

# Opportunities and Risk of eVTOL Financing

## - View from Development Bank of Japan -

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September 2023



# Profile

As of March 31, 2023

<b>Established</b>	October 1, 2008 (Former Japan Development Bank: <b>1951</b> , Former Hokkaido-Tohoku Development Finance Public Corporation: 1956)
<b>President</b>	Seiji Jige
<b>Total assets</b>	¥21,160.5 billion
<b>Loans</b>	¥15,176.2 billion
<b>Capital adequacy ratio</b>	15.15%(Basel III, BIS standard)
<b>Issuer credit ratings</b>	A1 (Moody's Investors Service, Inc.), A(Standard & Poor's Corp.), AA+ (Rating and Investment Information, Inc.), AAA (Japan Credit Rating Agency, Ltd.)
<b>Number of employees</b>	1,270
<b>Offices</b>	Head Office, 10 Branch Offices, 8 Representative Offices, 4 Overseas Subsidiaries

Note: Information above is on a non-consolidated basis.

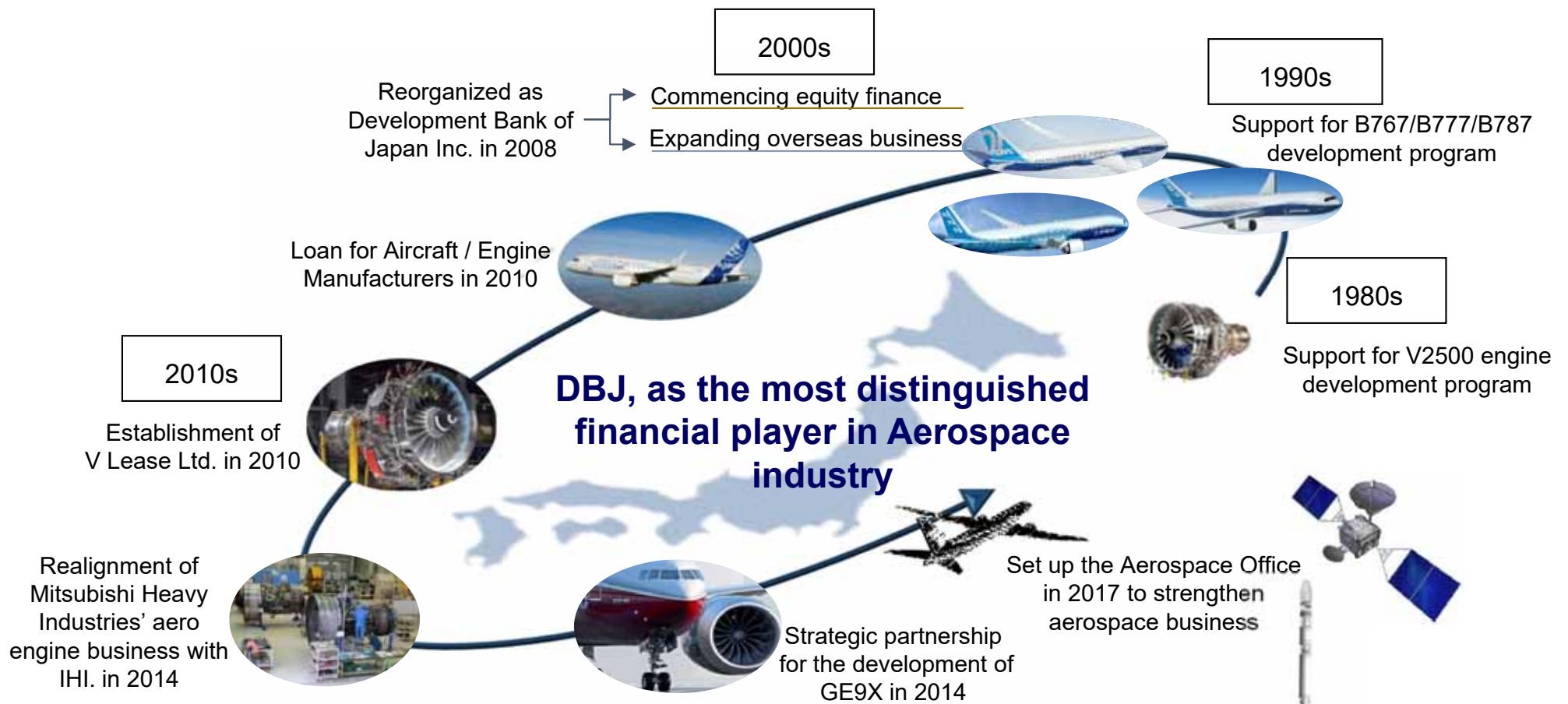
# DBJ's History and Roles

Since the days of its predecessors, the DBJ Group has worked to **promote Japan's sustainable development**. We have achieved this by responding flexibly to the issues of the day, through the periods of postwar reconstruction, high and stable growth, and the bubble economy and its collapse.

