

Japan

Potential 2035 economic impact of the metaverse

US\$87-165 B per year



Japan

With the metaverse, Japan will be able to tap on its strong heritage in digital craftsmanship and technical prowess to benefit a broad range of sectors at a wider scale.

PM Fumio Kishida's administration's plan to bring Japan into the digital era is highly compatible with the development of the metaverse: developing a facilitative environment for the promotion of Web 3.0, including blockchains, NFTs and the metaverse, upskilling digital talent, investing in digital technology, increasing R&D in AI and quantum technologies, creating a start-up boom, and reviving Japan as an international financial center.¹

This will mark a distinct shift beyond gaming and entertainment, which Japan has established themselves as a leader in.

As one of the world's first gaming markets and currently the third largest,² after China and the US, gaming in Japan has become more than a part of the economy – it has assimilated into culture. Long before 'metaverse' came into common parlance, Japan captured the popular imagination with the fantasy worlds of manga, anime and video games. These are now a source of inspiration for many virtual worlds and characters. The video game industry and gaming consoles would not be what

they are today if not for Japan. Today, Japan's cultural appeal remains prominent, with spin-offs like Pokemon Go remaining the highest grossing mobile AR game in the world.³ Compared to the emphasis on industrial uses in the US, early explorations of VR in Japan took on a different trajectory to become a tool for renegotiating personal space and a portal to "other world" fantasies.⁴

Early experiments in metaverse technologies are demonstrating how Japan can capitalize its strong cultural and technological capital to provide new offerings in retail, tourism and many other sectors. The ability to do this at scale will translate to wider economic and social benefits.

“Japan will develop an environment for the promotion of web 3.0, such as blockchain, NFTs and the metaverse, and achieve a society that facilitates the birth of new services.”

Fumio Kishida, Prime Minister of Japan, at the Guildhall in London, May 2022

1. Fumio Kishida, [“Speech on the New Form of Capitalism and Why Japan is a “Buy”](#), accessed September 29, 2022.

2. Newzoo, [Global Games Market Report](#), 2022.

3. SensorTower, [“Pokemon GO Catches \\$6b in Lifetime Player Spending,”](#) accessed September 29, 2022.

4. Paul Roquet, *The Immersive Enclosure: Virtual Reality in Japan* (New York: Columbia University Press, 2022).



Macroeconomic Determinants

- The metaverse will have wide ramifications across sectors in Japan, including business-to-consumer (B2C) and business-to-business (B2B) industries. Japan is a service-based economy (70.0% of GVA), with the three largest sectoral contributors to Japan's economy being manufacturing (20.5% of GVA), followed by wholesale and retail (12.7%), and real estate activities (11.8%).
- Ranked 13th in the world on the Global Innovation Index 2022, which suggests that Japan has a strong propensity for innovation.
- Opportunity to increase high value-added cultural and creative exports through the metaverse, reducing the reliance on domestic consumption as demographic challenges increase. Japan's overseas anime sales grossed close to US\$11b in 2020,⁵ accounting for half the market.
- GDP per capita stood at US\$39,935, suggesting that affordability of required immersive hardware on average may be less of a limiting factor on the economic impact of the metaverse.

JAPAN IN NUMBERS

Potential 2035 economic impact of the metaverse:

US\$87-165B per year, 1.3-2.4% of GDP

2020 GDP:

US\$4.38T

Per capita
(Constant 2017 US\$):

US\$39,935
(high income)

Population:

126M

91% urban

22% below 25

60% with basic digital skills

2% unbanked

Key sectors:



Global innovation index:

#13/132

EIU business environment ranking:

#19/99

Digital readiness index:

#16/141

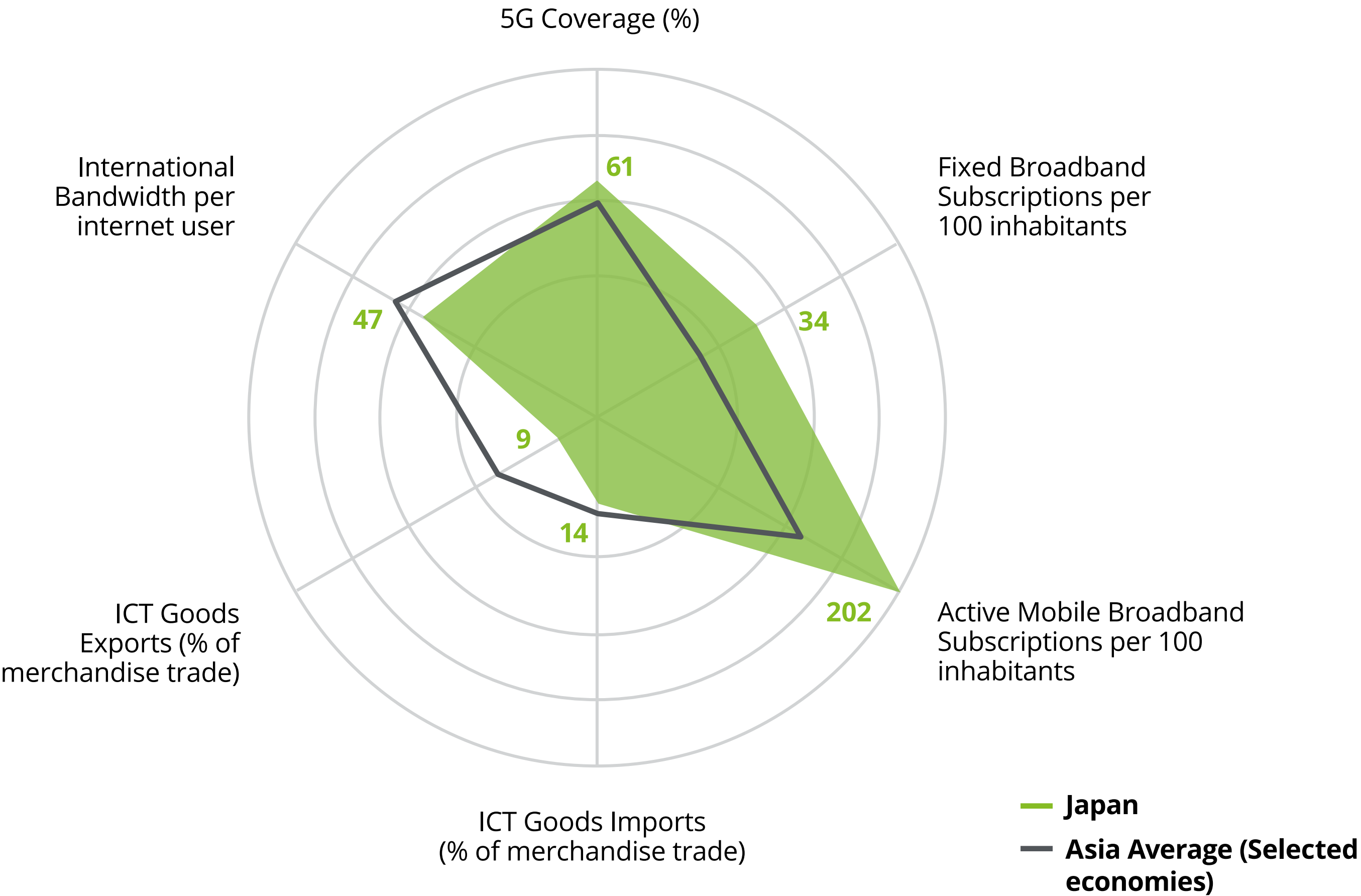
5. Association of Japanese Animations, Anime Industry Report 2020, 2020.

Sources: World Bank World Development Indicators 2020, Our World in Data 2017, ITU Digital Development Dataset 2019, World Bank Global Findex, Japan National Statistics

Technology Fundamentals

- The country has deep capabilities across the technology stack in metaverse-related technologies with Sharp as the single biggest supplier of VR displays for Meta Quest 2.⁶ In addition, Sony has both hardware and software capabilities, with its Playstation operating system holding a 65% share of the game console market.⁷ Tokyo also houses the largest cluster of data centers in Asia, primarily to meet local computing demand.⁸
- Japan aims to create a world-class digital infrastructure as part of its drive for digital transformation in both the public and private sector, including stimulating new services in Web3.0 and the metaverse. Japan is making steady progress in deploying metaverse-ready networks including 5G and WiFi 6E technologies.⁹
- Besides biotechnology, three of the five fields that will receive more R&D funding from the Kishida administration have direct relevance for the metaverse – AI, quantum technologies and digital. A fourth – decarbonization – can improve the sustainability of the energy-intensive metaverse.
- More online activity, including metaverse applications, may drive adoption of digital payments, which make up only 20% of transactions today.¹⁰

6. Lauly Li and Cheng Ting-Fang, “Japan’s Sharp bets on VR hardware as ‘metaverse’ takes off”, Nikkei Asia, March 8, 2022.
7. Statista, [Market Share of Game Console Operating Systems Worldwide](#), 2021.
8. Peter Judge, “Navigating the insular growth of Japan’s data center sector”, Data Center Dynamics, October 5, 2021.
9. Fumio Kishida, “Speech on the New Form of Capitalism and Why Japan is a “Buy””, accessed September 29, 2022.
10. Bloomberg, “Cash-loving Japan Shifts from Banknotes in Boost for Lenders”, accessed September 29,



Sources: GSMA Mobile Connectivity Index 2021, ITU Digital Development Dashboard 2020, UNCTADStat 2019

Ecosystem Enablers

Digital Skills

Investing in people is a demographic imperative. Workers across sectors of the Japanese economy whose jobs require digital skills contribute US\$785 billion to Japan’s GDP, or 16%. Interestingly, 75% of this value is derived from the non-technology sector, signaling the wider economic benefits of digital upskilling.¹¹

Already, Japan’s government has shifted vocational training to focus on digital skills and has plans to offer digital training programmes for Japanese workers through universities and technical schools. Educators like University of Tokyo¹² and N and S High Schools¹³ have also begun offering their courses within the metaverse. Interest around the metaverse could attract further talent into the sector, particularly from overseas as Japan attempts to diversify its talent pool.

