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Aviation Data and Analysis Seminar

Session 8: Air Connectivity

Tehran, 20-23 February 2017





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Air Connectivity

Concept and examples

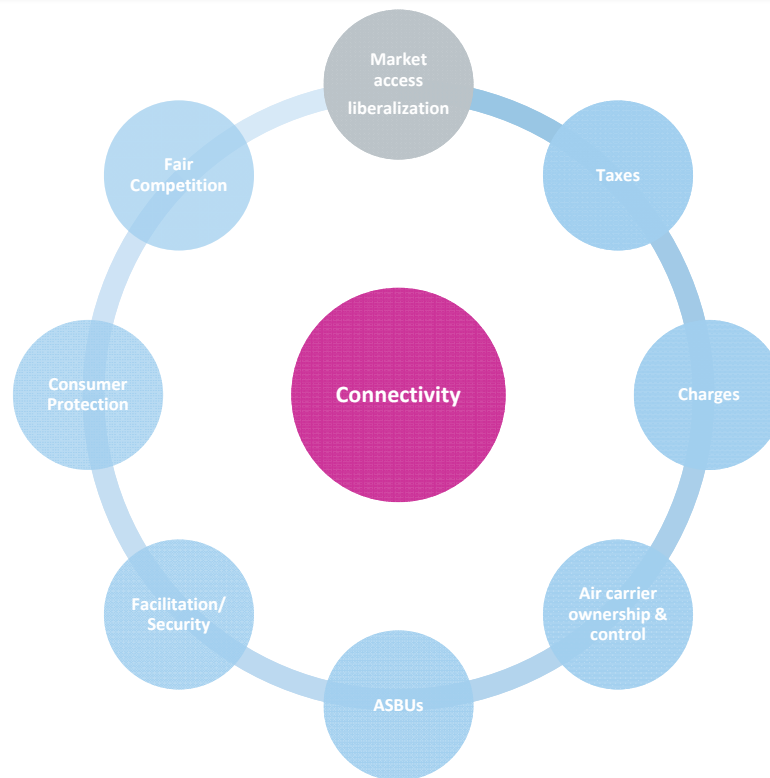
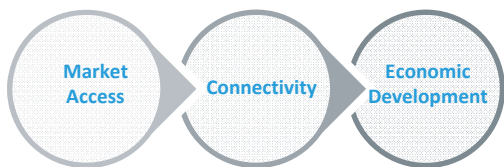


Connectivity Concept

Capacity of the transport value chain to move passengers, mail or cargo from **one point to another**, with

- Shortest possible time
- Maximum user satisfaction
- adequate price

Supporting regulatory framework to optimize connectivity:





Connectivity Developments

Number of **Total**
Passenger
1.1 billion

Number of **Direct**
Passengers
818 million

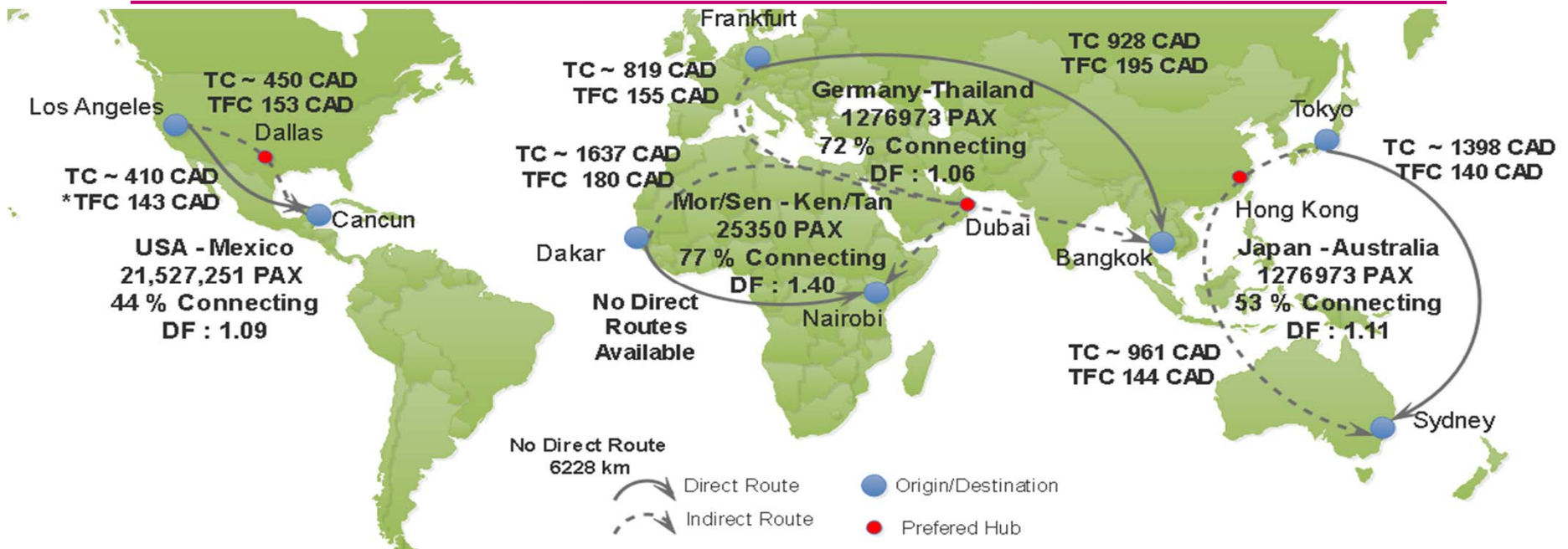
Number of **Indirect**
Passengers
349 million

