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**How are China's local authorities addressing potential planning risks in the development of industrial real estate?**

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Being a dissertation submitted to the faculty of The Built Environment as part of the requirements for the award of *MSc Housing and City Planning* at University College London:

I declare that this dissertation is entirely my own work and that ideas, data, and images, as well as direct quotations, drawn from elsewhere are identified and referenced.

## **Acknowledgement**

Firstly, I would like to take this opportunity to thank my supervisor, Dr Daniel Fitzpatrick, for his meticulous guidance throughout the course of my thesis. His interest in the research topic and his unconditional support and guidance has enabled me to carry out my research. In addition, many thanks to all the interviewees for their participation and willingness to share their expertise.

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## **Abstract**

The development of industrial real estate in China is receiving more attention than ever before. This is because the development of industrial real estate has become more critical than ever, as it often requires the simultaneous construction or upgrading of municipal and transport infrastructure, thus creating a scale effect that is fully in line with the requirements of upgrading the quality of industries and services in the process of economic transformation. In the past, there has been a lack of interest in the development of industrial real estate as the value of land and scale of investment in industrial real estate has been less significant to local government finances and individual investment than in residential and commercial real estate. In order to adapt to the new situation, it is necessary to accelerate the research related to industrial real estate development. As planning is the first step in the development process, planners must be able to reasonably anticipate potential future risks and establish a comprehensive risk management system, which has been discussed at less length in past studies. Therefore, in order to enhance the understanding of industrial real estate planning and risk management work, this paper presents a local planner's perspective on industrial real estate planning work, especially risk management, from the perspective of local governments and planners, using the example of Zhejiang, China, through interviews with staff from local authorities and literature analysis, and identifies some shortcomings in current planning and risk management systems, and concludes with some recommendations.

**Key word:** Industrial real estate, city planning, risk management

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## **Chapter 1. Introduction**

### **1.1 Background**

Industrial real estate development is considered to be the new windfall for China's real estate market in the future (Yuan, 2021), and is widely considered to be a new form of development that meets the requirements of sustainable development and economic transformation. Due to the volume of industrial real estate development and its characteristics of regional growth and economies of scale, this behaviour is often seen as a reflection of national entrepreneurship and urban entrepreneurship (OECD, 2011; Levenda, Tretter, 2019).

Industrialisation and urbanisation tend to proceed in tandem (Li & Sun, 2021), but because of China's late start, there are still many obstacles to the actual development of industrial real estate in China compared to many developed countries, making the overall's growth still slower than expected (shi, 2015). Zhang (2022) points out that weak awareness of risk management is an important reason for Slow growth in the scale of industrial real estate development. However, All types real estate development is a systematic project that requires detailed planning before development actions are taken, which includes the anticipation of risks. Risks are present throughout the real estate development cycle (Byrne, 1984) and are often hidden. For investors and users, the risk arises from the fact that the development cycle is in a rather uncertain environment, where most of the benefits of the building will be generated in the future and most of the costs will have to be borne upfront, but the main actors in the upfront process are not only the developer and the investor but also the local government. (Brill & Robin, 2020; ball, 2008; Adair & Hutchison, 2005).

As the Chinese government sector plays a dominant role in the overall pre-development of land, this situation is reflected in the fact that China's state-owned land system makes the process of land marketisation largely government-led, and ultimately different forms of financialisation are used for different types of land in China. Specifically, only commercial and residential land is capitalised, while industrial land is completely commercialised (Chen & Wu, 2022). This behaviour is characteristic of the planned economy of the past (Chen&Wu, 2020), and generally speaking, most countries in a market economy require lengthy communication and negotiation with the planning authorities about the value of land to be acquired in the early stages of development (Smyth, 1982; Adams et.al, 1992), whereas decision-makers in China tend to have more power. This requires special attention to the future development and value



of the land, including the management of risk (Dong & Feng, 2007; Zhu, 2011). This is a process that is difficult for developers to lead, especially in China (Cheng, 2021). The work of developers is based on feasibility studies based on planning documents issued by local governments and planning departments.

Industrial real estate requires more investment than a traditional residential property and has a longer payback period than traditional residential property, as well as potential land contamination and engineering safety issues, making the selection of industries and the delineation of industrial land indicators and risk management a priority for local authorities and planning departments (Shen et al., 2021).

Current research on industrial real estate in China is still mainly focused on developers, specifically in the areas of factory operations, project investment and engineering (Shi & Wang & Dong, 2015; Shen&Huang, 2010), while research on local governments or planning departments are mainly conducted as part of urbanization and land zoning studies (Wu, 2015; Ou, 2004; Sklair, L. 1985). Ou (2004) and Gao (2007) provide some practical details in their discussion of planning systems, but still lacking the content of risk management.

Risks in the property development process can impact multiple roles. The process of real estate development is not simply an economic one but is also highly social (Guy & Henneberry 2000; 2002a). As such, government - both local and national - is an important actor in its own right, as well as a regulator of other actors. These relationships must be seen and their contributions understood in terms of their specific linkages - functional, historical, political, social and cultural - as well as their links to elements of the wider political economy structure (Tiesdell & Adams, 2011; Ball 1986; 1998).

This dissertation examines risk management in pre-land planning practice from the perspective of local government and planning authorities, with particular reference to the risk of the industrial real estate planning process. Tiesdell & Adams, 2011; Gehner, 2008).