<u>Year</u>	<u>Themes and Issues of the Day</u>	<u>Projects</u>		
1951~	Rebuilding Vital Industry in the Postwar Era Nurturing of New Industry	Shipbuilding Program 	Building Steel Mills 	Factory for Calculators 
1970-80s	Strengthening International Competitiveness Stable Supply of Energy Reinforcement of Transportation	Sony Corporation 	LNG Power Plant 	Reinforcing Transportation 
1985~	Industrial Transformation Redevelopment of Infrastructure Regional Revitalization	Kansai Airport 	Tokyo Dome 	Tateyama Kurobe Kanko 
2008~	Crisis Response (ex: Financial Crisis, COVID) Post-Earthquake Reconstruction Building of Sustainable Society	COVID Crisis Response 	Pasmo 	Hydrogen Station 

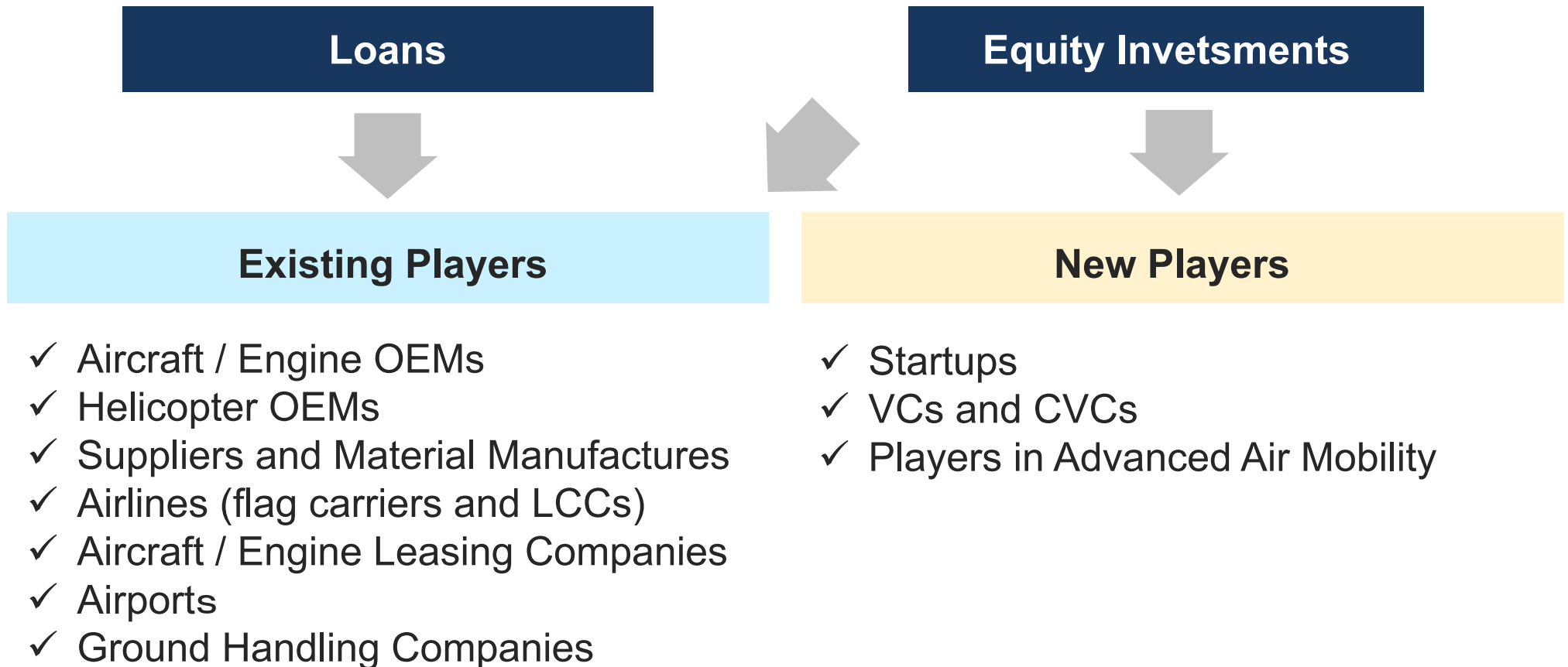
# DBJ and the Aviation Industry

- DBJ has been **supporting the growth of the aviation industry for the last 40 years** and provided debt and equity finance for various key projects in aviation history.
- In 2017 DBJ **established the Aerospace Office** and expanded its activities to space industry.



