beyond the runway

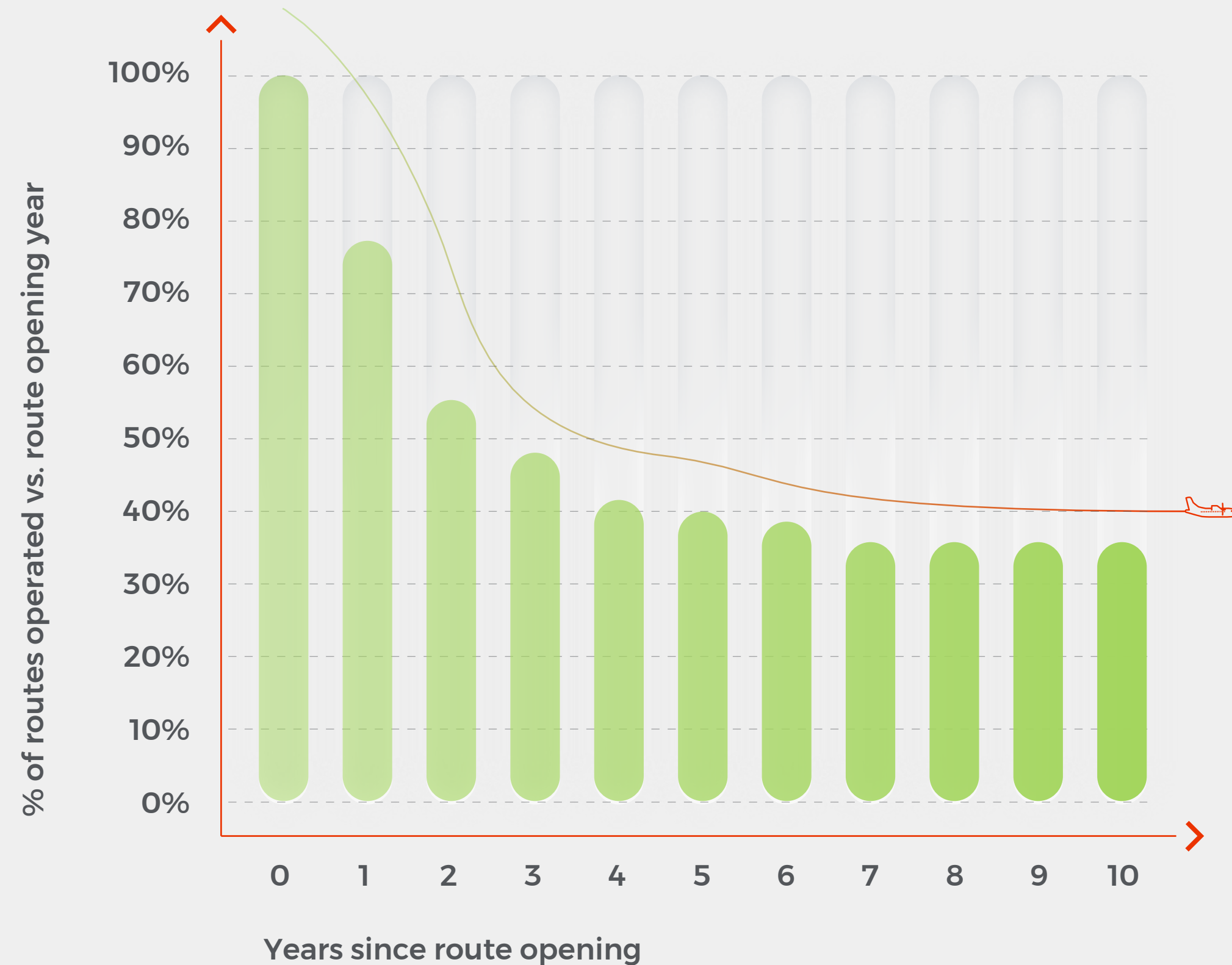
- Globally air travel supported 88 million jobs and created an economic impact of \$3.5 trillion (or 4.1% of global GDP) in 2019<sup>1</sup>. In short: aviation has a well-researched positive effect on a country's economy, society and its attractiveness as the destination.
- In Europe, for example, for every €1 of value added to the air transport industry, a return of almost €3 value is added to the overall economy.<sup>2</sup>
- In fact, regional aviation can have an amplifying effect on countries growth, depending on the state of development and its pre-existing transport links. The rate at which regions develop depends to a large extent on the quality of their connectivity, actually regional air transport plays a prominent role in territorial cohesion.<sup>3</sup>
- For example, in the US regional aviation alone supports 1.1 million jobs<sup>4</sup> and a 1% increase in an airport with subsidised services is linked to 0.12% increase in per-capita income.<sup>5</sup>



# Turboprops sustain network growth

Turboprops make ideal route openers

## Evolution of routes opened by turboprops



# 180

new routes opened  
yearly on average in  
past 10 years



# 35%

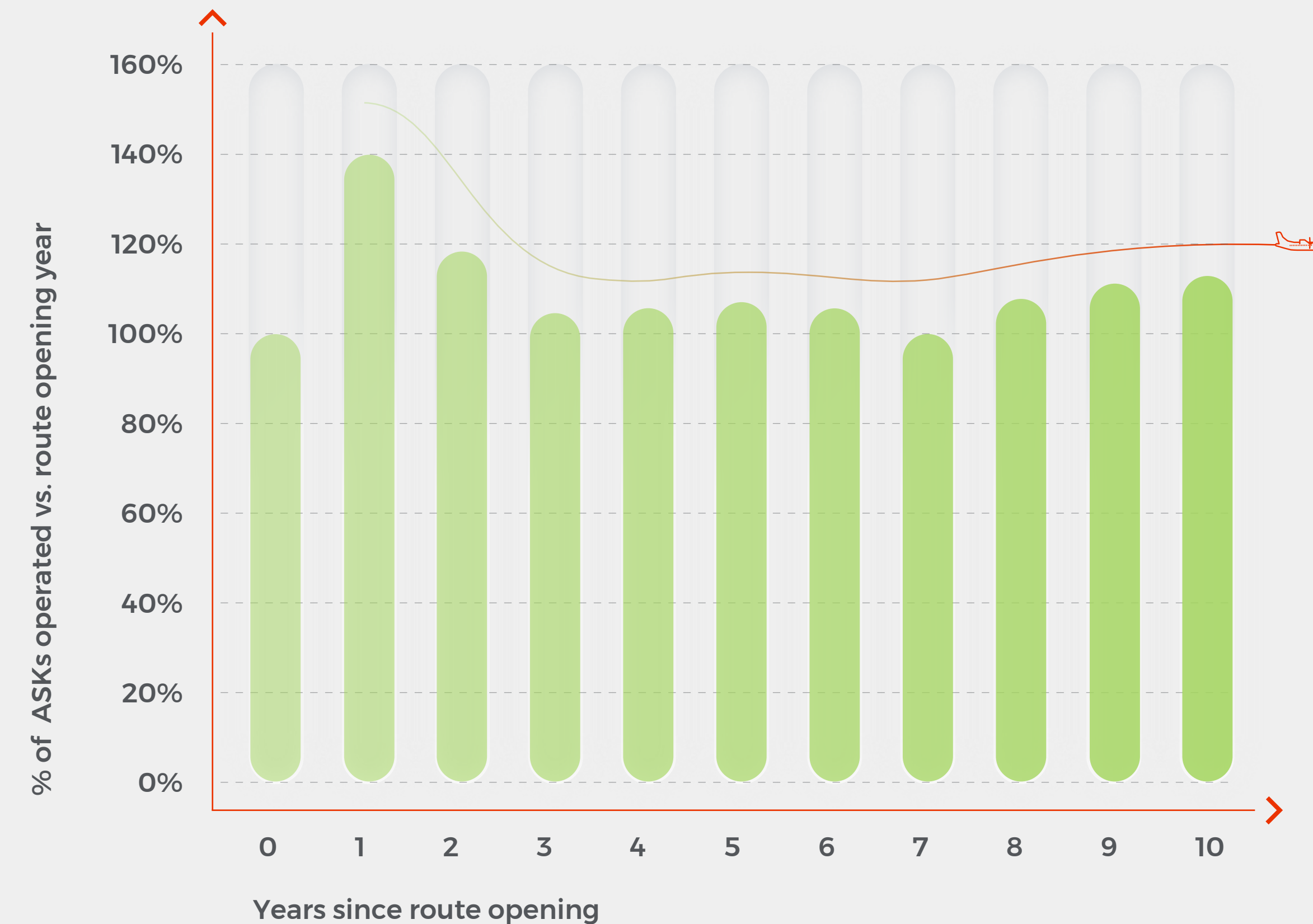
routes opened by  
turboprops still operate  
them when routes mature

- > Turboprops are a real driver of network growth for airline operators.
- > They provide a hugely effective and cost-efficient aircraft choice for operators to unlock growth opportunities. An average of 180 new routes per annum have been opened in the past 10 years.
- > Crucially, as routes mature over a third remain operated by turboprops. Routes with strong growth can be upgraded to bigger modules.
- > Globally, emerging growth markets such as India, Brazil and Indonesia have been the most active in creating new routes.
- > Even during the global Covid pandemic turboprops remained as drivers for operators opening new routes.

# Turboprops are catalyst for new routes

Route creation dynamics drive additional aircraft demand

## Evolution of routes opened by turboprops



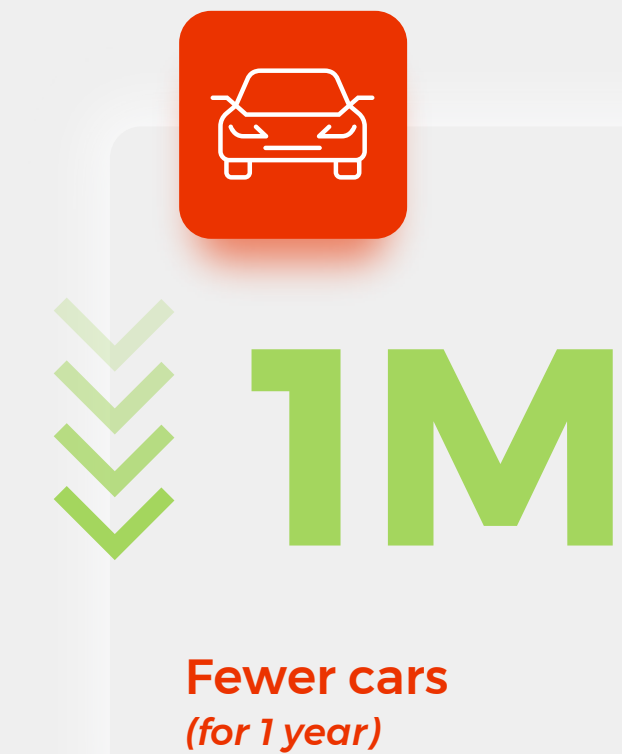
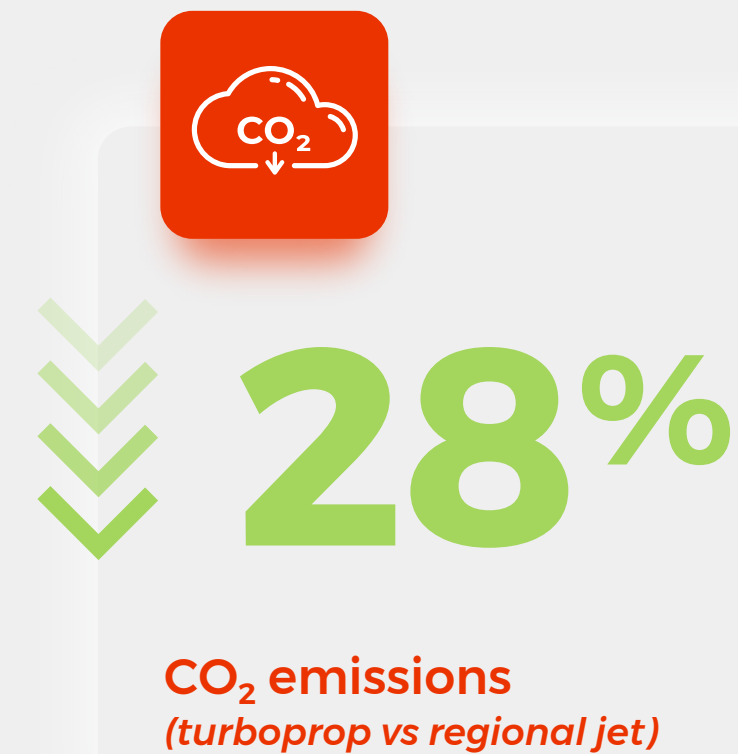
## Turboprop operation on new routes remains stable

- Thanks to their favourable economics and operational advantages turboprops are a great aircraft for opening new routes. Not only that but years after opening they continue to fly efficiently.
- As new routes mature many grow in turboprop frequency demonstrating their longer-term value in maintaining routes.
- In fact, the percentage of ASKs operated remains fairly consistent. Consequently, additional aircraft are required to continue new route creation.

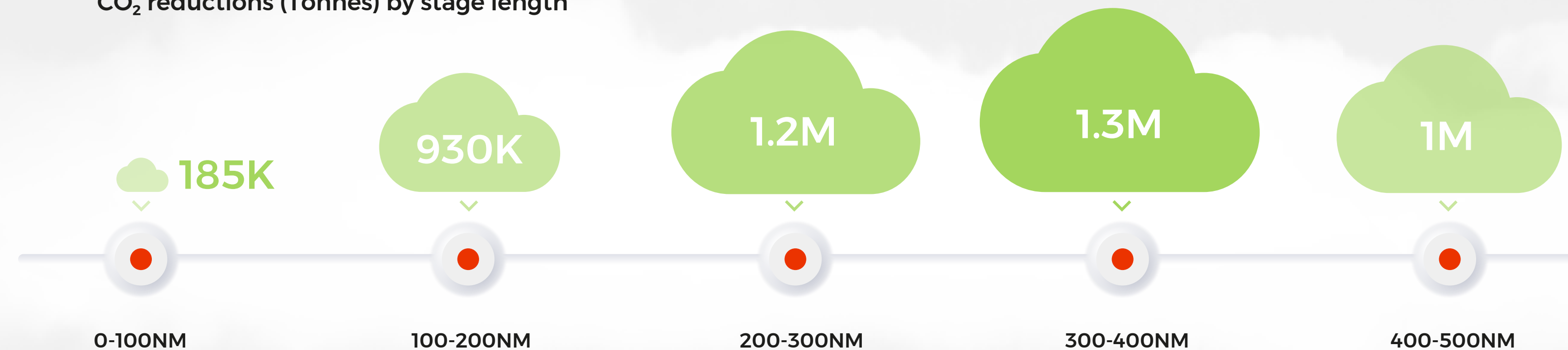
# Turboprops reducing regional aviation's CO<sub>2</sub> footprint today

## Most efficient engine technology for regional aviation

- Replacing regional jet activity with turboprops would drastically reduce CO<sub>2</sub> emissions.
- For example, in the US if regional jet capacity on routes up to 500NM (926 km) were replaced by turboprops there would be an immediate 28% drop in CO<sub>2</sub> emissions.
- This would be equivalent to a reduction of 4.6 million tonnes of CO<sub>2</sub> – or 1 million gasoline-powered passenger vehicles driven for one year.