68% of all passenger take **direct** flights – while **32%** still take **indirect** flights

- Increased exchanged of traffic rights: approximately **300+ Open Skies Agreements** involving **146** States
- Shift towards **hub-system** (center of gravity) proves as efficient
- Different **competition strategies** for individual airlines
 - ↳ Due to efforts in the field of connectivity and liberalization the **worldwide detour factor** is only **5%**



Direct versus Indirect Cost and Distance



- TC : Total cost inclusive of taxes, fees, and charges
- TFC : exclusive of fuel surcharge
- DF : Detour Factor



The cost of detour and lack of connectivity

Difference in operating costs for Senegal/Morocco to Kenya/Tanzania

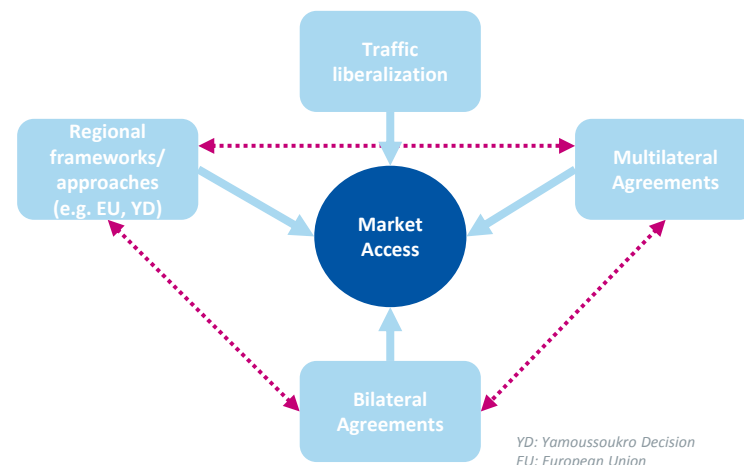
- The detour factor to travel from Morocco/Senegal to Kenya/Tanzania is **1.40**, meaning that passengers travel on average **40% more distance** than a nonstop flight.
- The market size is **25,000** passenger a year and **19,000** of them are flying a connecting flight.
- Based on the average cost structure of air carriers, the **flight operations costs**¹ are **38,900 \$** for the nonstop flight and **54,500 \$** for the connecting flight.
- The extra cost of this network inefficiency (economic and environment) is ultimately borne by all the passengers of the network.

¹ flight crew salaries and expenses, aircraft fuel and oil, flight equipment insurance, rental of flight equipment.



Overcoming Connectivity Inefficiencies

- **Market Access**
 - Restrictive exchange of **traffic rights** (Bilateral Agreements)
 - **Unsatisfactory implementation** of regional frameworks/multilateral agreements
 - Restrictions through **aircraft ownership and control** clauses
- **Sub-optimal use of**
 - **Air Navigation Services** (incl. ASBUs)
 - **Aircraft Fleets**
 - **Airport Systems**
 - **Facilitation and Security**
- Lack of **Intermodality**
- **Charges and Taxes**
 - Disregard of **key principles**: cost-relatedness, transparency, consultation with users, non-discrimination





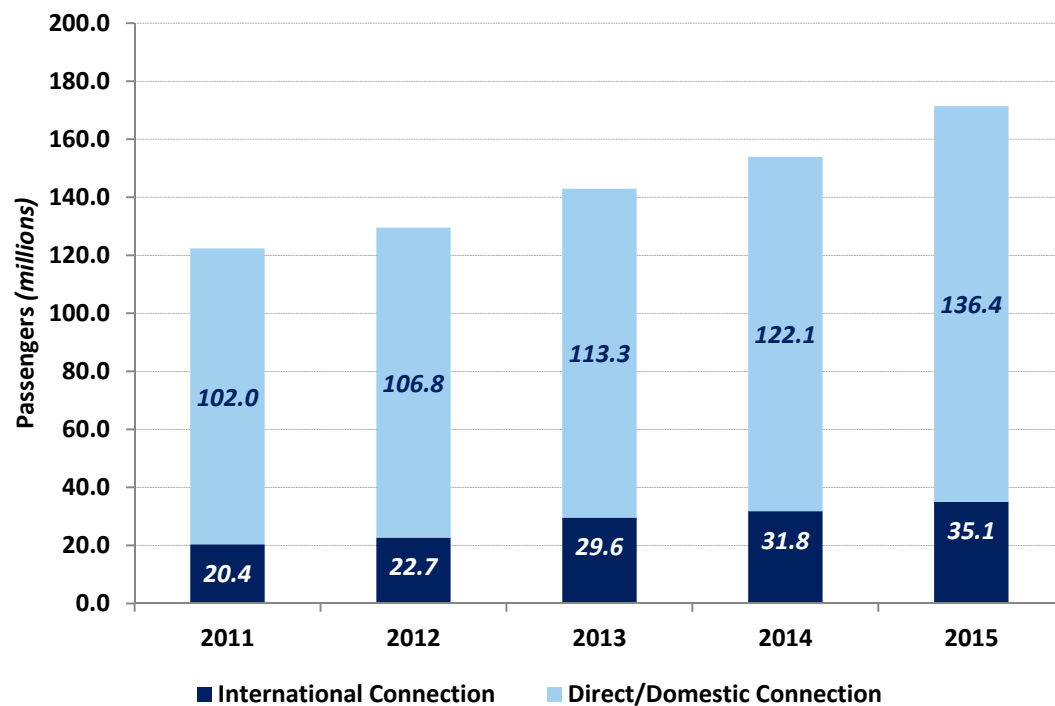
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Regional outlook