# DBJ's Overall Activities in the Aviation industry

- DBJ provides financing to various players **in the entire value chain of the industry**.
- In recent years DBJ has been trying to **expand its network and activities in the new area** to contribute to the industry's next phase of growth.



# DBJ's Equity Investment and Activities in Advanced Air Mobility



- **SkyDrive** is a Japanese start-up, developing a 2-seater multicopter type eVTOL, and is aiming to launch their service at the Osaka Expo in 2025.
- **DBJ has made equity investment to SkyDrive in 2020**, and has provided various kinds of support including, introducing potential customers and industrial partners.

Image: SkyDrive HP

- Together with Keio University, DBJ conducted **research on use cases of eVTOLs in Japan** and published the report in 2021.
- The local government in **Ehime prefecture** and DBJ are working together to make eVTOL reality in Ehime. Ehime and DBJ hold the symposium in July 2022 and **launched the roundtable** which is consisted from various local players.

# Symposiums on the Topic of “Manufacturing eVTOLs” hosted by DBJ

DBJ iHub オンラインシンポジウム

## 「ものづくり」としての空飛ぶクルマ産業

～次世代主要産業の成長可能性～

我が国にて、空飛ぶクルマ産業創造を目指す関係各省に加え、すでに空飛ぶクルマ産業に参画している機体メーカーやサプライヤーをお招きし、産業としての魅力や目指す世界などを語っていただきます。我が国の新たな一大産業を創り上げるきっかけを創造する本シンポジウムに、皆様是非ご参加ください。

日時 2021.11.12(金) 14:00-16:00 (オンライン開催)

参加費 無料

©Joby Aviation ©SkyDrive ©Volocopter

プログラム ※ 敬称略。変更の可能性もございます。

14:00-14:05	開会挨拶 株式会社日本政策投資銀行 取締役常務執行役員 村上 努
14:05-14:15	オープニング講演 ・「空飛ぶクルマ市場誕生に向けての世界的動き」 株式会社日本政策投資銀行 企業金融第2部 航空宇宙室 調査役 岩本 学
14:15-14:40	基調講演 ・「空飛ぶクルマの安全な飛行に向けたルール作りの現状」 国土交通省 航空局 大臣官房参事官(次世代航空モビリティ) 成澤 浩一 ・「空飛ぶクルマの産業振興に向けた取組」 経済産業省 製造産業局 次世代空モビリティ政策室長 川上 悟史 ・「航空宇宙産業ビジネスマッチングのご紹介」 関東経済産業局 航空宇宙・自動車産業室長 白戸 恒彦
14:40-15:30	企業講演(機体メーカー3社、サプライヤー2社) ・Joby Aviation, Inc. Strategic Business Relationships Lead 小早 康之 ・株式会社SkyDrive 代表取締役CEO 福澤 知浩 ・Volocopter GmbH Japan Consultant 羽東 良純 ・株式会社デンソー 執行幹部 石塚 康治 ・東レ株式会社 航空材料事業部長 塚原 憲明 ※オンライン開催のため交流会等は開催しませんが、登壇者に個別のコンタクトを希望される方は、シンポジウム終了後のアンケートにご記載ください。
15:30-15:55	質疑応答
15:55-16:00	閉会挨拶 株式会社日本政策投資銀行 業務企画部 イノベーション推進室長 竹森 祐樹

DBJ iHub オンラインシンポジウム 第2弾

## ものづくりとしての空飛ぶクルマ

- 空飛ぶクルマの産業創造 -

参加費 無料

米国や欧州をはじめとした世界各国で、空飛ぶクルマの実現に向けた動きが加速しています。昨年度に続き、空飛ぶクルマ産業拡大への機運醸成や連携に向け、オンラインイベントを開催します。政府の足下の取組みや、国内外の「空飛ぶクルマ」機体メーカーからの最新の話題をお届けする本シンポジウムにぜひご参加ください。

日時 2023.1.18(水) 15:00-17:30 (オンライン開催・同時通訳あり)