CO<sub>2</sub> reductions (Tonnes) by stage length



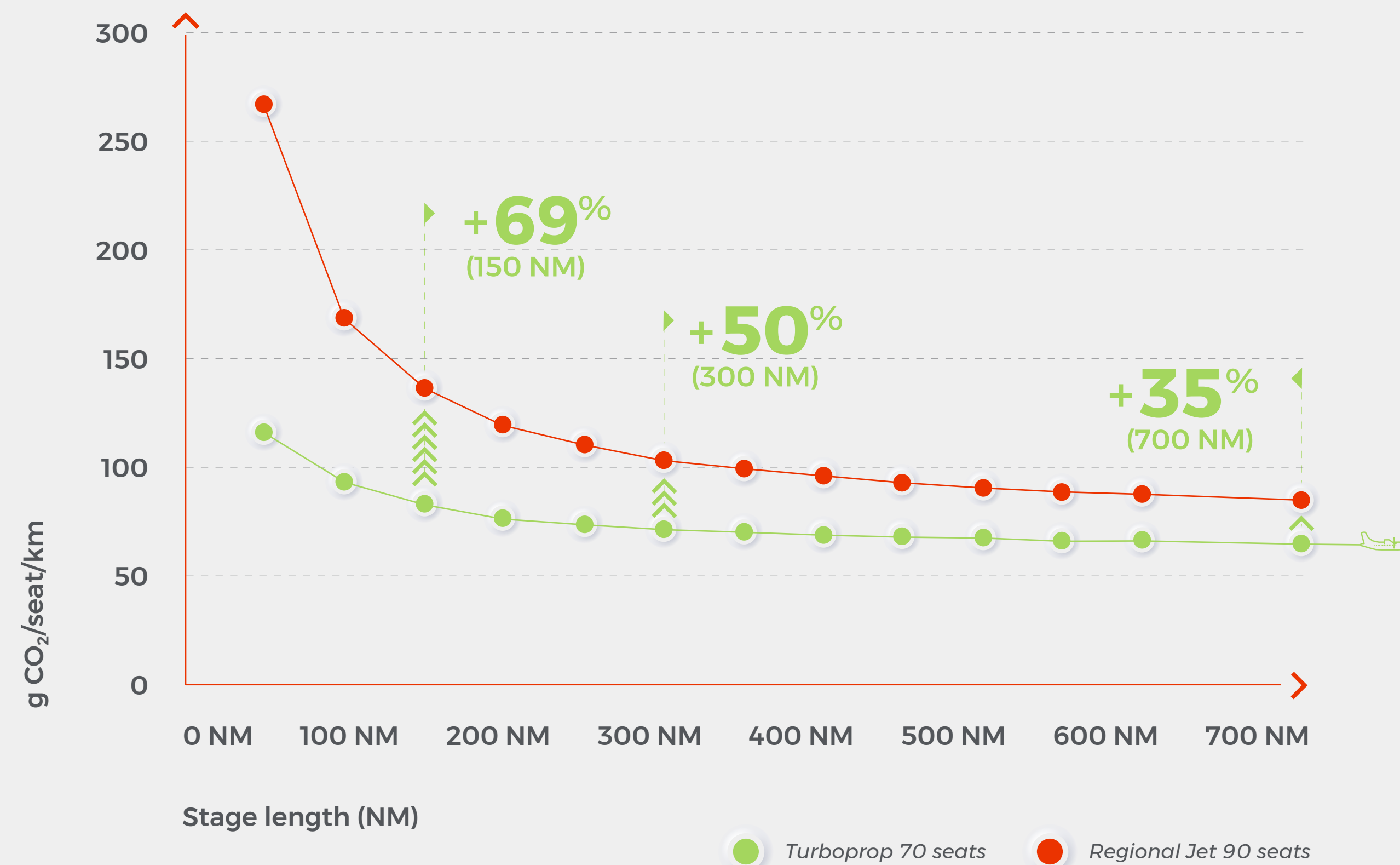
Regional jet replacement up to 90 seaters

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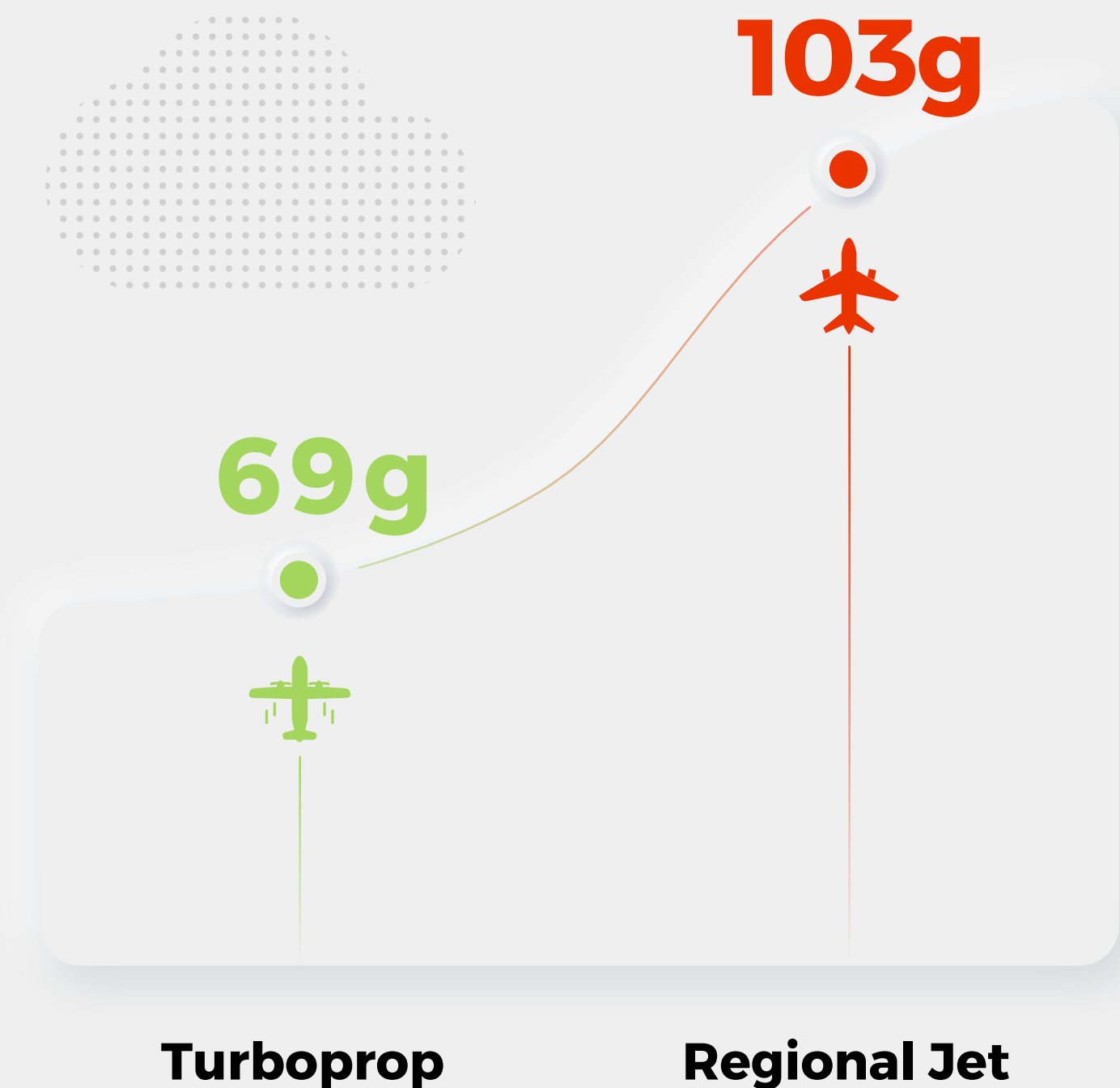
# Turboprops deliver reduced CO<sub>2</sub> on shorter routes

CO<sub>2</sub> emissions significantly lower than regional jets

Regional jets emit more CO<sub>2</sub> than turboprops, but the environmental impact is even more exaggerated on short-haul flights as jet technology is not optimised for this sector.



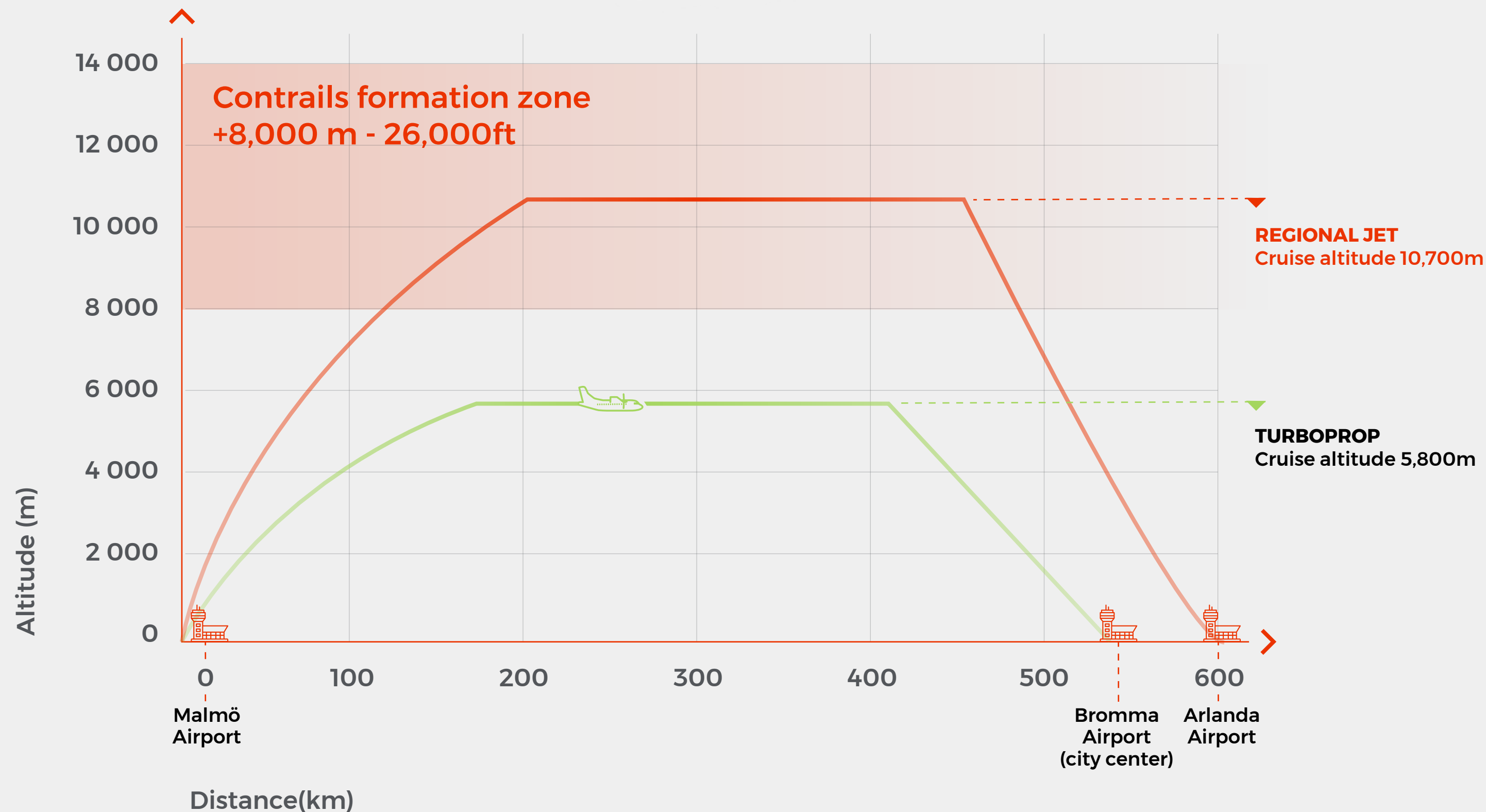
Emissions of CO<sub>2</sub> per seat/KM at 300NM turboprop vs regional jet



# Turboprops cruise at lower altitudes

Reducing the overall impact of regional aviation

## Flight profiles with different aircraft types Case Study: Malmö – Stockholm



2x

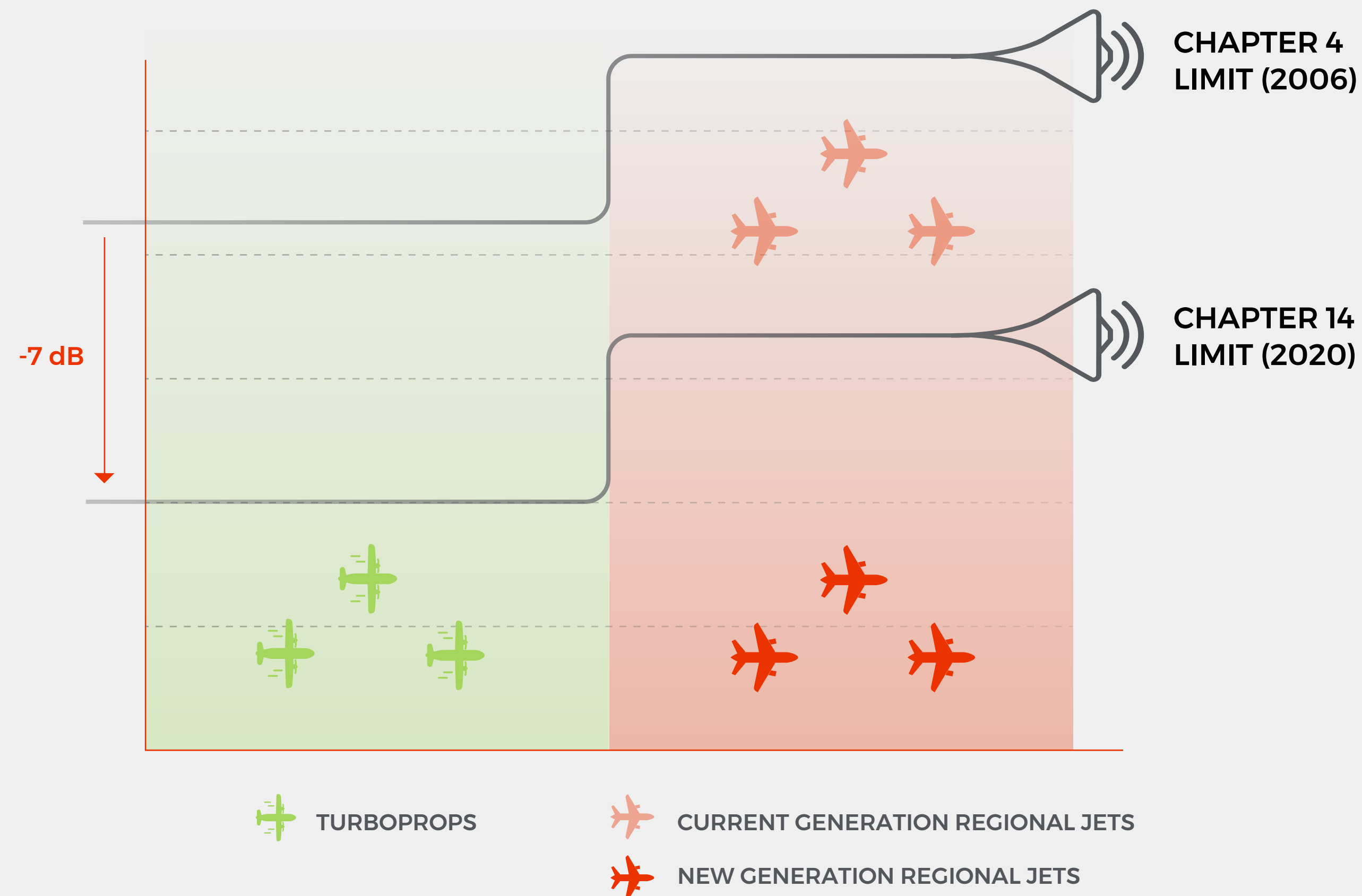
Contrails climate impact relatively to CO<sub>2</sub>

- > The climate impact of aviation is not just limited to CO<sub>2</sub> emissions.
- > Contrails could have the most impact on global warming - up to twice the effect of CO<sub>2</sub> alone. This is known as the 'Non-CO<sub>2</sub> effect'
- > Due to their lower cruising altitudes turboprops contribute less to the formation of contrails, reducing the overall impact of aviation's 'Non-CO<sub>2</sub> effect'.



# Turboprops operate within today's stringent noise regulations

Low noise signature certified to meet strict ICAO standards



- > In today's regulatory environment noise regulations are getting more and more stringent.
- > With their remarkably low noise signature, turboprops are the benchmark with a strong performance compared to the 2020 ICAO standards.
- > Turboprops' low noise footprint allows operations at airports located in city centres that impose strict sound levels, such as London City or Stockholm Bromma.

# Turboprops create more connections

## Regional aviation complements train travel

### Turboprop routes vs High Speed Train

- There has been much debate in recent years on the most appropriate forms of transport to minimise the environmental impact of travel.
- Most of the focus has been on the potential of high-speed trains (HST) replacing aircraft on routes below 500km.
- But with almost no overlap of turboprop routes and HST infrastructure the reality is: regional aviation doesn't compete with HST travel. In fact, it complements it.
- For example, development of HST networks is only financially and environmentally feasible between cities with passenger traffic flows above 1M annually.
- However, passenger flows served by regional aircraft are well below this total.