## **1.2 Research aim and Objectives**

This study uses a qualitative research design to investigate the planning risks of industrial real estate projects in China. The specific location of Zhejiang Province was chosen because it was established as a Common Prosperity Demonstration Zone in 2021, and the government of Zhejiang Province, in its Implementation Plan for Zhejiang's High-Quality Development and Construction of a Common Wealth Demonstration Zone (2021-2025). The government of Zhejiang Province proposes to accelerate the construction of a modern industrial system with international competitiveness during this period through the following main objectives: Consolidate and strengthen the foundation of the real economy and consolidate the industrial base for common prosperity; accelerate the construction of a global advanced manufacturing base; in-depth implementation of the manufacturing industry base reengineering and industrial chain upgrading project; and iterative upgrading systematization implementation plan and other requirements. (Cao&Ma, 2021; ZheJiang Gov, 2021).

Therefore, the transformation and upgrading of industries and the expansion of industrial real estate development are objective outcomes during this period, and how local policymakers and planning authorities in Zhejiang think and practice the process of future industrial transformation and risk management in industrial real estate development will provide a good reference value for other provinces in China as well as other developing countries. In order to better understand the risks that industrial real estate in Zhejiang, China, may face in the pre-planning process, we finally interviewed six participants with practical experience in this research.

In order to contribute to knowledge in this area and to better understand the behaviour of local authorities in Zhejiang, The purpose of this study is to explore the perceptions of local authorities in Zhejiang on the relationship between risk management and decision-making in industrial property development planning. The main questions are:

- How do policy-making and planning authorities in Zhejiang consider risk management in their planning decisions?

To this end, this paper will contribute to the achievement of the research objectives by accomplishing the following

- To examine the role of risk in the decision-making process of planning and decision-making authorities.

- To determine the risk awareness of local planning and decision-making authorities and to examine how they spread risk.
- Investigate industrial property development activities in Zhejiang to understand how planning departments decide on industrial layout and land reserves.
- Analyse how local authorities consider and respond to issues such as potential risks to developers and future environmental protection, and identify the factors that influence their decisions.
- Assess which risk management methods are applied by local decision-making and planning authorities.
- Evaluate the key findings of the study and provide recommendations for further investigation.

### **1.3 Study outline**

The dissertation is divided into six chapters. The first chapter provides an introduction to industrial property development and the riskiness and purpose of the research faced by planning authorities. Chapter 2 presents a literature review and an insight into the development of industrial property development in China and the decision-making processes of local governments and planning authorities in China. Chapter 3 explains the research methodology and data collection, followed by the case study process in Chapter 4. Chapter 5 provides key findings, Conclusion and further recommendations are presented in Chapter 6.

## **Chapter 2.Literature Review**

### **2.1 Definition of industrial real estate**

Industrial real estate, or land development activities that focus on the establishment of industrial projects, is a dynamic concept that has evolved from the study of the link between economic development and industry, while land development is the process by which the need for industrial landing and the layout of a practical city is completed from paper to land. However, the study of the direct link between the two has evolved over time and has been articulated in a number of doctrines to date.

Research into the economic efficiency of industry can be traced back as far as William Petty (1755) described the income differences between manufacturing, agriculture and commerce, and systematically analysed the industrial structure and economic trends in Britain, France and the Netherlands. Clark (1957) pointed out that as people's income increased, the labour force would gradually move from the primary sector to the secondary sector and eventually to the tertiary sector, and then this concept was continuously improved, eventually forming the Petty-Clark theorem, which basically laid down the modern economics of industrial structure, that is, industry and economic conditions are positively correlated.

Since the first industrial revolution in the 18th century, there has been a growing awareness of the contradictions between the increased productivity and population and the urban layout of the agricultural era. A number of theories on land development and urban planning have been developed, such as Unwin's satellite city theory. Since this time, industrial development has been linked to land development, although there is still some disagreement as to the specific links, such as whether industries should be located directly in the suburbs or relocated to new cities (Hu, 2005). However, the importance of industrial layout did receive more attention and recognition than ever before. By the 19th and early 20th centuries, these theories of urban development were widely used and the needs of industrial society were largely incorporated into the physical structure of many contemporary cities, and by the eve of World War II, industrial cities had become an integral part of the European landscape (Karadimitriou, 2013).

In the post-World War II period, with the rise of digital technology, represented by computers, and high-level manufacturing and business management capabilities, represented by robots, some scholars refer to this period as the 'Post-Industrial Society', where old industries became

more dependent on new technologies due to the rapid economic growth of this period. Due to the rapid economic development during this period, the old industries became more dependent on new technologies, and the classification of industries was no longer limited to the traditional sense of primary, secondary and tertiary industries (Kankhva. et.al, 2018; Fitzsimmons,1994), and its original spatial layout no longer accommodates the new modes of operation such as offshoring, division of labour and sub-location collaboration of new industries, while the disposal of secondary industries represented by heavy industries, which were heavily encouraged during the war years, and the environmental problems and human-land conflicts arising from them also pose many challenges to planners (Tonin & Turvani, 2014. Karadimitriou, 2013; Blinder, 2006, Beauregard, 2003). Since the 1980s, innovation policies developed with regional objectives have become a common practice among planners in many countries, a model characterised by the application of research on paper to assembly-line efficient industries that can be put on the ground, so that during this period. As a result, new industrial bases in the form of science parks, cultural and creative parks, and business incubators have become the focus of urban development efforts. In developed countries, there are approximately 8,800 industrial parks in the USA, 1,200 in Canada, 200 in the UK and 300 in Germany. (Adams, & Russell & Taylor, 2021; Miao.et.al., 2015; OECD, 2011; Yong&Zhao, 2009).

