iCV TAnK
Technology Advisory
& Knowledgebase

Strategies For Cities To Ensure The Success in Future Industry Development

Industry Research Report

July 2023

Executive Summary

This report provides a comprehensive description of strategies for cities to ensure the success of future industry development. First, the background situation and development trend of future industries are discussed, and the importance of developing future industries in cities is analyzed in detail. Second, an in-depth analysis of the future industry development situation is presented regarding the five major difficulties faced by the future industry development and the seven challenges cities face in developing the future industry.

In response to these difficulties and challenges, this report designs a comprehensive strategic framework in nine areas, aiming to address the problems faced by cities in the process of future industry development. This includes providing a favorable policy environment, strengthening innovation and technology research and development, increasing financial investment, nurturing high-quality talent, planning urban spatial resources wisely, promoting industrial upgrading, and focusing on green environmental protection. Through the implementation of these strategic measures, cities can lay a solid foundation for the success of future industries, promote sustainable economic development, and take the lead in global competition.

Therefore, the purpose of this report is to introduce representatives of all levels of government, institutions and other interested actors to the strategies cities can use to ensure the success of future industrial development and to illustrate evaluation indicators that can lead cities toward a more prosperous and innovative future. All activities should be adapted to specific needs, circumstances and goals in order to effectively address national and regional challenges.

Acknowledgements

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PART A

Background

A.1 Introduction

A.1.1 Definition

Future industries are industries formed based on cutting-edge, major scientific and technological innovations. These industries are still in the incubation stage, but they have significant characteristics such as high growth, strategic and pioneering, and are expected to form new growth poles in the global economy and drive transformative economic and social development. Future industries are forward-looking industries that face the future and determine the competitiveness of future industries and regional economic strength, are pioneering industries that influence the direction of future development and are leading industries that support future economic development. According to the "2022 Global Future Industry Index" (GFII 2022) released by ICV, the annual "future industries" in 2022 are defined as six major areas: quantum information, green energy, robotics, metaverse, advanced communication, and biotechnology.

A.1.2 Characteristics

Future industries are characterized by frontier technology, long cultivation period, uncertainty, cross-border integration, and first-mover lock-in.

① Frontier technology-driven. Technology-driven and innovation-driven are the essential features of future industries and strategic emerging industries, but the core technologies supporting future industries belong to breakthrough and disruptive frontier technologies, which are usually on the eve of accelerated breakthrough and explosive growth and can meet the fundamental needs of human beings or potential unmet needs with stronger technical performance, higher efficiency, lower cost or better experience.

② Longer incubation period. The future industry is mainly in the first stage of the S-shaped curve of technological progress and the incubation period of the industrial life cycle, from discovery, cultivation to industrialization is a relatively long process, which needs to go through multiple stages as stated in the theory of technological development cycle, generally taking 5 to 10 years, and some even more than 20 years, requiring a long time to work.

③ Uncertainty. Future industrial development has great uncertainty and high risk, many technologies will die out in the development period, and some technology directions and technology routes may prove to be unsuitable for development after practical testing. Therefore, the development path of future industries often requires trial and error through innovation, promoting cooperation among entrepreneurs, scientists, and venture capitalists, leading to diversified investment with entrepreneurship, and strengthening the dynamic identification and resolution of risks.

④ Cross-border integration. Future industries are characterized by crossover in multiple fields, and the development process is prone to new theories, new carriers, new spaces, new models and new business models. The deep penetration between technologies and industrial fields will give rise to "N+X" new industries, and the deep integration of biology, intelligent technology, energy and other application scenarios is expected to give rise to a number of new fields and new industries in the future.

⑤ Pre-emptive lock. The importance of the future industry is not only reflected in the scale and economic growth, but more importantly, the development of the future industry is about a country's future industrial development of the battle for the high ground. The first entrant in the future industry has a significant "first mover advantage" and can build a complete ecology including patents, intellectual property rights, product standards and upstream and downstream industrial chains, and it is extremely difficult for late entrants to catch up.

A.1.3 Development background

With the acceleration of globalization, profound changes in social and economic patterns, rapid development of science and technology innovation, evolution of population structure and rising awareness of environmental protection, the development of future industries in major economies around the world is increasingly highlighted as a highly important trend.

With the further development of globalization, industrial competition among countries will become more intense, and enterprises in each country need to continuously improve their competitiveness in order to gain more opportunities in the fierce competition. Laying out future industries can help countries achieve more results in technological innovation and market expansion, seize market opportunities, gain more market share and revenue, and achieve sustainable development.

With the development of the economy, people's living standards continue to improve, and people's consumption demand and consumption behavior are constantly upgrading. The market demand is further expanded, and the scale and development speed of the industry will be enhanced even more in the future. Meanwhile, the continuous expansion and development of the capital market provides more financing channels and investment opportunities for the development of the future industry, thus further promoting the development of the industry.

The rapid development of science and technology, the emergence of more and more new technologies, new materials and new processes, the future industry will be driven by technology, accelerating the upgrading and optimization of products, the emergence of more new industries and business models.

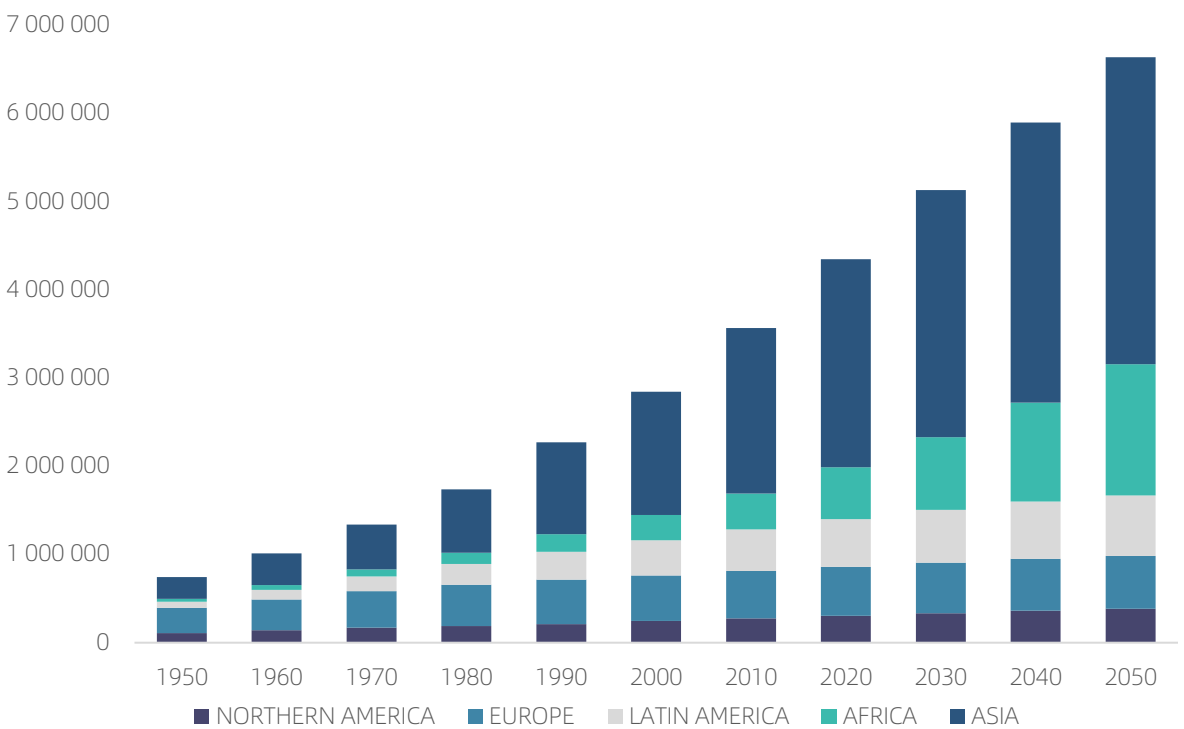
The government has an important role in the development of future industries. The government provides active policy support and protection in many aspects, such as industrial policy, tax policy, financial support policy, talent policy, intellectual property policy and environmental policy, in order to promote the innovative development and competitiveness of future industries.

UN data shows that as of 2021, there are still 785 million people living below the extreme poverty line worldwide, accounting for about 10% of the global population. The global wealth gap continues to widen. the combined wealth of the world's 26 richest people in 2018 is equal to the combined wealth of the world's 380 million poorest people. The development of future industries can provide some help in addressing poverty through innovation and technological progress, industrial restructuring, talent training, public policies and social support.

