

London Heathrow Airport (LHR)

A sustainable strategic future



Dalia Madi

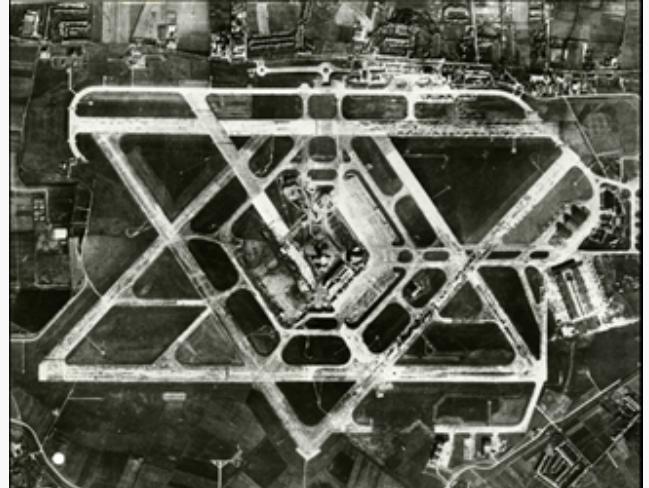
Ivan

Kamil Zelezniak

Kinga Posluszny

Nishad Malik Mohamed

Evolution



1946
•Opened