In the 21st century, industrial real estate is considered to be a land development activity oriented towards new industries or the renewal of previously Environment unfriendly or uneconomic industries, and with the increasing number of people employed in the service sector and in industry, a new spatial concept of urban economic development has been formed in its concrete form, integrating industrial parks, technology parks, warehousing and logistics and even housing. (Qu & Liu, 2021; Yu, 2019; Shi&Wang&dong, 2015).

## **2.2 Background to the development of industrial real estate in China**

China was an agrarian society until the mid-19th century, during which time industry was mainly represented by family-based artisanal workshops, a model that could only sustain normal living needs and had not yet reached the productivity required for industrialisation. The idea of systematic industrialisation emerged after the Opium War in 1840, China's contacts with the West increased and a systematic industrial layout gradually began (Qu, 2016; Von, 2016). This trend continued until the eve of World War II and was then interrupted by the war

until the founding of the People's Republic of China in 1949. The course of China's industries and the development of its land after this time is highly correlated with changes in economic policy, which can be specifically divided into four phases through a series of landmark events:

1. The early years of the founding of the country (1949-1958)

During this period, China vigorously developed its heavy industry through the First Five-Year Plan, receiving assistance from the Soviet Union, and by the end of the First Five-Year Plan in 1957, China had developed a large-scale heavy industry system (Liu, 1992).

2. The Great Leap Forward and the Cultural Revolution (1958-1978)

As a result of the excellent results of the First Five-Year Plan, the Chinese government increased the demand for local production targets, especially for iron and steel production. But the subsequent internal political disputes the Cultural Revolution led to a decade of "stagnation" during which little development took place, except for some military industries (Liu, 1992). It is important to note that prior to this period, land and industrial layout were unified and coordinated by state units according to the principles of a planned economy, so there was no real planning activity by local planning departments during this period, and even in the case of housing, the policy was based on welfare housing, and private or commercial housing was extremely rare, so the link between land development and industrial layout was quite homogeneous (Chen The link between land development and industrial layout is therefore rather homogeneous (Chen & Wu, 2020).

3. The early period of reform and development (1978-1992)

After the end of the Cultural Revolution, China began a difficult market-oriented reform as the new government leaders put the economy back into focus. However, after the reform and opening up of China, the central government slowly began to experiment with decentralisation, based on greater local planning rights, for example, municipal governments could also identify and develop their own core industries as well as attract foreign investment and build the market environment on their own. In this process, land development was no longer a pure state undertaking, but individuals, private enterprises and even foreign investors were involved in the process, and the planning and layout of industries and the subjects of land development began to take on a pluralistic character, and market-oriented economic reforms gradually pushed the development of different key industries in different regions (Chen & Wu, 2020; Liu, 1992). The industrial structure of modern China has been continuously upgraded since the reform and opening up, and representatives of new industrial parks with new industries at their core are emerging (Table 1). At the end of 1984, the Chinese government approved the first batch of 14 coastal urban development zones, in which the restrictions on development

activities in industrial zones were relaxed in order to accelerate industrial construction and the construction of a market economy, and the scale of industrial zones at the local level was gradually reduced and their coverage expanded, with the increasing commercialisation of industrial land (Chen & Wu, 2020). At the same time, Lin et al. (2020) show that many local governments in China have been selling land use rights for industrial purposes at low or zero prices in order to attract investment and promote local economic growth.

Stage	Background	Representative parks	Core Industries
Exploration period (1979-1985)	Reform and opening up Participation in the international division of labour	Shekou Industrial Park	Transport and trade, electronics, petrochemicals, etc.
The Beginning period (1986-1991)	The World Wave of New Technologies State support for high-tech enterprises development	Shenzhen Science and Technology Industrial Park	Electronic Information, Bioengineering, New Materials, Opto-mechatronics
Expansion period (1992-2000)	Deng Xiaoping's Southern Tour Speech National Industrial Park Boom	Zhangjiang Hi-Tech Park	Biomedical, IC, Software
Standardization period (2001-2015)	China's accession to the WTO Economic and industrial policy adjustments	Suzhou Industrial Park	Electronics and telecommunications, precision and mechanical engineering, biological and pharmaceutical industries and new materials
Innovation (2015-now)	China has made significant breakthroughs in new technologies for clean energy, represented by new energy vehicles	Greater Bay Area	New Energy Vehicles, Biomedical, Artificial Intelligence

Table 1 Industrial real estate in China at different times

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Collated from: Ai&Wu (2015); Cheng et al.(2014); Dennis et.al (2009)