Environmental protection has become an important issue globally due to the increasing environmental pollution and resource shortage. Pollutants such as carbon dioxide, sulfur dioxide, nitrogen oxides, and particulate matter exceed the standards, leading to a decline in air quality. Air pollution causes more than 7 million premature deaths worldwide each year. The problem of water pollution causes illness and death of more than 10 million people worldwide each year due to drinking polluted water. Agricultural, industrial and urban landfills make the soil overloaded with chemicals that are harmful to the ecosystem and human health. The world needs to develop renewable energy, eco-friendly materials, etc. to promote sustainable development.

The global population continues to grow, while the global population is aging as life expectancy increases and fertility declines. By 2050, people aged 65 and older will make up 16% of the global population. More and more people are flocking to cities, and the urban population is increasing as a proportion of the global population. By 2050, the global urban population is expected to reach 66%. As the population ages and urbanization accelerates, the demand for health, medical care, and retirement is also increasing. Areas such as preventive medicine, personalized medicine and digital medicine will become hot spots in the future, which will drive the development of related fields.

Figure 1 Urban Population, 1950-2050
Unit: thousands



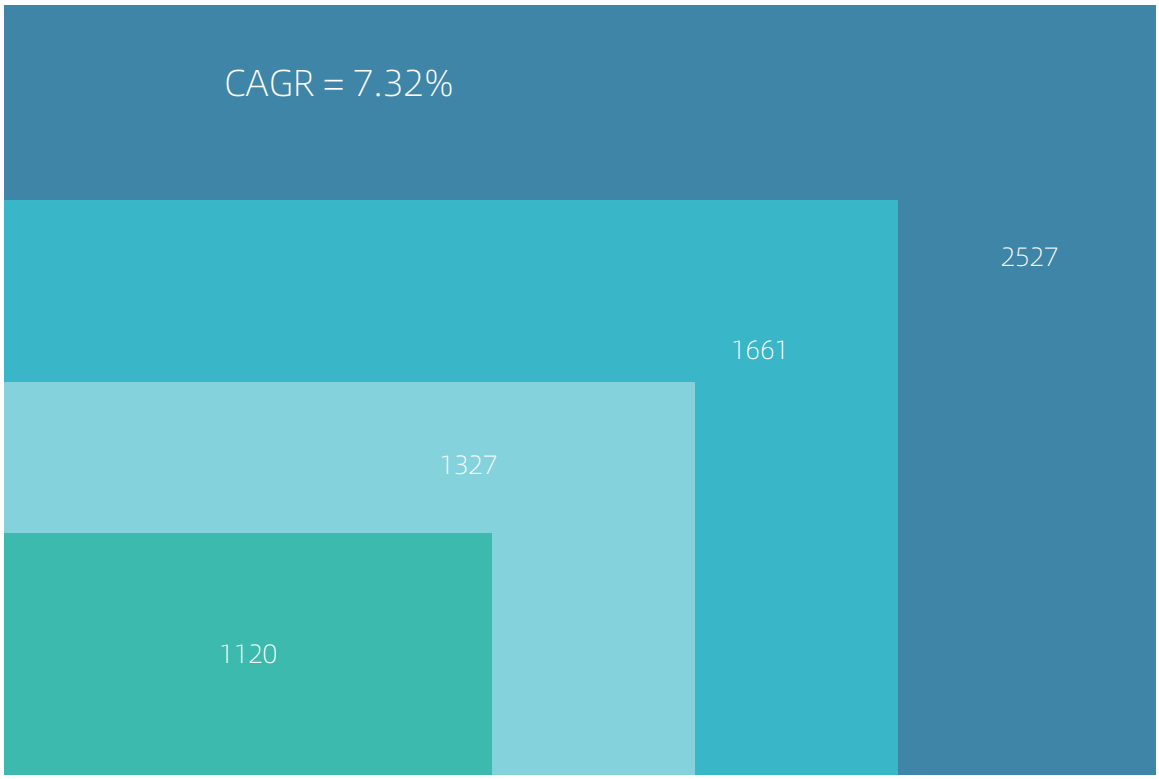
Source: United Nations

A.1.4 Development trend

From the development characteristics of the global future industry, the future industry mainly focuses on 3 aspects: intelligence, green and health.

In the field of intelligence, quantum information industry is a fast-developing field, the technology of quantum computer, quantum communication technology, quantum sensing technology, quantum software and algorithm is continuously innovating and upgrading, and the application scenarios are continuously expanding and enriching. The business model and business opportunities of quantum information industry will be better enhanced and improved. In the future, quantum technology will become an important infrastructure and core technology to support smart manufacturing, smart cities, intelligent transportation and other industries.

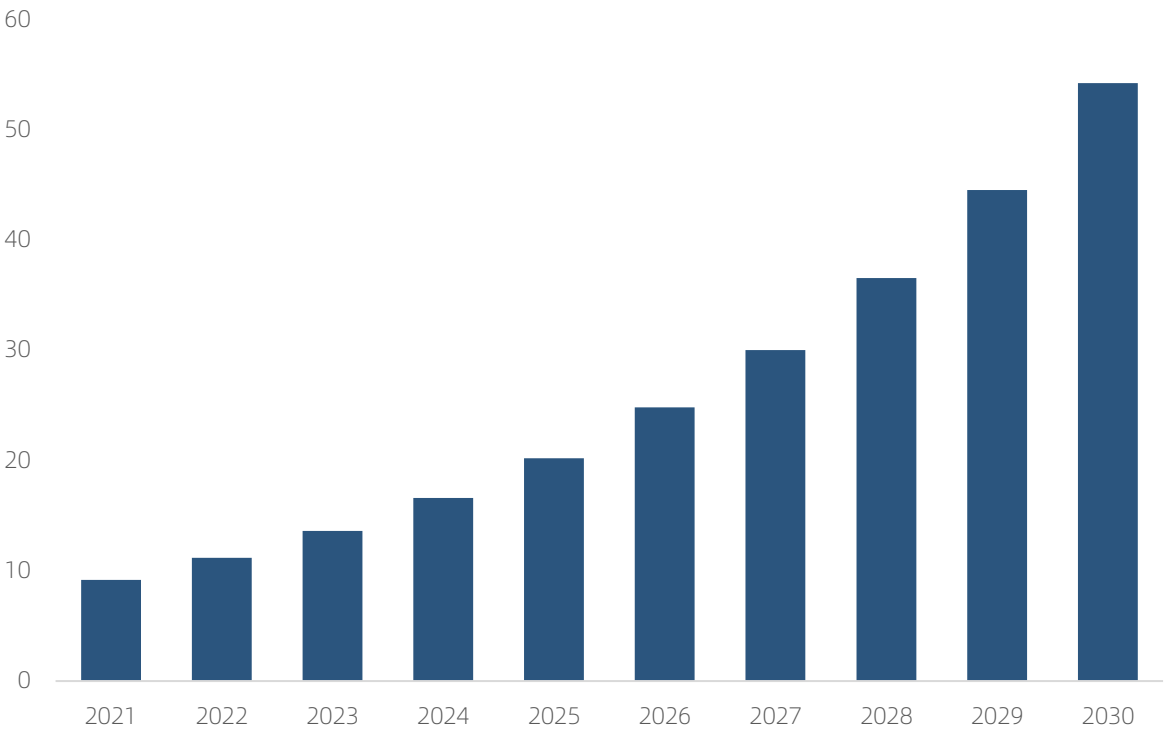
Figure 2 Quantum Precision Measurement Global Market Size Forecast (2019, 2022, 2025, 2030)
Unit: in million USD



Source: ICV TAnK

The artificial intelligence robotics industry is one of the fast-growing industries in recent years. In the future, robots will become more and more intelligent and humanized, with richer forms and capabilities, adapt to more forms of scenarios and task demands, deepen collaboration and coexistence with humans, and have higher credibility and reliability. In the future, robots will become an indispensable part of human society and be widely used in various fields and industries. For example, manufacturing, health care, logistics and distribution, agriculture, and other fields to improve production efficiency and quality of life. It will bring a more convenient, efficient, safe and intelligent living and working experience to human life.