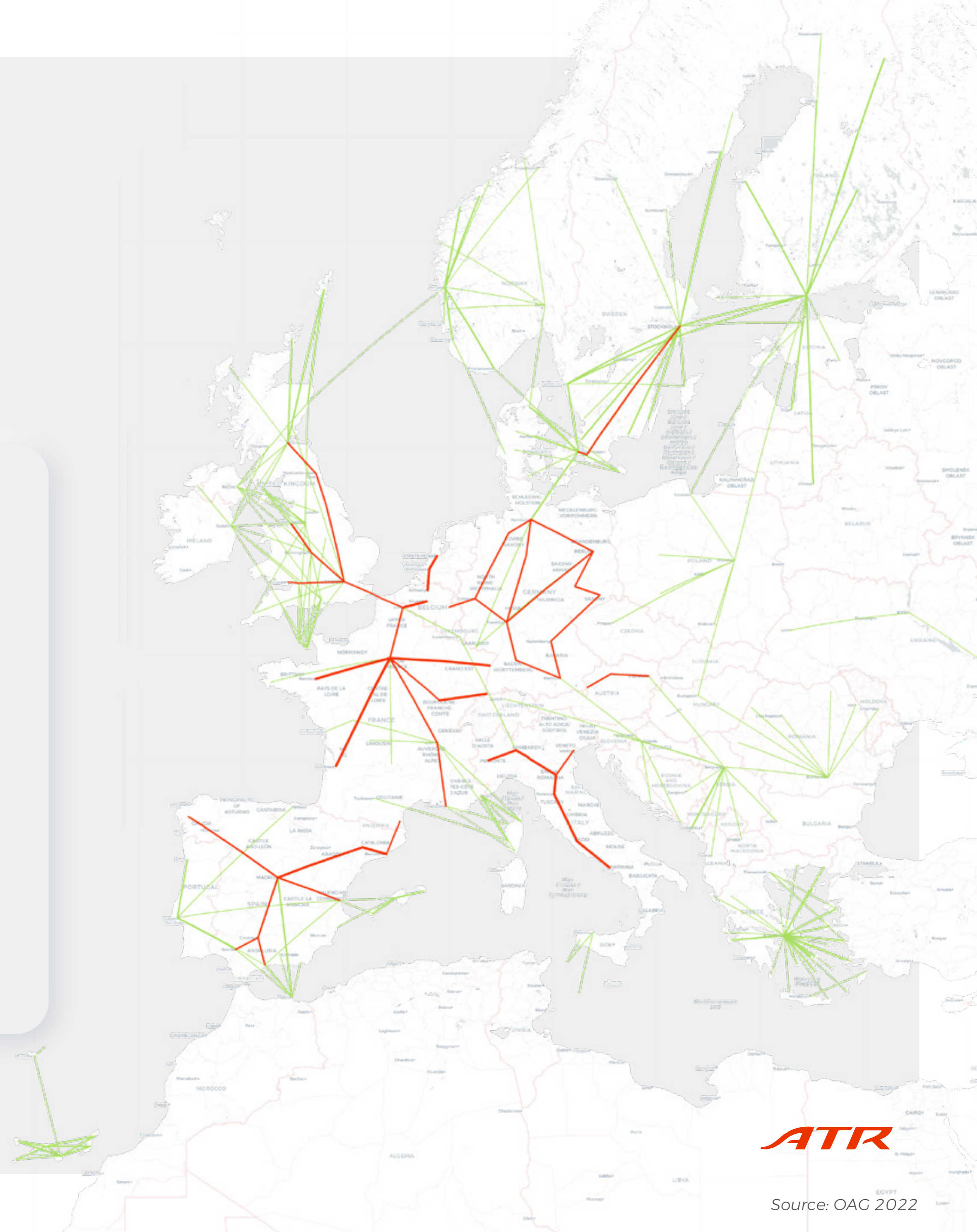
#### Case Study: Europe

HST trains in Europe serve larger traffic flows (1M+ pax / year) than any turboprop city pairs.

The busiest mainland turboprop route is Helsinki - Joensuu in Finland with <0.5M pax per year and no direct HST service.

More visibly, regional turboprop routes in Europe travel connects local communities directly where no HSTs operate.

— HST network — Turboprop routes (above 20k pax annually)



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Source: OAG 2022

# Significant benefits of flying point-to-point

Establishing direct routes reduces emissions and journey times, while improving profitability

**Case Study:** Opening a direct route between Aberdeen in Scotland with Berlin in Germany delivers...



TURBOPROP 50 REGIONAL JET or SINGLE AISLE SINGLE AISLE

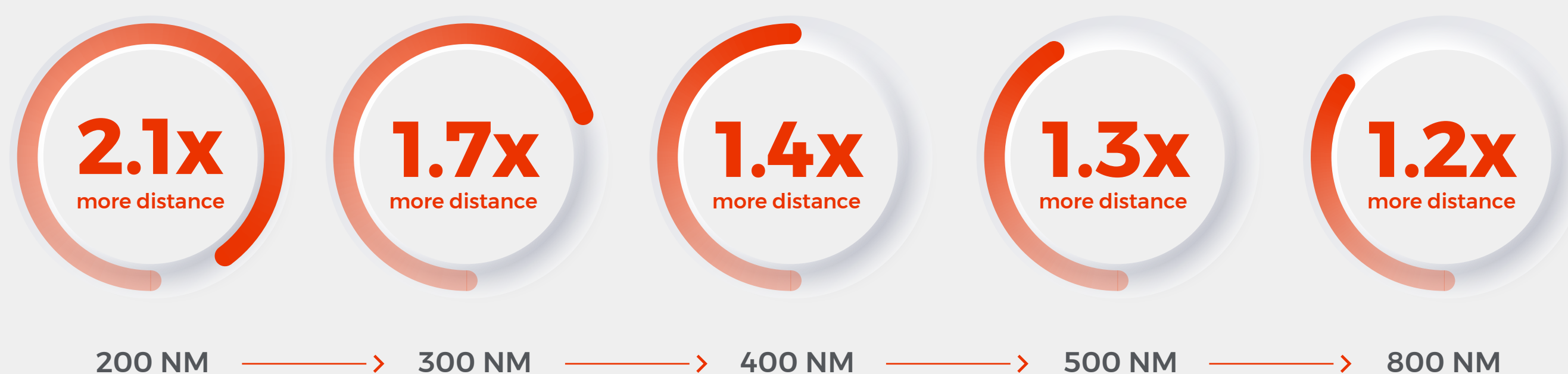


ATR

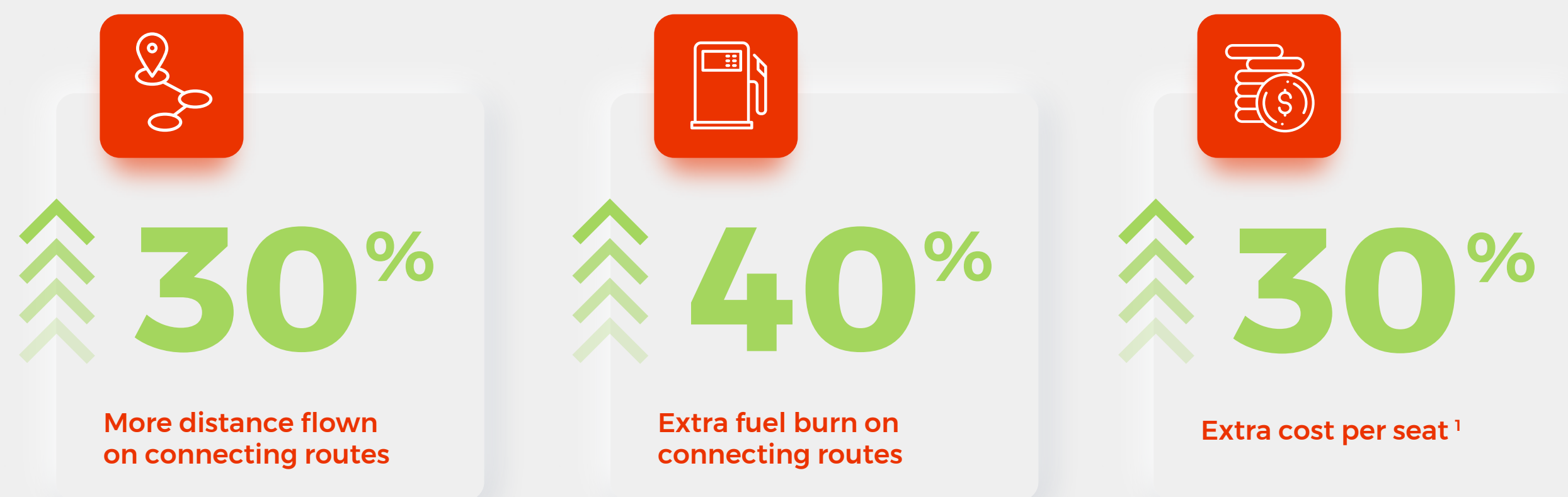
# Turboprops create direct flight opportunities

## Reducing environmental impact and boosting operating efficiencies

**Detour factor\*** for European connecting flights



- Flying direct rather than using 'third airport' connections, optimizes travel times and costs and most of all minimises emissions.
- However direct routes may have low passenger demand.
- Turboprops address this challenge by offering an aircraft size that meets demand in regional markets, offering a viable alternative to connecting through a hub.
- Turboprops give operators the opportunity to unlock the benefits of flying direct. In fact, 85% of turboprop traffic is point-to-point. It minimises distance travelled – the 'detour factor' – which minimises the environmental impact of flying. At the same time, it improves cost efficiencies and boosts profitability on regional routes.



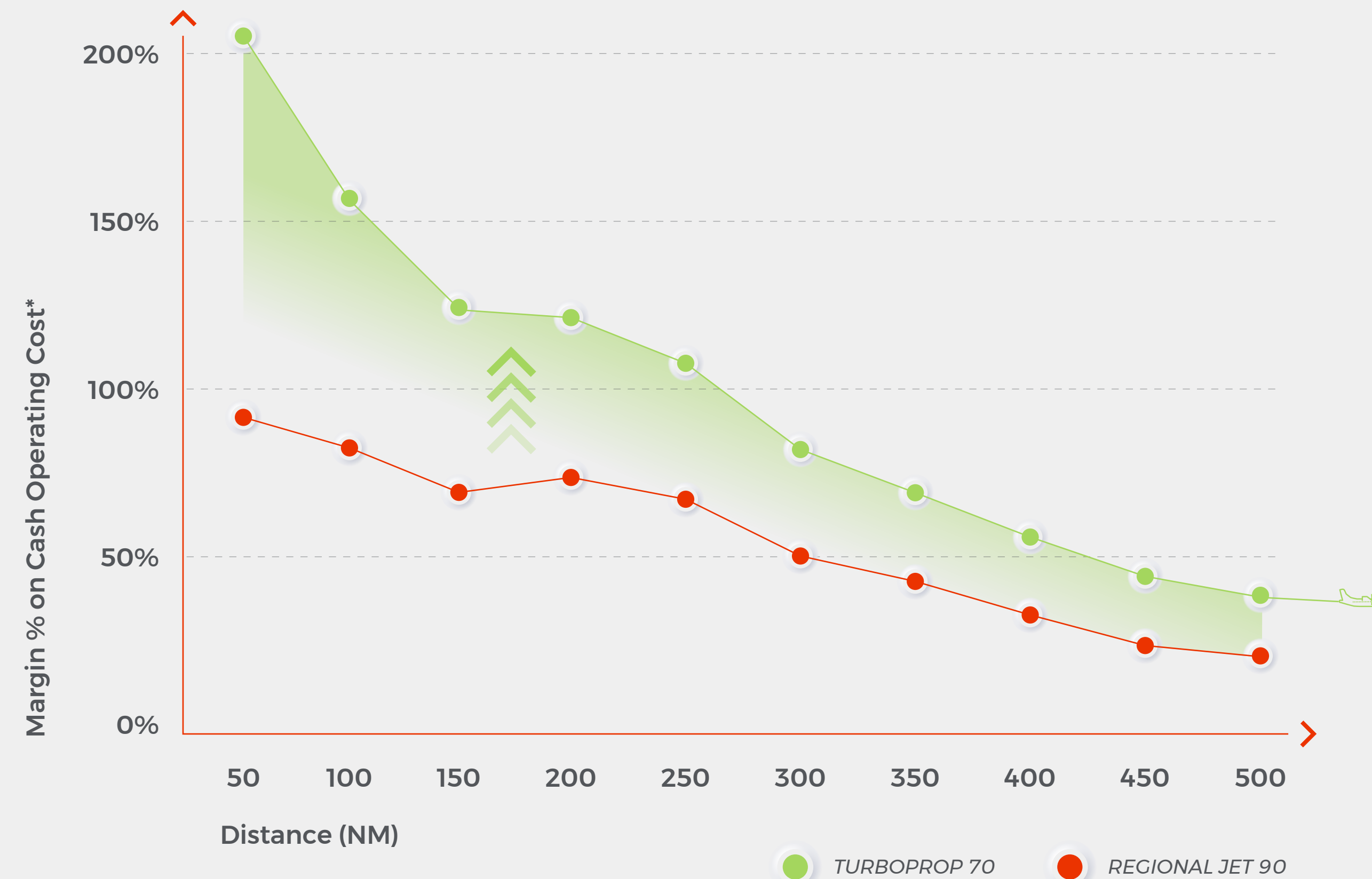
\* incremental distance on the same O&D between connecting vs. direct flight in 2019

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# The smart choice for the regional market

Turboprops offer strong economic benefits in regional aviation

## Profitability advantages of turboprops vs regional jets



  
**50pp**  
profitability on turboprop vs regional jet below 200NM

- > Turboprops are the most efficient aircraft choice for operators when it comes to delivering regional connections on short, thin routes.
- > Compared to a regional jet with comparable seating capacity, turboprops' engine technology and tailored design point for short-routes provides a sustainable competitive advantage.

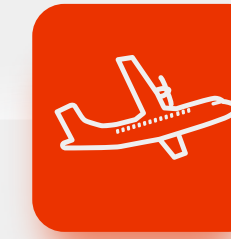
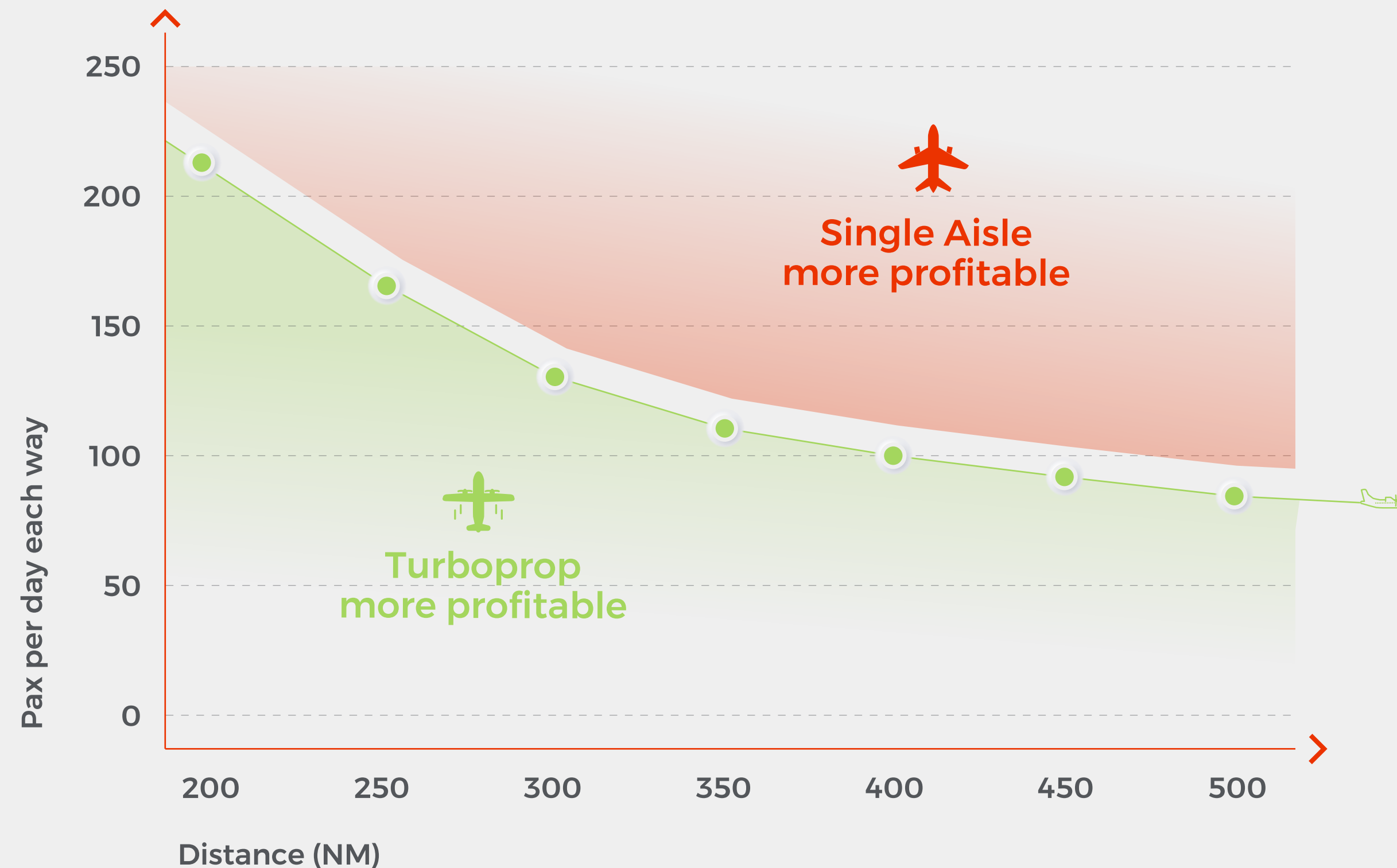
\* Cash Operating Costs = Direct Operating Costs - Ownership cost  
Analysis at constant revenue for modelling purposes

**ATR**

# The smart choice for the regional market

Turboprops offer strong economic benefits in regional aviation

## Turboprop vs single aisle profitability on Direct Operating Costs <sup>1</sup>



22%

of operators with  
TP30-90 also operate  
Single Aisle

- Below 200NM turboprops will always be the most efficient option regardless of demand.
- Above 200NM, turboprops offer greater flexibility to adjust aircraft capacity to traffic demand and stage length. This means operating profits can be maximized.
- In fact, higher frequencies drive higher yields. Although not captured in this generic analysis, schedule choice is a decisive factor for higher yielding passengers such as the corporate segment.
- Not only that, but opening new routes with a small aircraft such as a turboprop reduces commercial risk for the airline as it lowers the cost per trip and the revenue exposure in an untested market.
- As demand grows, the route grows in frequency and may ultimately upgrade to larger modules.