#### 4. After Deng Xiaoping's Southern tour (1992-now)

Deng Xiaoping was the central leader of China in the 1980s and 1990s, and a major proponent of reform and opening up. The reform and opening up process was again hindered by the controversy over the route of China's reform and development in the mid-1980s and the ensuing political turmoil. In an attempt to solve domestic economic problems and attract more investment, Deng Xiaoping visited various places in southern China in 1992 and gave several talks during this period, unveiling China's stance and initiatives to further open up the market, including setting the development line and tone of "socialism with Chinese characteristics" and continued reform and opening up. In 1995, the State Council issued the "Decision on Accelerating Scientific and Technological Progress", making "science and education for the development of the country" a national development strategy (Chen & Wu, 2020; Fewsmith, 2003, Liu, 1992). The influx of investment has pushed China's industrial structure from heavy industry to high-tech industry. Nowadays, China's new industries, such as digitalisation and new energy, are developing rapidly, but with this comes the problem of land renewal and environmental protection, which are the legacy of the old industries (Yu, 2022). During the late of this period, the world's local protectionism became prevalent and posed a challenge to the transformation of China's industrial structure, and the transfer of old industries led to social problems such as increased unemployment (Colin, 2019).

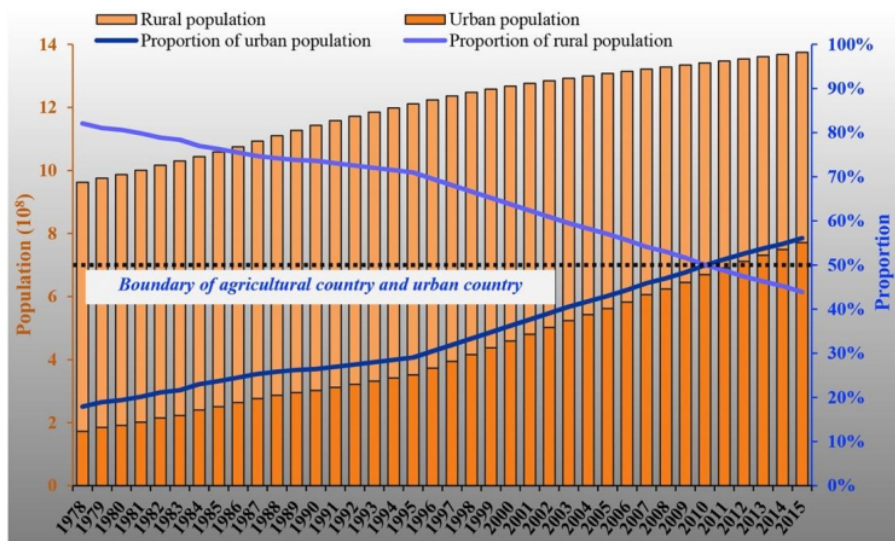


Figure 2 China's urbanization process

Source: Guan et al., 2018



The scale of China's industrial development has also achieved a huge breakthrough, as the Ministry of Land and Resources report reveals that the supply of industrial land in China reached 120,800 hectares in 2015, higher than the total supply of commercial land (34,600 hectares) and residential land (72,900 hectares), and the fixed assets of Chinese industrial enterprises increased from 594.675 billion yuan in 2000 to 3,674.053 billion yuan in 2017. The fixed assets of Chinese industrial enterprises also increased from RMB 5,946.75 billion in 2000 to RMB 3,674.053 billion in 2017, an increase of nearly six times (Figure 2). As of today, according to incomplete statistics from the Ministry of Land and Resources, there are 6,866 industrial parks in China, 113 of which are government-approved industrial parks of national, provincial and municipal scale (Geng & Doberstein, 2008). After 2010, new industries such as new energy vehicles and data technology have also made great progress in the Greater Bay Area (Lau&Wu&Yan, 2022)

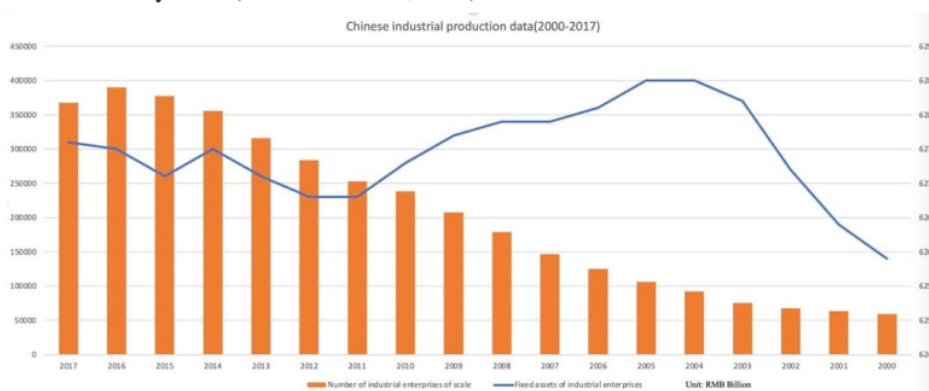


Figure 5 Industrial development in China  
Source: National Statistical bureau

### 2.3 Planning of industrial real estate

Industrial layout and land development in China are part of the work of the urban planning system and indeed the urbanisation process (Sklair, 1985). In China, urban planning is divided into two main levels, with Wu (2015) divided the system into the formulation of plans and guidelines and their implementation. The central or provincial governments are responsible for producing the planning framework or guiding documents. The details and implementation are left to the municipal and county authorities. (Figure 3), mainly industrial real estate planning has undergone a transformation from overall global planning to local detailed planning processes, possessing different planning visions at different times, since the reform

and opening up, Typical representatives are the Wenzhou model and the Pearl River Delta model.

