

## Overview of Japanese Business Aircraft Market

### **Executive Summary**

1. During 90's, business aircraft manufacturers became aware of untapped potentiality of Japanese Market
2. Japan was then world second economic power after USA measured by size of annual GDP.
3. As such, there were frequent flow of business people between Japan and outside world.
4. Exchange of business visitors were heavy especially between Japan and USA/Europe.
5. Distance between Tokyo-USA East Coast and Europe is more than 10,000 km.
6. Most expensive Heavy Jets are required to be employed to cover this distance.
7. Japan is island nation requiring air transport to visit even the neighboring regions of Asia-Pacific.
8. This requires use of Mid~Heavy Jets priced between \$20~50 MM.
9. Marketing agents of aircraft manufacturers were major Japanese trading houses eager to seek new business.
10. One other critical issue was Japanese airports were not readied to receive foreign business aircrafts.
11. Japan is highly centralized nation where major activities are centered around Tokyo and few major cities..
12. Most acute problem was access to metropolitan Tokyo where Narita/Haneda had no extra slots to spare.
13. In order to rectify the situation, JBAA (Japanese Business Aviation Association) was established.
14. All the major trading houses except Mitsubishi Corporation joined. JBAA was established in May 1996.
15. Close association between NBAA, EBAA and IBAC (JBAA was admitted as a member in 2001) continues.
16. Major users such as Toyota, Sony, MHI (Mitsubishi Heavy Industries) became founding members.
17. MLIT (Ministry of Land Infrastructure and Transportation) and Tokyo City Government were strong supporters
18. Soon after establishment of JBAA, 3 slots were allocated in Narita gradually expanding then-after.
19. By mid-2000, all but metropolitan Tokyo airports became fully accessible for use by business aircraft.
20. Runway extension in Narita, opening of Ibaragi airport, completion of 4<sup>th</sup> runway in Haneda was seen by 2010.
21. In October 2013, "cabotage restriction" applied to visiting foreign business aircraft was lifted.
22. By end 2013, MLIT provided new operational rules modeled after US Far Part 135.
23. Though some room of improvement do remain, most of infrastructure for use by business aircraft were provided.
24. All looked well except there was major oversight, namely absence of "real market" user client groups.
25. While all the major trading house aircraft marketing divisions were involved, actual users were left out.
26. Top trading houses employees represent large number of international jet setters do not use business jets.
27. This includes top executives but more ironically not even leaders of aircraft division or their staffs.
28. Currently round trip airliner fare between Narita- NY is \$4~5,000 for business, \$11,000 for first class.
29. Expenses of Heavy Jet fluctuate widely by fuel cost but ball-park figure of equivalent to above is \$400,000.
30. Big oversight was Japanese business communities use business aircrafts overseas for half-a-century.
31. Japanese global enterprises adhere to notion of "No national boundary in sky in age of one global market"

32. Toyota, Sony moved their business operating hab to USA. Other global corporations moved out of Japan.
33. Today Japan own 24 light~microjet not suited to make overseas trip.
34. Domestically, it is used to carry foreign business aircraft passengers but Japan lifted "cabotage" restriction.
35. Super-rich, celebrities, VIP and "Privileged Few" can easily charter heavy jets from neighboring countries.
36. Japan is egalitarian society where obvious show of "Wealth and Power" as bad taste and inappropriate.
37. Japanese "bottom up" decision making style do not produce charismatic leader commensurate to use business jets.
38. Meanwhile, Japan do own approximately 800 business aircrafts for past 15 years.
39. Average cost of aircraft is between \$0.3~2.5 MM markedly different from high-end \$50~100 MM aircrafts.
40. Japanese corporate community is aware that airfare of business jet is 50~100times that of commercial airliners.
41. 128 million Japanese live in area equivalent to State of Delaware connected by web of public transportation
42. No blue chip corporations own or use business aircraft but make use of much inexpensive public transportation