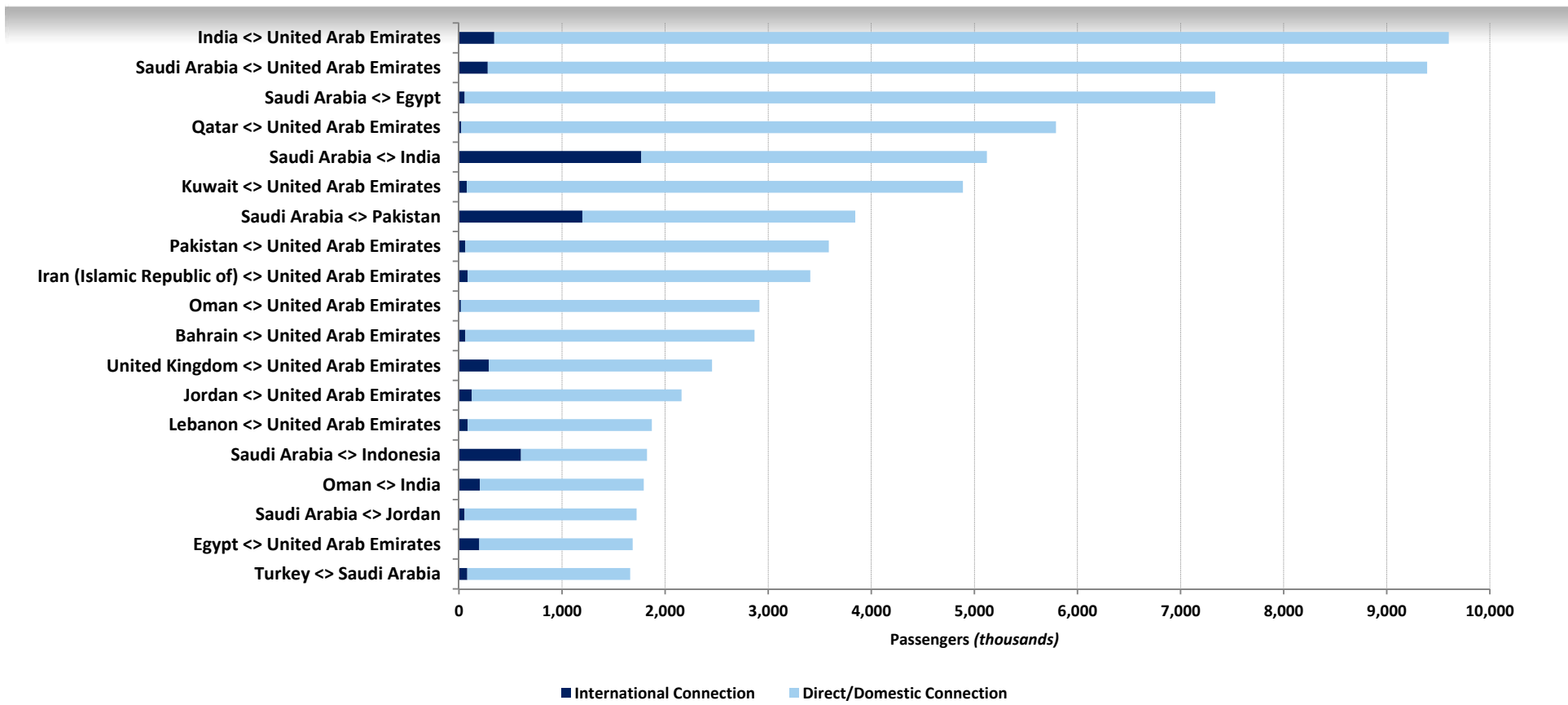
Connectivity of the Middle East in 2015



Number of passengers connecting or flying non-stop to their destination in the Middle East