The Wenzhou model implies that the private sector economy broke through the historically limited context and became the dominant local structure by breaking away from the constraints of the state-planned economy, a situation that also emerged in the widespread establishment of private factories and influenced the process of China's reform and development policies (Liu, 1992).

The Pearl River Delta model represents the cooperation between the local and private economy in the middle of the reform and development period, where industrial real estate gained higher marketability based on the local authorities bearing more of the original costs and laying the foundation for future industrial upgrading and standby replacement. (Sit&Yang, 1997; Oi, 1995).

Both of the above models are products of the National Innovation System (NIS) with the national will as the supreme guiding ideology (Cooke, 1992; Cooke& Morgan, 1998), and with the continuous improvement of productivity and social environment, the contribution of local innovation to the economy became difficult to ignore, so the concept of Regional Innovation System (RIS) was widely applied in the construction of new industries. The Suzhou model is typical of this period. In the late reform and opening-up period, the central government further decentralized local governments, allowing local communities and subordinate units to develop rapidly through privatization and global capital injection

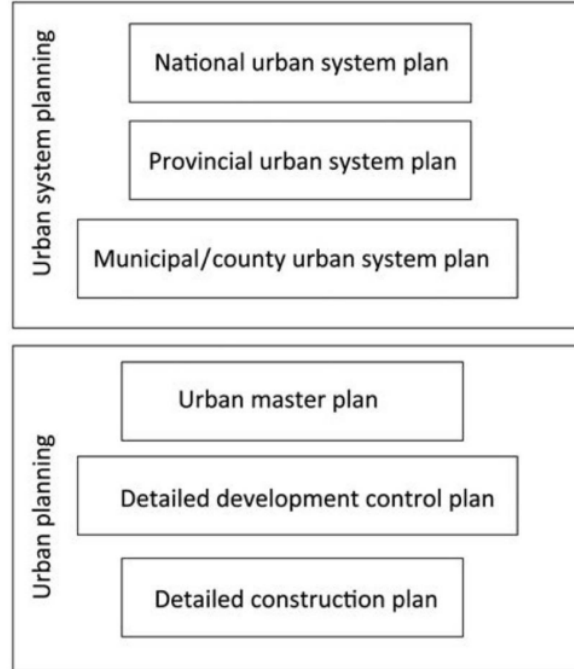


Figure 7 The statutory planning system in China

Source: Wu(2015)

China's industrial parks can be classified according to the administrative level of the planning unit as national, provincial/municipal, local city/town, and some private or Sino-foreign joint venture zones. They are the most active area of foreign investment and play an important role in China's economic development, according to statistics although all industrial parks account for only 0.004% of China's land, they account for 10% of the country's foreign investment ( Geng & Côté, 2001; UNEP, 2001), and the new urbanisation movement of recent years has made industrial parks the base for the restructuring of industries and the renovation of old and new enterprises in the mother cities. The new urbanisation movement in recent years has made industrial parks a base for restructuring and renovating old enterprises in the home city, and their cooperation with advanced foreign productivity has made them a venue for the transformation of Chinese business management practices to international norms of management practice (Geng & Côté, 2003). Amin and Thrif (1992) summarise this phenomenon as the emergence of a global network of firms and identify industrial zones and local complexes as the best way for regions to integrate into the world economy and to expand the products of the global network of firms.

### **2.3.1 Land reserves and site selection**

For Chinese planning authorities, the mindset and administrative framework for land planning layouts can differ from those of other countries. In general, China's land is state-owned, the land used in Chinese industrial parks is usually land reserved by their municipalities for industrial development, with industrial land often acting as the most commercialised unit (Chen & Wu, 2022). Chinese land legislation provides for two main types of land use rights: allocated state land use rights (ALUR) and granted state land use rights (GLUR). ALURs are usually satisfied when a joint venture is formed with an existing or former state-owned enterprise, under which the state allocates land use rights to the state-owned enterprise almost free of charge (Li&Sun, 2021; Garnaut& Song & Yao, 2006). In return, these state-owned companies are expected to develop the land at their own expense, including resettling former users such as farmers, building the required infrastructure, and paying a small annual fee to the government. In return, the state has the right to withdraw this right or increase the annual fee every three years at its own discretion (Yong & Zhao, 2009).

In general, site selection criteria for foreign companies and industrial enterprises can usually be divided into operational site factors such as markets, raw materials, logistics, real estate, infrastructure, energy and availability of skilled labour; and factors such as existing legislation, investment regulations, taxation, customs and financial systems (Vaidya, et al., 2018). A very important factor for any type of investor is the so-called 'US\$30 million threshold. Investment projects above this value usually have to be approved by central government authorities, but projects below the threshold can be handled by local authorities, usually at the municipal level. This threshold will become very important in investment studies at the local level (Yong & Zhao, 2009).

Another important part of selecting and establishing industrial sites is obtaining secure and enforceable rights to the underlying property. Although China does not provide a system of private land ownership, and all land remains in state ownership, there is an established but still evolving system that allows for the transfer of land use rights for value. However, this land use rights system requires a great deal of attention from investors as it has undergone significant changes in the past and is still undergoing further improvements. In addition, China has a huge demand for building land for development which has led to a significant increase in land prices as a result. Because the capital investment for the large infrastructure facilities it requires cannot be afforded by individuals or enterprises at an early stage, and because of the political

misgivings associated with working with foreign capital, early large-scale parks often have a substantial background in the state capital and a fully integrated administration that makes provision for ongoing future management, imposes restrictions on tenants and carries out detailed planning of lot sizes, access and facilities.