### **Where-To**

1. Total aircraft fleet in Japan is approximately 4,000, civil aircrafts 2,000, out of which business aircraft is 800.
2. Business Jet + Turbo-Prop is 61, Piston 256, rotorcraft 518 or total 835. (see chart attached for more details)
3. Global fleet of Business Jet + Turbo-Prop was 35,517, Asia-Pacific 2,336 so that share of Japan's 61 was 0.17%
4. Global fleet of rotorcrafts are 32,830, Asia-Pacific 4,432, Japan 677. according to FAA database.
5. More accurate Japanese registration show piston single 177, turbine single 175 and turbine twin 459 or total 811.
6. Piston single market is dominated by 61 Robinson R-22 and 97 R-44.
7. Popular turbine single are Airbus AS-350/EC-130 series, 42 Bell 206 will eventually be replaced by Bell 505.
8. Robinson R-66 received Japanese certificate in June 2013 and 5 is now in commercial operation.
9. Even these light rotorcrafts are not much engaged in corporate passenger transportation because of high fare.
10. High cost is primarily attributed to low operation rate, 260h/y for top performer but average 150h/y.
11. Initial work have started to achieve drastic cost cutting by cross-industry "joint ownership and operation"
12. Airbus bought stocks owned by C. Itoh to reach market first hand establishing service center in Kobe few year ago.
13. Bell established Bell Helicopter Japan this January starting to reach the market directly by themselves.
14. Robinson's agent Alfa Aviation established assembly, maintenance and training facility few years ago near Narita.
15. Because of highly developed and sophisticated public transportation network in Japan cost competitive is must.
16. Feasibility study will be initiated to provide helicopter as air taxi to complement ground taxi service.
17. Air taxi can connect two points by straight line without ground traffic lights or congestions at 4 times speed.
18. Narita-Tokyo is 60 minutes ride by express train but helicopter 20 minutes, Haneda 30 minutes v.s. 8 minutes
19. Similar as ground taxi, air taxi will serve short distance (25~50 km) for short ride (8~15minutes)
20. Plan calls for containing air taxi fare within 1.5~2 times that of ground taxi fare of ¥350/km
21. This is a preview of what may emerge out of proposed public/cross industry coalition and collaboration.
22. It also requires global collaboration to finally realize corporate air passenger transportation in Japan

**Narrowly Defined Business Aircrafts**  
**(Jet+Turbo)**

Ascend May 2015

	N.America	L.America	Europe	Asia-Pacific	Others	Total
Jet	11,806	2,759	2,855	927	1,226	19,573
Turbo	8,238	2,763	2,043	1,409	1,491	15,944
Total	20,044	5,522	4,898	2,336	2,717	35,517
Share	56.4%	15.5	13.8	6.6	7.7	100.0

	Global	Asia-Pacific	Share	Japan	Share
<b>Business Jet</b>	19,573	927	4.7%	24	0.12%
<b>Turbo-Props</b>	15,944	1,409	8.8%	37	0.23%
<b>Total</b>	35,517	2,336	6.6%	61	0.17%

**Japanese Business Aircrafts End 2014**

Public Registration

Type	Total	Business	Public	Commercial	Individual
<b>Jet</b>	<b>582</b>	24	8	549	1
<b>Twin</b>	567	24	6	536	1
<b>Multiple</b>	15	0	2	13	0
<b>Turbo</b>	<b>129</b>	37	27	64	1
<b>Single</b>	28	25	1	1	1
<b>Twin</b>	101	12	26	63	0
<b>Jet+Turbo</b>	<b>711</b>	61	35	613	2
<b>Piston</b>	<b>540</b>	256	5	26	253
<b>Single</b>	489	241	4	9	235
<b>Twin</b>	51	15	1	17	18
<b>Rotocraft</b>	<b>811</b>	518	169	49	75
<b>Piston Single</b>	177	113	0	3	61
<b>Turbin Single</b>	175	142	12	16	5
<b>Turbine Twin</b>	459	263	157	30	9
<b>Total</b>	<b>1,351</b>	774	174	75	328
<b>Grand Total</b>	<b>2,062</b>	835	209	688	330

**Global Rotorcrafts Regional Distribution**

FAA Database April 2015

Total	N. America	Europe	Asia-Pacific	L. America	Others
32,830	19,505	5,832	4,432	1,678	1,383
Share	59.4%	17.8	13.5	5.1	4.2