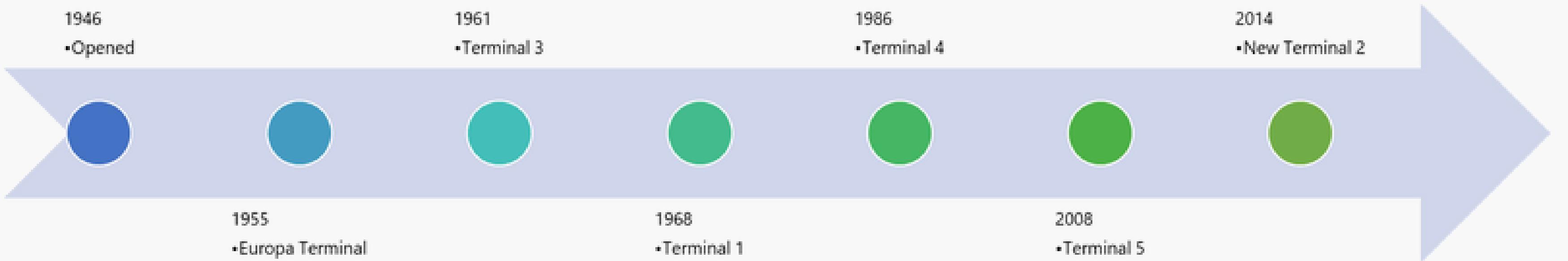
1961
•Terminal 3



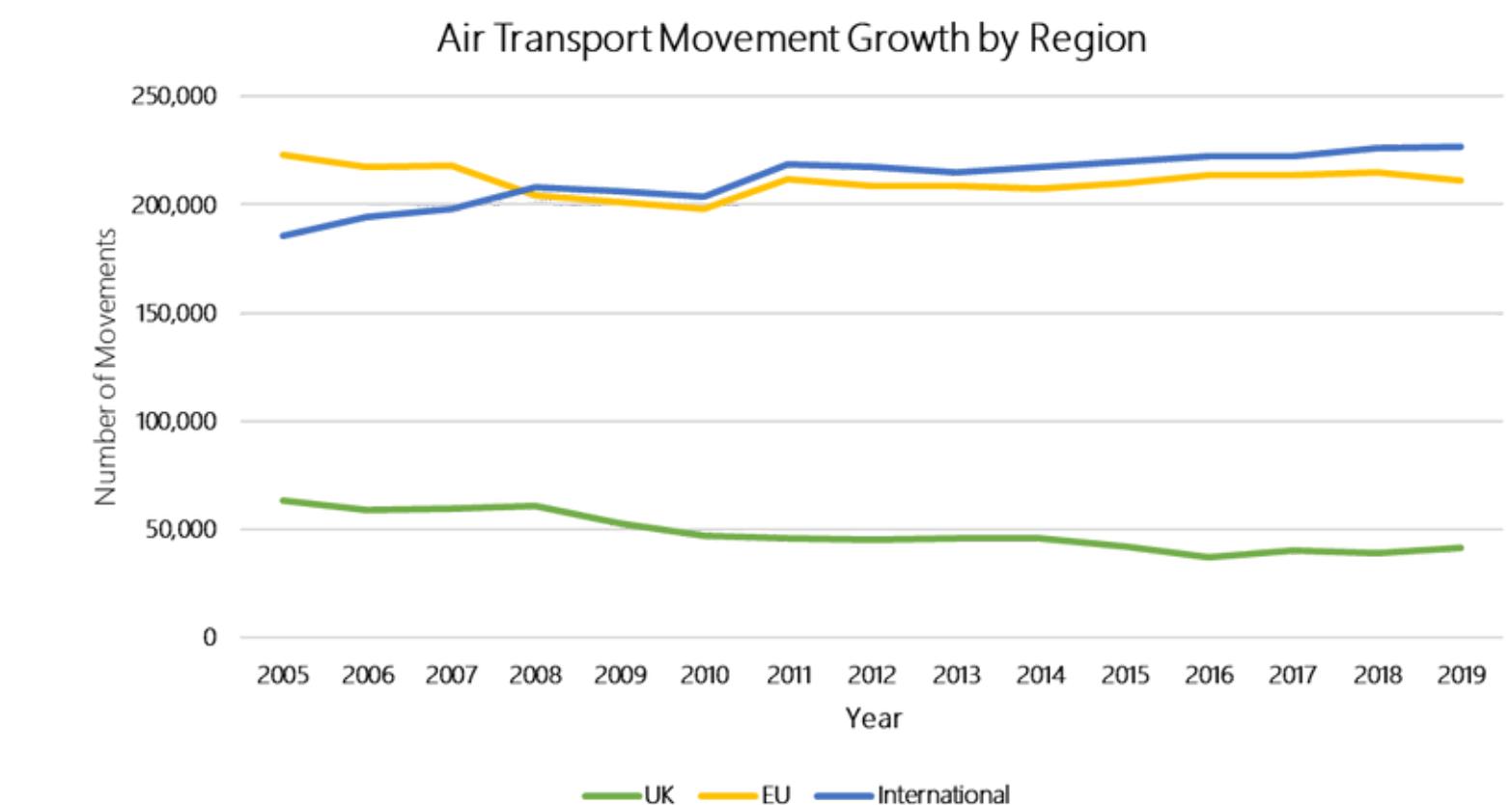
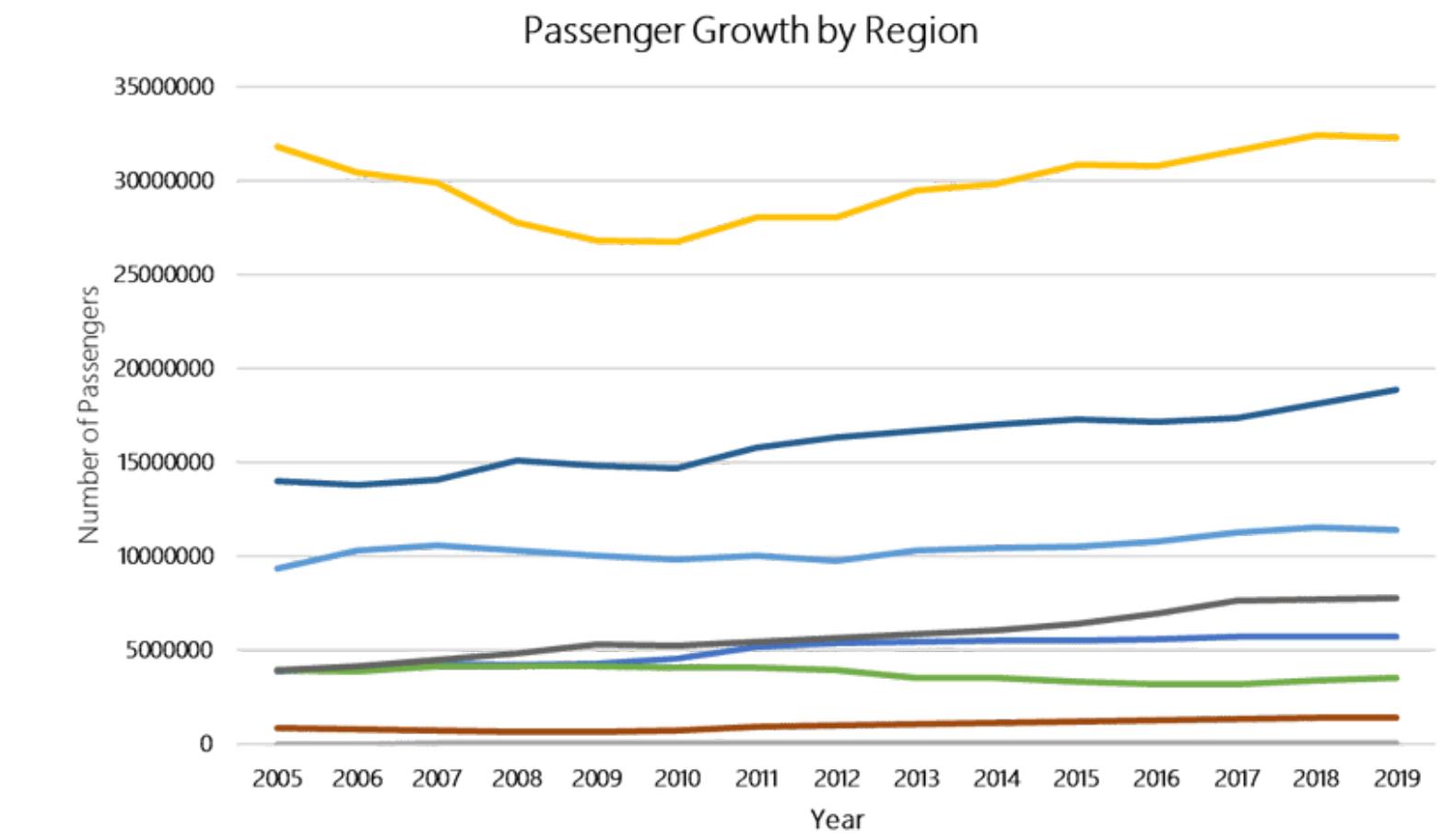
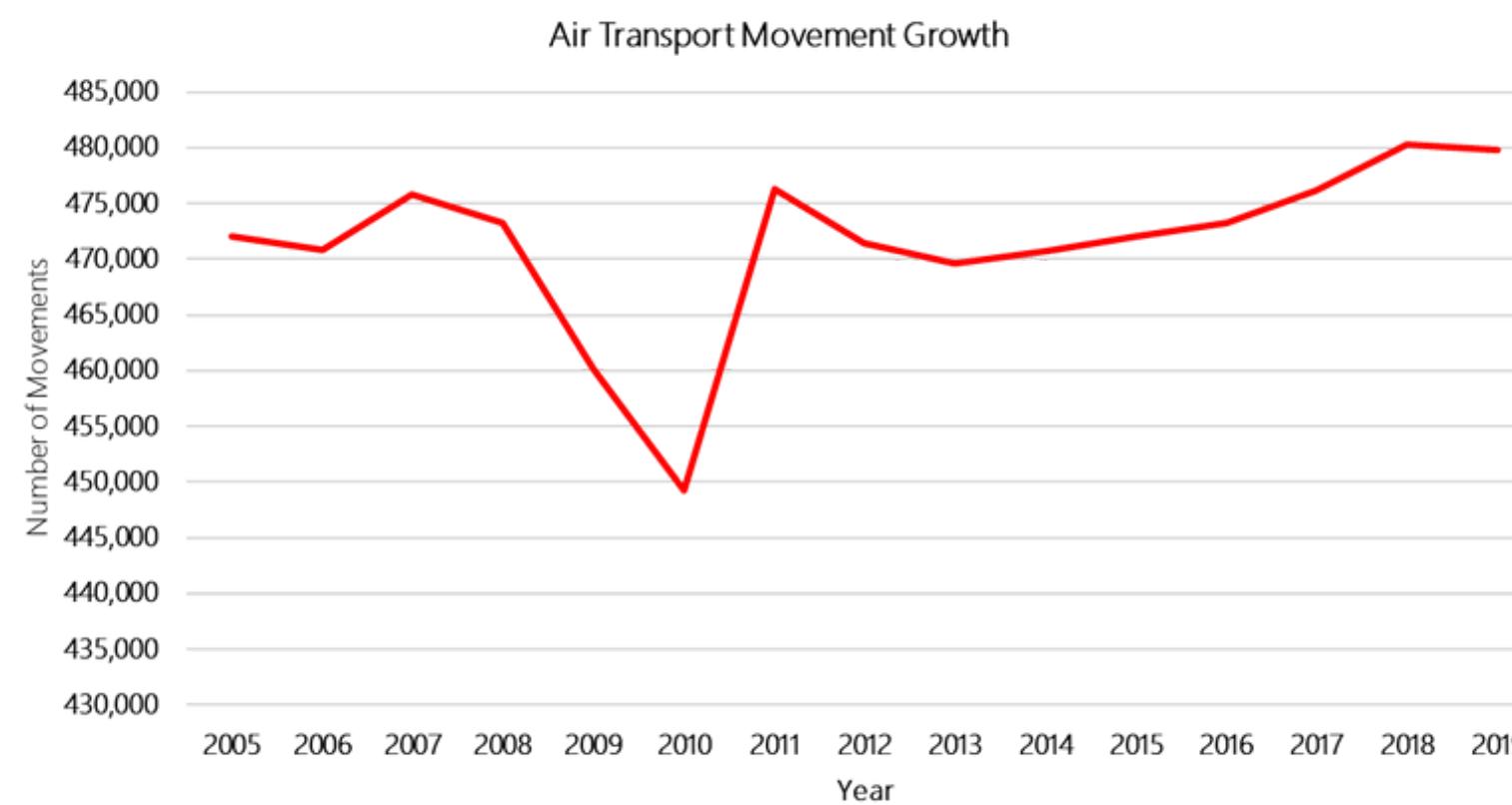
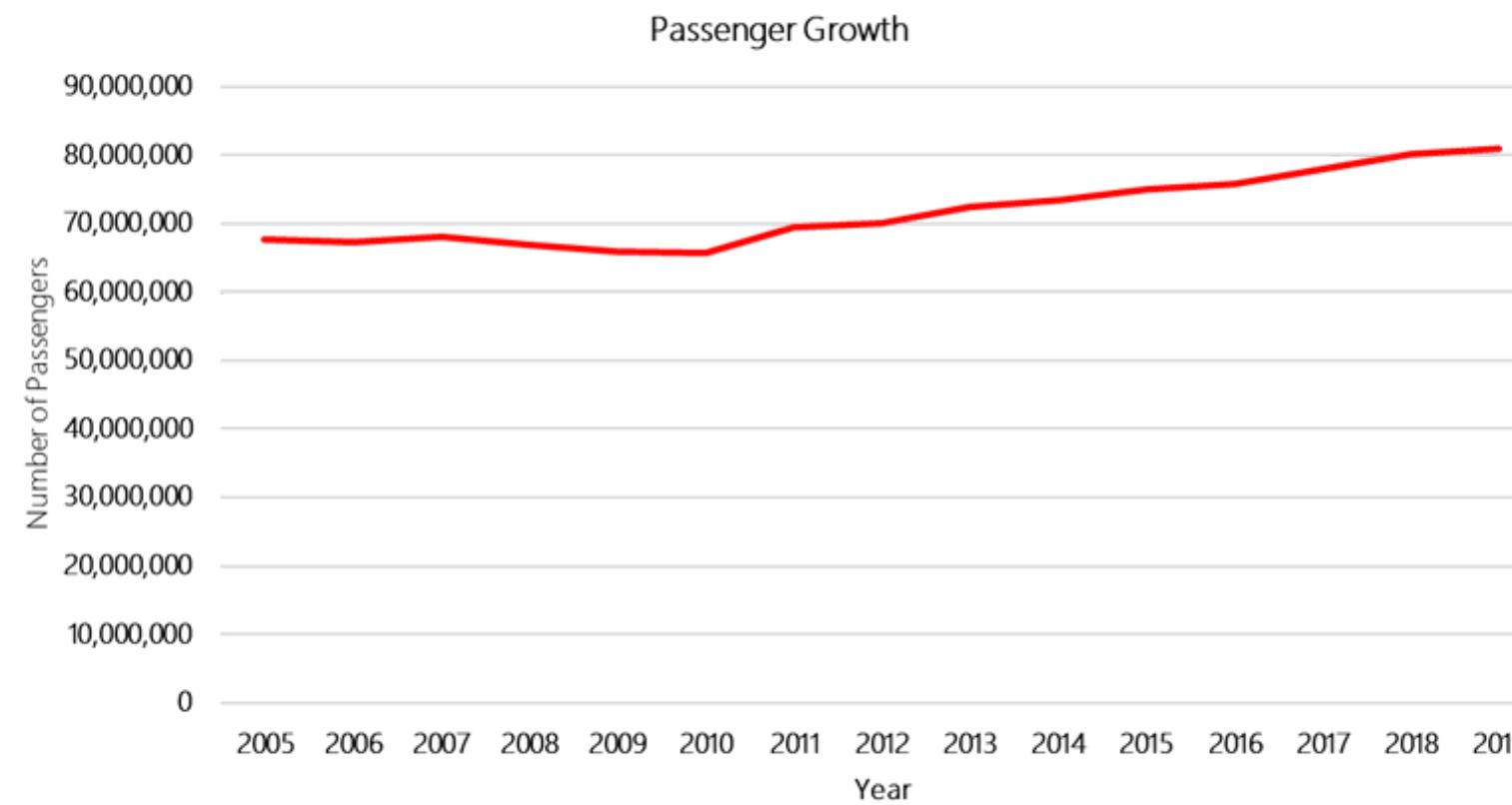
1986
•Terminal 4