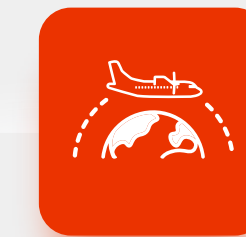
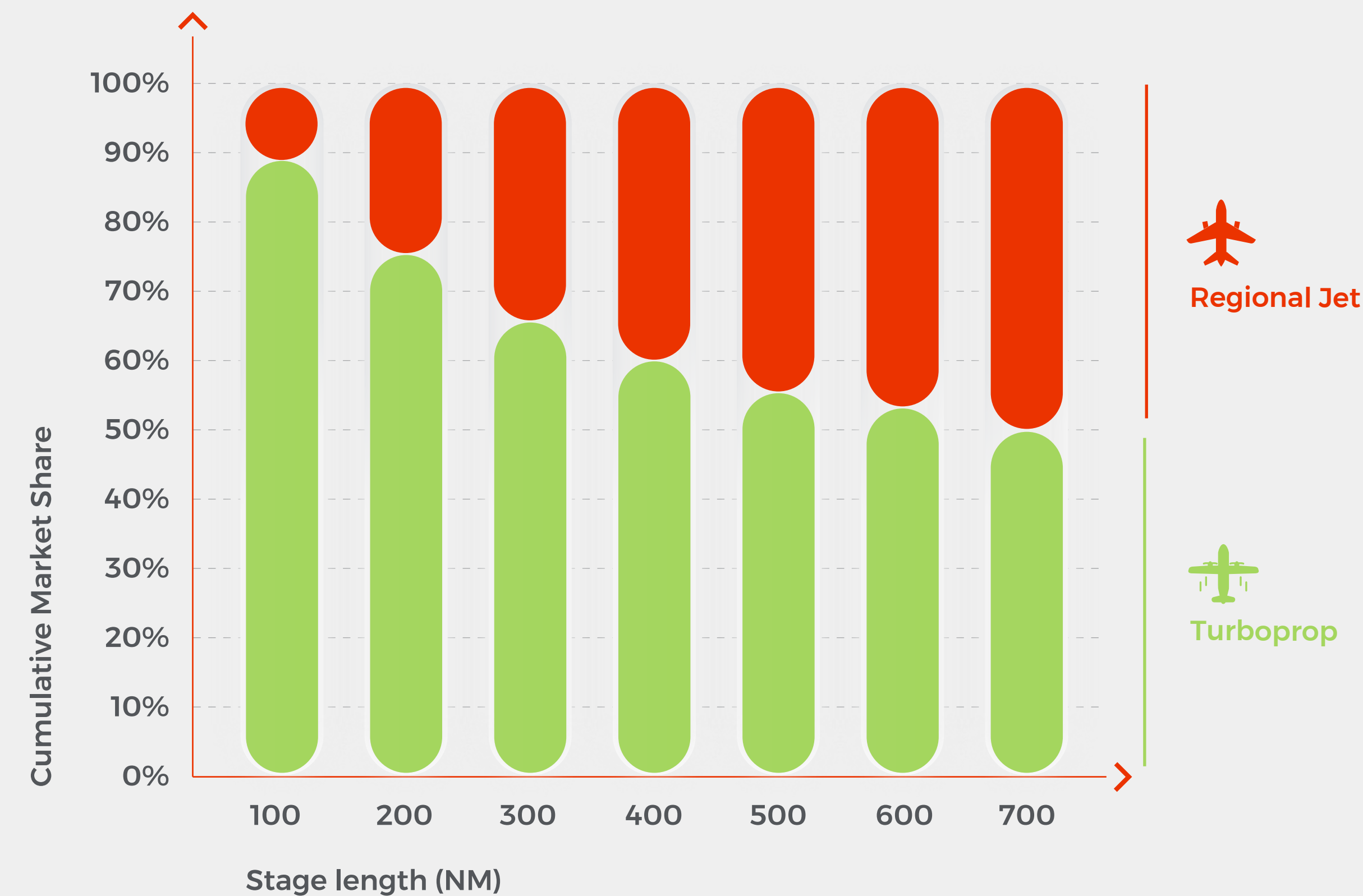
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<sup>1</sup> Analysis at constant revenue for all types for modelling purposes, spill effects disregarded

# Room to grow on the regional market

Regional jets operate at low stage lengths where a turboprop is more efficient

## Global market share of turboprops vs regional jets



64%

turboprops market share vs. regional jets below 300NM

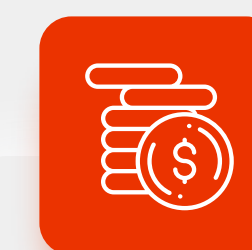
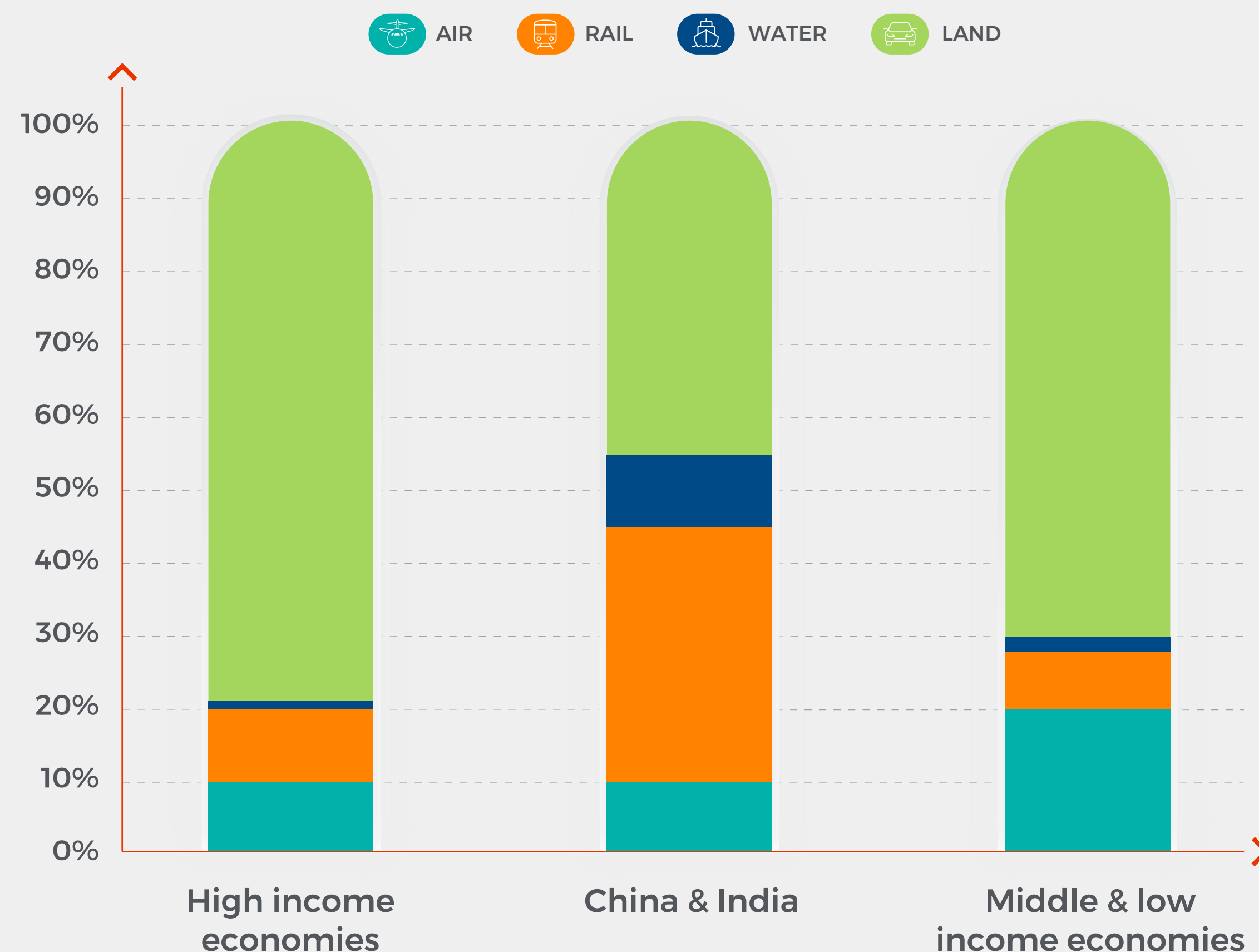
64%

- > Turboprops are better equipped than regional jets to operate at low stage lengths – both from an economic as well as emissions perspective.
- > Turboprops have a majority of the global market share compared to regional jets on flights up to 500NM, giving them the potential to act effectively as a replacement
- > The US represents a significant growth market for turboprops below 300NM. Market share stands currently at 24% indicating a strong potential to boost operator profitability and drive emissions reductions by flying turboprops at low stage lengths, where they are particularly efficient.

# Air transport delivers essential connectivity

Infrastructure for regional aviation is an affordable option

## Percentage of domestic trips by mode, 2019



10%  
to 20%

Air transport's role in  
lower vs higher income  
economies

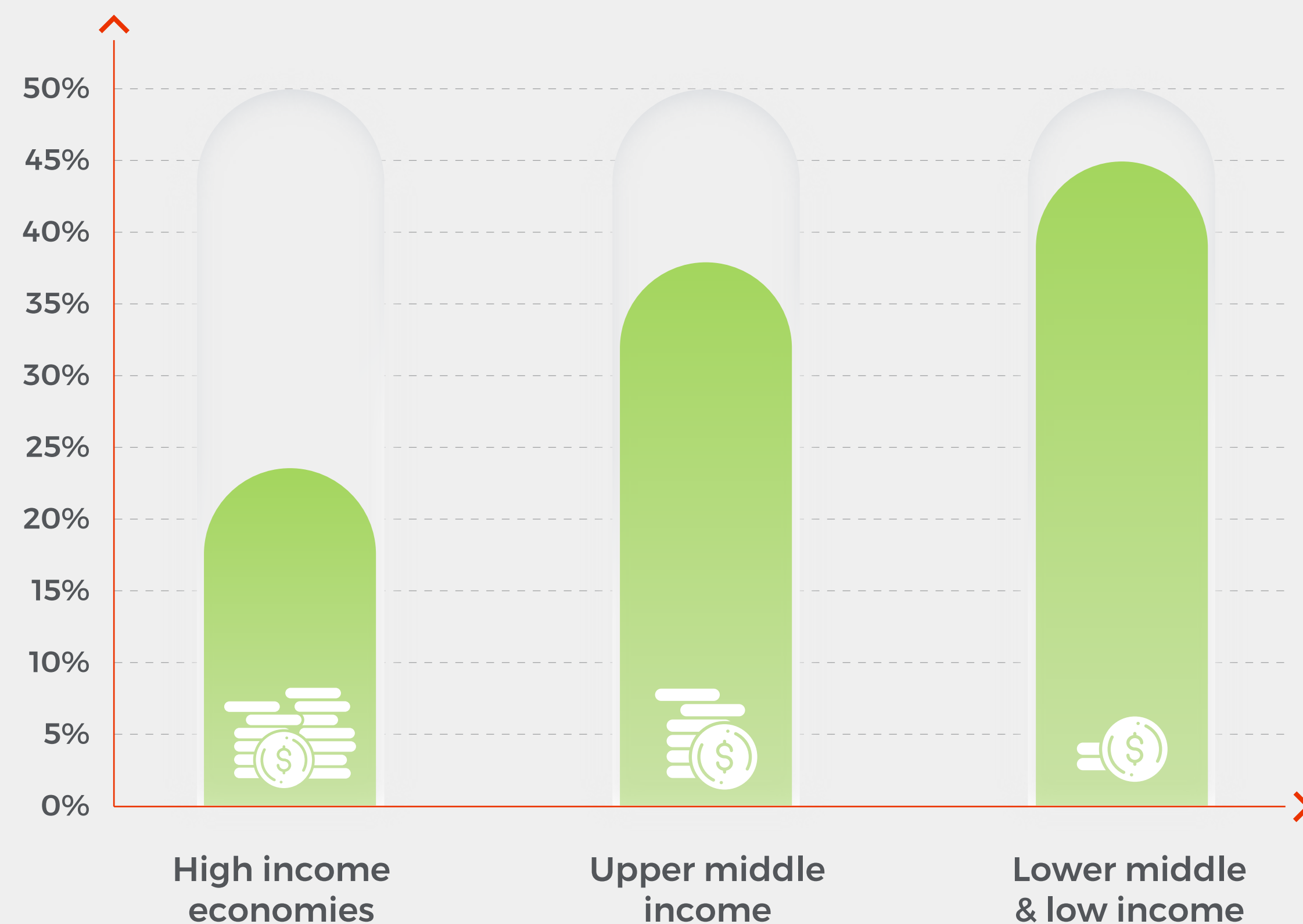
- > Air travel is often thought of as a luxury good. However, when it comes to regional travel, air transport is less of a luxury and, in many countries, more an essential service.
- > Although countries such as China and India already have extensive ground transportation in high density populated areas, for others this may not be either affordable or viable given population density.
- > In middle and low-income economies, the role of air transport in domestic travel is twice the size compared to economies with more developed infrastructure.
- > Building two 1.5km runways is cheaper than 300km of road or railway.

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# Airports provide essential connectivity to communities

Middle and Low Income economies rely more on scheduled air transport

Percentage of airports with scheduled services <sup>1</sup>



95%

of turboprops  
flights are domestic

- > The difference that air travel makes to society becomes even more important to countries without high incomes.
- > The significantly higher proportion of scheduled services at airports in middle and low income economies testifies to the importance of regional aviation to provide essential connectivity.
- > Conversely, in high income economies there is a large network of under-served or unserved airports. This airport infrastructure, which is already available for use without major capital expenditure, provides a huge potential to restore domestic connectivity.