**Rotorcraft Fleet of Top 15 Nations**

FAA Database April 2015

Rank	Country	Number	Rank	Country	Number
1	U.S.A.	17,132	9	Japan	677
2	Canada	2,373	9	Kazakhstan	677
3	U. K.	1,796	11	Italy	670
4	Australia	1,483	12	Brazil	555
5	South Africa	793	13	Mexico	381
6	New Zealand	756	14	Switzerland	296
7	France	753	15	India	259
8	Germany	682	Top 15	29,283	89.2%

**Rotorcrafts Within Asia-Pacific Region**

FAA Database April 2015 (Asian Sky Group Feb. 2015)

Rank	Country	Number	Rank	Country	Number
1	Australia (Asian Sky Group)	1,796 —	6	Indonesia	115 (179)
2	New Zealand	756 —	7	Philippines	84 (179)
3	Japan	677 (800)	8	Thailand	83 (115)
4	India	259 —	9	Malaysia	68 (173)
5	China	221 (655)	10	Others	373 (362)
	Mainland	214 (583)	<b>Top 10</b>	<b>Region Total</b>	<b>4,432</b>
	Hong Kong	3		<b>Share</b>	<b>91.5%</b>
	Macau	4 (31)			

	Taiwan	— (41)			
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The most reliable data on China and Southeast Asia is that of ASG (Asian Sky Group) ASG is joint venture of Avro, Inc of USA and AVIC International of China headquartered in Hong Kong. ASG data is inserted here in parenthesis.

### **Rotorcrafts in Japan**

Public Registration	Asian Sky Group end Year 2014	FAA Database 2015
Total 811	800	677
Piston Single 177		
Turbine Single 175		
Turbine Twin 459		

The most reliable data available for Japan is Japanese public registration data.

### **Popular Low Cost Rotorcrafts Used in Japan**

Japanese Public Registration FAA Data April 2015

Type	Japan	U.S.A.	Global
Airbus	<u>97</u>	<u>2,348</u>	<u>3,895</u>
AS-350/ EC-130 Series	94	2,125	3,503
EC-120 Series	3	223	392
Bell 206 Series	<u>42</u>	<u>4,279</u>	<u>4,619</u>
Robinson	<u>163</u>	<u>4,918</u>	<u>7,412</u>
R-22 Series	61	2,310	3,233
R-44/ R-44 II	97	2,174	3,719
R-66	5	434	460

Since Airbus, Bell, Robinson have strong presence in Japan coupled with full line service and training infrastructure, future competition will center around these three manufacturers. Airbus started production of EC-120 at Harubin, China from end 2013 to bring down the manufacturing cost after securing orders for 150 aircrafts. 42 Bell 206 series are in operation in Japan. High expectation exists for Bell 505 which can replace some of Bell 206 . Robinson R-66 started commercial operation from autumn 2013 with good performing records viewed to be major contender for future air taxi fleet.

### **End 2014 Low Cost Rotorcrafts in Japan**

Public Registration 2015

	R-22	R-44	R-66	Bell 206	EC-120	AS-350/EC-130
Piston Single	61	97				
Total 177	34.5%	54.8				
Turbine			5	42	3	94
Single			2.9%	24.0	1.7	53.7
Total 175						

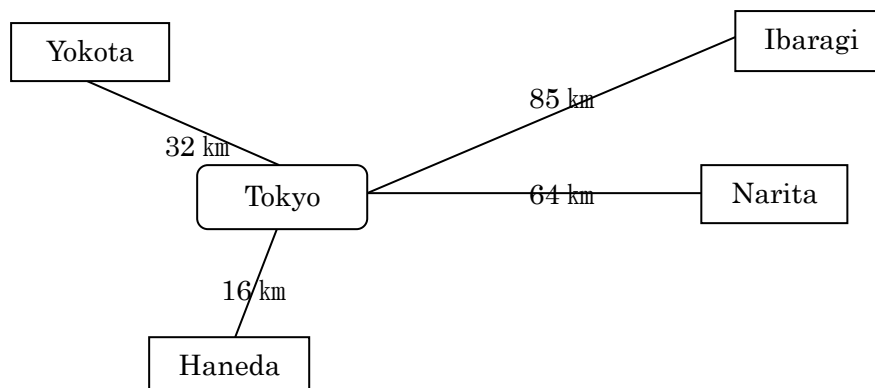
Actual market data exhibits types of rotorcrafts that are more congenial to regional environment and customer needs.