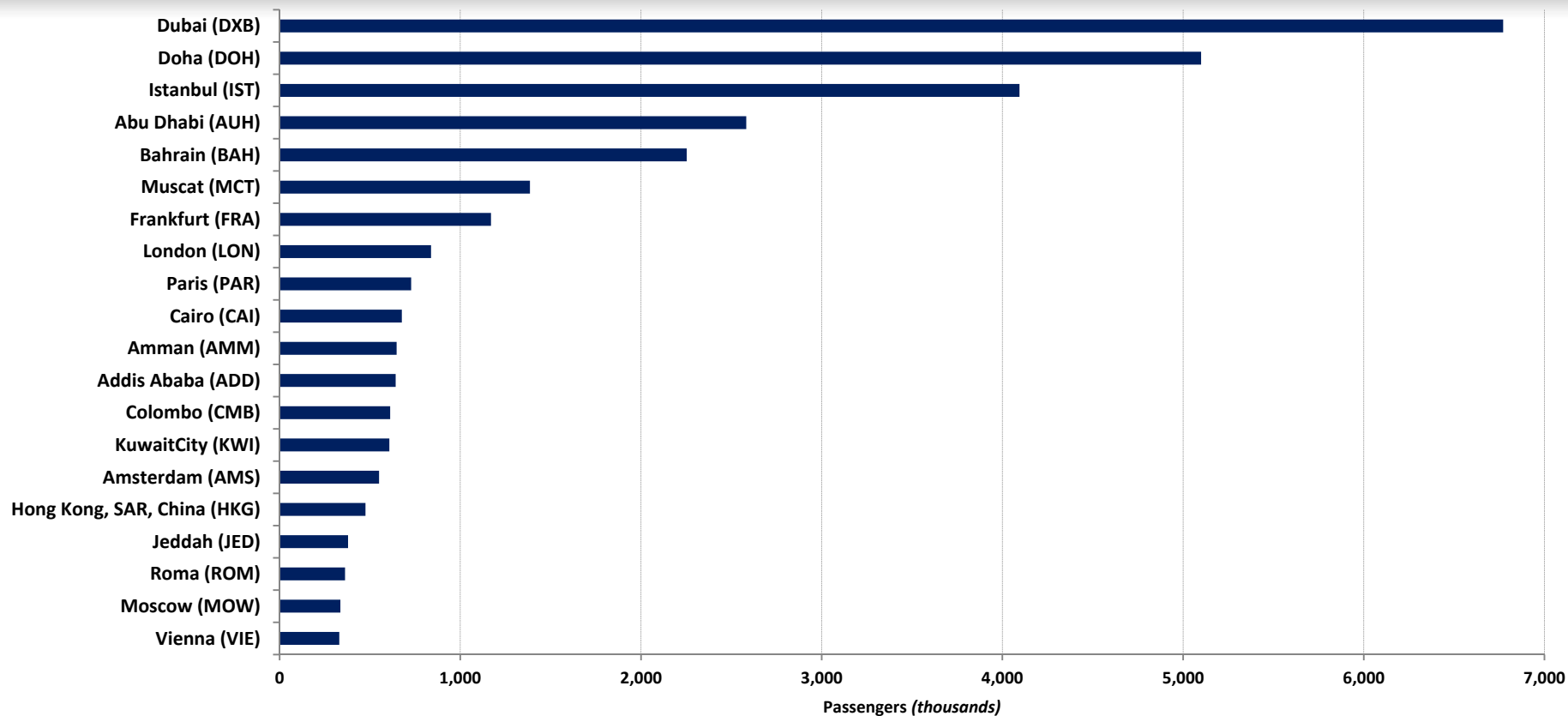
Top State Pairs



Source: ICAO



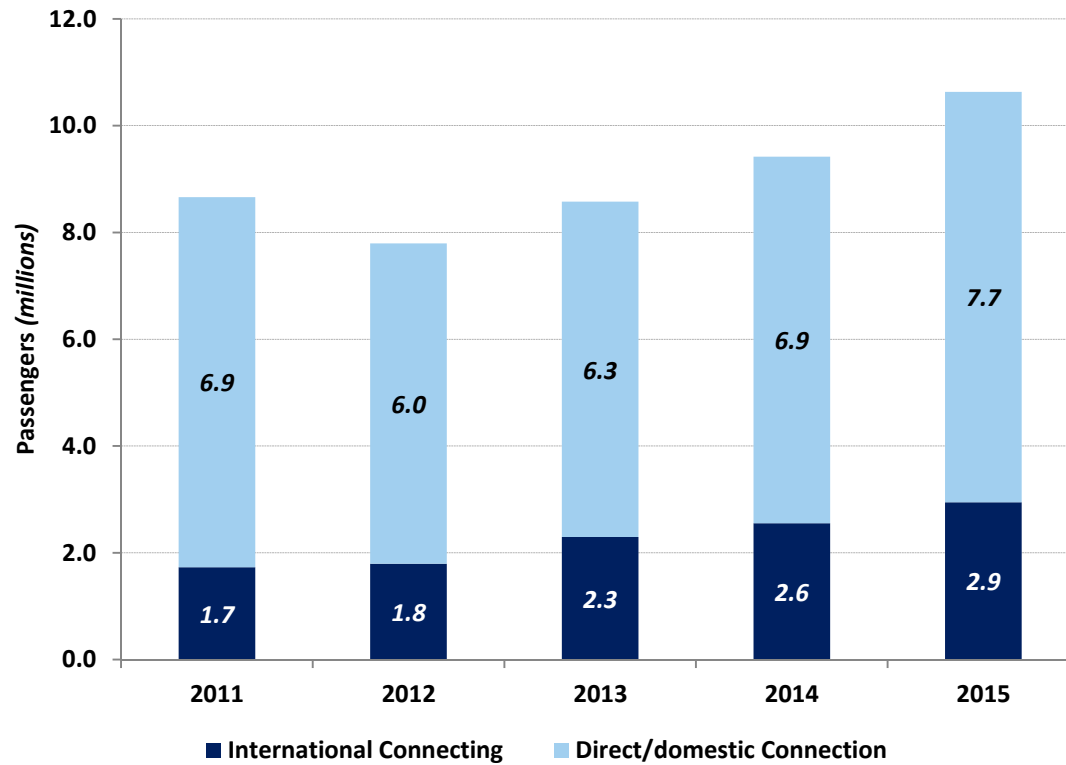
Top connecting Hubs to/from the Middle East in 2015