**GOTHENBURG**

SWEDEN



**316**

AIRPORTS OVER **795** SERVED  
BY **ATR** IN EUROPE & CIS

# REGIONAL FORECAST

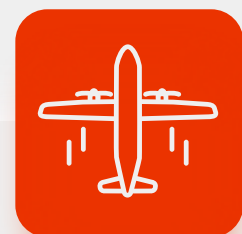
# Focus on

## Africa & Middle East

Deliveries

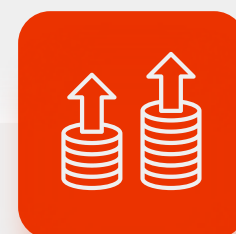
40  Turboprop 50

190  Turboprop 70



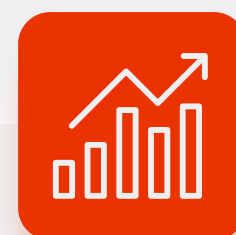
230

TOTAL  
DELIVERIES



+2.5%

GDP GROWTH



+3.6%

TRAFFIC GROWTH



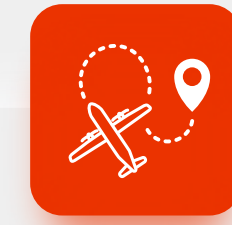
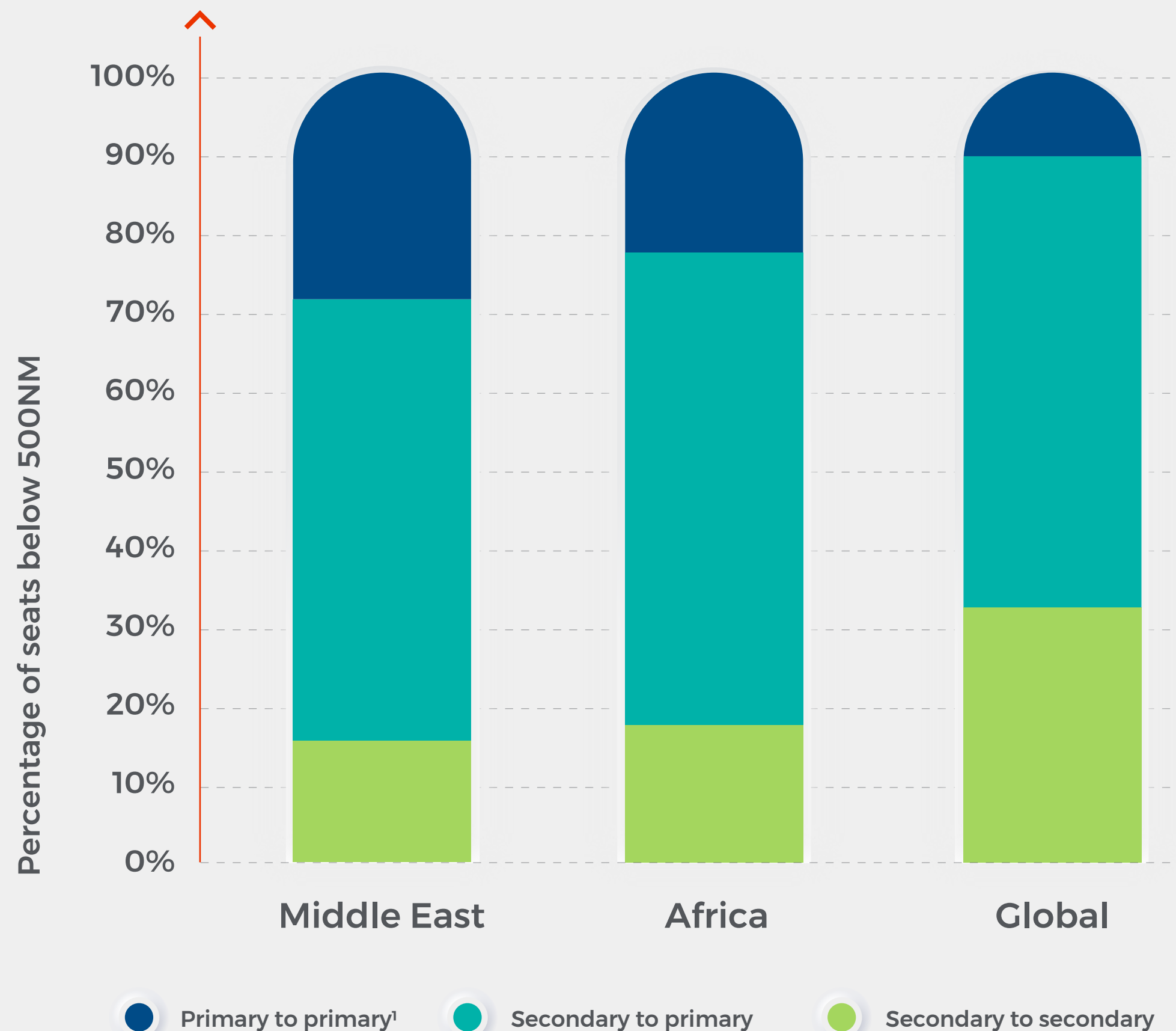
KILIMANJARO

TANZANIA



# Africa and Middle East

Additional connectivity will bring value to communities



**49%**

AME routes are secondary-to-secondary

**17%**

Seats dedicated to the network on these routes



**67%**

Routes below 500NM served daily or less

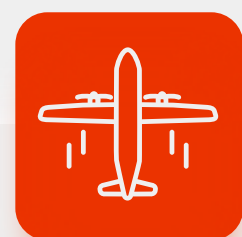
- Africa and the Middle East are regions of stark contrasts and difficult geography. Some parts have flourishing regional aviation networks, many operated by turboprops, which play a key role for local businesses, goods transport as well as boosting tourism.
- But the region remains widely under connected: 67% of the routes under 500NM are operated once daily or less, representing only 11% of seats.
- Most traffic is concentrated on a few well-served trunk routes, while connectivity from secondary gateways is declining. Flying turboprops can provide an upside to domestic and subregional connectivity reliably and affordably. Air services are relatively easy to establish and require less costly infrastructure that can be the backbone of domestic transportation.
- In Africa wide adoption and effective implementation of SAATM (the African single skies agreement) will also be a crucial stepping-stone to make air travel part of the reality for everyone.

# Focus on North America

Deliveries

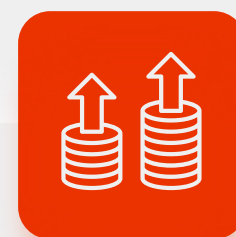
90  Turboprop 50

150  Turboprop 70



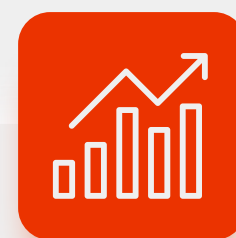
240

TOTAL  
DELIVERIES



+1.9%

GDP GROWTH



+4.9%

TRAFFIC GROWTH



JACKSONVILLE

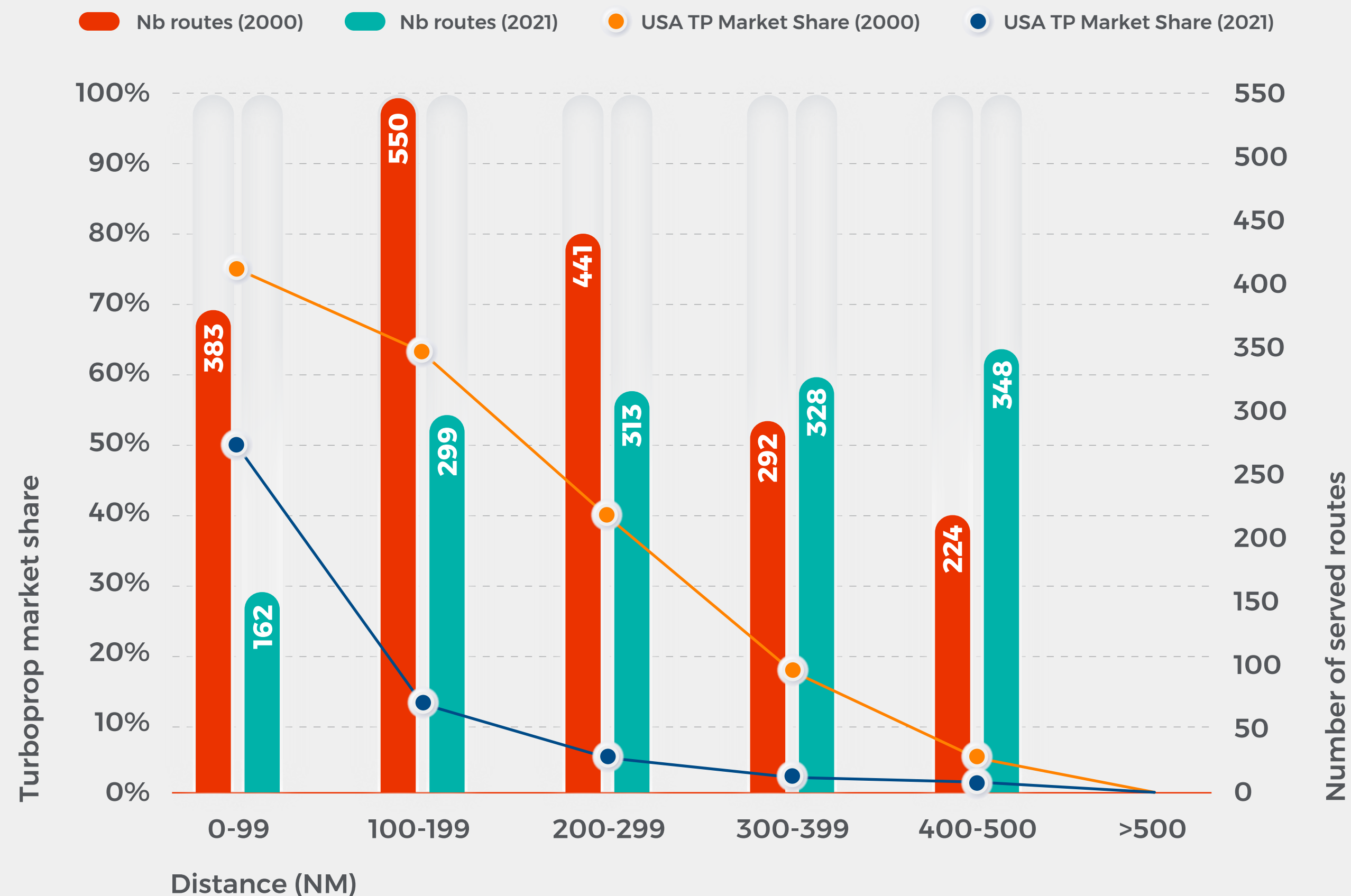
U.S.A



# North America

The challenge of restoring regional connectivity

## Opportunity for growth in turboprop market-share



# 32%

fewer domestic city pairs  
than in 2000 (<500NM)

- Connectivity in North America has decreased over the past 20 years as turboprop fleets declined and small regional jets retired.
- Meanwhile, domestic regional traffic<sup>1</sup> declined by more than -30% and traffic connecting 20 largest cities increased by more than 5%.
- Small regional jets are usually the aircraft of choice for Essential Air Services. Currently there are around 900 small regional jets operating in the US and the youngest are already 15 years old. This creates a significant replacement opportunity for turboprops to restore connectivity in a sustainable way.
- Another key challenge affecting regional aviation in North America is an acute pilot shortage, which requires the engagement of several stakeholders across the aviation value chain to be resolved.

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<sup>1</sup> Domestic traffic excluding 22 top Airports