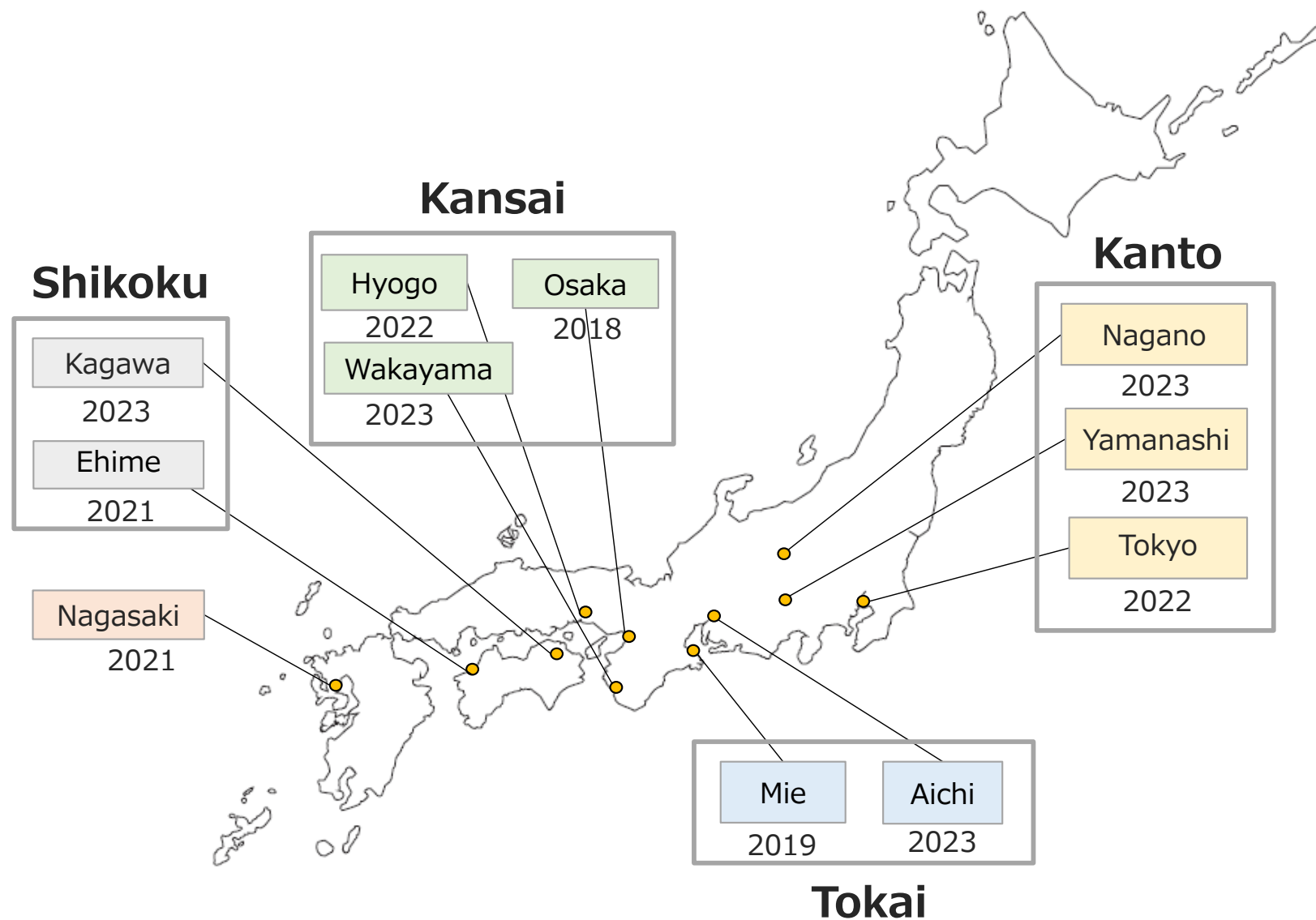
プログラム ※ 敬称略。変更の可能性もございます。

15:00-15:05	開会挨拶	日本政策投資銀行 取締役常務執行役員 北所 克史
15:05-15:12	基調講演①	経済産業省 次世代空モビリティ政策室長 宇田 香織
15:12-15:19	基調講演②	経済産業省 航空機武器宇宙産業課 課長補佐 岩永 健太郎
15:19-15:26	基調講演③	関東経済産業局 航空宇宙・自動車産業室長 釜田 雅樹
15:26-15:40	パネル ディスカッション	パネリスト：宇田 香織、岩永 健太郎、釜田 雅樹 ファシリテーター：日本政策投資銀行 産業調査部 調査役 岩本 学
15:40-15:55	企業講演①	SkyDrive 代表取締役CEO 福澤 知浩
15:55-16:10	企業講演②	BETA Technologies Patrick Buckles, Chief Revenue Officer