Source: ICAO



Connectivity of Iran in 2015

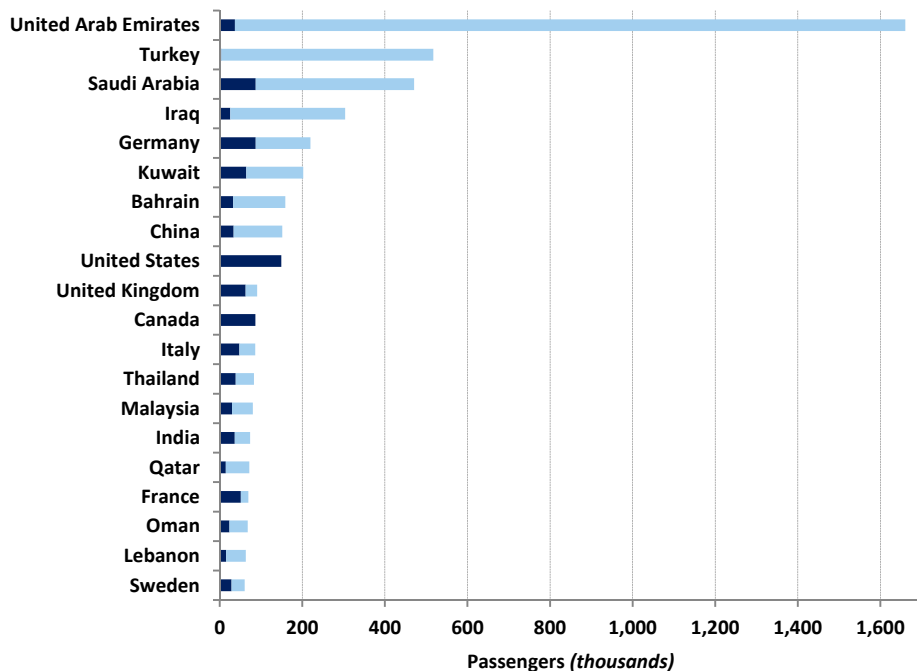


Number of passengers connecting or flying non-stop to their destination to/from Iran

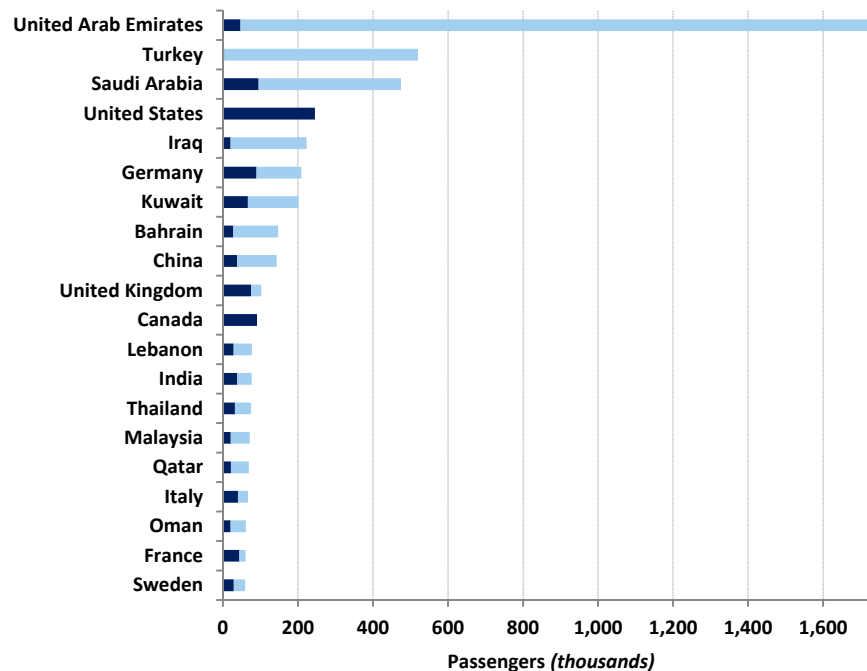


Top destinations to/from Iran in 2015

Top 20 Destinations of Traffic Departing From Iran 2015



Top 20 Origins of Traffic Destined to Iran 2015



■ International Connecting ■ Direct/domestic Connection

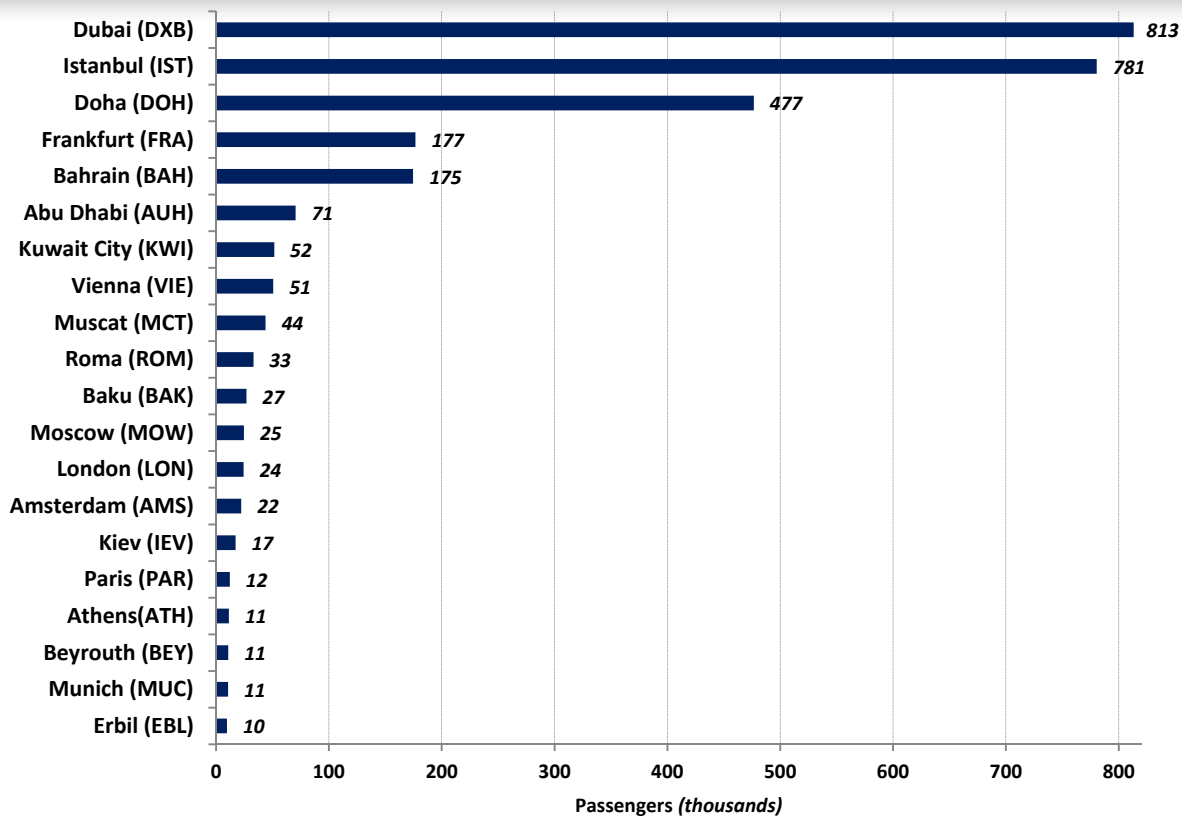
■ International Connecting ■ Direct/domestic Connection