In some countries, industrial parks have a dual function as production and residential areas, for example in China and Thailand, in contrast to the North American model where parks are primarily based on manufacturing. Thus, a typical Chinese industrial park has an industrial production area, a scientific research area, a residential area, a recreational area and a business and service area (Lyhyaou. et.al., 2015; Yong&Zhao, 2009). Taking the Suzhou Science and Technology Park as an example, the current spatial planning of a typical industrial park is as follows (Figure 4). Lin et al. (2020) also showed that land policy has a direct impact on the price of industrial land and the intensity of land use and that there is a positive correlation between the price of surrounding housing.

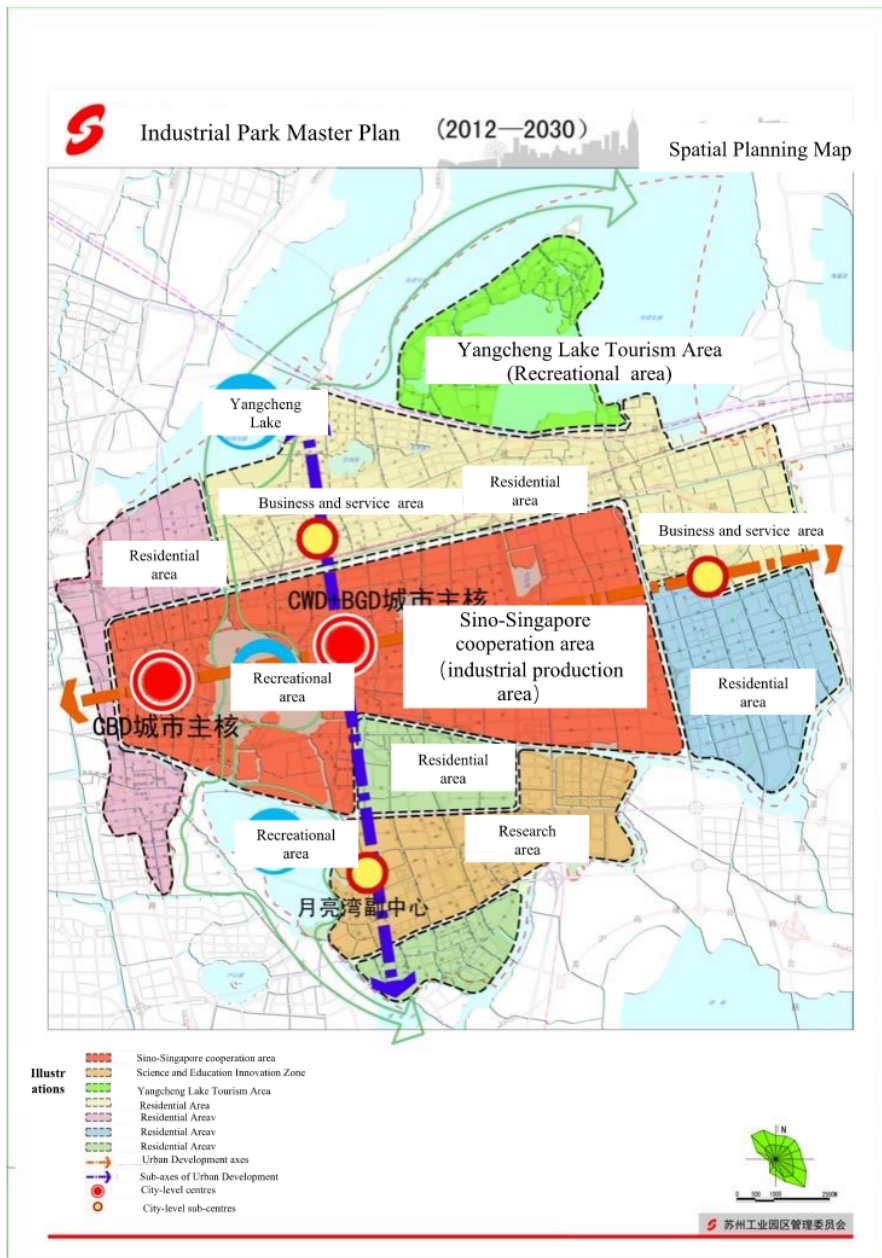


Figure 4 Suzhou Industrial Park Master Plan (2012-2030)

Edit by author

Source: Suzhou Industrial Park Management Committee

Available at: [http://www.sipac.gov.cn/szgyyqenglish/scientific/list\\_tt.shtml](http://www.sipac.gov.cn/szgyyqenglish/scientific/list_tt.shtml)

## 2.4 Risk in planning decisions

Risk refers to the unpredictable and unavoidable uncertainty and uncontrollability that people encounter when engaging in various risky and innovative activities, which for planners means that the "land investment behaviour" for the future is objective and the key is to take effective actions to avoid or mitigate losses (Fang, 2000). There are still many risks in the current planning system in China. According to Zhang (2001), China's planning system is still in a process of continuous improvement and is highly vulnerable to external interference, particularly by administrative forces. This power is often not revealed on paper. Gao (2007) has reviewed the development of China's planning system over the years and summarised some of the problems that still exist. For example, there are structural risks such as inadequate administrative functions, lack of departmental cooperation and coordination, the inability of planning managers to adapt to the rapid development of urban construction, and severe division of authority between departments, as well as non-structural risks such as investment disruptions and natural disasters. Ou (2004) classifies these risks according to their nature, content and process (Figures 5 & 6). In general, the risks of planning come from the institutional, social and economic environment and the quality of the people involved.