#### **4 Airports in Vicinity of Metropolitan Tokyo**

(Distance from center of Tokyo)

Airport	Haneda	Narita	Ibaraki	Yokota
Distance	16 km	64 km	85 km	32 km
Time Required	8 minutes	20 minutes	26 minutes	10 minutes

Applied helicopter cruising speed is 200km/h.



Narita is major international airport closed during night time because of noise restriction. Haneda is now open for international flights and allow midnight early morning flights. Ibaraki because of distance and less convenient transportation access are utilized by LCC. Once air taxi can connect Ibaraki to metropolitan Tokyo, it will be 26 minutes ride. For instance, Narita-ANA downtown hotel air taxi service will require 20 minutes ride v.s. using express train-ground taxi or limousine bus spending 80 minutes, if no traffic congestion will cause unwanted delay,

#### **Scope of Greater Kanto Area**

地理区分	Area	Population	Regional GDP
Japan Total	372,924 km <sup>2</sup>	127.8 MM	495.6 (Trillion Yen)

<b>Greater Kanto</b>	70,814 (19%)	51.1 (40%)	221.9 (44.8%)
<b>Kanto</b>	32,560 (46%)	42.2 (33%)	186.4 (31.6%)
<b>Greater Tokyo</b>	2,189 (6.7%)	13.2 (10.3%)	91.1 (18.3%)
<b>Metropolitan Tokyo</b>	65 (3%)		

Greater Kanto area cover 100~150 km (62~93 miles) radius of Tokyo. This area occupies 20% of Japanese land area, house 40% of Japanese population and produce 45% of Japanese GDP. While land area is about the size of Ireland and population of Korea, GDP is about Brazil, Russia if exchange rate of ¥100/\$ is applied but at ¥80~90/\$ (Japanese yen has appreciated in past to below ¥80/\$), it can exceed France and UK. In short, there is high concentration of commercial activities within the area that can be served by helicopter. Although all the cities in this area are well connected by express train, local railroad, bus and highways, there are numerous less accessible pockets that can be served by short ride air taxi (25~50 km)

There are astonishing concentration of major business firms within center of Tokyo which require two-way movement of people between headquarter→neighboring manufacturing sites, research facilities, delivery center and local business clients.

One imminent need is how to cope with visitors of upcoming Tokyo Olympic 2020, but more urgent is mushrooming visitors from neighboring area thanks to growing affluent middle-class. There are large market for EMS, SAR, law enforcement and fire fighting.

<b>Area</b>		<b>Closest Overseas Nation</b>
<b>Japan Total</b>	372,924 km <sup>2</sup>	Zimbabwe 390,580 Germany 357,021 (World Rank 61th)
<b>Greater Kanto</b>	70,814	Sierra Leone 77,474, Ireland 70,280 (World Rank 118th)
<b>Population</b>		
<b>Japan Total</b>	127.8 MM	Russia 142.9, Mexico 118.4 (World Rank 10th)
<b>Greater Kanto</b>	51.1	S.Africa 53, Korea 50.2 (World Rank 26th)
<b>Regional GDP</b>		
<b>Japan Total</b>	495.6 (Tl ¥)	World number 3 after USA and China
<b>Greater Kanto</b>	221.9	Brazil 224.2, Russia 211.8.