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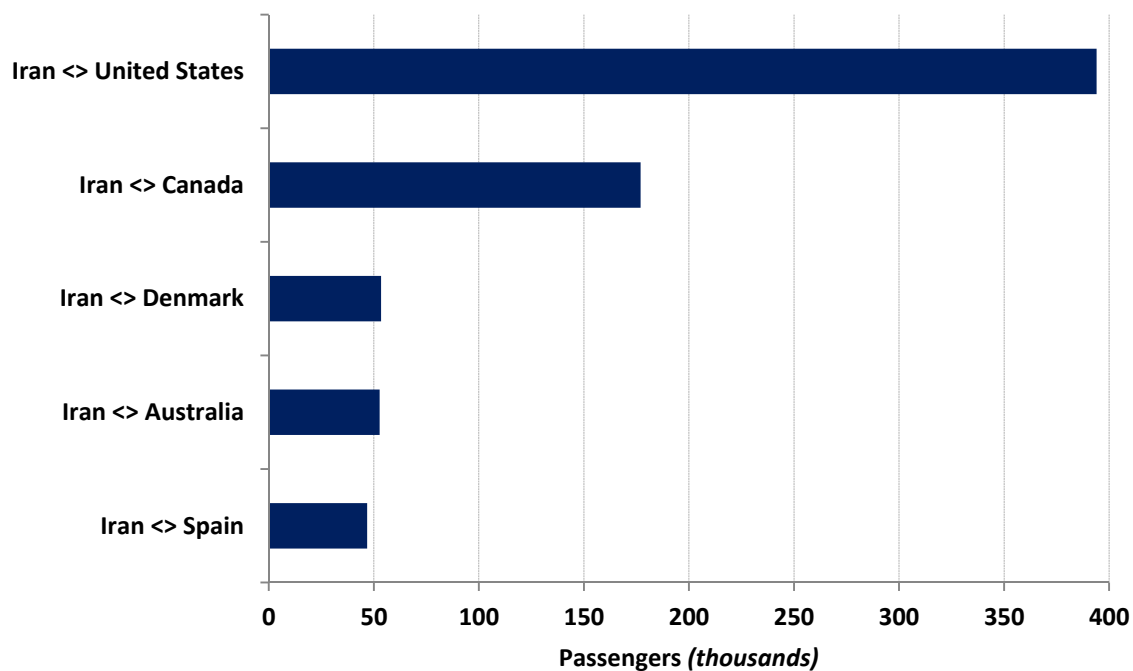
Top International Hubs connecting Traffic to/from Iran in 2015