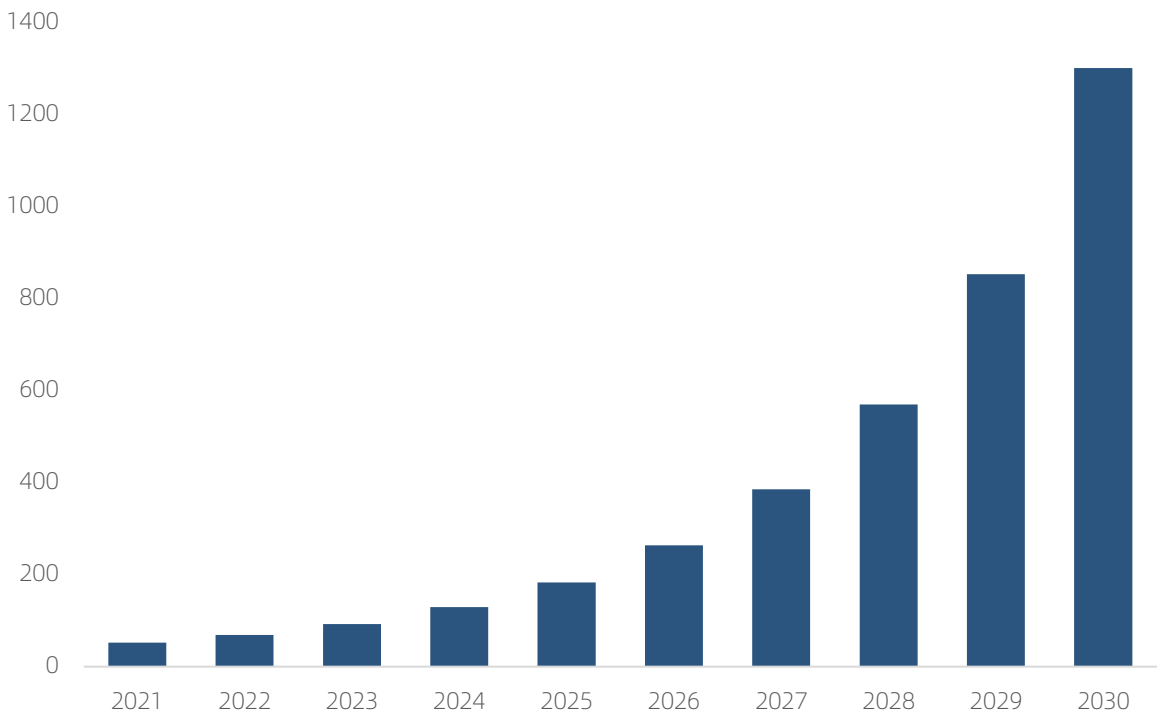
Figure 3 Artificial Intelligence Robots Market Size, 2021-2030
Unit: in billion USD



Source: Precedence Research

As virtual reality (VR) and augmented reality (AR) technologies continue to advance and people's demand for digital experiences grows, this digital world will become increasingly important, and the future metaverse industry will become an important part of the digital economy and digital culture. The metaverse offers new forms across the real economy, richer virtual experiences, multi-dimensional virtual assets and huge business opportunities. It will change people's consumption habits, education methods and working environment, etc., and will become the mainstream technology in the future.

Figure 4 Metaverse Market Size, 2021-2030
Unit: in billion USD

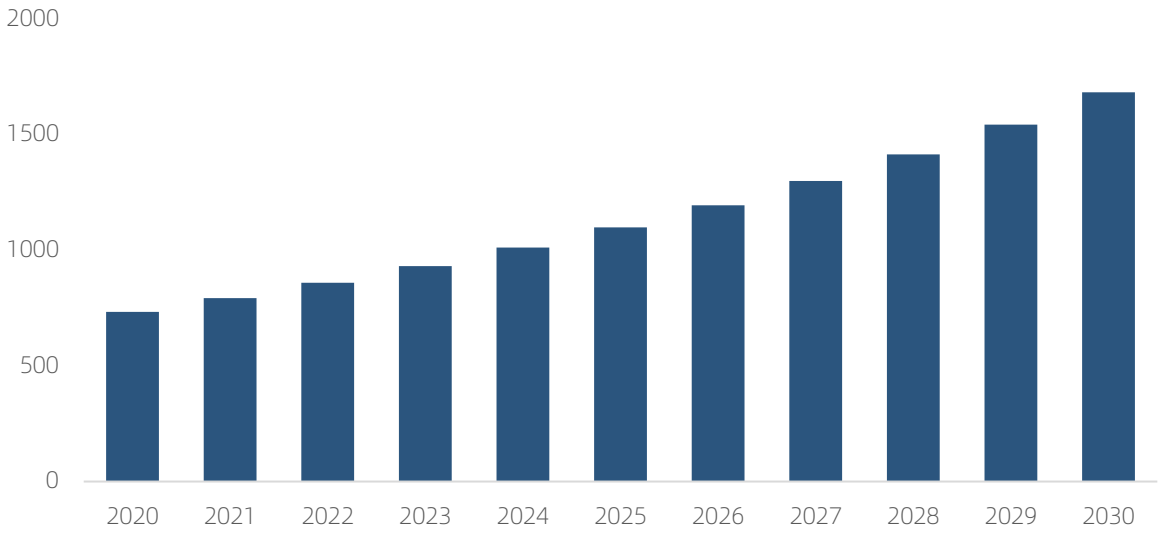


Source: Precedence Research

In the field of advanced communication, the advanced communication industry will become more and more intelligent and automated. With the continuous development and application of technologies such as the Internet, big data and artificial intelligence, the advanced communication industry will form more integration and innovation with other industries, for example, the integration of the Internet and traditional telecommunications, the integration of the Internet of Things and intelligent manufacturing, etc., to further promote the rapid development of the advanced communication industry. In the future, the advanced communication industry will also continue to strengthen network security and data privacy protection to guarantee the safety of people's lives and property and information security.

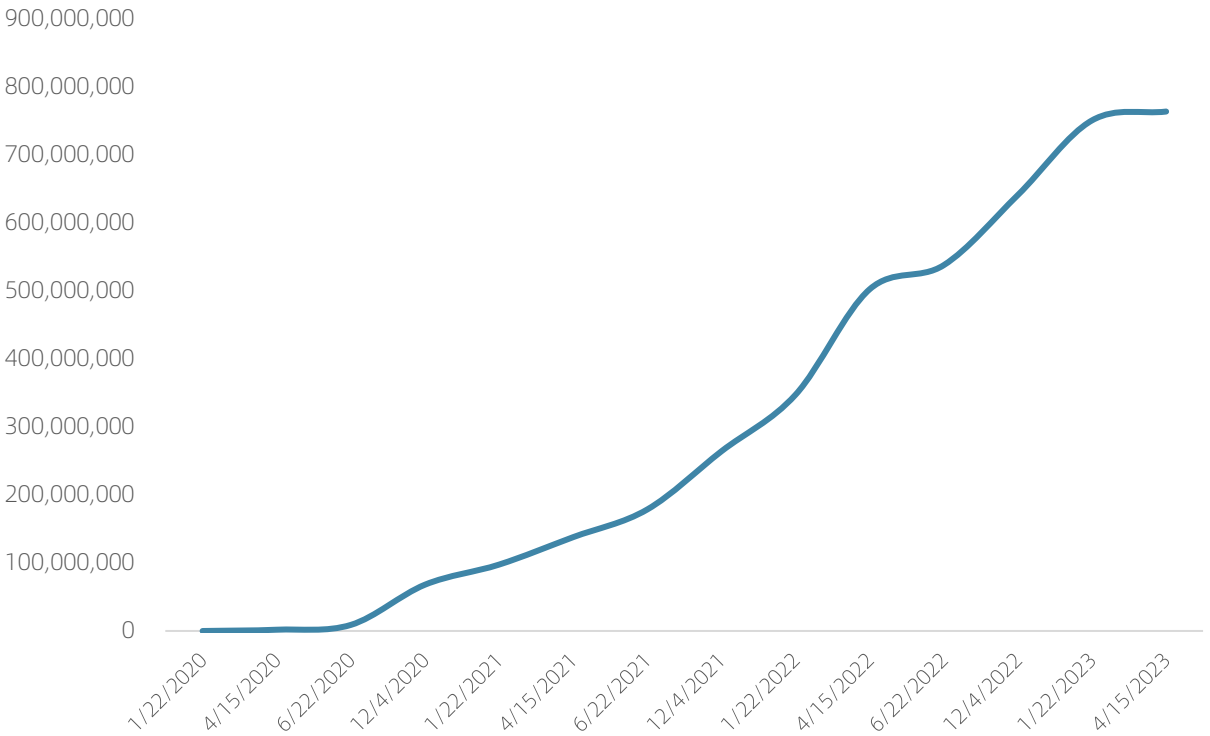
In the field of biotechnology, with the aging of population and the increase of chronic diseases, people's demand for health and healthcare is growing, and the biotechnology industry can meet these demands by developing new treatments, drugs and medical devices to bring more health and welfare to human beings. Among them, gene editing technology, synthetic biology, biomanufacturing and bioinformatics will have great prospects for development in the future.