16:10-16:25	企業講演③	EVE Air Mobility Augustine Tai, Head of Business Development (APAC)
16:25-16:40	企業講演④	Vertical Aerospace Jenny Harcourt
16:40-16:55	企業講演⑤	ロールス・ロイスジャパン 代表取締役社長 神永 晋
16:55-17:10	企業講演⑥	AeroEdge 代表取締役社長 兼 執行役員CEO 森西 淳
17:10-17:25	企業講演⑦	Leonardo Giuseppe Sernicola, Senior Vice President New Initiatives
17:25-17:30	閉会挨拶	日本政策投資銀行 業務企画部イノベーション推進室長 竹森 祐樹

主催 DBJ 株式会社日本政策投資銀行 ERI 一般財団法人日本経済研究所

後援 兼松株式会社 双日株式会社 丸紅株式会社

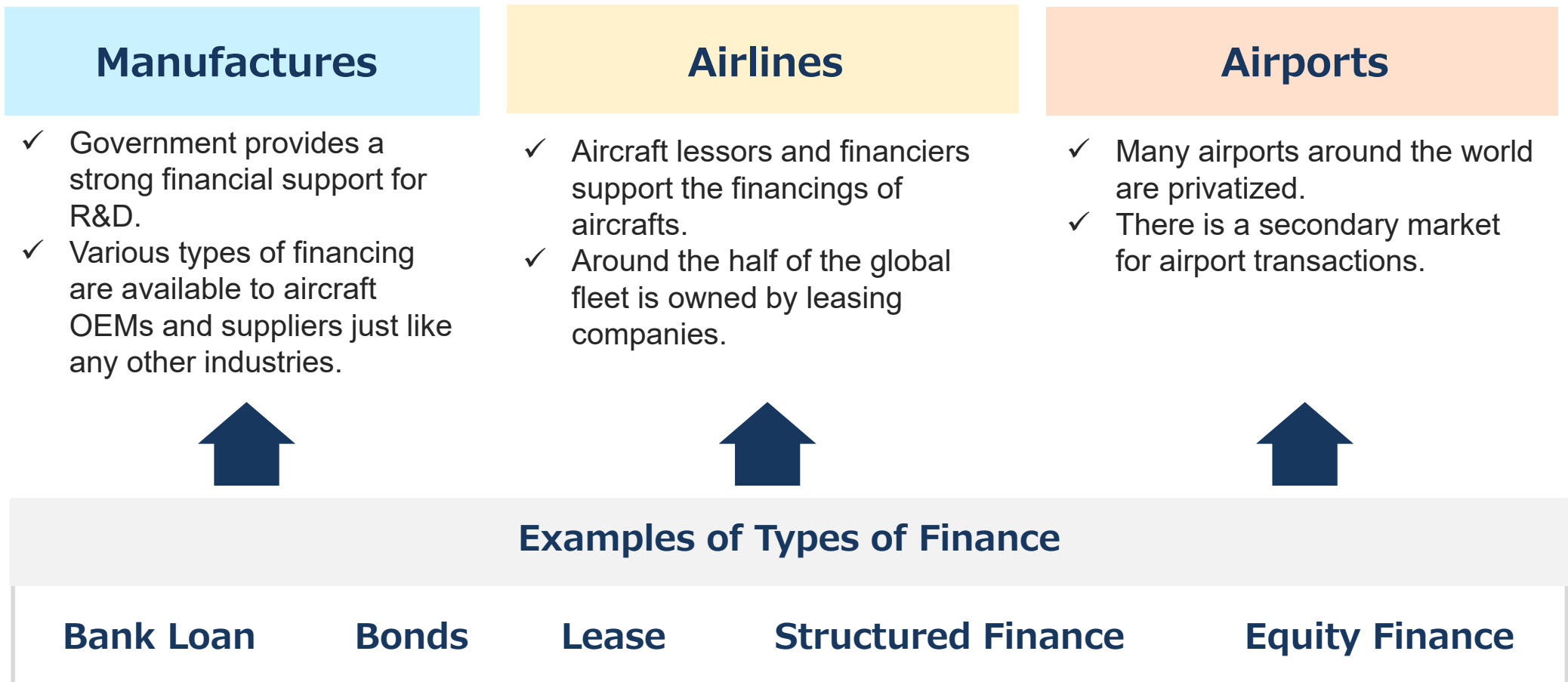
# Local Governments in Japan with an Interest to eVTOL