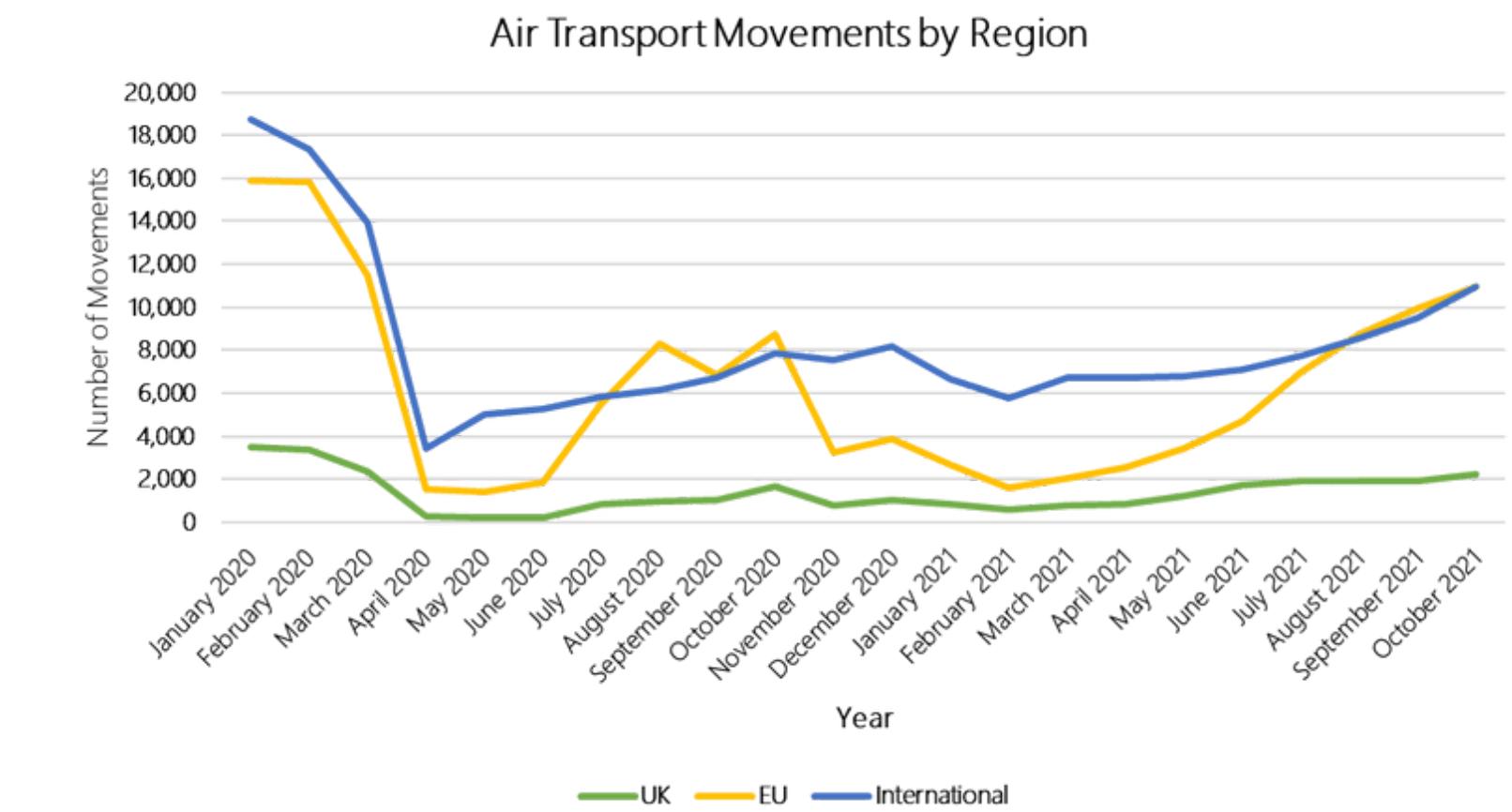
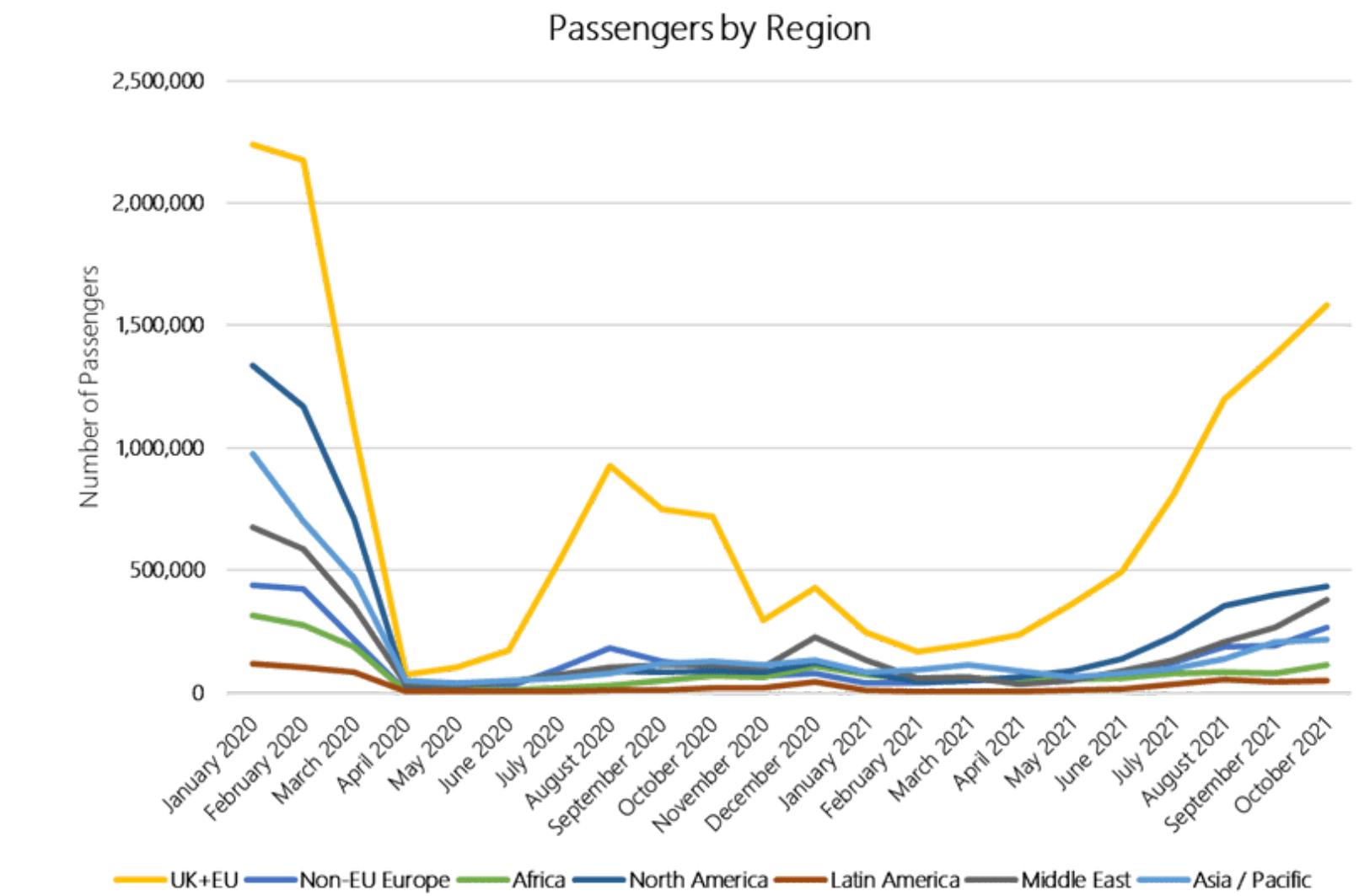
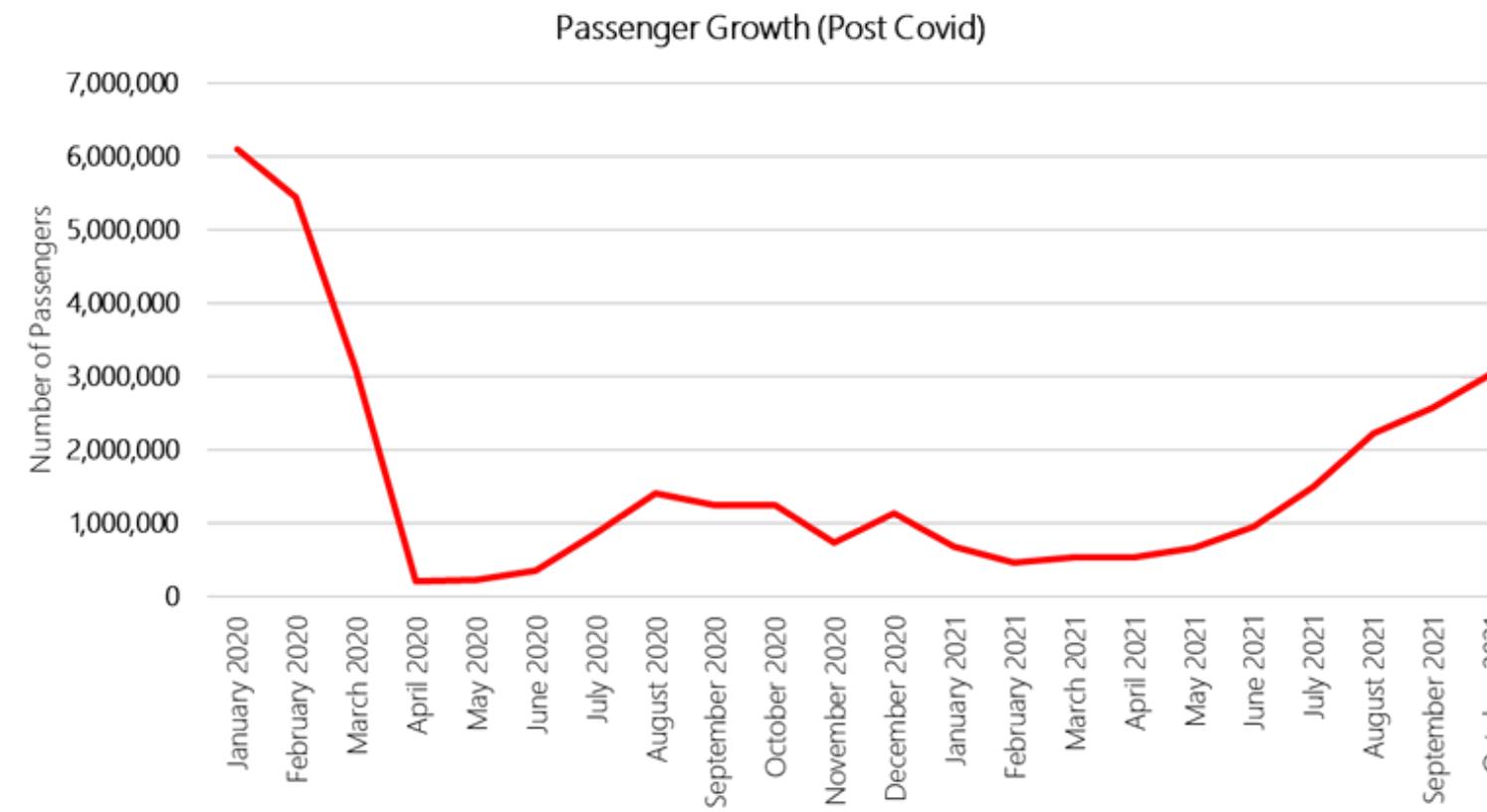
2014
•New Terminal 2