Figure 5 Biotechnology Market Size, 2020 TO 2030
Unit: In billion USD



Source: Precedence Research

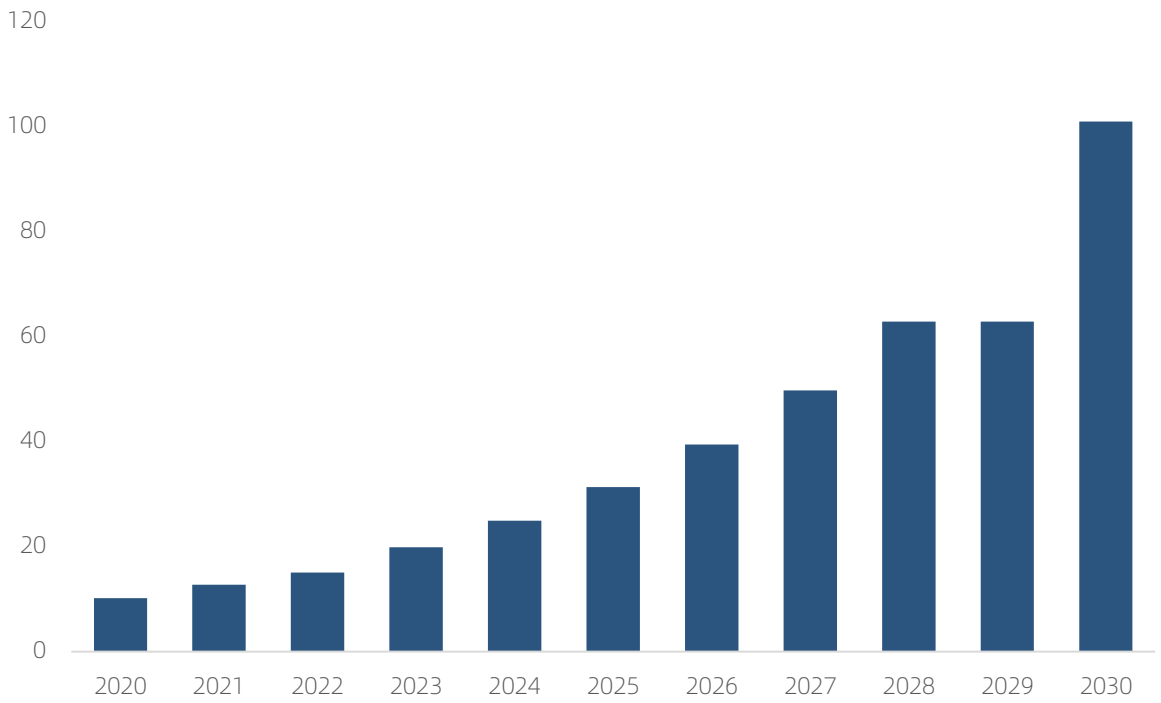
Figure 6 Number Of Cumulative Cases Of Covid-19 Worldwide, 2020-2023



Source: Statista

In the field of green energy, as awareness of environmental protection increases and fossil fuel resources are gradually depleted, the global demand for sustainable development and green energy is increasing. The green energy industry has ushered in new development opportunities. Green energy offers technological innovation, better energy storage, and the widespread use of distributed energy and energy internet. New energy technologies such as solar, wind, and hydro energy will become the main source of energy in the future.

Figure 7 Renewable Energy Certificate Market Size, 2020-2030
Unit: in billion USD



Source: Precedence Research

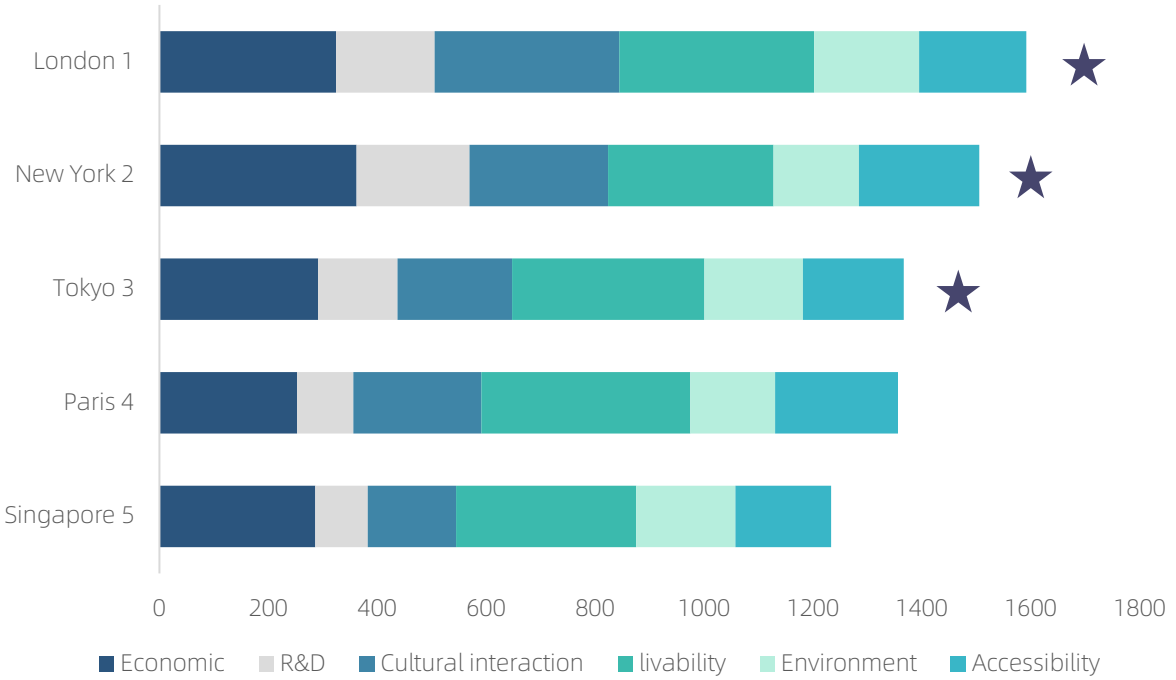
A.2 The Necessity Of Developing Future Industries

The layout of future industries in cities is a strategic initiative for urban economic development, which can drive rapid economic and social development and technological innovation in cities, create more business platforms and employment opportunities for society, promote intelligent construction in cities, advance industrial upgrading and transformation, improve the competitiveness and sustainability of cities, compete for global leadership, and enhance the status and influence of countries in international competition.

A.2.1 Competing for global leadership

Future industries represent the development direction of the new round of technology and industrial revolution and are the key for cities to cultivate and develop new dynamic energy, promote high-quality economic development, and gain new competitive advantages in the future. As the Endless Frontier Act points out, the U.S. leadership position is being challenged by China in the global competition. To ensure national leadership in future industries, the U.S. is making every effort to mobilize national efforts to gain leadership in future industries.