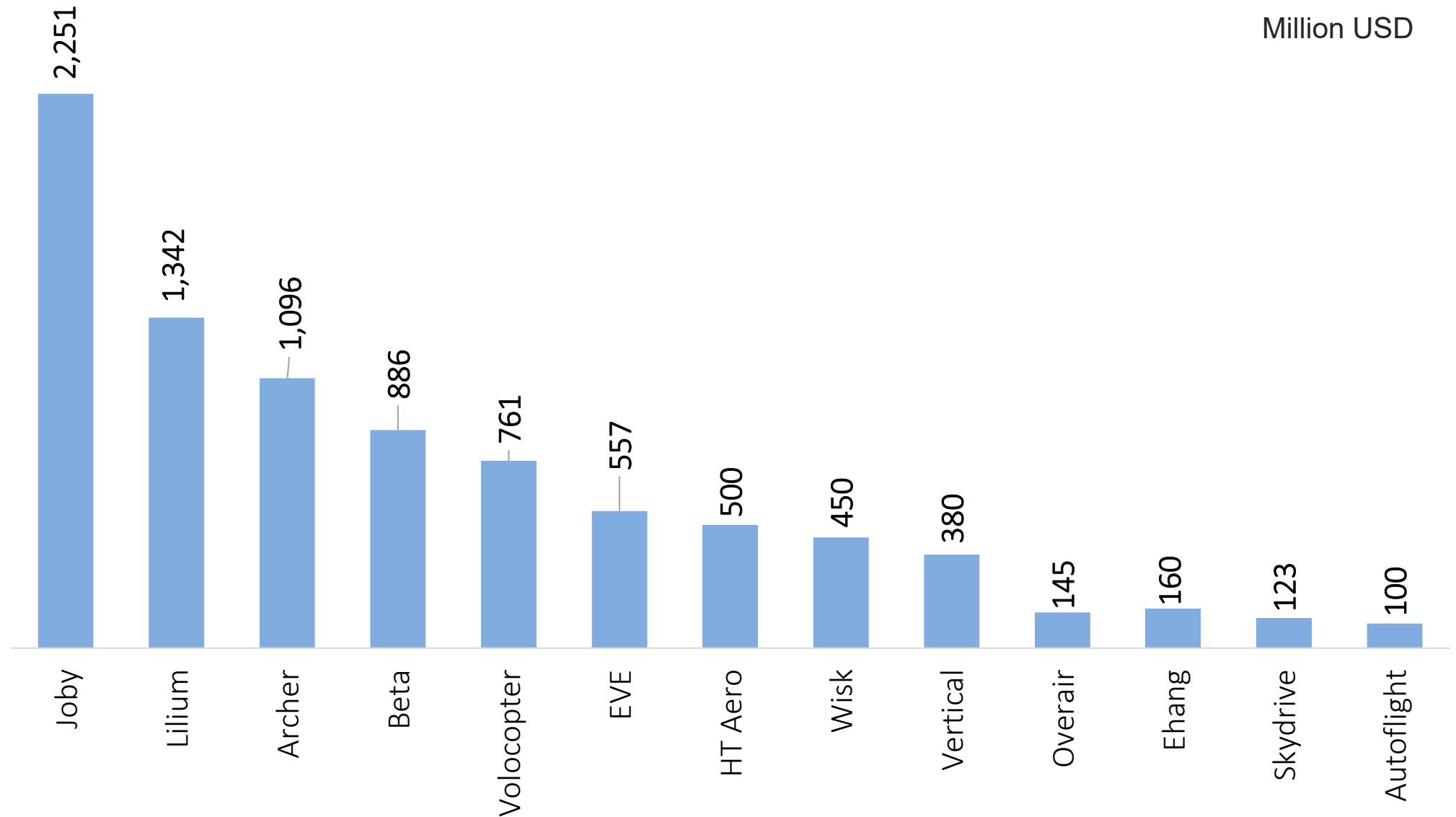


# Financing Market for the Commercial Aviation Industry

- The rapid growth of the three main business in the commercial aviation industry cannot be achieved without the active support from the financing sector.
- Various types of finance products are available for these players since 1) **their cash flow is predictable** and 2) **the value of their assets is stable**.