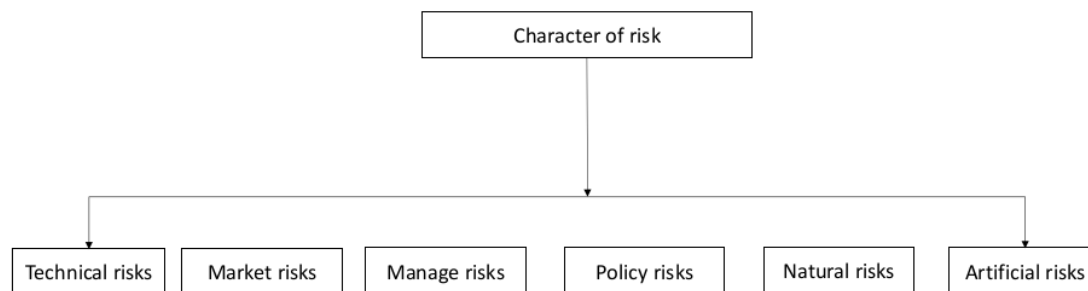


Figure 5 Character of risk  
Edit by Author,Source: Ou(2004)

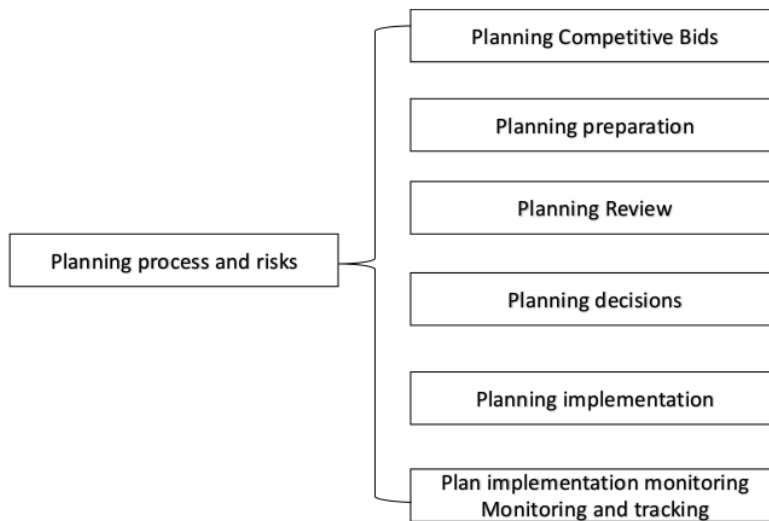


Figure 6 Planning process and risks

Edit by Author, Source: Ou(2004)

#### **2.4.1 Risk management process**

Risk management is defined as defining the scope and frequency of risk management and identifying all relevant stakeholders (Kontio, 1998), and in most cases, risk management arises in a cyclical pattern (Figure7, Gehner et al., 2008). , the whole process can be broadly divided into steps such as objective setting, risk identification, risk control, and risk detection. Like the planning process, the risk management processes reviewed differ in their stages; however, they all involve the same basic steps. In this study, the risk management process is considered to have the following four key elements (Hsu, 2012; Godfrey, 1996)

1. problem identification
2. understanding the concerns of the parties involved
3. understanding attitudes to risk and uncertainty
4. setting specific risk and uncertainty research objectives



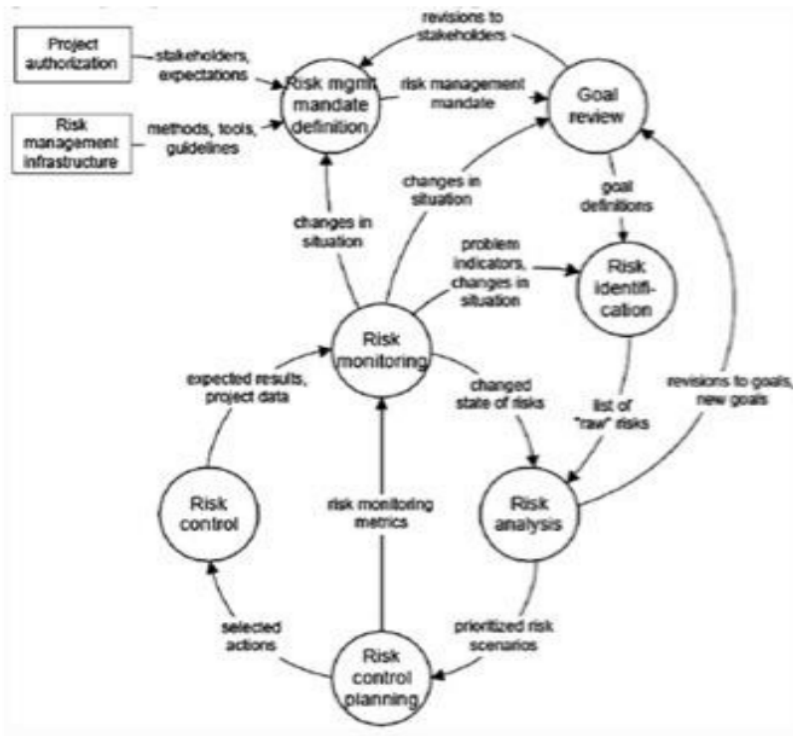


Figure 7 Risk management cycle

Source: Taken from Kontio et al.(1998)

This model will give important insights into this study to help understand exactly how the case works in the various aspects of risk management.