Growth Pre-Covid



Growth Post-Covid



Top Connections

- 27% of top 25 connections non-EU
- 10% by just 3 non-EU airports

Continent	%GE Change last 5 years	Year on Year Change			
		2016	2017	2018	2019
AFRICA	5.34%	-4.36%	-0.03%	4.70%	5.24%
ASIA	15.05%	5.58%	6.82%	1.98%	0.03%
AUSTRALIA	-37.52%	-18.97%	-8.63%	-12.20%	-3.88%
EUROPE	6.22%	1.75%	2.38%	2.60%	-0.62%
NORTH AMERICA	9.86%	0.10%	1.37%	4.13%	3.96%
SOUTH AMERICA	14.18%	-0.29%	3.54%	7.42%	2.97%

2015			2016			2017			2018			2019		
Airport	Passenger	%GE	Airport	Passenger	%GE	Airport	Passenger	%GE	Airport	Passenger	%GE	Airport	Passenger	%GE
NEW YORK (JF KENNEDY)	3,050,499	4.37%	NEW YORK (JF KENNEDY)	2,914,554	-4.13%	NEW YORK (JF KENNEDY)	2,945,744	4.02%	NEW YORK (JF KENNEDY)	3,034,155	4.03%	NEW YORK (JF KENNEDY)	3,152,193	4.20%
DUBAI	2,451,738	3.51%	DUBAI	2,651,776	3.73%	DUBAI	2,873,011	3.93%	DUBAI	2,610,784	3.47%	DUBAI	2,533,127	3.07%
DUBLIN	1,682,655	2.41%	DUBLIN	1,750,502	2.46%	DUBLIN	1,803,497	2.46%	DUBLIN	1,809,396	2.40%	DUBLIN	1,855,333	2.44%
AMSTERDAM	1,587,605	2.27%	AMSTERDAM	1,616,595	2.28%	AMSTERDAM	1,689,924	2.31%	AMSTERDAM	1,746,529	2.32%	AMSTERDAM	1,748,216	2.30%
HONG KONG (CHEK LAP KOK)	1,584,486	2.27%	HONG KONG (CHEK LAP KOK)	1,574,741	2.22%	LOS ANGELES INTERNATIONAL	1,600,587	2.19%	LOS ANGELES INTERNATIONAL	1,657,737	2.20%	HONG KONG (CHEK LAP KOK)	1,612,530	2.12%
FRANKFURT MAIN	1,530,986	2.19%	LOS ANGELES INTERNATIONAL	1,529,632	2.15%	HONG KONG (CHEK LAP KOK)	1,588,805	2.17%	HONG KONG (CHEK LAP KOK)	1,572,021	2.09%	LOS ANGELES INTERNATIONAL	1,602,892	2.11%
LOS ANGELES INTERNATIONAL	1,518,903	2.18%	FRANKFURT MAIN	1,493,204	2.10%	FRANKFURT MAIN	1,501,134	2.05%	FRANKFURT MAIN	1,559,218	2.07%	FRANKFURT MAIN	1,548,995	2.04%
MADRID	1,321,558	1.89%	MADRID	1,317,122	1.85%	MADRID	1,362,478	1.89%	SINGAPORE	1,421,105	1.89%	SINGAPORE	1,526,634	2.01%
PARIS (CHARLES DE GAULLE)	1,252,777	1.79%	MUNICH	1,215,546	1.71%	DOHA HAMAD	1,287,225	1.76%	MADRID	1,417,554	1.88%	MADRID	1,476,551	1.94%
MUNICH	1,230,618	1.76%	DOHA HAMAD	1,296,752	1.70%	SINGAPORE	1,234,896	1.69%	PARIS (CHARLES DE GAULLE)	1,250,771	1.66%	MUNICH	1,266,993	1.67%
SINGAPORE	1,150,249	1.65%	SINGAPORE	1,198,727	1.69%	PARIS (CHARLES DE GAULLE)	1,207,929	1.65%	MUNICH	1,242,063	1.65%	DOHA HAMAD	1,264,687	1.66%
ZURICH	1,075,098	1.54%	PARIS (CHARLES DE GAULLE)	1,140,213	1.61%	MUNICH	1,190,441	1.63%	DOHA HAMAD	1,181,541	1.57%	PARIS (CHARLES DE GAULLE)	1,260,985	1.66%
DOHA HAMAD	1,072,031	1.54%	ZURICH	1,162,296	1.55%	ZURICH	1,139,638	1.56%	ZURICH	1,167,980	1.55%	CHICAGO (O'HARE)	1,250,426	1.64%
CHICAGO (O'HARE)	1,059,686	1.52%	CHICAGO (O'HARE)	1,072,875	1.51%	CHICAGO (O'HARE)	1,062,328	1.45%	CHICAGO (O'HARE)	1,158,537	1.54%	ZURICH	1,168,545	1.56%
SAN FRANCISCO	1,046,981	1.50%	GENEVA	1,053,728	1.48%	GENEVA	1,056,478	1.48%	MUMBAI	1,121,997	1.49%	TORONTO	1,151,792	1.52%
DELHI	1,034,172	1.48%	TORONTO	1,050,524	1.48%	TORONTO	1,047,947	1.43%	TORONTO	1,091,315	1.45%	ABU DHABI INTERNATIONAL	1,119,673	1.47%
TORONTO	1,032,206	1.48%	DELHI	1,042,532	1.47%	DELHI	1,023,509	1.40%	NEW YORK (NEWARK)	1,084,275	1.44%	SAN FRANCISCO	1,073,554	1.41%
MIAMI INTERNATIONAL	1,030,673	1.48%	MIAMI INTERNATIONAL	1,030,483	1.45%	ISTANBUL	1,031,532	1.40%	ROME (FUMICINO)	1,076,489	1.43%	GENEVA	1,070,524	1.41%
GENÈVE	1,021,882	1.46%	SAN FRANCISCO	1,016,616	1.43%	NEW YORK (NEWARK)	1,030,678	1.39%	ISTANBUL	1,074,397	1.43%	MIAMI INTERNATIONAL	1,069,986	1.41%
STOCKHOLM (ARLANDA)	1,002,530	1.44%	STOCKHOLM (ARLANDA)	1,012,568	1.43%	STOCKHOLM (ARLANDA)	1,013,192	1.38%	GENEVA	1,056,433	1.40%	ISTANBUL	1,026,032	1.35%
NEW YORK (NEWARK)	999,986	1.43%	ROME (FUMICINO)	988,708	1.39%	SAN FRANCISCO	1,009,584	1.38%	SAN FRANCISCO	1,055,976	1.40%	JOHANNESBURG	1,004,190	1.32%
COPENHAGEN	997,988	1.43%	JOHANNESBURG	986,897	1.36%	ABU DHABI INTERNATIONAL	1,004,473	1.37%	MIAMI INTERNATIONAL	1,029,346	1.37%	NEW YORK (NEWARK)	977,710	1.29%
ROME (FUMICINO)	972,111	1.29%	ISTANBUL	956,634	1.35%	MIAMI INTERNATIONAL	985,148	1.35%	DELHI	1,021,351	1.36%	BOSTON	970,239	1.28%
MUMBAI	949,485	1.36%	COPENHAGEN	949,566	1.34%	COPENHAGEN	982,928	1.34%	COPENHAGEN	1,012,730	1.34%	STOCKHOLM (ARLANDA)	959,928	1.26%
JOHANNESBURG	938,503	1.34%	NEW YORK (NEWARK)	944,639	1.33%	ROME (FUMICINO)	976,106	1.33%	ABU DHABI INTERNATIONAL	1,010,388	1.34%	COPENHAGEN	947,501	1.25%

High Speed Rail 2

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The Guardian

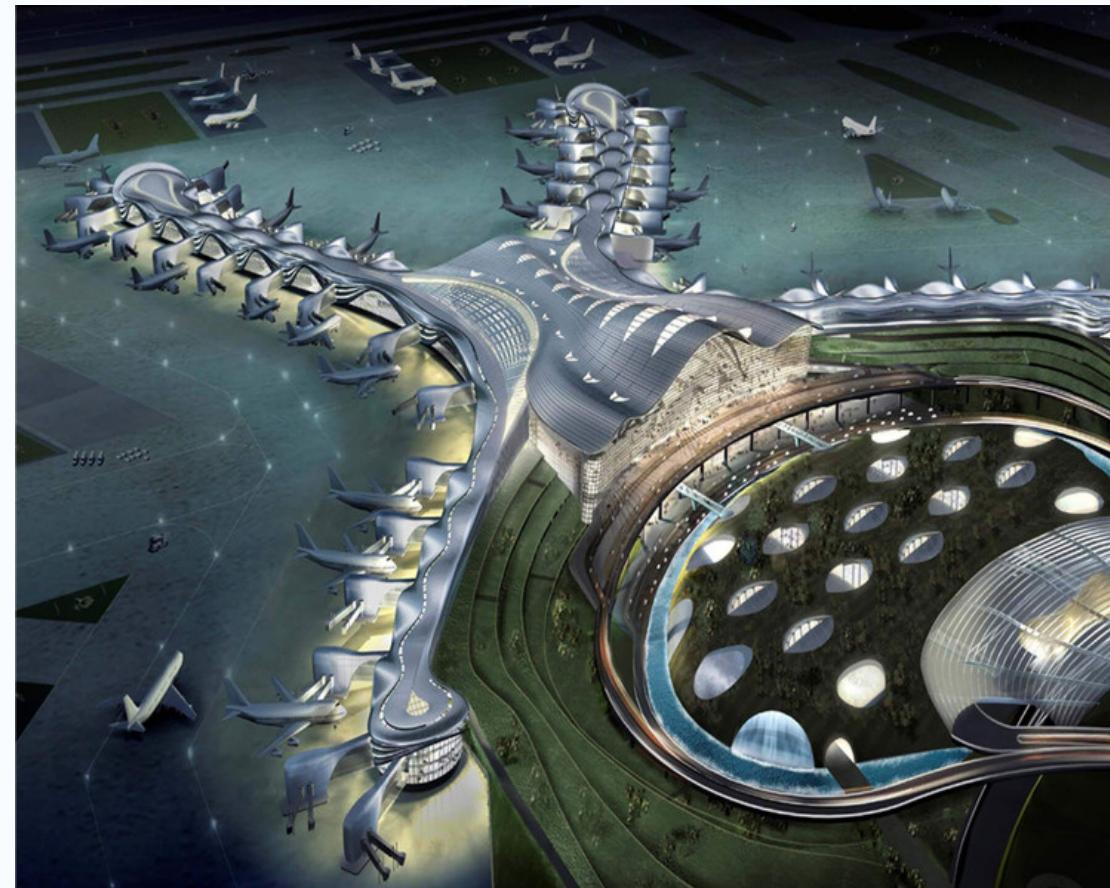
For 200 years

France to ban some domestic flights where train available

MPs vote to suspend internal flights if the trip can be completed by train within two and a half hours instead