Figure 8 City Comprehensive Ranking

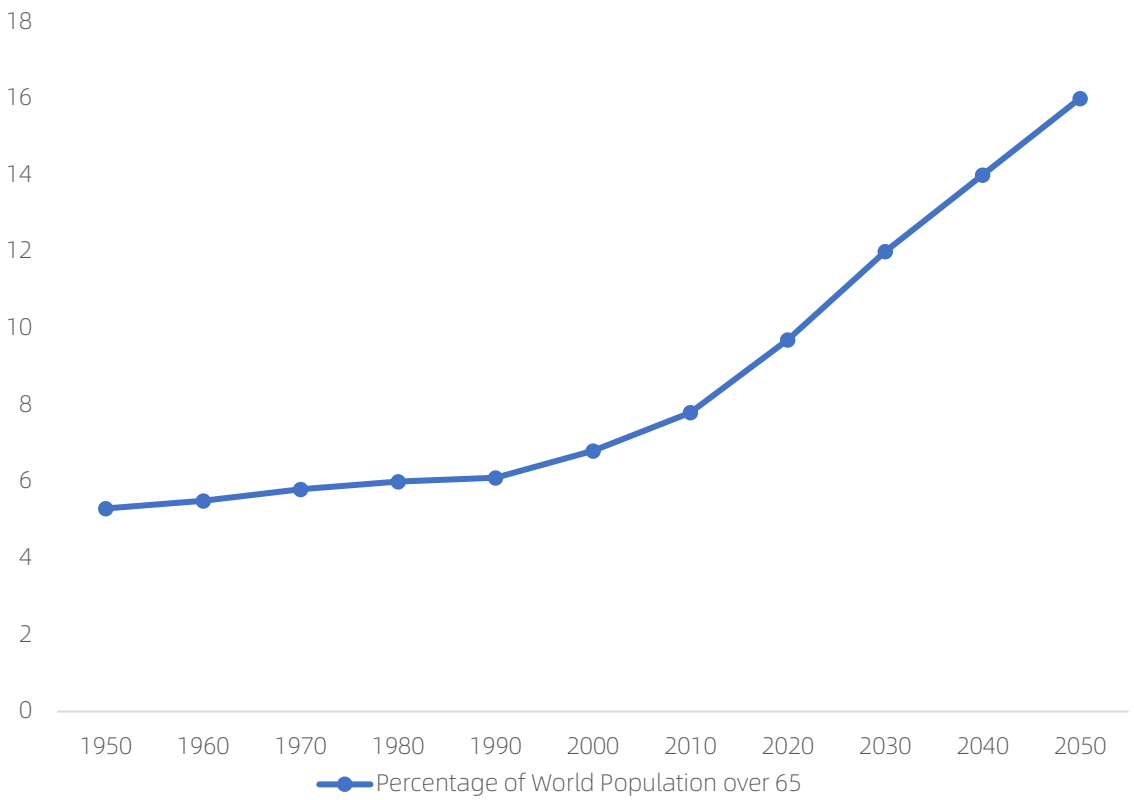


Source: Mori Memorial Foundation

A.2.2 Addressing Population Aging

Human development is facing aging, and the aging population is decreasing the proportion of working-age population, increasing the financial expenditure of government for the elderly and increasing the financial burden. At the same time, the demand for medical care continues to increase. Biotechnology is developing new drugs for society through genetic engineering, protein engineering and other technologies to treat hard-to-treat diseases. Intelligent medical devices, telemedicine technology, and health monitoring sensors can provide personalized and convenient medical and health services to meet the health needs of the elderly, slow down disease progression, and improve quality of life. Intelligent robotic caregivers can also provide basic medical care services. Meanwhile, the development of artificial intelligence robots helps people improve productivity, reduce production costs and solve the problem of labor shortage.

Figure 9 Percentage Of World Population Over 65, 1950-2050
Unit: Percentage

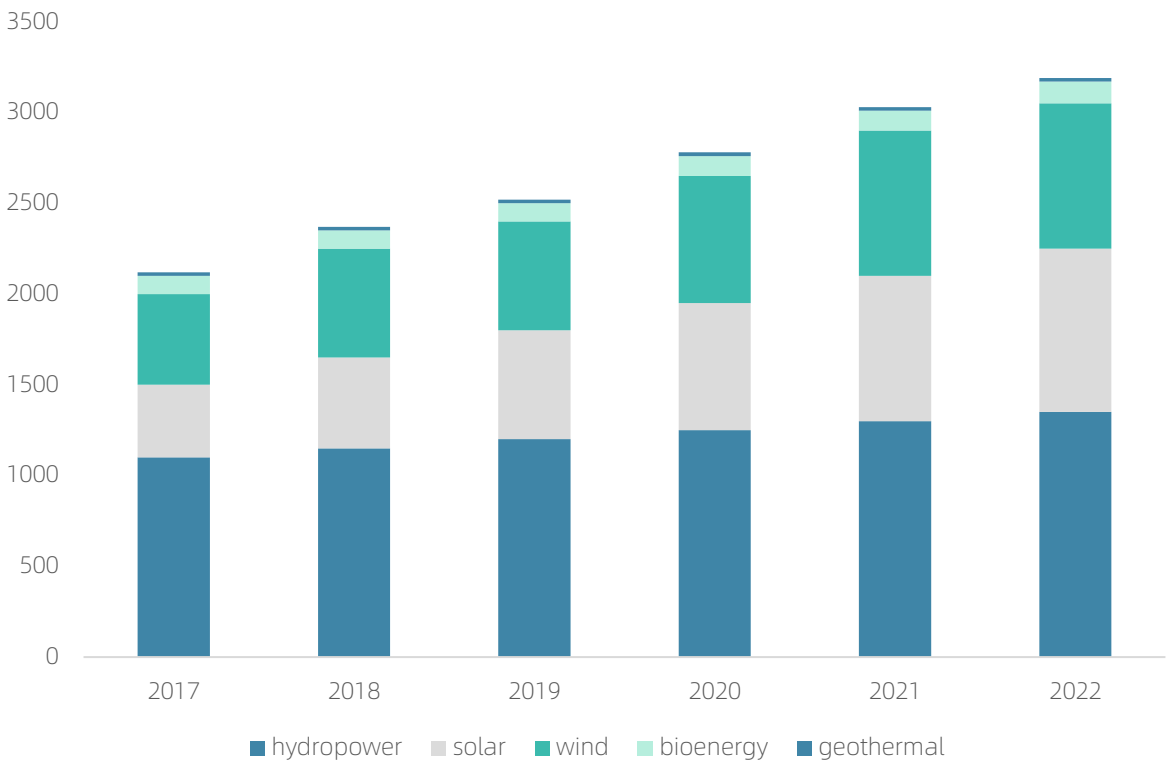


Source: UN World Population Prospects, 2008

A.2.3 Solving the problem of environmental pollution

Human development is facing the problem of environmental pollution, and there is an urgent need for the future industry to provide new solutions. The development of future industries can improve environmental problems and provide sustainable development for cities. For example, the development of green energy industry will reduce carbon emissions and environmental pollution, improve the reliability of energy supply, promote energy restructuring, and reduce dependence on fossil fuels, thus reducing energy security risks and economic risks. The development of green energy industry will help achieve better and more efficient resource utilization and will also promote the green economic development and sustainable development of cities. Meanwhile, biotechnology has developed bio-decontamination technology to treat wastewater and waste gas through biological materials such as microorganisms and enzymes to achieve the purpose of reducing pollution and protecting the environment.

Figure 10 Renewable Power Capacity Growth
Unit: GW



Source: IRENA

A.2.4 Solving economic dilemmas

Future industries are the new driving force and engine of the global economy. Attracting and nurturing future industries can drive the rapid development of a city's economy, form industrial chains and industrial clusters, and thus promote the development and growth of the local economy. Future industries usually have high return on investment and potential, attracting attention and investment from domestic and foreign capital. The inflow of foreign capital and investment will promote economic growth, provide financial and technical support for the development of industries, and promote the optimization and upgrading of economic structure. The United States, Japan and other developed countries have been trapped in a low growth dilemma for a long time and urgently need new growth points from future industries.

A.2.5 Provide high quality employment

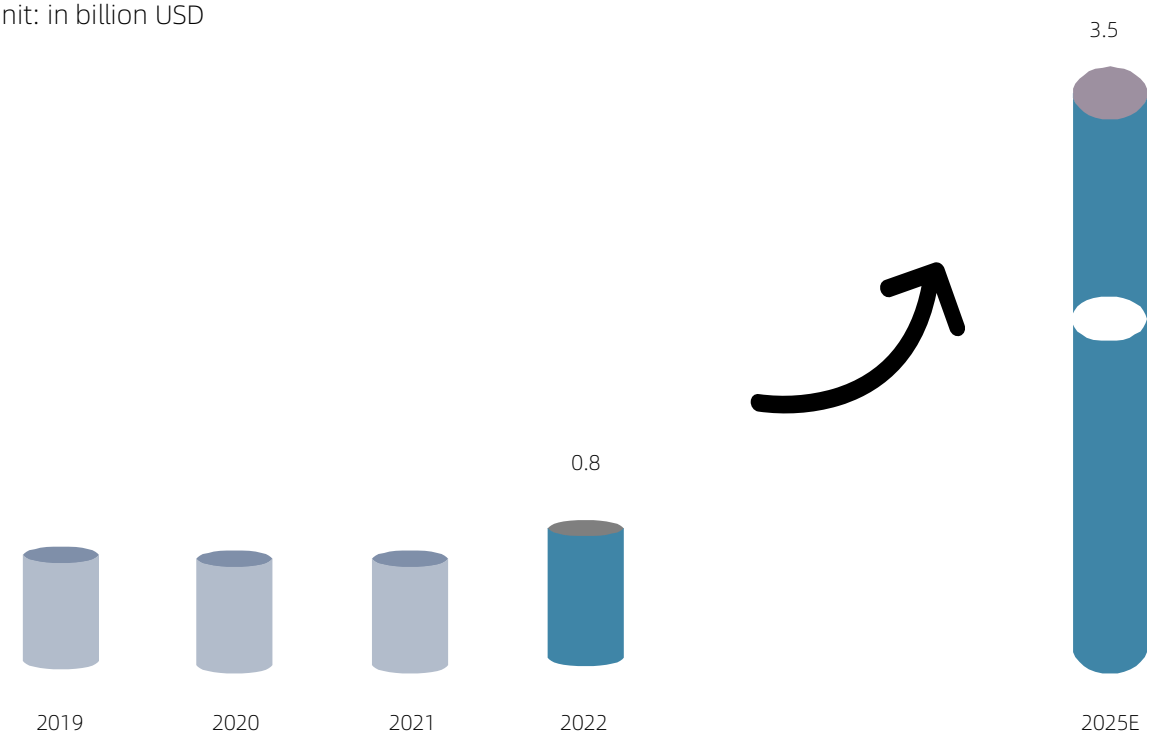
The development of future industries increases high-quality employment opportunities and tax revenues. The development of future industries can increase the tax revenue of local governments and provide more financial support for local public utilities and social welfare. With the development of future industries, the scale and output value of urban enterprises will also increase, thus bringing in more tax revenue. Future industry development is an important means of job creation.