Source: ICAO



Top 5 Routes (Unidirectional) with no Direct Flights

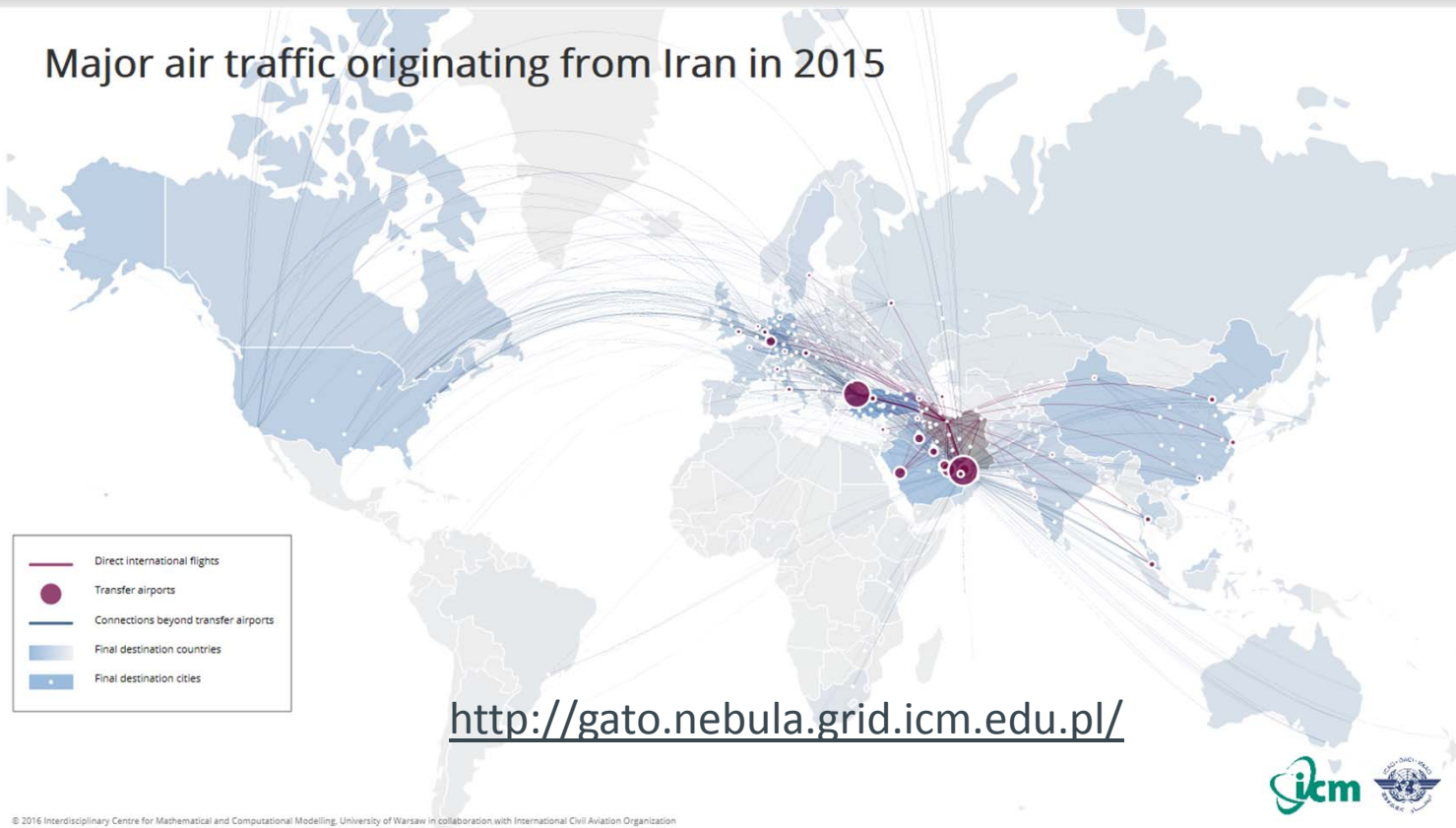


Top Connecting Hub	Proportion of Passengers Connecting via Top Hub
Dubai (DXB)	26%
Frankfurt (FRA)	37%
Istanbul (IST)	60%
Dubai (DXB)	61%
Istanbul (IST)	70%