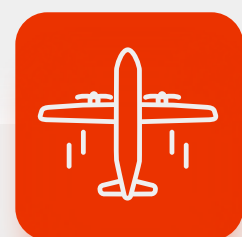
# Focus on

## Latin America & Caribbean

Deliveries

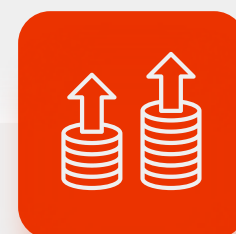
80  Turboprop 50

245  Turboprop 70



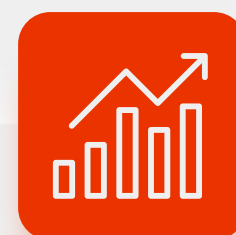
325

TOTAL  
DELIVERIES



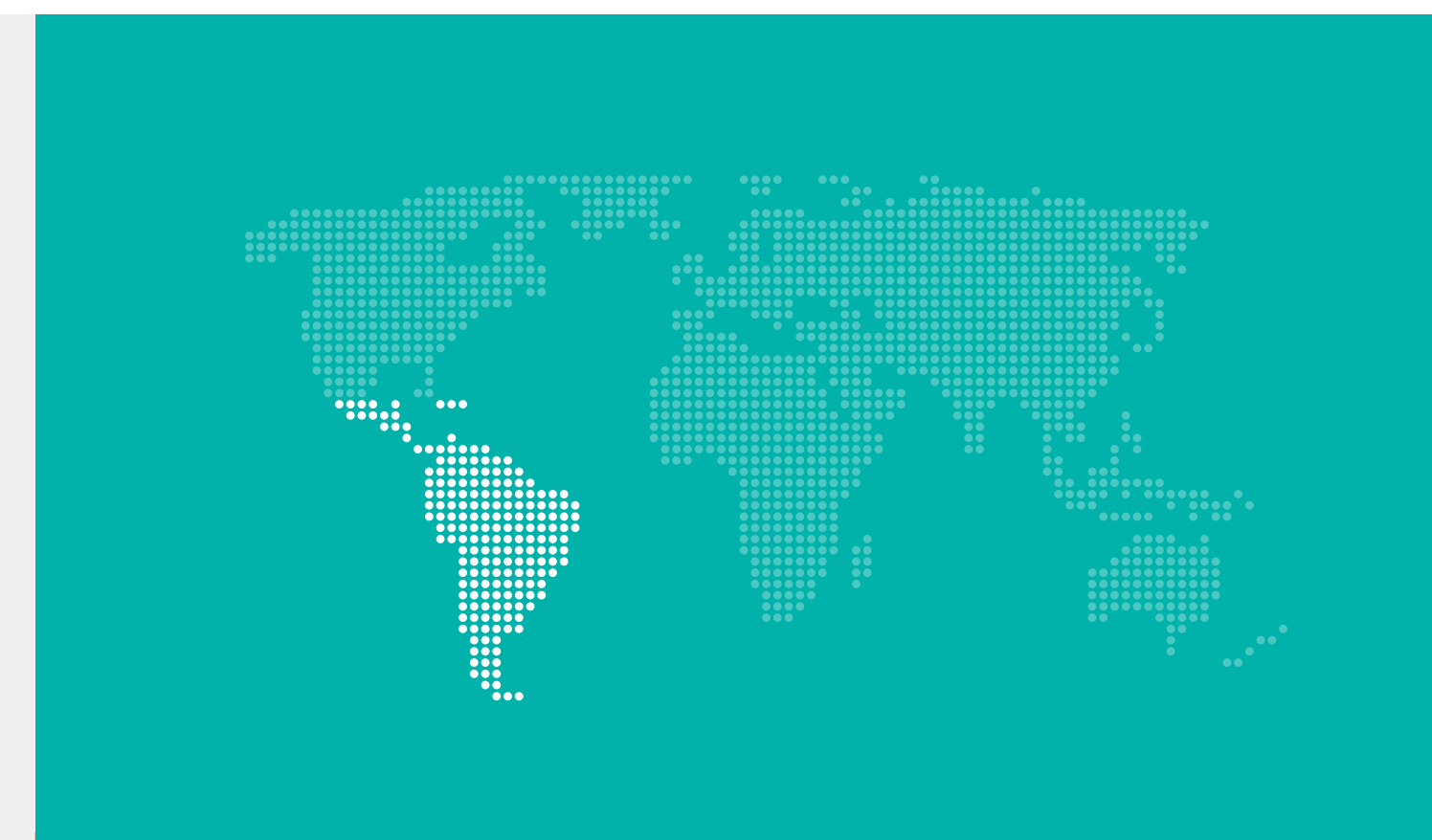
+1.8%

GDP GROWTH



+4.0%

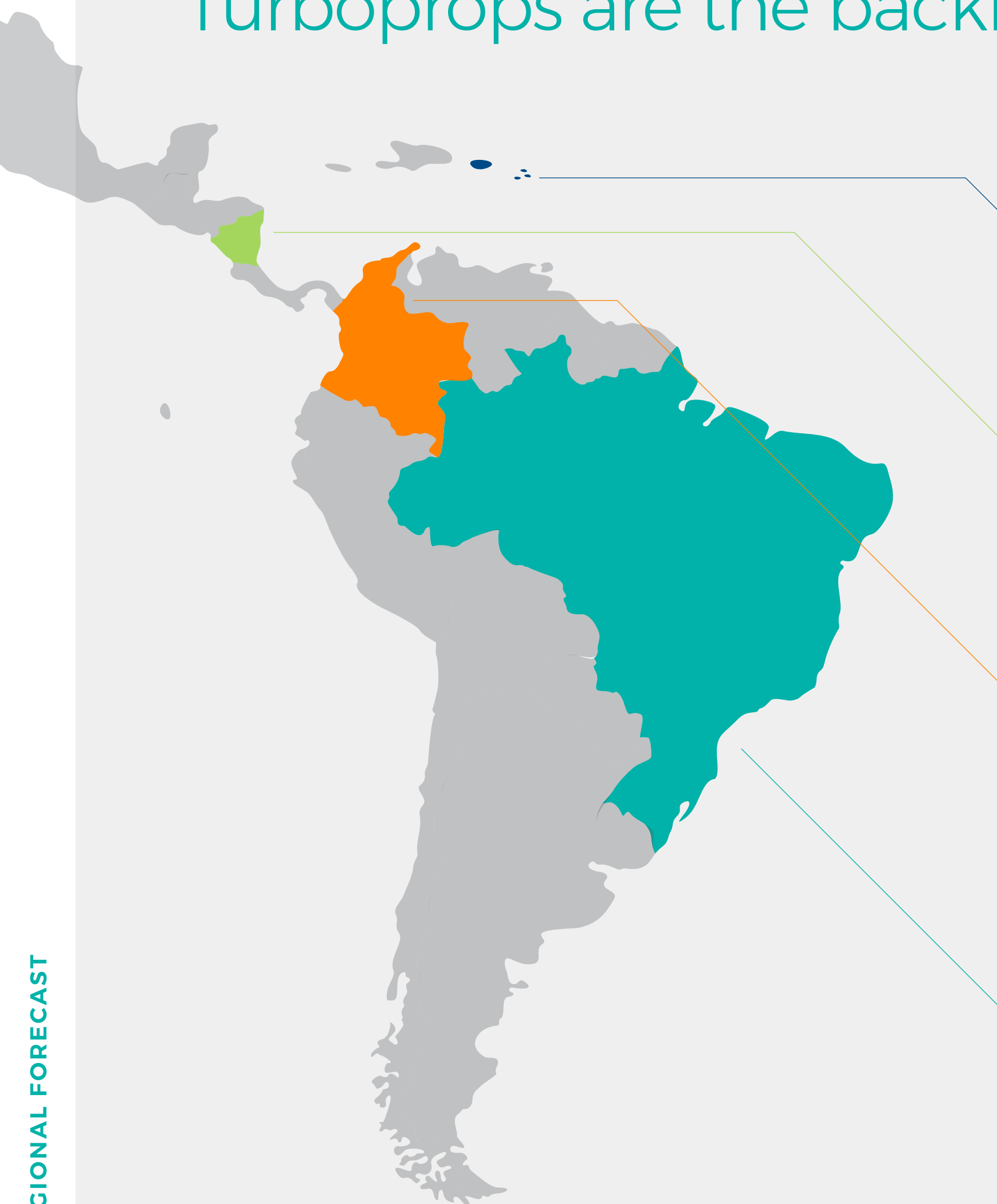
TRAFFIC GROWTH



MANAUS  
BRAZIL

# Latin America & Caribbean

Turboprops are the backbone for domestic travel in the region



St Maarten - St Barts is the  
**BUSIEST**  
turboprop route in the world

**100%** Domestic routes  
in Nicaragua operated  
by turboprops

**34%** of airports in Colombia  
are served only by  
turboprops

**45%** Brazil domestic routes  
below 500NM operated  
by turboprops.

**38%** Brazil transversal domestic  
flights<sup>1</sup> below 500NM  
operated by turboprops

- Latin America is a region of contrasting geography - from islands to vast swathes of rainforest and dynamic mega-cities. Sparsely populated areas make air travel an efficient means of transport for domestic journeys.
- In the countries where turboprops fly, they become a key pillar of domestic travel. They substitute long journeys by bus or boat and provide new levels of connectivity to businesses and remote communities.
- Turboprops also play an important role in new route creation. This not only links new places on the map, but it also unlocks social and economic development in local communities and beyond.

**ATR**

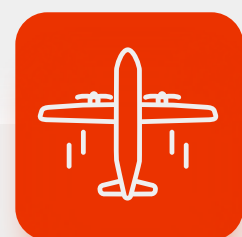
<sup>1</sup> Transversal flights: routes excluding the top 5 cities in Brazil

## Focus on Asia Pacific (excl. China)

Deliveries

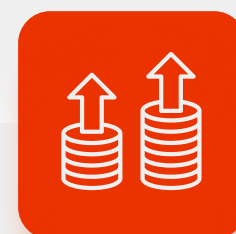
225  Turboprop 50

750  Turboprop 70



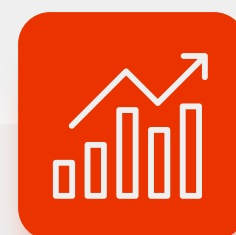
975

TOTAL  
DELIVERIES



+2.9%

GDP GROWTH



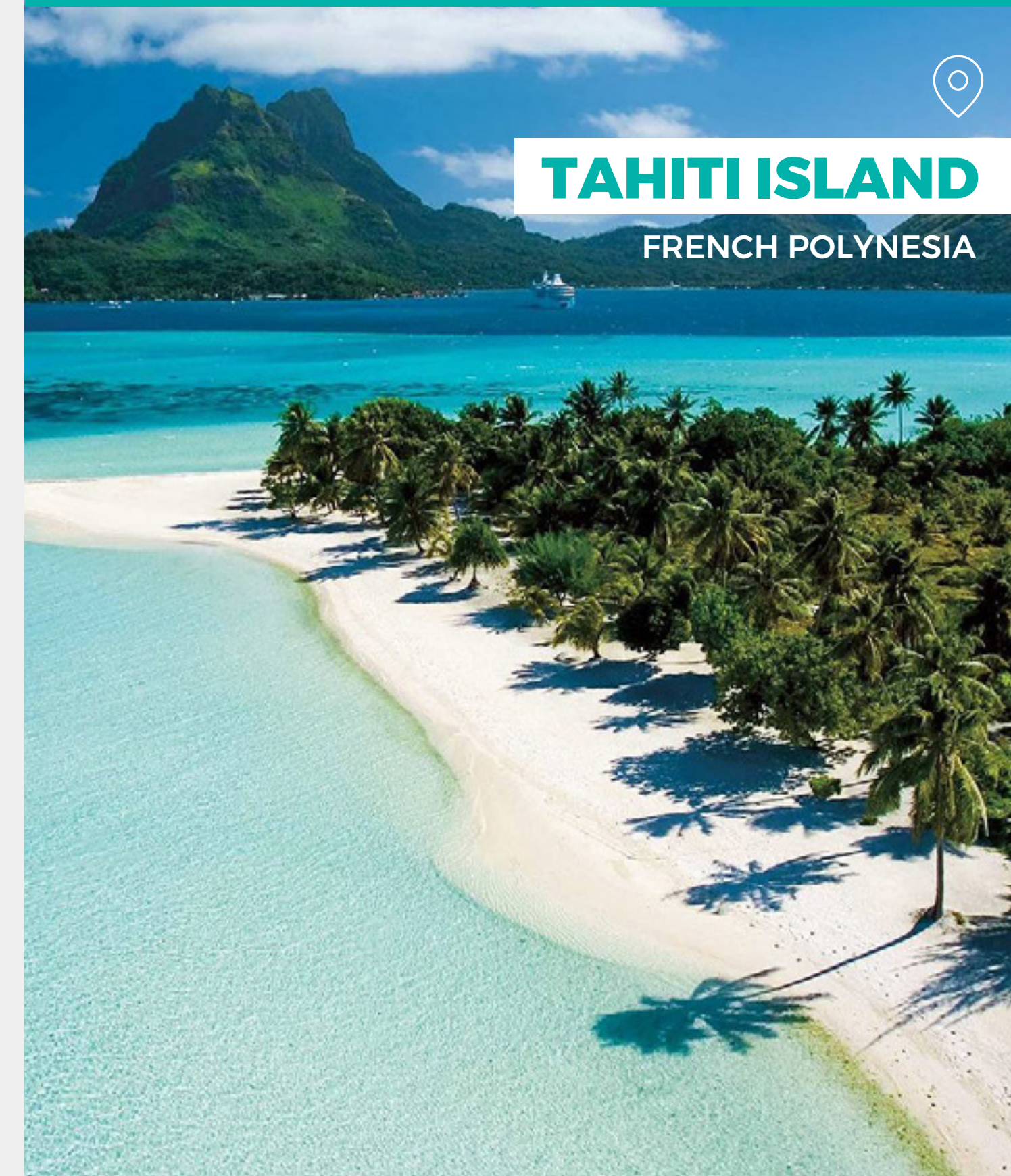
+4.7%

TRAFFIC GROWTH



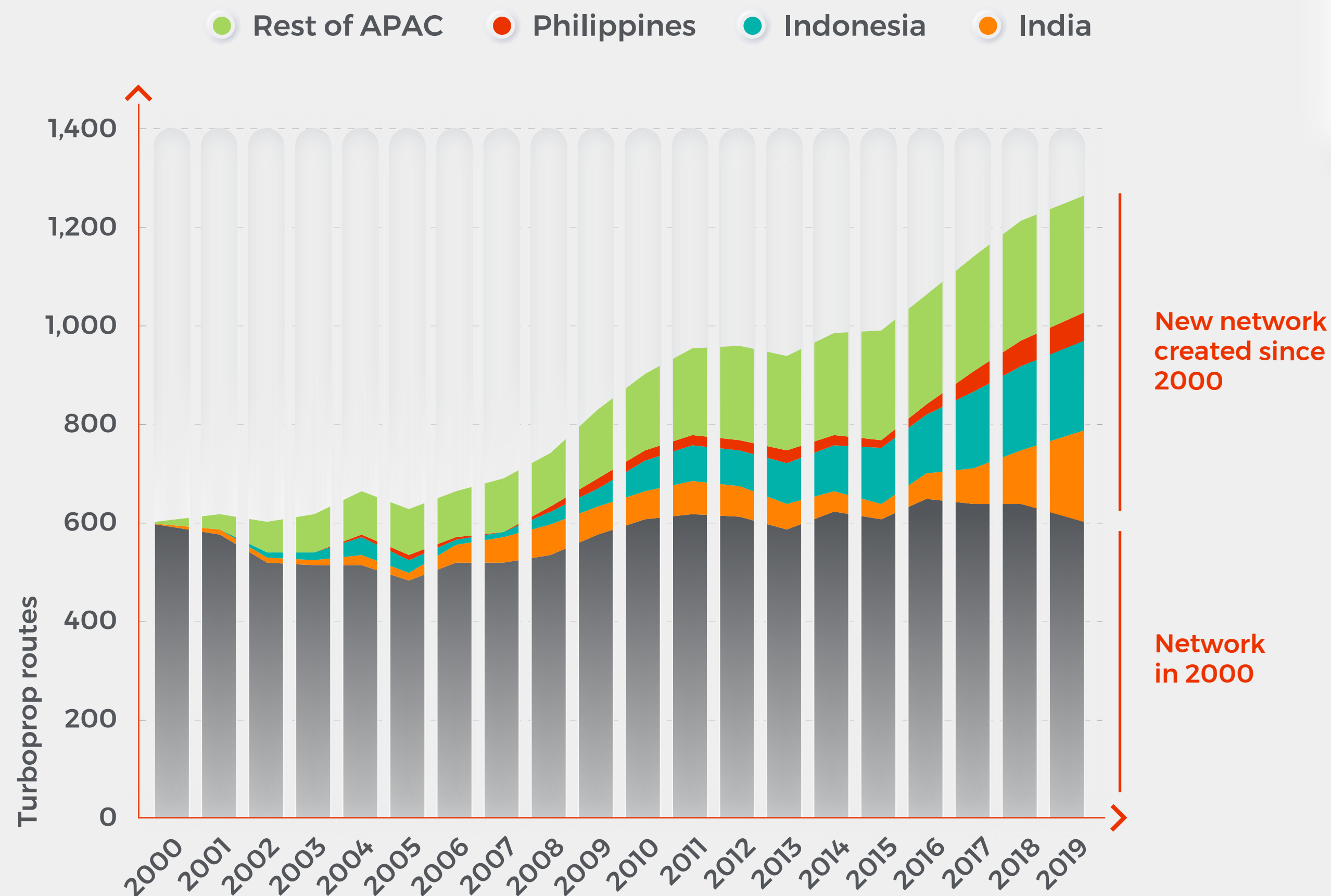
TAHITI ISLAND

FRENCH POLYNESIA



# Asia Pacific (excl. China)

Turboprops create new connections to bring communities closer



## 56%

Growth in turboprop fleet growth in 10 years



## 6.3x

Number of new routes operated by turboprops since 2000 in Indonesia



## 2x

Growth in turboprop routes since 2000

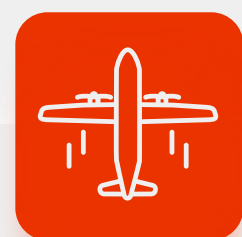
- Turboprops have expanded rapidly in South Asia and South-East Asia in the past 10 years. They have been the driver behind the increased affordability of air travel and the creation of a new network equal to the size of the pre-existing one 20 years ago.
- Many of the passengers filling aircraft today previously travelled by boat, train or road, requiring long and inconvenient journeys. As economies develop and middle-classes increase in size, demand for regional air travel will continue to grow as an alternative to time-consuming mobility options.
- Asia Pacific will be the region where the highest turboprop demand is expected in the coming 20 years.

# Focus on China

Deliveries

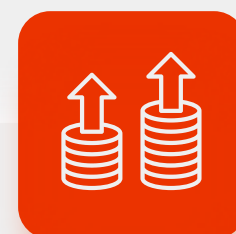
105  Turboprop 50

175  Turboprop 70



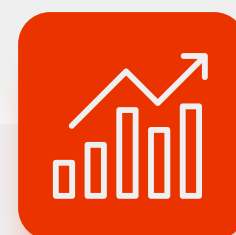
280

TOTAL  
DELIVERIES



+3.9%

GDP GROWTH



+6.9%

TRAFFIC GROWTH



YUNNAN

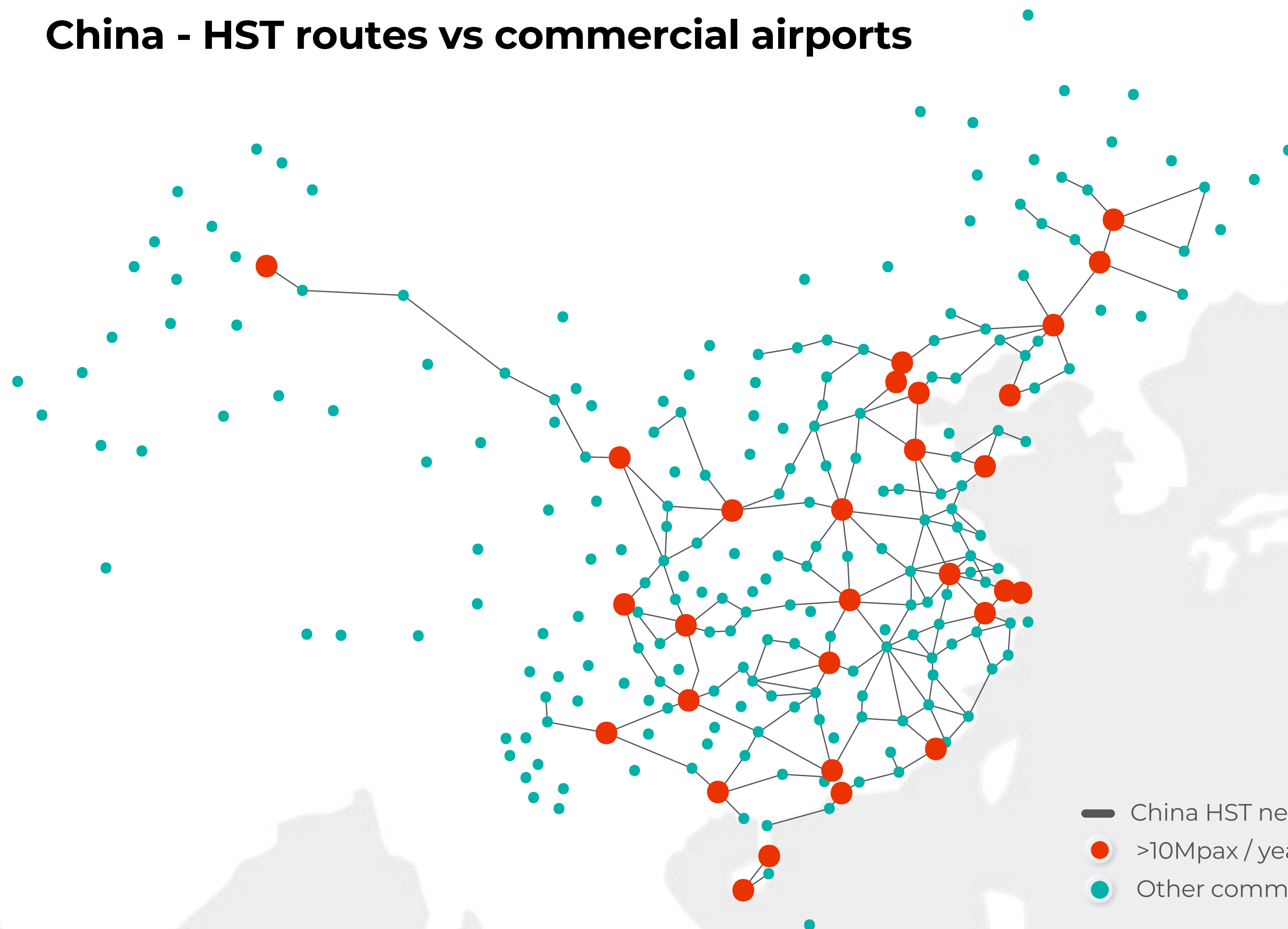
CHINA



# China

## Structuring the airport network to enhance regional connectivity

### China - HST routes vs commercial airports



- China is a vast country with high density routes in large cities better served by air using larger modules or high-speed trains. However, HST don't reach everywhere. Developing regional connections would bring a boost to connectivity and decrease the reliance on public subsidies for air services. Those dynamics mainly stem from the limited availability of 30 to 50 seat aircraft.
- Chinese authorities in the 14th five-year development plan (2021-2025) have envisaged as an axis of their aviation policy the enhancement of regional connectivity by integrating general aviation into regional networks under the umbrella of essential air services. In the next 10 years over 150 airports will be built with turboprops playing a key role in creating a new network of routes from these new gateways.
- As Chinese aviation continues on a high growth path it is also important to consider how it develops with eco-responsible aircraft types, such as turboprops.