Future industries are usually high technology and high value-added industries that require people with specialized skills and knowledge. The development of these industries will create a large number of jobs, absorb talent into the labor market, reduce unemployment, and increase per capita income levels. The American Jobs Plan, officially released by the Biden Administration in April 2021, proposes future industries that will provide new jobs and increase the number of higher-income industries in the economy.

A.2.6 Promote technological innovation

Future industries provide application scenarios, new markets, driving forces and directions for science and technology innovation. The development of future industries can promote scientific and technological innovation and technological progress and improve the competitiveness and innovation ability of cities. In the process of future industry development, cities need to continuously innovate to improve the efficiency and competitiveness of the whole industry. For example, quantum computers provide faster computing speed and processing power, and quantum communication achieves more secure information transmission and guarantees the confidentiality and integrity of information. Quantum sensing technology achieves higher precision measurement and detection, which helps to improve the accuracy and sensitivity of medical imaging, environmental monitoring, earthquake early warning, etc.

Figure 11 Quantum Communication Industry Size, 2019-2025
Unit: in billion USD



Source: ICV TAnK

A.2.7 Intelligent construction

Laying out future industries can promote the intelligent construction of cities, improve their informatization level and scientific and technological innovation ability, and provide strong support for their modern development. For example, the development of metaverse promotes the digitization and wisdom of the city and provides new ideas for urban planning and management. Through the metaverse platform, virtual city models can be constructed, and simulations of urban planning and design can be performed. Using intelligent technologies and algorithms, intelligent analysis and optimization of cities in transportation planning, land use planning, and architectural design can be carried out to improve the efficiency and quality of urban planning.

A.2.8 Industrial upgrading and transformation

With the rapid development of science and technology and changes in the global economy, many traditional industries are facing great challenges, while emerging industries are showing rapid growth. Future industries are important areas for economic structure upgrading and industrial transformation, and the layout of future industries in cities can promote the transformation and upgrading of urban economy from traditional industries to future industries and improve the quality and efficiency of urban economy. For example, artificial intelligence robotics has wide application prospects in many fields such as manufacturing, logistics, medical care, agriculture, etc., and can promote industrial upgrading and transformation. The development of renewable energy, energy storage technology and energy management systems can drive urban industries to a low-carbon and sustainable direction. The development of biotechnology can lead to innovations in the medical and health fields, such as gene editing, precision medicine and biopharmaceuticals.

PART B

Future Industry Development

B.1 Difficulties In The Development Of The Future Industry

There are five major difficulties in the development of the future industry: the restriction of policies and regulations, the risk of technological innovation, the challenge of capital investment, the bottleneck of talent supply, and the change of market demand.

(1) The development of future industries is restricted by government policies and regulations. Future industries often involve new technologies and fields, and relevant regulations and standards are not yet perfect. In this case, individual countries and regions may develop different regulations and standards, resulting in uncertainty and complexity of industrial development. The future development of the industry needs massive data support, but relevant regulations and standards are not yet perfect, and data privacy and security become important obstacles to the development of the industry. For example, the development and application of metaverse involves important information assets and requires massive data support, but there are still problems with data sources and standardization, so the issue of guaranteeing users' privacy and information security still needs to be improved. In addition, the development of future industries may bring some moral and ethical issues, such as the application of artificial intelligence and the development of biotechnology, which need to be supported and regulated by reasonable laws and regulations.

(2) Future industries need to rely on technological innovation to maintain competitiveness, which itself has certain uncertainties and risks and requires a lot of research and development work. The application and popularization of emerging technologies require large-scale investment and promotion by enterprises, while issues such as technology standardization and compatibility also need to be addressed. The construction of the metaverse requires the integration of innovations from multiple technology fields, such as virtual reality, augmented reality, artificial intelligence and other technologies, and technical research and application face huge challenges.

(3) The future industry requires a large amount of capital investment. The future industry usually requires a large investment in technology development and innovation, which includes various aspects such as talents, equipment, laboratories, and patents. At the same time, the development of future industries requires long-term financial support, and technology development and marketing need to be ongoing. These investments require large amounts of capital, and long-term financial support, which is particularly difficult for start-ups and small businesses. Lack of sufficient capital investment may lead to limitations in the development of the industry. In addition, the development and application of new technologies may be subject to uncertainty and market risk, and investors may have reservations about riskier future industries, making funding difficult to obtain. The lack of investment institutions with expertise and experience in the future industry sector also makes it difficult for investors to evaluate projects and make investment decisions.

(4) The development of future industries will involve multiple fields and skills, thus requiring talents with cross-disciplinary and comprehensive skills. However, the supply of these high-end talents is relatively limited and requires a large investment of time and money for training and education, which, together with factors such as fierce competition and lack of attractiveness, leads to an imbalance between supply and demand. The traditional education system is usually discipline-based and lacks interdisciplinary training and cross-learning opportunities across fields. Future market demand may change very rapidly, so talent development needs to be flexible to adapt to changes in market demand. The traditional education system may not be able to keep up with the changes in skill demand in a timely manner, resulting in a gap between talent supply and market demand.

(5) Future industries usually involve emerging technologies, innovative products and services, and changes in market demand are often uncertain and rapid. The cycle of future industry development may become shorter as rapid technological development and increased market competition may lead to more rapid product and service updates. Future consumer needs and preferences will change in response to changes in the social, cultural and economic environment. Changes in market demand may cause industry development to be limited or adjusted.

B.2 Challenges Of Developing Future Industries In Cities

There are seven major difficulties for the development of future industries in the city. The risk of policy support, the challenge of technological innovation, the challenge of capital investment, the bottleneck of talent supply, the limitation of space resources, the difficulty of industrial upgrading, and the increase of environmental pressure.

(1) Future industries need policy support for development in cities. Future industries are usually associated with emerging technologies and business models, which have innovation risks and uncertainties. The government needs to take certain risks when formulating policies. Supporting the development of future industries requires significant investment of funds and resources. With limited financial resources, the government needs to develop effective financial support policies, such as start-up funds and tax incentives, to attract investment and promote industry development. In addition, the government also needs to make reasonable planning in resource allocation to ensure effective use and fair distribution of resources.

(2) The technology threshold involved in the future industry is very high and requires a high level of technology and expertise. At the same time, the technology involved in the future industry is developing very rapidly, and the technology is being updated very quickly. In addition, many R&D experiments and long R&D cycles are required. Therefore, research institutions and enterprises in cities may face the problem of insufficient technological R&D capability or intellectual property protection.

(3) Future industries need a lot of capital investment, technology research and development costs, infrastructure construction costs, investment of talents and a lot of advanced equipment investment, these capital needs are large and may exceed the financial capacity and investment capacity of the city, which requires the joint support and collaboration of the government, enterprises, investment institutions and other parties, and innovative investment and financing mode.

(4) Future industries usually need highly qualified and skilled talents, and it is a big question whether the current education and training system and talent training mechanism of the city meet the talent demand of future industries. Future industries need the support of many talents in the development process, but the competition in the talent market in the city is fierce, and some talents may be lost to other cities or enterprises, affecting the development of future industries in the city. Talents in future industries need to update their skills and knowledge through continuous training and learning, and cities may not have enough investment to support talent training, resulting in the ability and quality of talents not matching the needs of future industries.