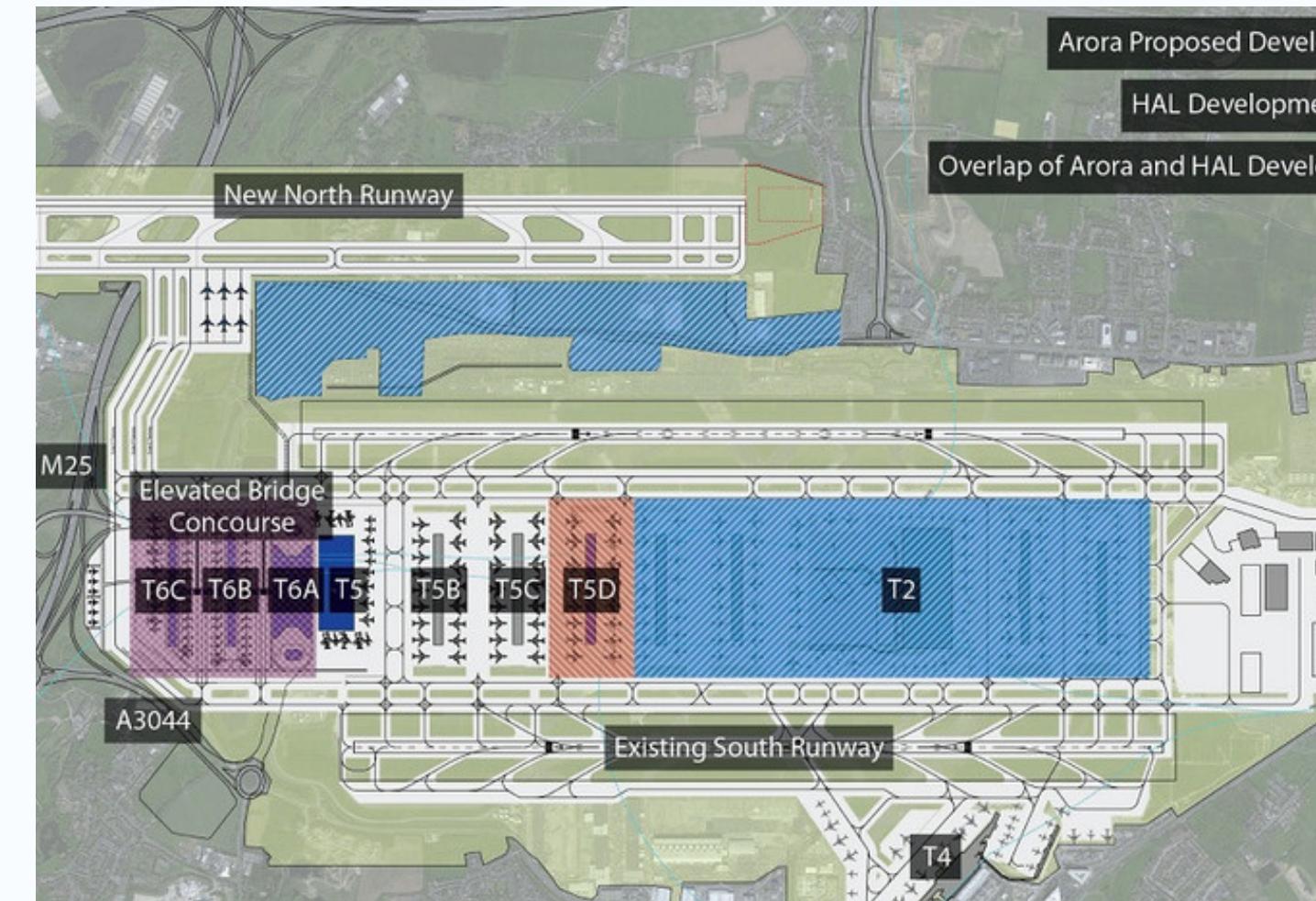
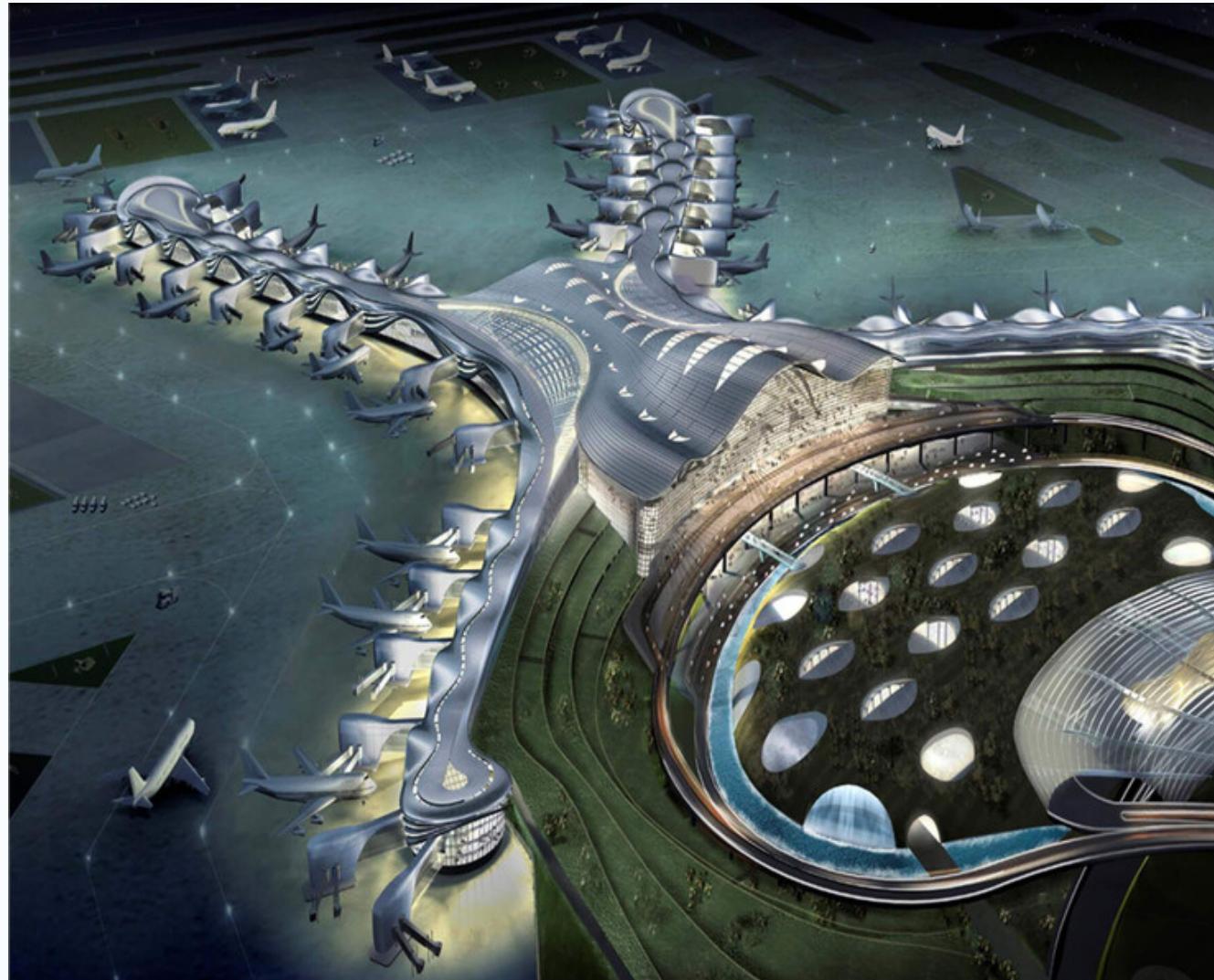
—Defining Strategic Objectives—

Terminal expansion, runway expansion, green approach



—Defining Strategic Objectives—

Terminal expansion



- increase efficiency of terminal capacity
- support world class passenger service

- demolishing of terminals 1 and 3
- expansion of terminal 5
- passenger throughput (33 to 40 mppa)
- new terminal T5X to be constructed