Competition within the metaverse

A thriving start-up ecosystem will drive the creative destruction needed for metaverse innovation. Japan’s fledgling funding ecosystem (both early and late stage)¹⁴ has yet to catalyze a sizeable number of unicorns relative to Japan’s GDP.¹⁵

PM Kishida seeks to “create the next start-up boom in Japan”, and this could well be in the metaverse space in line with the push towards Japan’s digital era. Startups like Cluster Inc and HIKKY are creating immersive environments where creators, businesses and users can co-participate. For instance, Cluster hosted the world’s first-ever VR music event in 2017, where more than 5,000 people participated.¹⁶

There is room for more Japanese businesses to adapt and participate in a more technologically disruptive future, as Japan ranks 53rd out of 63 countries for business agility in IMD’s Digital Competitiveness Index.

11. AlphaBeta, [The Economic Opportunity of Digital Skilling in Japan](#), 2020.
12. Brian Quarmby, ["The University of Tokyo to offer courses in the Metaverse"](#), Cointelegraph, October 19, 2022.
13. Asaki Ogawa, ["Distance-learning high school holds classes in the metaverse"](#), Japan News, October 19, 2022.
14. Tokyo Development Learning Centre, [Boosting Japan's Startup Ecosystem: Challenges, Opportunities and Recommendations](#), 2021.
15. Trevor Tan, ["Singaporeans spend more time playing video games than South Koreans, Japanese: Survey"](#), Straits Times, March 22, 2019.
16. Masuru Ikeda, ["Japan's Cluster secures \\$3.6M series B to develop own VR live show content"](#), Bridge, October 19, 2022.

Sectors to Watch

Tourism

Prior to the pandemic, Japan was ranked the third most popular tourist destination in Asia.¹⁷ The pandemic was a significant blow to its tourism industry, particularly with the Tokyo Olympics being held in its midst. This prompted experimentation with metaverse solutions, turning crisis into opportunity.

As part of the Tokyo Paralympics, a parallel virtual experience – the Pegasus Dream Tour – enabled spectators around the world to virtually engage in Paralympic sports and festivities.¹⁸ Tokyo Shibuya’s 2021 Halloween celebration allowed this annual tradition to continue in the midst of social distancing restrictions.¹⁹ ANA Airways is also developing an interactive virtual platform ANA NEO.²⁰ Through partnering with tourism agencies around the world, users can visit recreations of famous tourist sites and enjoy new shopping experiences.

Even as Japan’s borders open, these early experiments pave the way for innovative travel experiences, and access to new groups of travelers – virtual or physical.

Retail and e-commerce

The metaverse era of the internet offers Japan an opportunity to unlock the cultural capital it has built up since the 1980s-90s to influence other sectors beyond gaming and entertainment. One adjacent sector poised to benefit is retail and e-commerce. An example is former Final Fantasy XV Game Director Hajime Tabata,²¹ who is applying his experience as a pioneer in creating user-centric experiences with the popular role-playing game through his start-up JP Games. Japanese retail companies such as Isetan and Daimaru Matsuzakaya have been utilizing virtual reality and live commerce to promote and sell their products.²²

Another popular trend that emerged in Japan in the mid-2010s is VTubers (or virtual Youtubers); digitally animated characters that can play similar roles to human celebrities like performing concerts and pitching products. VTubers have generated widespread attention, clinching over 1.5 billion in monthly viewership and raking in millions.²³ Brands are discovering the power of VTubers through livestreaming and advertising, not only in Japan, but across the region too.²⁴

17. Global Economy, “[World Tourism Organization, Tourist Arrivals 2019](#),” accessed October 5, 2022.
18. Japan Forward, “[Inside the 'Pegasus Dream Tour': The World's First Paralympics Video Game with Live Concerts](#),” accessed October 19, 2022.
19. Kaila Imada, “[Shibuya's famous Halloween parade is going virtual this year](#),” TimeOut, October 19, 2022.
20. ANA Group, “[ANA Holdings and JP Games Partner to Launch ANA NEO, Introduces “SKY WHALE” Virtual Platform](#),” accessed October 5, 2022.
21. Alibaba Cloud Youtube Channel, “[Construct your Metaverse with Alibaba Cloud](#),” accessed October 5, 2022.
22. AR VR News, “[Japanese department store Isetan to provide VR shopping experience](#)”, accessed October 5, 2022.
23. Anime News Network, “[Virtual Youtuber Views Grew to Over 1.5 Billion Views Per Month by Oct 2020](#),” accessed October 5, 2022.
24. Jada Nagumo, “[Japan's virtual celebrities rise to threaten the real ones](#),” Nikkei Asia, January 19, 2020.