(5) The space resources of the city are limited, and the development of future industries may require more office space, production sites and technology parks, etc. How to use the space resources of the city reasonably is a difficult issue. Future industries need reasonable spatial layout and planning, but urban planning is difficult and requires multiple coordination and comprehensive consideration of the city's population, land use, environmental protection and many other factors.

(6) The development of future industries may require cities to undergo economic transformation and industrial upgrading, which may require large-scale investments and reforms by city governments and enterprises. This requires city governments and enterprises to have sufficient resources and decision-making capabilities, as well as to overcome resistance from some traditional industries and established interests.

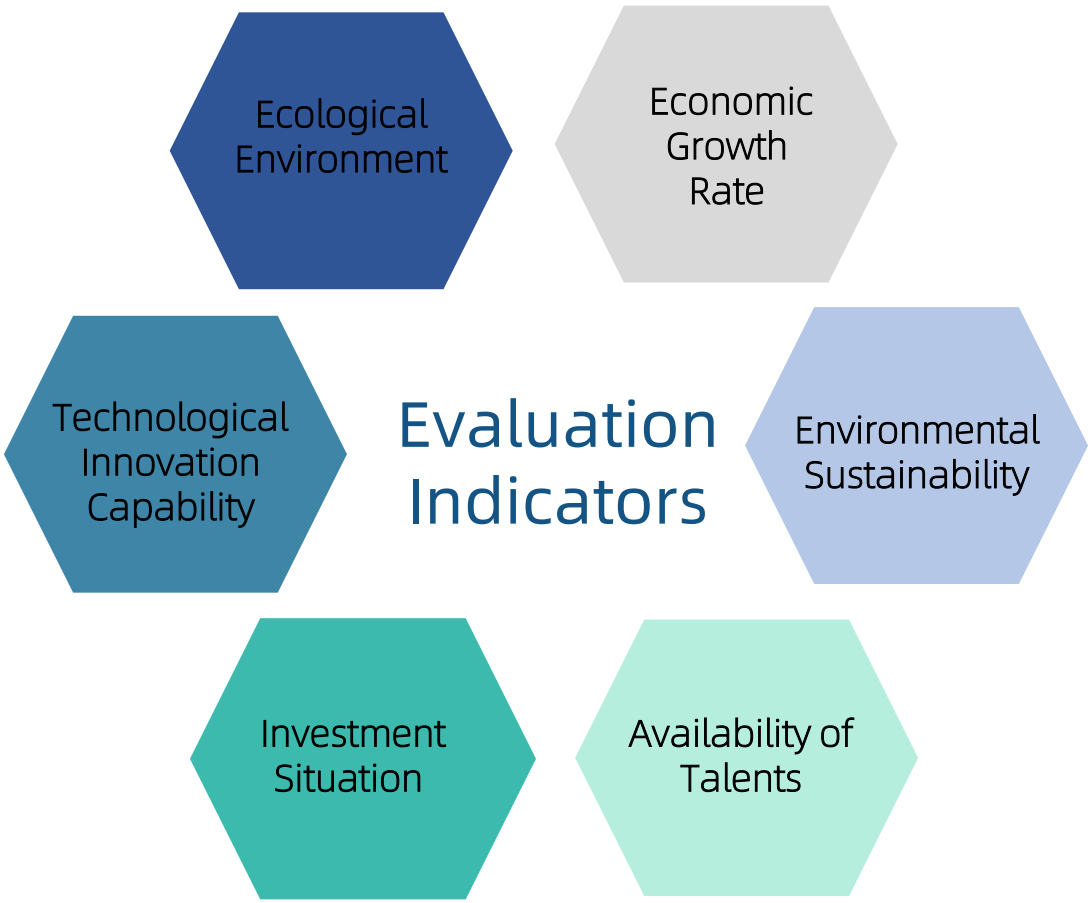
(7) The development of future industries will consume a lot of energy and resources and will also cause some pollution and impact on the environment. Balancing industrial development and environmental protection is a difficult task. The higher cost of environmental protection technology and management may have some constraints on the development of future industries. Some new industries, especially start-ups, often lack sufficient financial and technical resources to bear the high cost of environmental technology and management and need the support of the government and the community. At the same time, the market demand and awareness of green industries may not be mature enough. Consumers and businesses may have limited demand for green products and services and lack sufficient market impetus.

PART C

Technical Module

B.1 Evaluation Indicators

The success of the development of the city's future industry can be judged from six aspects: the economic growth rate brought by the future industry, the ecological environment of the industry, the technological innovation capability, the investment situation, the availability of talents, and the environmental sustainability.



(1) Whether the future industry development of a city is successful or not is usually closely related to economic growth. Continuous and stable economic growth can reflect the competitiveness and vitality of a city's future industry. Industry value added, tax contribution, and job creation can determine the economic benefits and financial support for future industrial development. For example, according to the Australia federal government, it's estimated that quantum-based industries could create 19,400 direct jobs and $5.9 billion in revenue by 2045.

(2) The success of the city's future industry is influenced by the industry's ecological environment. Market competition, industry unspoken rules, and the degree of industry clustering are important factors in measuring a good ecological environment for the future industry. At the same time, the government's reasonable planning of resource allocation and practical policies such as tax incentives, financial subsidies and financing support for enterprises are also a reflection of a good industry ecological environment.

(3) The innovation ability of a city is an important indicator to measure the successful development of its future industry. It includes investment in scientific research, transformation of scientific and technological achievements, number of patents, number of high-tech enterprises, etc. Also, the number and quality of science and technology R&D institutions, the degree of concentration of innovation resources, innovation and entrepreneurship support policies, etc., are important reflections to assess the technological level and innovation environment of a city. In the quantum industry.

(4) The development of future industries cannot be separated from the city's investment. Observe the scale and trend of investment in the field of future industries in the city. Including the amount and growth of various types of investment such as venture capital, venture capital and government investment. Assess the investment structure of the city's future industrial development. If the investment structure is diversified and innovative, it means that the city has a good cognition and strategic planning for the development of future industries. Also, the quality and quantity of investment projects in the field of future industry of the city is one of the indicators reflecting the investment. 3.7 billion USD in NIH grant for biotechnology in New York in 2021.

(5) Successful future industry development cannot be achieved without excellent talent. A successful city for industrial development should be able to provide abundant job opportunities and attract talent to the labor market. The quantity and quality of high-quality talent, talent introduction policies and attractiveness, talent training and educational resources are important indicators for assessing future industrial talent.

(6) The future industrial development of a city requires coordinated economic, social and environmental development. Green development, resource utilization efficiency, environmental protection level and carbon emission reduction are important factors to measure the sustainable development of the future industry of the city development.

C.2 Theory Of Change

Provide an enabling policy environment	Establish a stable, transparent and open policy and regulatory environment Promote international cooperation and standardization Establish a sound regulatory mechanism In-depth research and understanding of future industry trends and needs
Enhance innovation and R&D	Building science and technology parks, incubators and other innovation carriers Increase investment and support for scientific research institutions Establishing a mechanism for close cooperation between scientific research institutions and industry Establishing a sound intellectual property protection system
Increase financial investment	Set up special funds, provide tax incentives, and give subsidies Attracting investments from venture capital institutions and private equity funds Attract investment from international capital and multinational corporations Establish public-private partnership investment cooperation mechanism Innovative financial mechanism
Nurturing High-Quality Talent	Restructuring the education system Establishing a more diversified and flexible talent training mechanism Provide good living environment conditions Increase financial investment in human resource training for future industries
Planning urban space resources	Adopting the concept of smart city planning Using digital technology and virtualization platforms