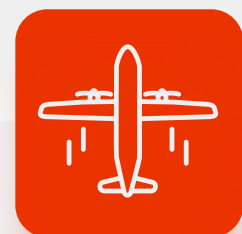
— China HST network (April 2022)  
● >10Mpax / year commercial airports (CAAC 2021 data)  
● Other commercial airports (exclusive of general aviation airports)

## Focus on Europe & CIS

Deliveries

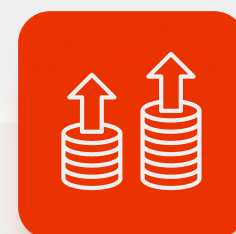
80  Turboprop 50

320  Turboprop 70



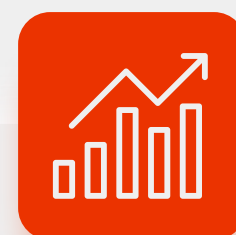
400

TOTAL  
DELIVERIES



+1.3%

GDP GROWTH



+4.0%

TRAFFIC GROWTH



**SANTORINI**

GREECE

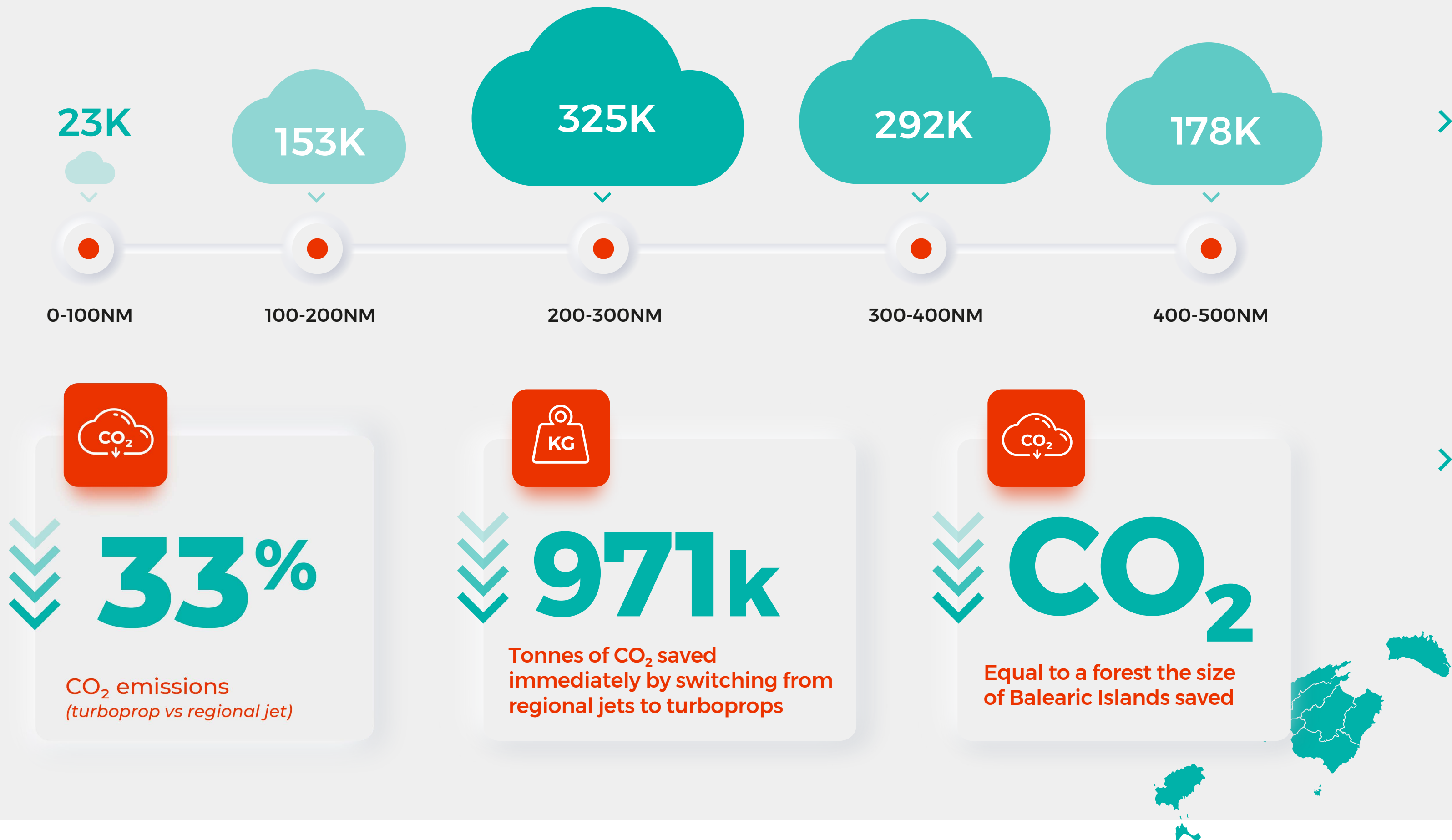


# Europe & CIS

Environment is key driver for Europe's aviation industry

## EU domestic CO<sub>2</sub> reduction (tonnes) by journey length

(if regional jets were replaced by turboprops)



- Although the aviation network in Europe is dense and well-developed, most of the publicly subsidised routes rely on regional aircraft, specifically on turboprops, to connect those communities to the outside world.
- Environment is also a key challenge and main driver for change across the entire commercial aviation ecosystem in Europe. A reduced carbon footprint is already a feasible reality. If turboprops were flown instead of regional jets on routes up to 500NM (926km), the annual reduction in carbon emissions would be equivalent to the carbon sequestered by a forest the size of the Balearic Islands.
- It is important to note that Eastern Europe and Central Asia offer significant growth potential to develop new point-to-point routes from secondary to primary or secondary to secondary gateways.



**JACKSONVILLE**

U.S.A



**65**

AIRPORTS OVER **740** SERVED  
BY **ATR** IN NORTH AMERICA

# FREIGHTER

# Freighters deliver essential services and connectivity

Air cargo helps keep communities and businesses going

**Air cargo has emerged as an important factor for the aviation industry during the Covid pandemic and as the world starts to return to the “new normal”.**

During this challenging time, freighters played an essential role in both supporting regional communities and responding to the huge acceleration in the digital economy and e-commerce.

The growth in freighters' social value during the pandemic can be seen in their ability to keep flying goods and services to remote locations - distributing sanitary equipment and delivering vaccines in a timely and reliable way.

Freighters were also called on to ensure production lines were able to keep operating around the world when supply chains faltered.



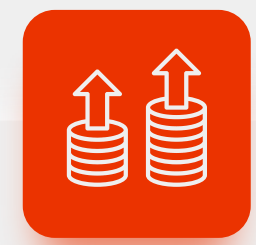
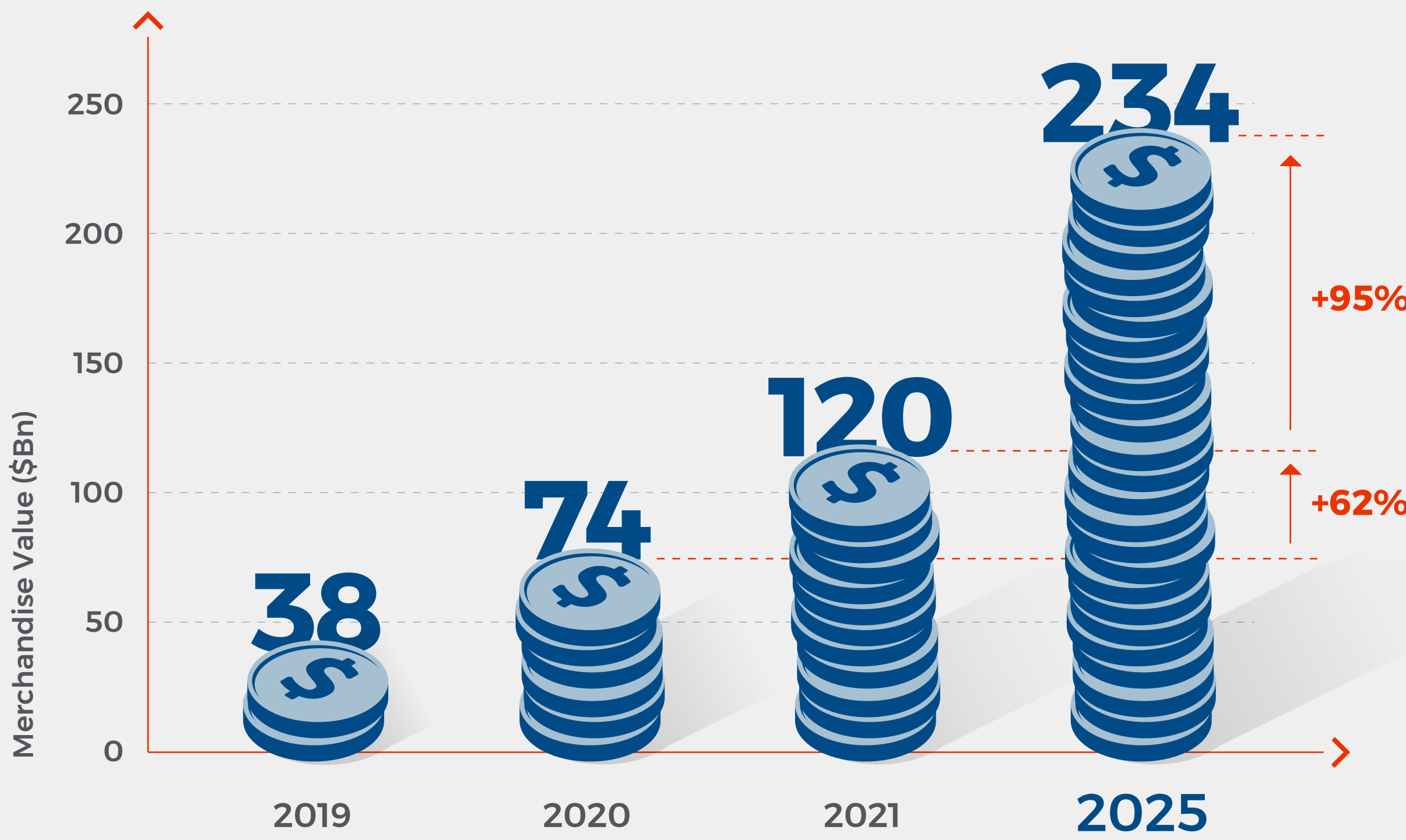
As a response to these global changes logistics strategies have shifted. Businesses are focusing on supply chain resilience, building redundancy (i.e. blending sea/air/road transport options) into their supply-chains and vertically integrating to keep control and retain value.

We expect the demand for regional freighters to continue globally, as China, South-East Asia and LATAM see increased demand for fast deliveries expanding beyond key primary gateways in the regions.

# E-commerce driving freighter fleet growth

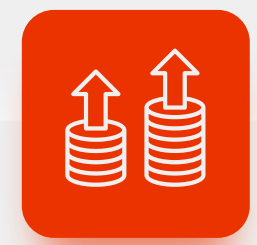
Air cargo demand responds to changes in consumer behaviour

South-East Asia E-commerce Global Merchandise Value (\$Bn)



5x

digital economy growth in Indonesia by 2030



11x

digital economy growth in Philippines by 2030

- > For regional freighters, the evolution of the air cargo demand is highly dependent on the Express segment, which represents the majority of the global fleet.
- > As such the most significant trend driving growth in the regional freighter fleet market – both now and in the next 10 years – is e-commerce.
- > Online retail, already growing fast in mature markets, saw significant acceleration due to pandemic lockdowns and greater disposable income to spend on goods instead of services.
- > Growth rates of online retail in developing markets have also been impressive. India and Brazil are the top two growing markets globally (>26% growth1). South-East Asia (SEA) is also seeing significant growth.



Source: e-Conomy 2021. Google, Temasek, Bain & Company

# Regional freighters key to enabling speed

Faster deliveries defining value driver for e-commerce

What US customers value in omnichannel retail, % of survey respondents



46%

of consumers abandon shopping carts when shipping times too long or not provided

Source: UPS

- > With consumers in developed markets, such as the US, ranking delivery speed as one of their main value drivers, e-commerce necessitates stronger demand for speed.
- > Expectations have evolved from a 5-day delivery standard in 2010 to same-day delivery. This standard is extending beyond major cities to become the norm – and in many cases this is something that can only be enabled by air cargo.
- > Additional fulfillment centres are being built to handle increasing cargo volumes and reduce the time taken to reach customers. Many of those middle mile thin routes can be flown by regional freighters ensuring speedy deliveries.