Connectivity map - Iran

Major air traffic originating from Iran in 2015



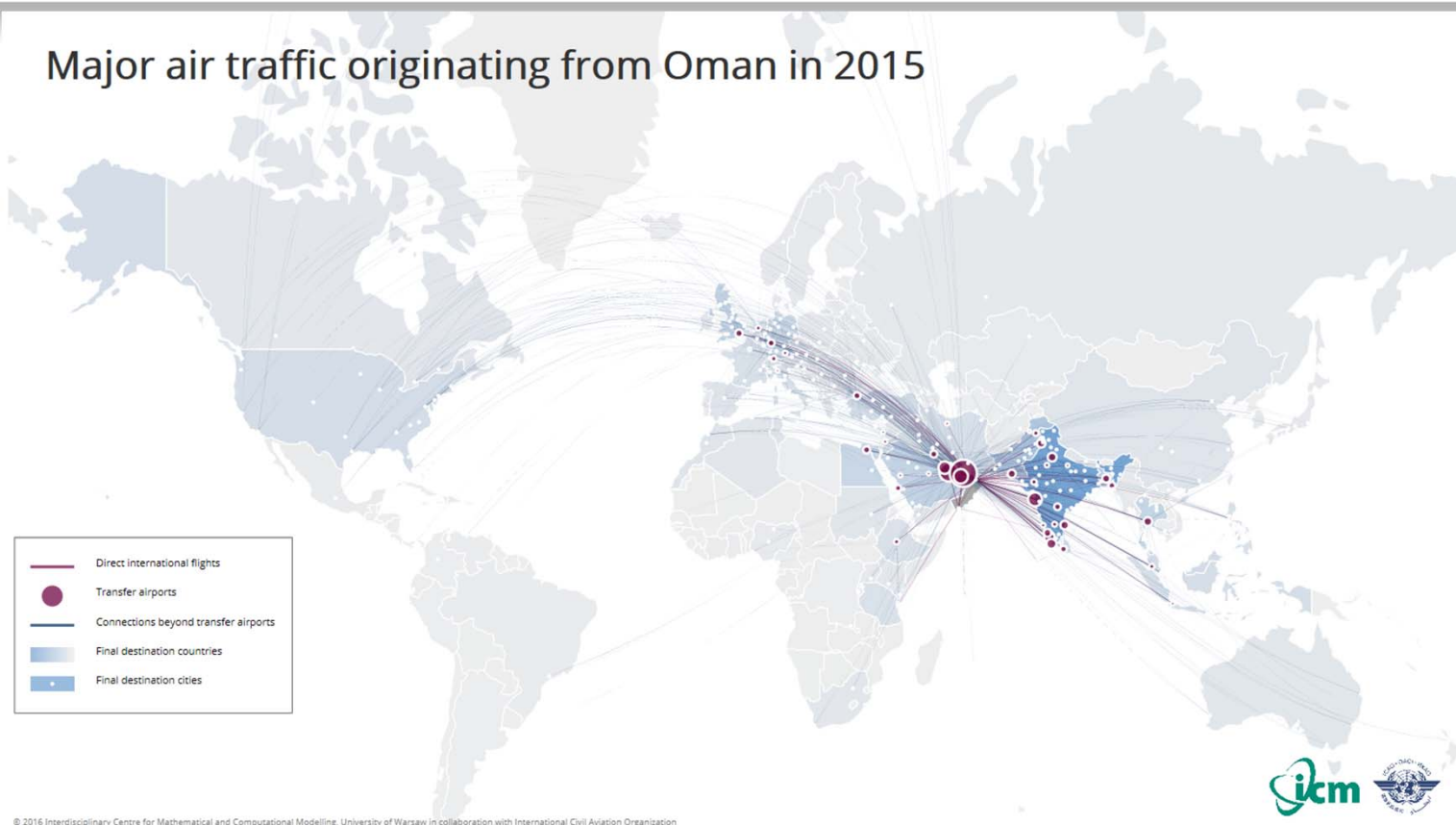
<http://gato.nebula.grid.icm.edu.pl/>

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Connectivity map - Oman

Major air traffic originating from Oman in 2015



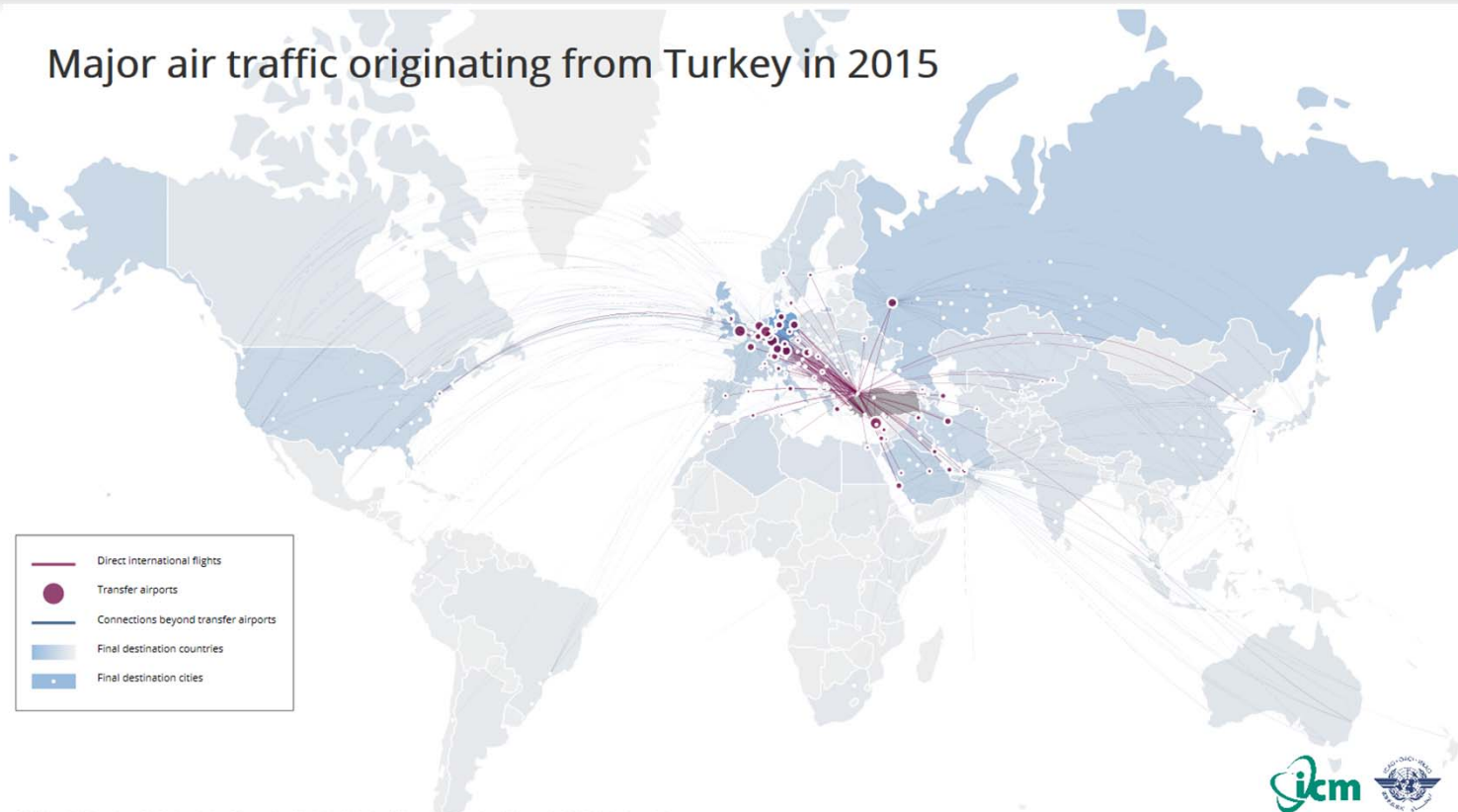
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Connectivity map - Turkey

Major air traffic originating from Turkey in 2015



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