—Defining Strategic Objectives—

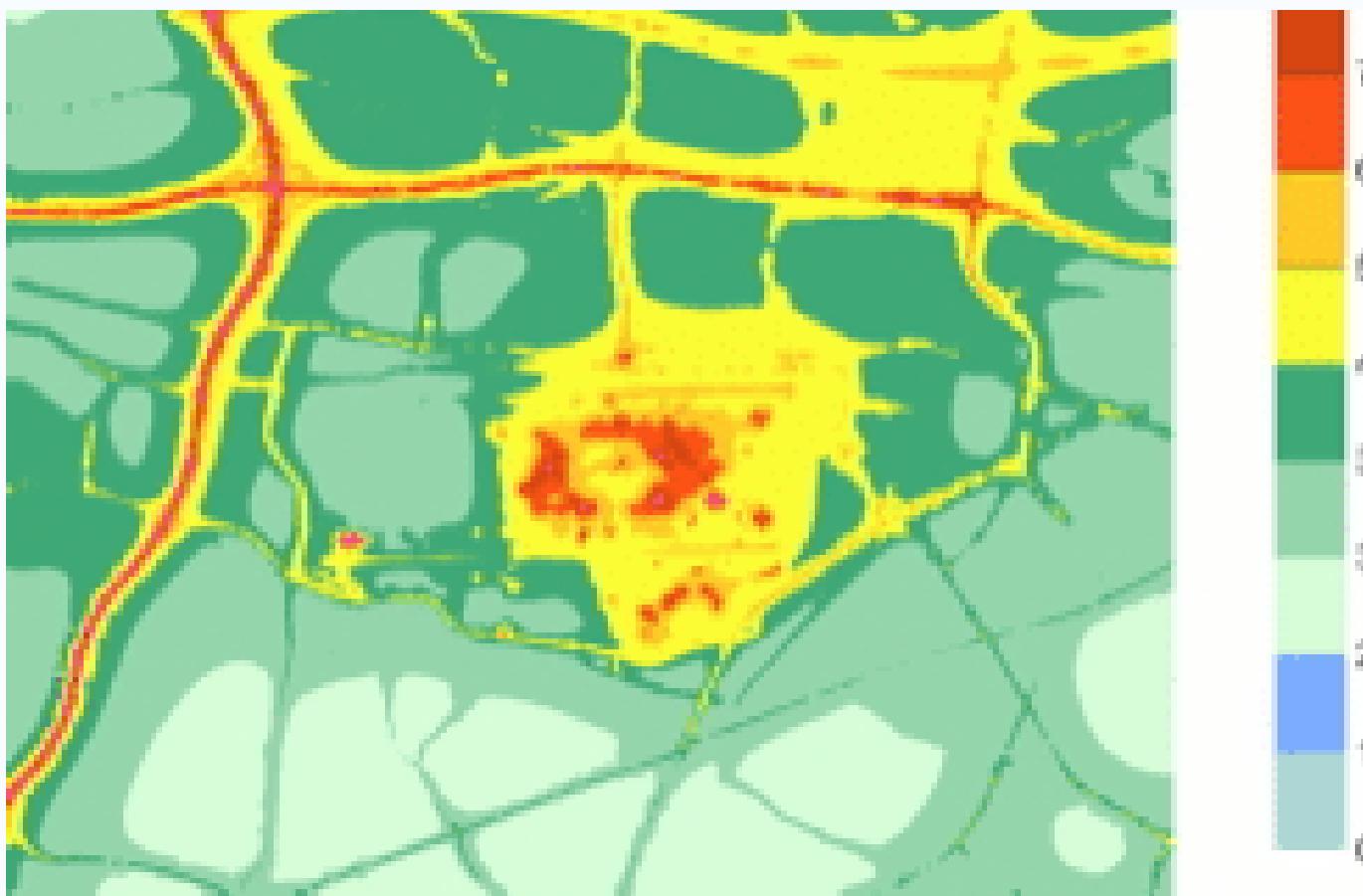
Runway Expansion



- increased efficiency for airlines
- mitigate the effects of aircraft noise
- North and south runway remain
- Construction of Northwest runway

Defining Strategic Objectives

Environmental concerns with expansion



Modelled NO₂ concentrations around Heathrow, 2002 base case (µg/m³)

- Increase in NO₂ emissions due to aircrafts
- Increased CO₂ emissions , from 37 to 43 million tonnes yearly
- Additional 40,000 cars road journeys yearly
- Noise decibel exceedance-more than 75 dB
- Water courses need to be diverted(eg. River Colne)