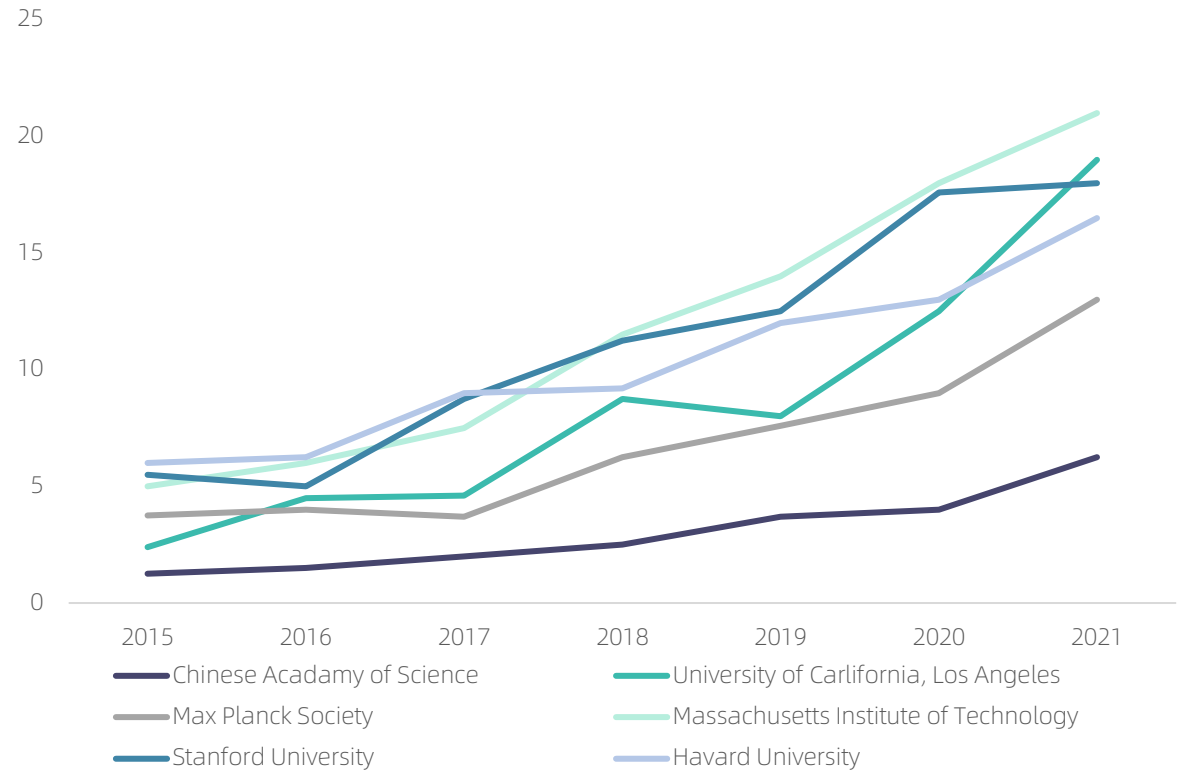
Promote industrial upgrading	Develop long-term strategic industrial development plans Adopt macro-control measures Establish scientific evaluation indicators and evaluation system
Focus on green environment	Strengthen environmental control and governance and raise awareness of environmental protection Increase financial investment in environmental management costs and support for environmental technology Promote the development of green finance Establish a cooperation platform for green technology R&D and transfer
Keeping up with changes in market demand	Staying on top of new technologies and market trends Establish a flexible and efficient supply chain and production system Conduct regular market monitoring and research Establish a good customer relationship management system
Support for entreprene urship and MSMEs	tune to provide start-up capital and venture capital support Develop relevant preferential policies Help SMEs to participate in completing incubation

C.3 Solutions

(1)The business environment of the city is crucial to the development of the industry. The city needs to establish a stable, transparent and open policy and regulatory environment, provide a fair competitive market environment and investment protection for enterprises, improve the level of government services, optimize the administrative approval process, reduce the operating costs of enterprises and attract more enterprises to the city. Policy-wise, in terms of legal and regulatory restrictions, future industries are often transnational and cross-regional in nature, requiring the promotion of international cooperation and standardization efforts. The government can actively participate in international organizations and multilateral negotiations, promote the development of uniform regulations and standards, and facilitate international collaboration and exchange. At the same time, a sound regulatory mechanism should be established to strengthen the supervision and evaluation of emerging technologies and fields, and to identify and solve related problems in a timely manner. In terms of policy formulation by cities, the government needs to thoroughly study and understand the trends and needs of future industries and establish a scientific basis for decision-making. Provide continuous and stable policy support to stimulate and attract the development of future industries. Strengthen policy evaluation and monitoring and adjust and improve policy measures in a timely manner.

(2) Strengthen science and technology innovation. Cities can build science and technology parks, incubators and other innovation carriers to attract and incubate high-tech enterprises and promote the transformation and application of scientific and technological achievements. Facing the lack of R&D capacity in cities, the government can increase the investment and support to research institutions and provide more research funds and equipment resources. Establish a mechanism for close cooperation between research institutions and industry to promote the exchange and sharing of research technologies. Also establish a sound intellectual property protection system to protect the intellectual property rights of R&D results. This can stimulate innovation, enhance the motivation of R&D, and attract more R&D investment.

Figure 13 Share In Artificial Intelligence And Robotics As A Proportion Of Total Share, 2015-2021
Unit: Percentage



Source: Nature

(3) In terms of capital investment, the government can guide social capital to participate in investment in future industries by setting up special funds, providing tax incentives, and giving subsidies. At the same time, it can attract professional investment institutions such as venture capital institutions and private equity funds to participate in the investment of future industries, attract international capital and multinational companies to invest, share resources and technological advantages through cooperation, and promote the development of future industries.

Establish a public-private partnership investment cooperation mechanism to encourage the government, enterprises and financial institutions and other parties to cooperate in joint investment in the future industry and share risks and returns. Innovate financial mechanisms, including green bonds, industrial funds, and equity investments, to provide diverse financing channels and financial support for future industries.

(4) The development of future industries in cities needs to be supported by highly qualified and skilled talents. Cities should pay attention to the introduction and cultivation of talents and improve the quality level of talents in cities. Adjust the education system, pay attention to interdisciplinary education, and cultivate talents with comprehensive ability and innovative thinking establish a more diversified and flexible talent cultivation mechanism, improve the innovation capacity of education and research institutions, and establish talent exchange platforms, etc. Provide talents with a good living environment, quality educational and medical resources, diversified cultural and recreational facilities, etc. Attract and retain talents through the construction of high-level universities, support for scientific research institutions, and incentives for innovation and entrepreneurship. At the same time, the government can also increase the financial investment in the training of talents for future industries to improve the attractiveness of talents for future industries.

(5) In terms of urban resource constraints, the concept of smart city planning is used to optimize the efficiency of resource utilization in cities through the application of technology and information technology. This includes intelligent transportation systems, intelligent energy management, and smart buildings to maximize the savings and optimize the use of spatial resources. Digital technology and virtualization platforms can also be used to promote the digital transformation and online development of some industries. This can reduce the need for physical space, transfer some office, production and communication activities to virtual space and release physical space resources.

(6) Cities should formulate long-term strategic industrial development plans according to their own characteristics and advantages and take macro-control measures to promote the technological upgrading and transformation of industries and their healthy and orderly development. Establish scientific evaluation indexes and evaluation system to regularly evaluate and monitor industrial upgrading. Through the assessment results, timely adjust the industrial development strategy and promote the continuous improvement of industrial upgrading.

(7) Future industries need to focus on environmental protection and sustainable development, and cities need to strengthen environmental control and governance, raise environmental awareness, and promote future industries in the direction of green, low-carbon, and circular economy. Increase financial investment in environmental management costs and support for environmental technology. Promote the development of green finance and provide financial support and loan concessions for green environmental projects. Establish a cooperation platform for green technology development and transfer, encourage technology cooperation and sharing among enterprises, reduce duplication of investment in technology development and application, and lower costs. Strengthen the green management of the supply chain, encourage enterprises to choose environmentally friendly suppliers and partners, and improve the environmental performance and sustainability of the entire industrial chain.

(8) In the face of changing market demand, enterprises need to continue to innovate and research and develop and keep an eye on new technologies and market trends. Establish a flexible and efficient supply chain and production system that can quickly respond to changes in market demand and improve the speed and quality of product delivery. At the same time, regular market monitoring and research are conducted to understand the changes in market demand and competition, so that products and strategies can be adjusted in time to seize market opportunities. In addition, establish a good customer relationship management system and keep close contact with customers to understand their needs and feedback in order to adjust products and services in a timely manner.

(9) Provide financial support to start-ups and SMEs, provide start-up capital and venture capital support, and help entrepreneurs and SMEs obtain start-up capital and development funds by setting up venture capital funds, guidance funds and start-up subsidies. Formulate relevant policies to give entrepreneurs and MSMEs tax incentives, tax reductions or tax deferrals to reduce their operating costs and stimulate innovative and entrepreneurial activities. Help SMEs participate in incubation and scale up to help them reduce their start-up and operating costs.

In conclusion, to ensure the success of future industrial development, cities need to make comprehensive consideration and integrated planning from many aspects, continuously improve the development capacity and competitiveness of cities, create urban ecology suitable for future industrial development, and provide strong support for the economic and social development of cities.

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Contact Us

5250 Fairwind Dr. Mississauga, Ontario, L5R 3H4, Canada

(+1) 929 530 5901

infer@icvtank.com