# Funding by eVTOL Startups as of August 2023



# Examples of Investors of eVTOL Startups

## Aircraft OEMs and Suppliers

- Boeing
- Embraer
- Rolls Royce
- Honeywell
- BAE
- Thales

## Airlines including Leasing Companies

- American
- United
- Delta
- Skywest
- Republic
- JAL via CVC
- Avolon
- Tokyo Century
- Azorra

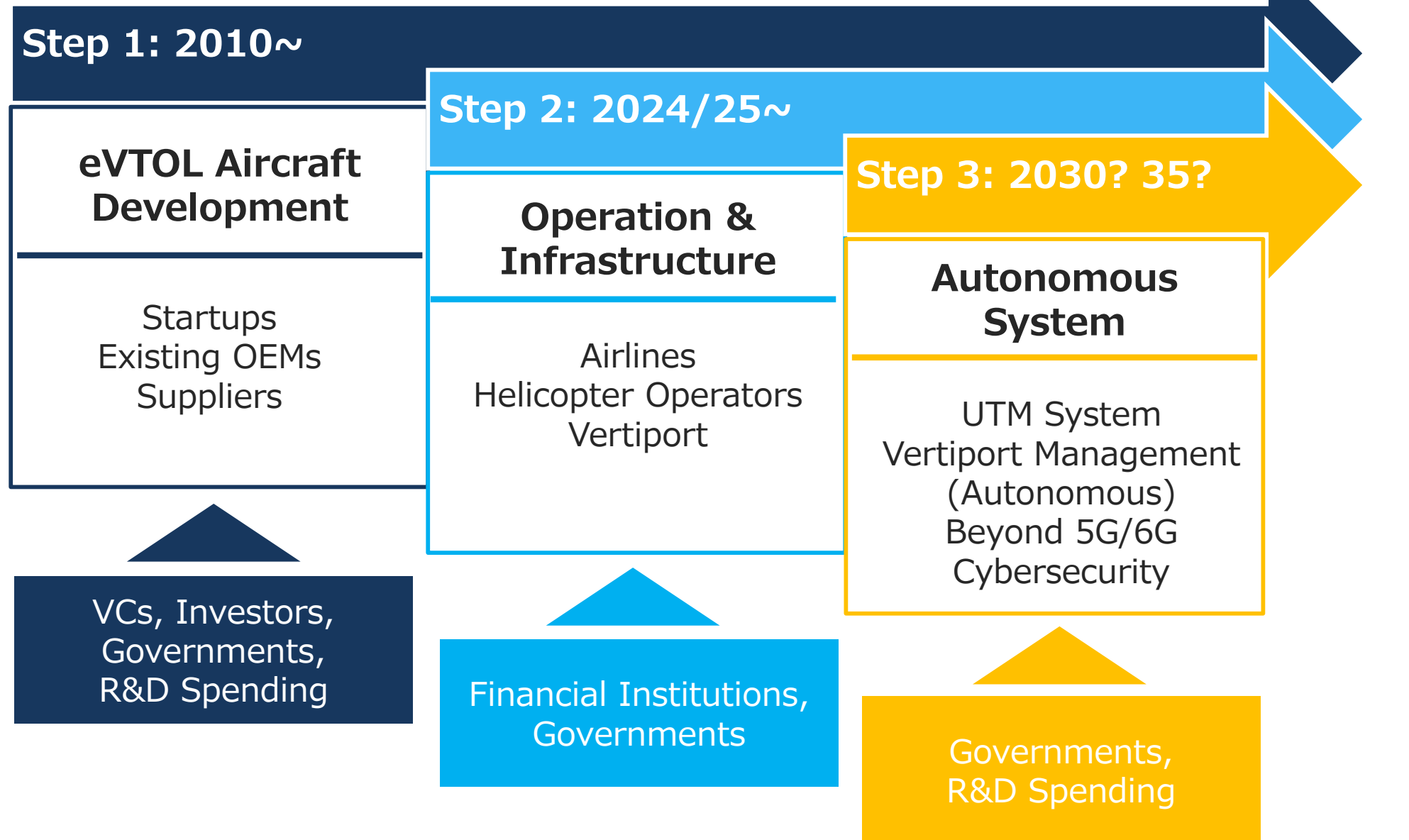
## Automobile Companies

- Toyota
- Stellantis
- Daimler/Geely
- Continental
- Xpeng
- Uber
- SUZUKI

## Others

- Microsoft
- NTT
- Amazon
- Tencent
- Palantir
- Black Rock
- Fidelity
- Institutional Investors
- VC/CVC