### Population of Cities

Demographia 2012

### GDP of Cities

Brookings Institution 2012

<b>Rank</b>	<b>City</b>	<b>Population</b>	<b>Rank</b>	<b>City</b>	<b>GDP</b>
<b>1</b>	Tokyo	37,126 K	<b>1</b>	Tokyo	\$1,520 Bil
<b>2</b>	Jakarta	26,036	<b>2</b>	New York	1,210
<b>3</b>	Seoul	22,547	<b>3</b>	Los Angeles	786.7

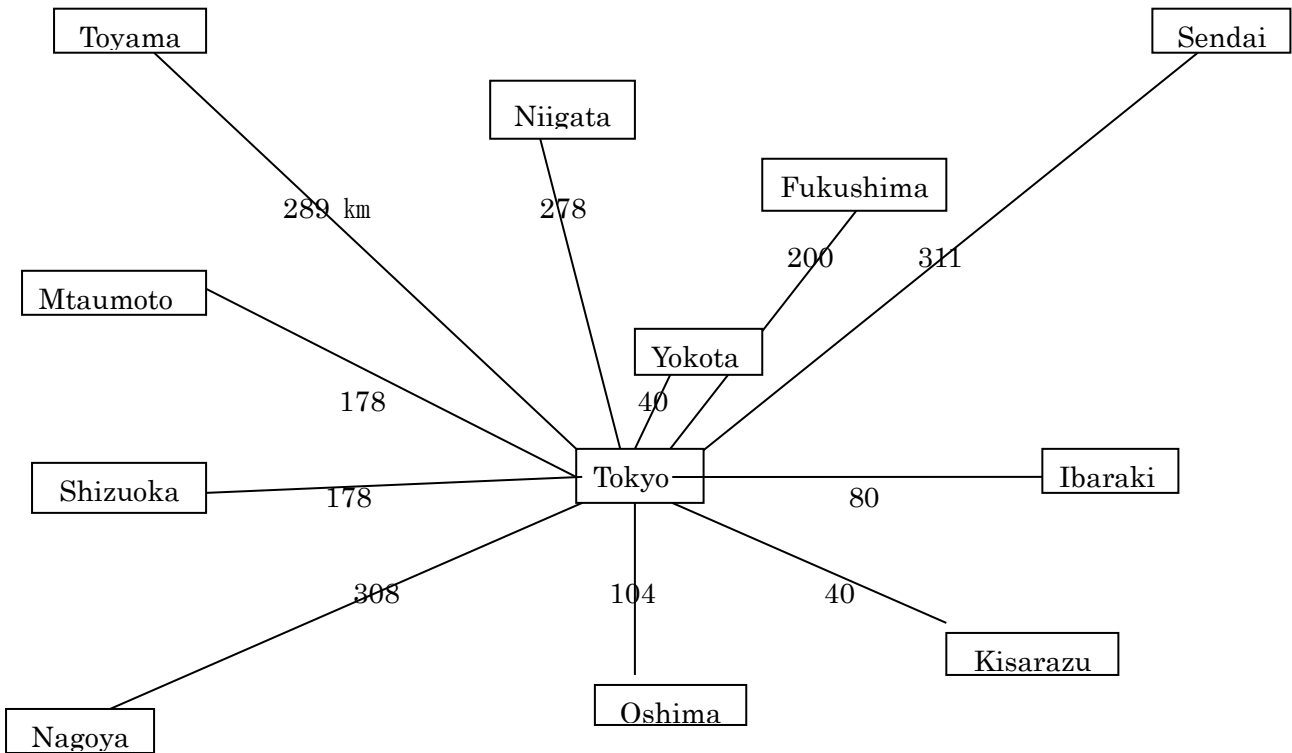
4	Delhi	22,242	4	Seoul	773.9
5	Manila	21,951	5	London	731.2

**Number of Billion Dollar Corporation Headquater**

McKinsey Data

Rank	City	Number
1	Tokyo	613
2	New York	217
3	London	193
4	Osaka	174
5	Paris	166

**Neighboring Regional Airports**



<b>USA</b>	New York – Washington 379 km, Boston 333, Pittsuburgh 606, Detroit 407
<b>Europe</b>	Frankfurt – Zurich 306 km, Wien 594, Milan 515, Paris 475

Above is to demonstrate different sense of distance in Japan and USA/Europe. Japanese distance can be covered easily by low cost light rotorcrafts.