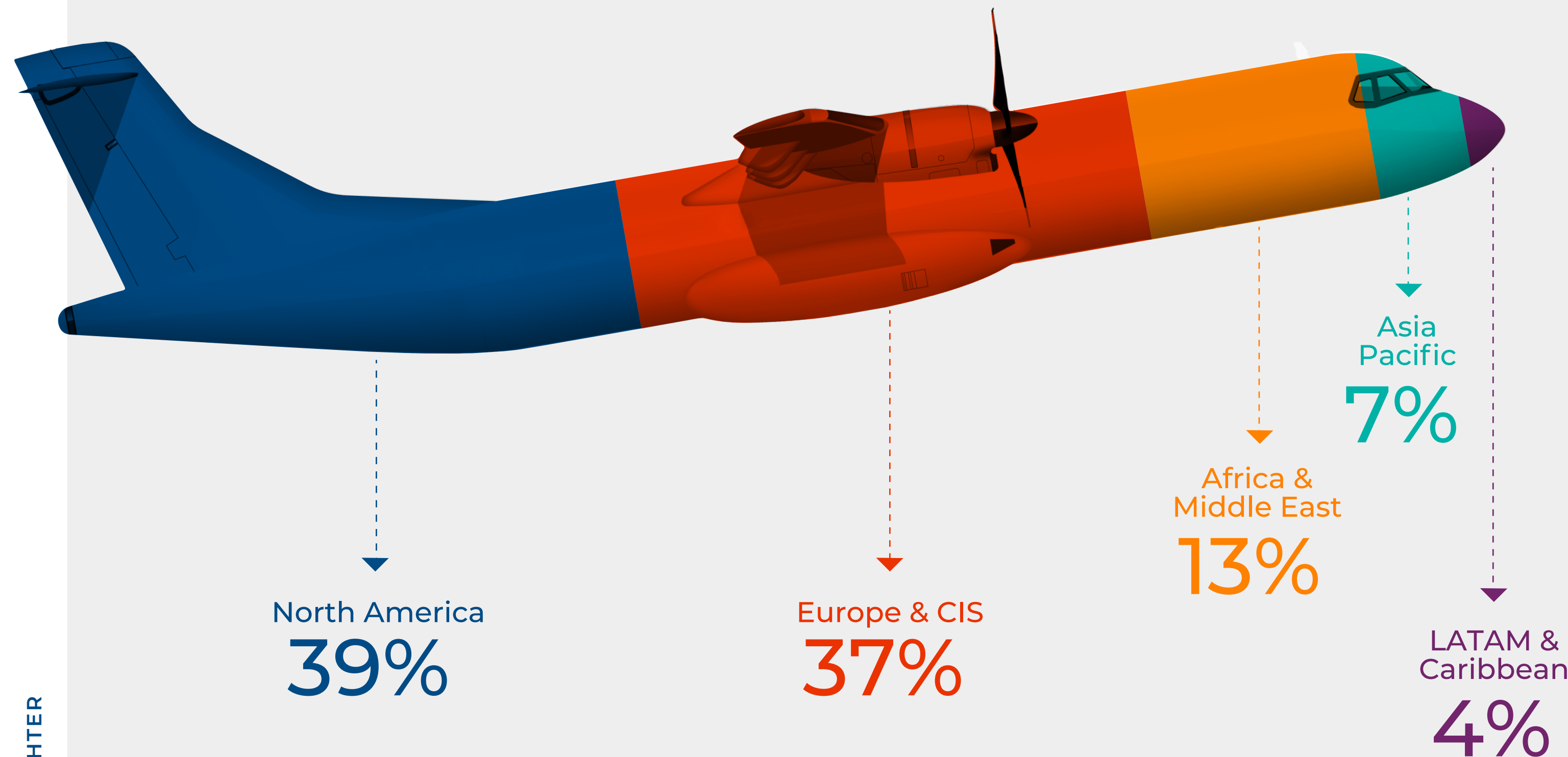


Source: McKinsey Digital Consumer Survey

# Growth opportunities for freighter fleet

Significant untapped opportunities in emerging markets

Current global turboprop freighter fleet 3-9 Tn



76%

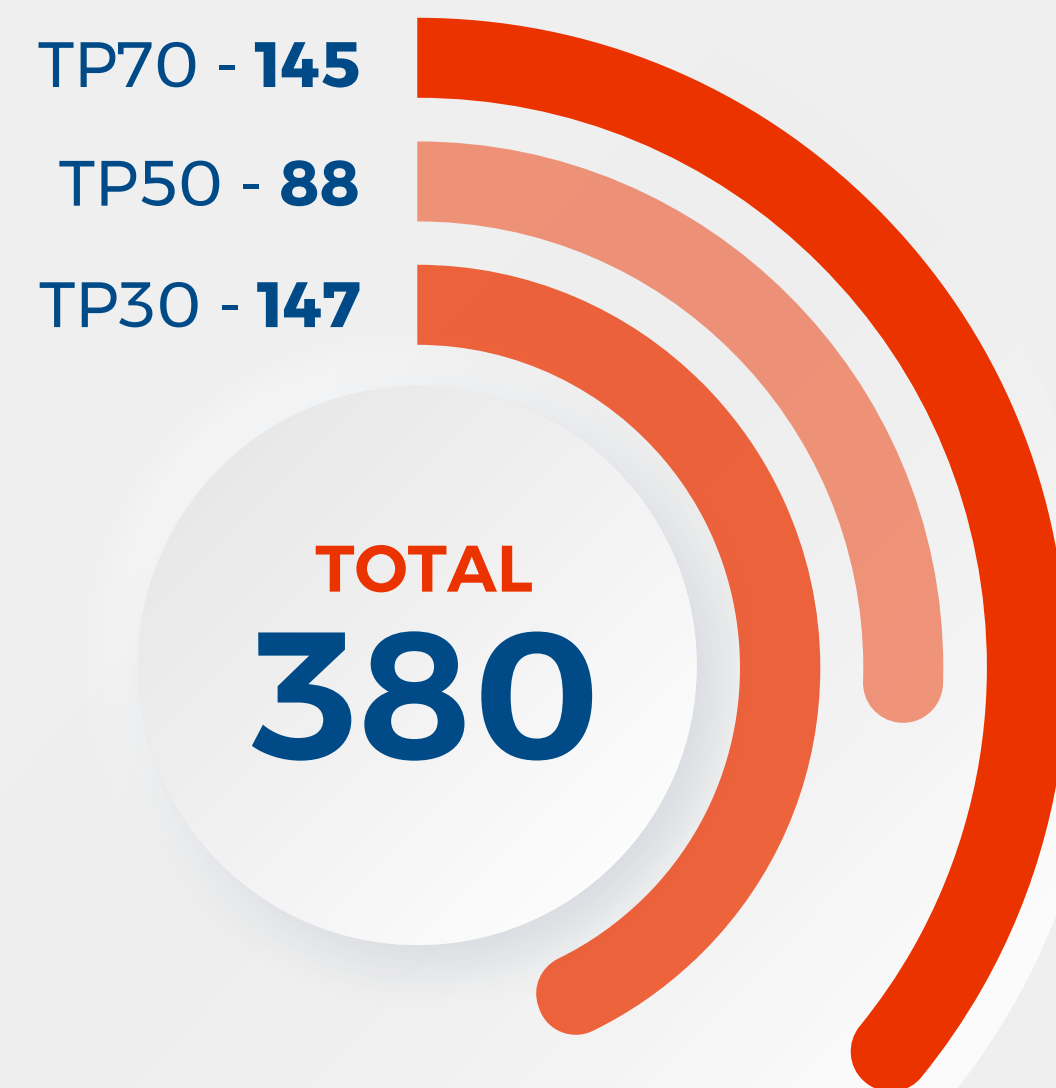
of current fleet is in mature markets

- > Currently the distribution of the regional feeder fleet is dominant in mature and economically developed markets.
- > We expect South-East Asia and LatAm to become areas of increased regional freighter demand as customer expectations for fast delivery expands beyond key primary gateways in each region.
- > With China as the largest e-commerce market, we expect cargo expansion beyond East China will drive additional opportunities for regional feeders.

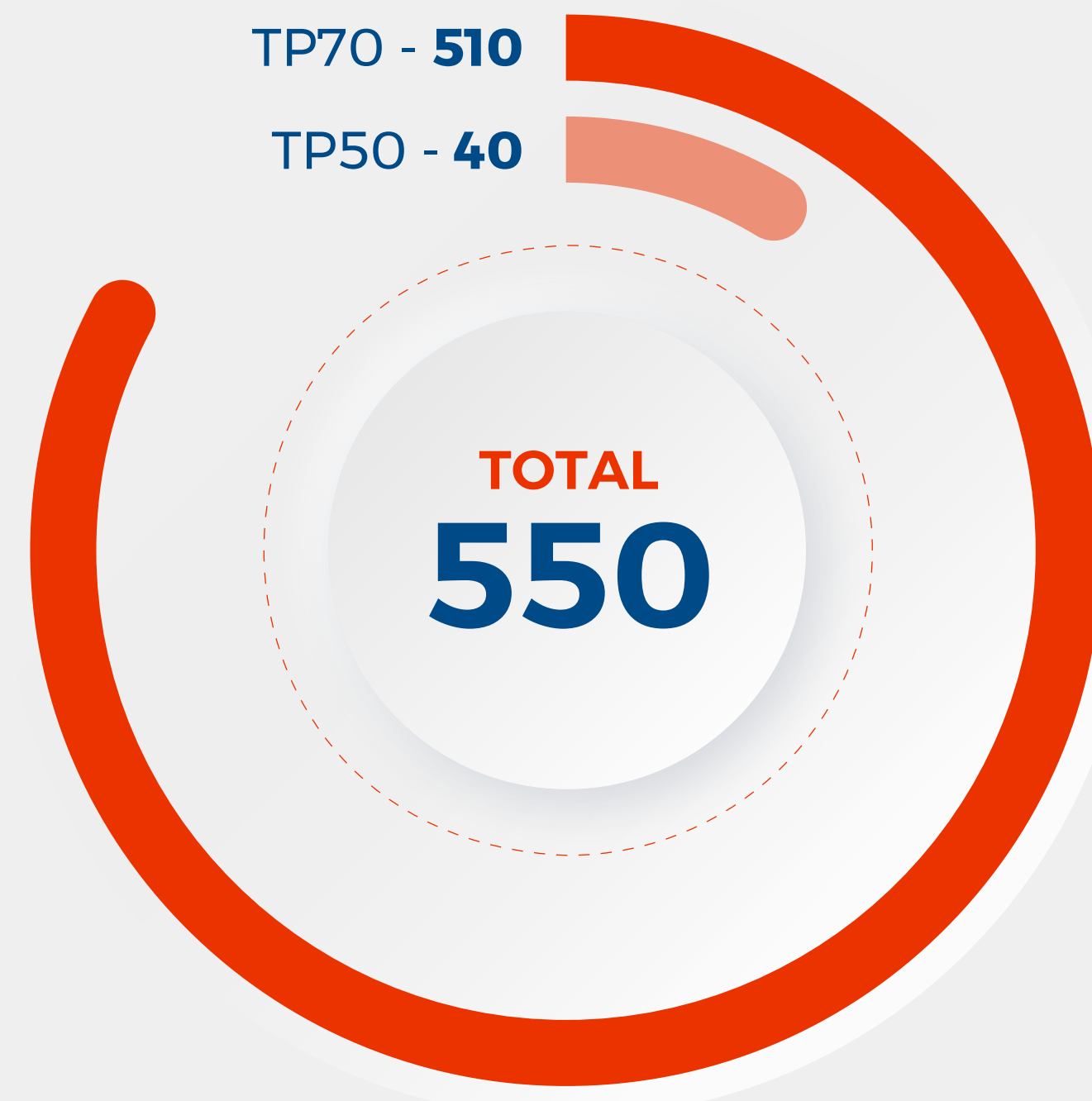
# Turboprop freighter demand focuses on 70-seater segment

Optimal aircraft for availability, operating cost and capacity

2021 in-service  
turboprop freighters



2041 in-service  
turboprop freighters



**94%**

of the current  
regional freighter fleet  
is turboprops



**550**

turboprop freighters  
in 2041

- > The air cargo market is highly price-sensitive with operators continually seeking the best economic returns. This is why turboprops continue to be the market's preference.
- > Growth in the turboprop freighter fleet will be determined by feedstock availability and market needs. For example, the average age of the 30-seater turboprop passenger fleet is 26 years - well beyond conversion age; while 50-seaters are also scarce.
- > As such, 70-seaters will become the aircraft of choice for operators with ample feedstock for conversions as well as new-built freighters and larger capacities to cater for increased volumes.



**YUNNAN**

CHINA

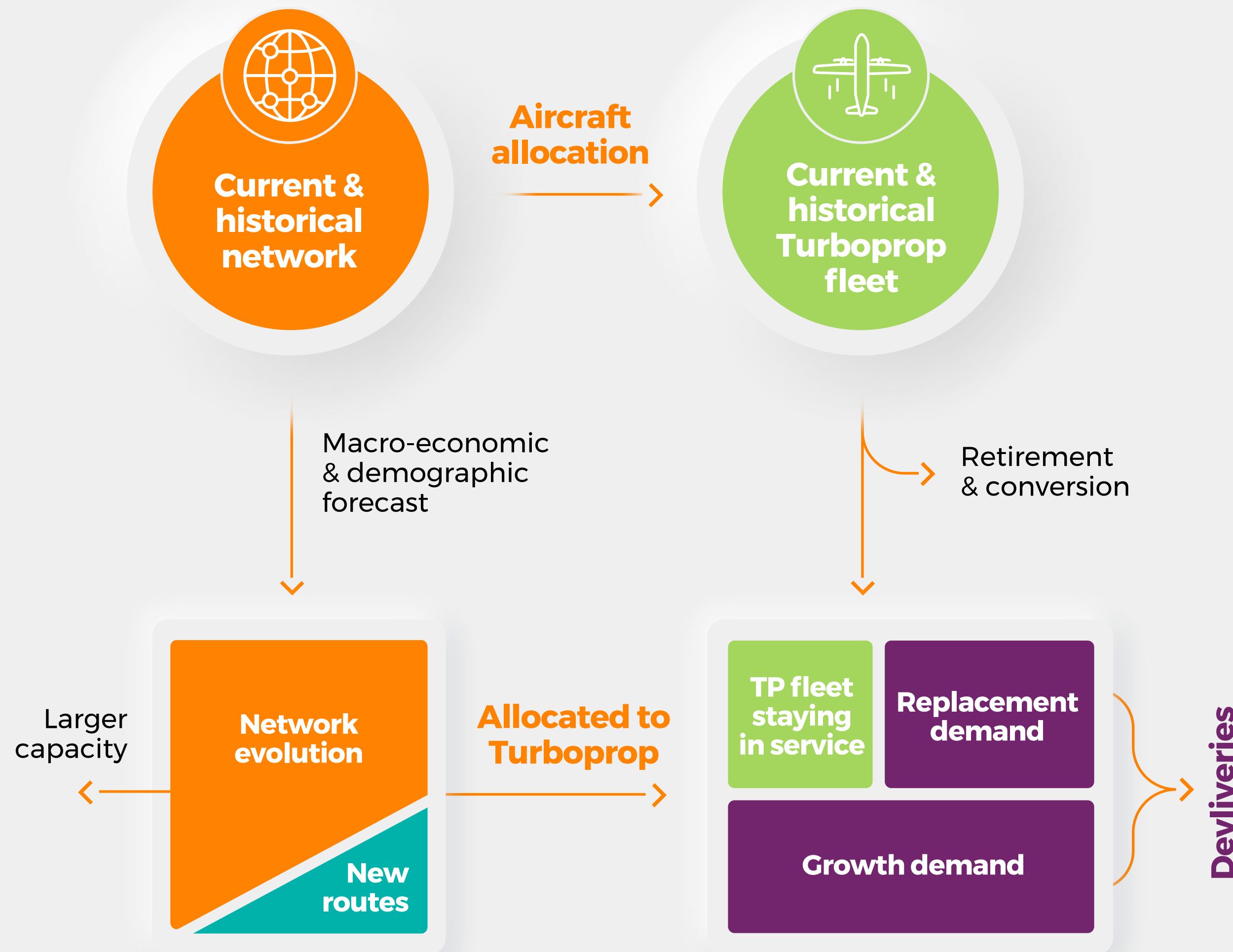


**150**

COMMERCIAL AIRPORTS  
WILL RAISE BY **2035** IN CHINA (+**60%**)

# METHODOLOGY

# Methodology and Assumptions



## Assumptions:

The following assumptions and definitions apply unless otherwise specified:

- > ASK: available seat kilometer – seats multiplied by distance.
- > GDP: real Gross Domestic Product considered in this document at constant prices and exchange rates.
- > HST: High Speed Train
- > O&D: Origin and Destination
- > Turboprop in-service fleets are considered in the range of 30-80 seats in standard configuration including storage
- > Network range up to 900 Nm ~ 1,700 km ~1,000 mi.
- > Route size considered: up to 300 daily seats each way per carrier.
- > Traffic allocation to all types of existing 30+ seats aircraft categories, jet and turboprop technologies.
- > Deliveries include aircraft currently in-production and launched programs.
- > Major changes to the regional aviation ecosystem were not factored in. They include, but are not limited to: fuel and emissions prices, disruptive technologies, regulatory frameworks, passenger dynamics.

## Sources:

- > ATR studies and survey
- > Cirium
- > Euromonitor
- > IATA
- > OAG
- > Oxford Economics
- > World Bank

# Safe harbour statement

## Disclaimer:

**This presentation includes forward-looking statements. Words such as anticipates, believes, estimates, expects, intends, plans, projects, may, forecast and similar expressions are used to identify these forward-looking statements. Examples of forward-looking statements include statements made about strategy, ramp-up and delivery schedules, introduction of new products and services and market expectations, as well as statements regarding future performance and outlook.**

**By their nature, forward-looking statements involve risk and uncertainty because they relate to future events and circumstances and there are many factors that could cause actual results and developments to differ materially from those expressed or implied by these forward-looking statements.**

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- › Significant disruptions in air travel (including as a result of terrorist attacks or pandemic).
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- › The successful execution of internal performance plans, including cost reduction and productivity efforts.
- › Product related risks such as new and disruptive technology risk and performance and program management.
- › Customer, supplier and subcontractor performance or contract negotiations, including financing issues.
- › Competition and consolidation in the aerospace and defence industry.
- › Significant collective bargaining, labour disputes.
- › The outcome of political and legal processes, including the availability of government financing for certain programmes and the size of defence and space procurement budgets.
- › Research and development costs in connection with new products.
- › Legal, financial and governmental risks related to international transactions.
- › Regulatory and financial risks related to international transactions or aircraft operations.
- › Legal and investigatory proceedings and other economic, political and technological risks and uncertainties.

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**ATR**

1, allée Pierre Nadot  
31712 Blagnac cedex - France  
**T:** +33 (0)5 62 21 62 21

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