# Emerging Opportunities to Finance in the eVTOL Industry



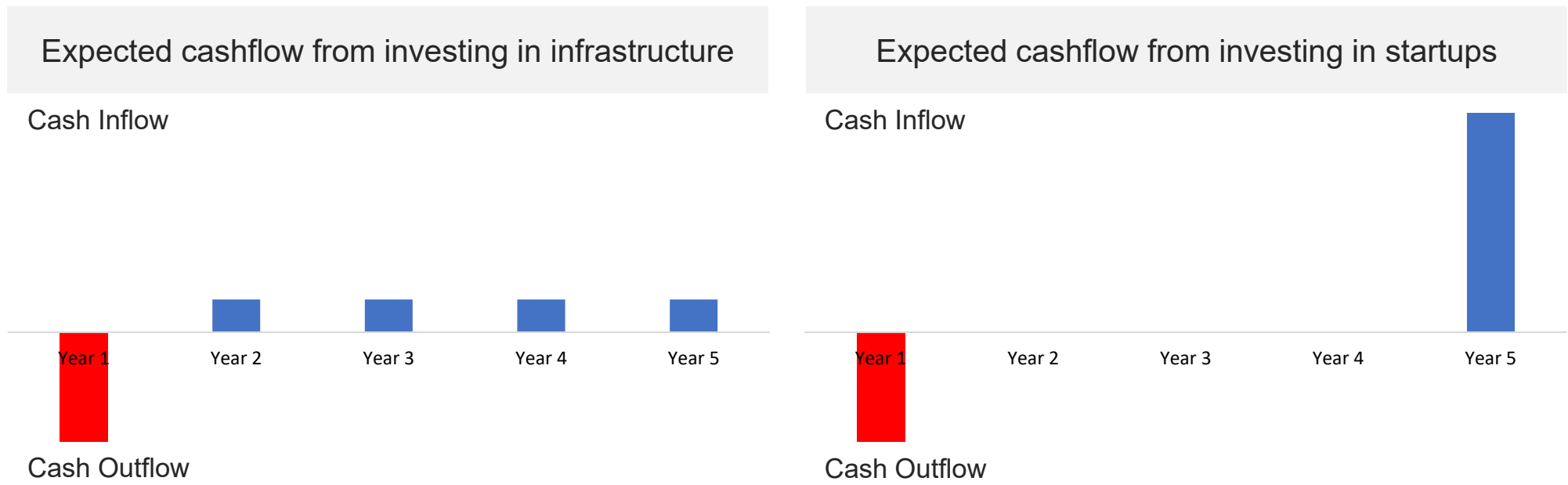
# Issues for eVTOL Aircraft Finance

		Commercial Aircraft	eVTOL
<b>Deal Size</b>		More than 100 million USD per aircraft	Less than 5-6 million USD per aircraft
<b>Residual Value</b>	<b>Units Sold</b>	Predictable	Unpredictable
	<b>Useful Life</b>	20-25 years	Unknown (7-8 years?)
	<b>Tradability</b>	Secondary Market	No Secondary Market
	<b>Scrap Value</b>	Exist	Unknown

**Providing financing for the current eVTOL models comes with large risks** from financiers' perspective, making a corporate loan / financing lease (which is generally more expensive) an only option for many operators.

# Issues of Vertiport Project Finance

- Establishing the eVTOL infrastructure, particularly vertiports, will likely be a **long-term investment requiring significant capital**. Both private and public money will be needed to support the development and operation of this new asset.
- However, it will be difficult to attract private capitals at the early stage of the eVTOL industry due to **the unpredictability of cashflow or revenue** which is likely to be consisted only from landing fees.
- Here, it is also important to note that investors who invest in infrastructure look for returns with long term stability unlike investors who invest in start-ups and venture capitals.



## Summary + Additional Comments

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- Players in the commercial aviation industry have access to various types of finance products for their business expansion.
- Although there has been a massive inflow of capital into the eVTOL industry, those investments mostly take the form of startup investment which is used to fund the development of eVTOL aircrafts.
- Now that there is going to be several certified eVTOLs in the next few years, it is time to start to think about how to finance operators and infrastructure, particularly vertiports.
- Due to the unpredictability of CF and asset value, it is not easy to attract large capital inflows into the eVTOL industry from a private sector, which in turn limits the scalability of this industry at the early stage.
- In order to build the eVTOL infrastructure, national / local governments may need to play a major role with the support from the private industry.
- It might be important for academic and research communities like ICAS to have more dialogue with governments and traditional players from other industries and support them to establish a clear vision / road map for eVTOL.

# Disclaimer

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