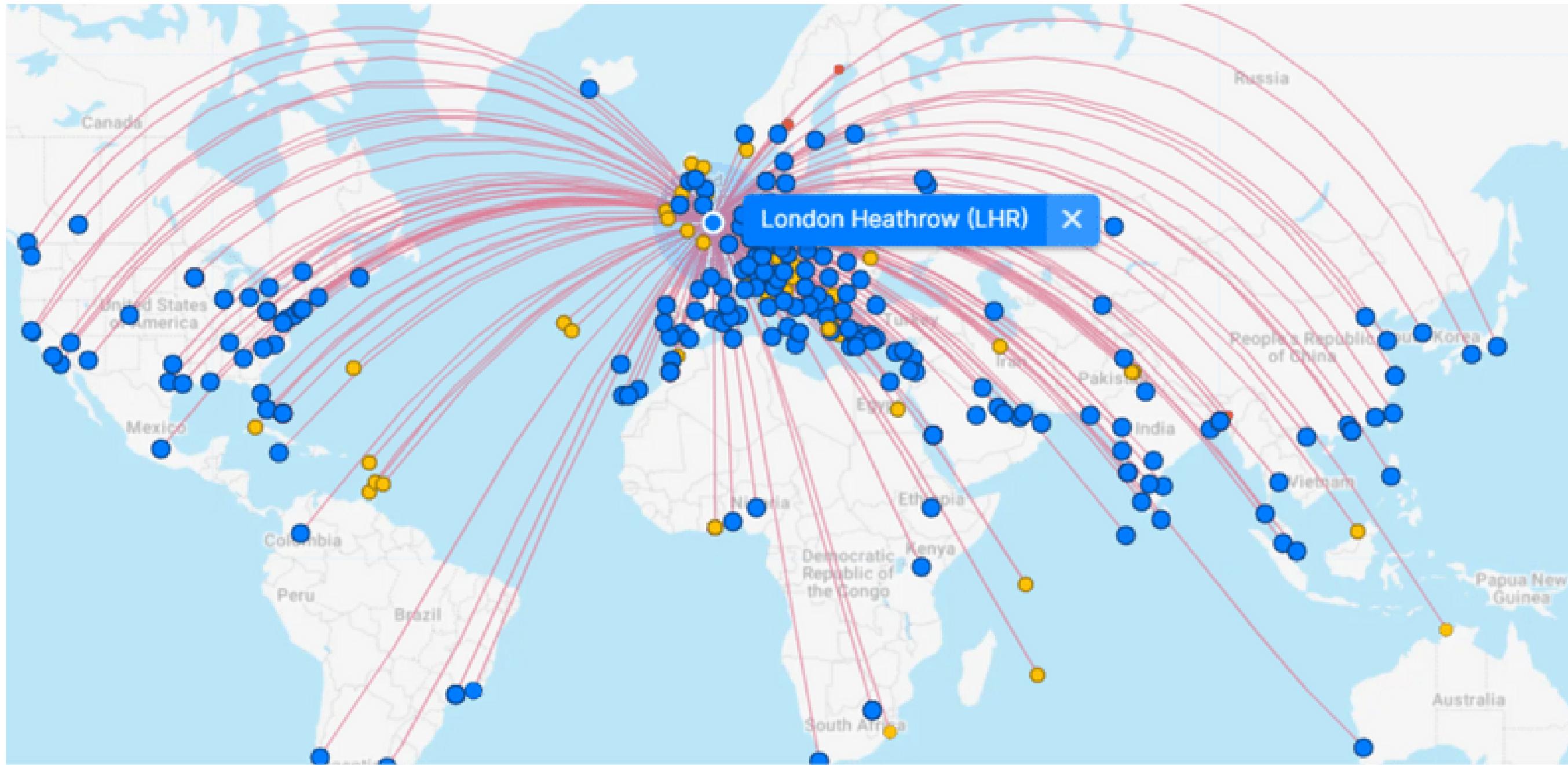
—Defining Strategic Objectives

Green Approach



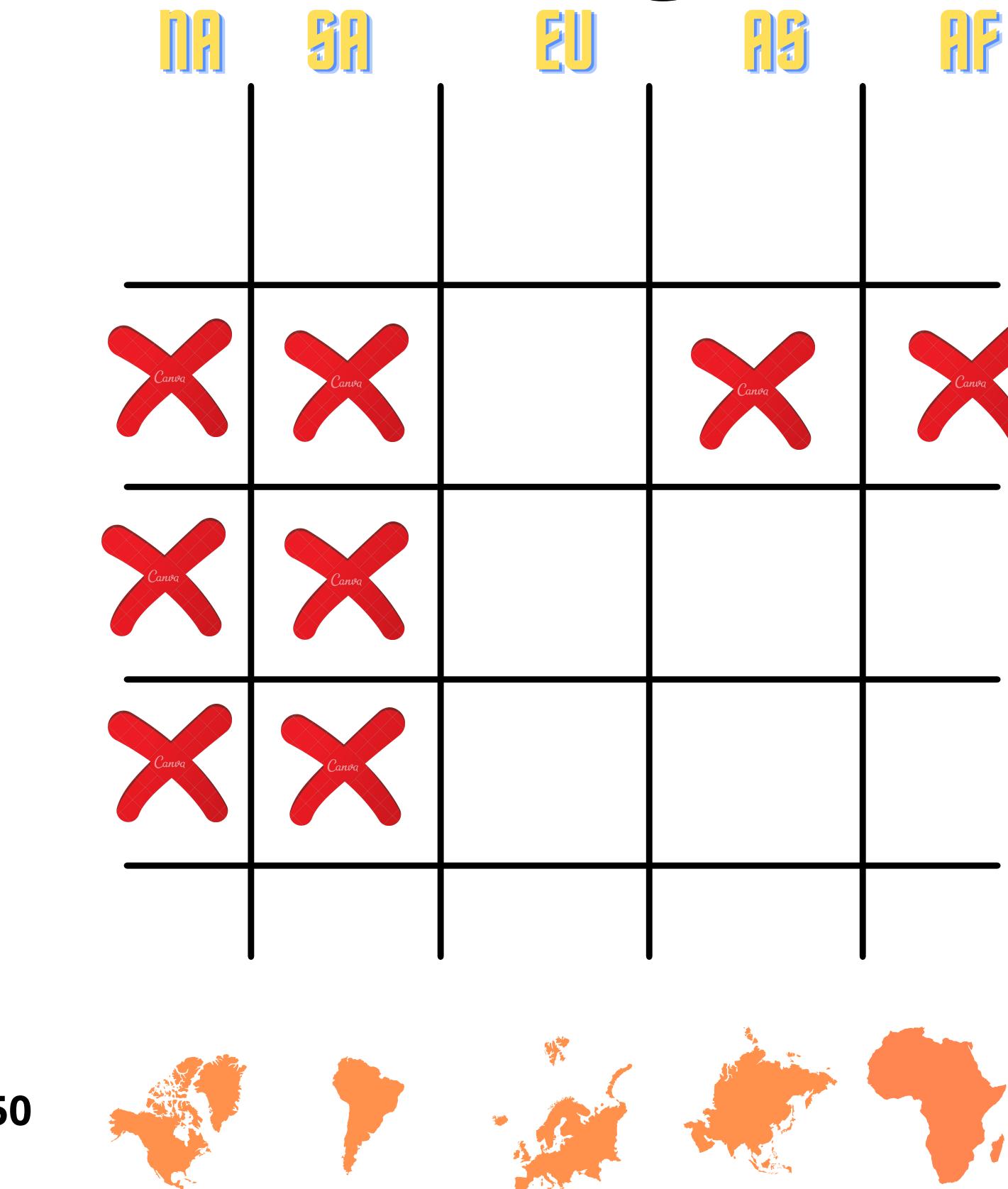
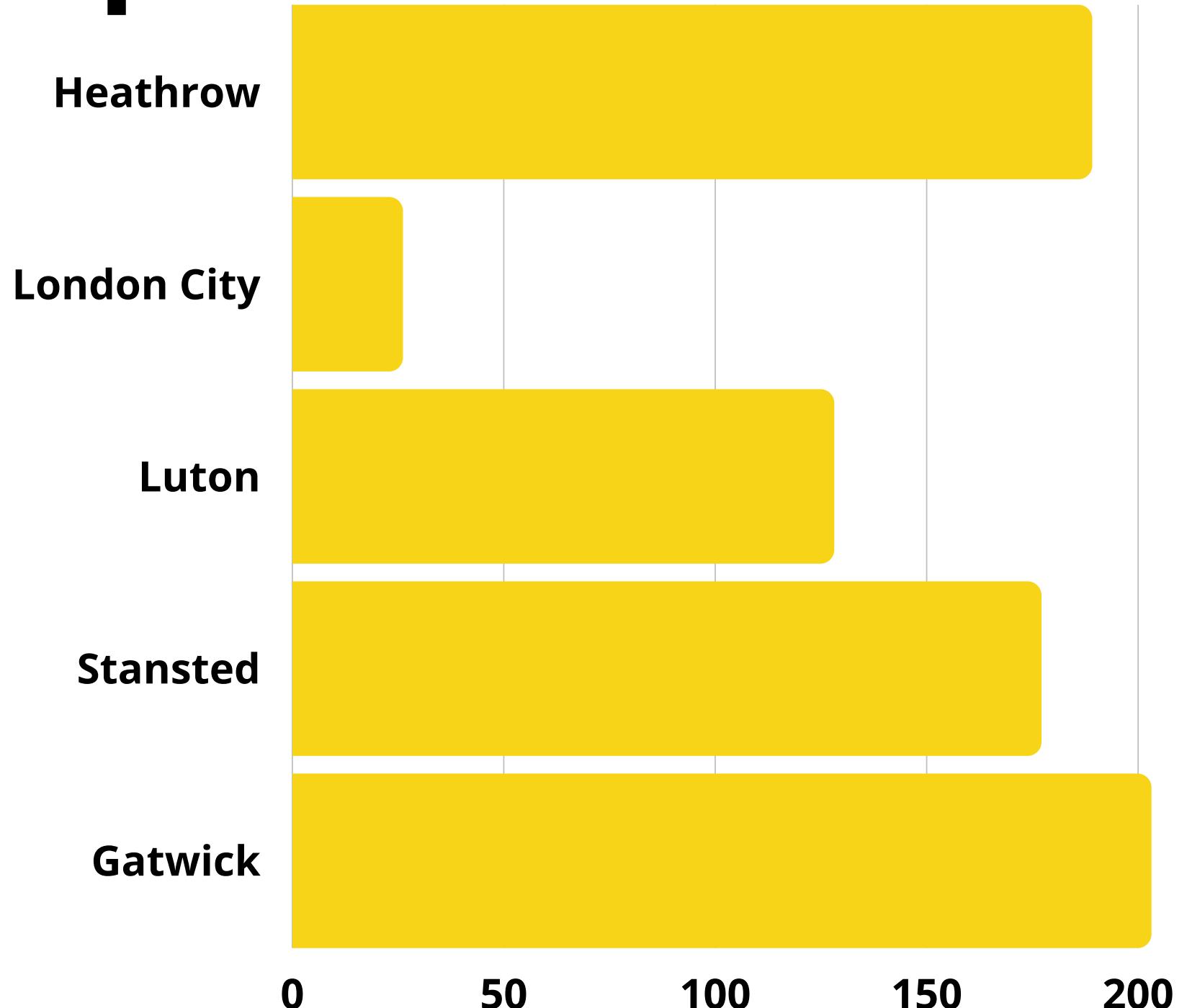
- Focus on international flights, less on many short-haul (Asian markets)
- Construction Traffic Management Plan
- Flood storage and water quality treatment to put in place
- Steeper descents to reduce noise emissions
- Increased Environmental Impact Assessments
- increase uptake of carbon-efficient aircraft

—Connection and position



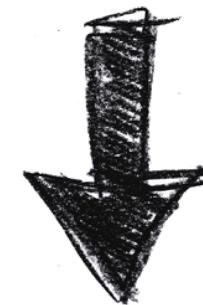
- International(flight to all continent)
- Operated by biggest airline in the country(ba,virgin)
- 184 direct destination
- equipped with 4 terminals, 45 lounges

Comparative analysis - strategic position

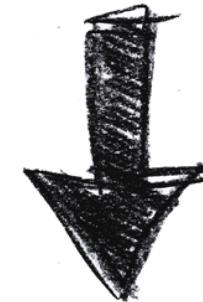


—Defining action - Step 1

Shift Europe flights to city airport
(reallocate resources)



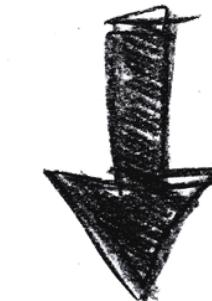
Reducing the short haul flights



More capacity free up

Defining action - Step 2

Implement more long-haul flight from Heathrow
(i.e to Asia, South America and USA)



Less CO2 emissions, more sustainable in terms of environment

Emissions from different modes of transport

Emissions per passenger per km travelled

■ CO2 emissions ■ Secondary effects from high altitude, non-CO2 emissions

Domestic flight



133g

+121g

Long haul flight



102g

+93g

—The balanced strategy proposed by us—

- 50% reduction in intra-European passenger numbers
- increase in passenger numbers on flights to Asia by 100%
- increase in passenger numbers on flights to North America by 80%