### 2.4.2 Risk identification and analysis

The purpose of risk identification is to avoid or minimise the risk of loss. Risk identification requires a variety of methods to understand the potential risks and analyse them, ideally a 'list' (Kontio, 1998). In general Lyon and Skitmore (2004) collate risk identification techniques and conclude that qualitative methods are more commonly used in risk assessment than quantitative methods.

Qualitative methods are mainly based on previous experience, measuring the likelihood of occurrence or impact when sufficient quantitative data is not available, and often provide the basis for future quantitative analysis. Interviews, brainstorming, the Delphi method, flowcharting and scoring are common tools used for qualitative risk analysis (Hu, 2010; Godfrey, 1996).

In contrast, quantitative risk assessment is based on the analysis of large amounts of data. The purpose of conducting a quantitative analysis is to estimate the impact of a project's risks in terms of scope, time, cost and quality. Due to the uncertainty of the planning horizon and the difficulty of obtaining data, this method is usually more difficult to use in planning systems and is more suitable for investment in individual projects, operational risk forecasting, or large-scale spatial planning, including probabilistic methods, sensitivity analysis, etc. (Hu, 2010; Wang & Zhang, 2001)

### **2.4.3 Risk control and monitoring**

The point of risk control is to avoid or mitigate losses from risks, Kontio (1998) considers that the risk control phase has several main purposes, 1. selection of the most important risks in the risk list. 2. proposing risk control actions for the most important risks. 3. to select the risk control actions to be implemented and should specify the acceptable level of risk as well as ensure that the remaining risks are properly understood and that risk transfer actions can be carried out if necessary, a process in which the planner needs to view everything as uncertain and although risks will always be present, it is important and helpful to maintain multiple perspectives and once the critical situation is clarified, the focus can be shifted according to the actual. Once the critical situation is identified, the focus can shift to the measurement of risk and uncertainty according to the situation (Hsu. et.al, 2012).

## **2.5 Past research**

In the past, many scholars have focused on the risks in the planning system of local governments and planning authorities, and have suggested legal and institutional adjustments such as balancing administrative forces and coordination mechanisms between planning departments (Gao, 2007; Ou, 2004; Zhang, 2001). Some scholars have studied the risks and failures of property developers and investors at the pre-planning stage (Gehner, 2008) and have suggested key quantitative data and factors, such as adjustments to investment decisions.

Although many scholars are aware of structural problems in China's planning system (Wu, 2020; Abramson, 2006; Ou, 2004; Gaubatz, 1996), there is a lack of a sufficient number of studies to discuss the specific difficulties encountered by planning authorities and local governments in the practice of up-front planning decisions and the practical responses to them (often not in full compliance with regulations). The number of studies on industrial real estate

and industrial land use, in particular, is even more scarce, while past studies have taken a case-by-case approach or interviews, which are more focused but therefore lack a dialectical perspective, i.e. the views may not be universal. Therefore, the author believes that it is necessary to strengthen the behavioural research on pre-planning and to expand the scope of the research. The use of current theoretical risk management models combined with interviews with actual staff to analyse the risk management of industrial properties in China will effectively fill in some of the gaps in the previous literature.

## **Chapter 3. Methodology**

This chapter describes the research methodology, data collection, interviewee selection criteria and ethical considerations of the research.

### **3.1 Research Methodology**

Quantitative methods have been common in past research on real estate and land planning and risk management, and quantitative analysis is widely used in applications such as information science, geoscience and management decision-making (Adafin et.al,2020; Groneberg et.al,2019; Fellows et. al,2003). The quantitative approach emphasises numerical data analysis and is, therefore, Lack of discussion of psychological activity and character feelings and lacks human perception (John & David, 2018). In contrast, qualitative research methods are used to examine and understand individuals or organisations in relation to social issues (Cresswell & Creswelll, 2018).

A qualitative research design was used in this study. Qualitative research methods allow the researcher to work closely with participants, in this case, professional local planning authority participants as well as local government personnel and industrial property developers, in order to gather relevant data and experiences. document and expert surveys are common methods (Creswell, 2018). Anonymous surveys of experts represented by the Delphi method have been conducted by several scholars in the past in the direction of risk control as well as financial management (Wang, 2015; Kauko and Palmroos, 2014; Rowe & Wright, 2001; rower & Wright, 1998), but this approach has certain limitations, such as the Delphi method's professional overly demanding and distracted by personal perspectives, and lack of depth. Therefore, in order to achieve the aims and objectives of the thesis, this study was planned to use a combination of document and interview methods and questionnaires. In terms of recruitment, potential participants were contacted via email. This included information about the purpose of the study as well as an ethical statement.

### **3.2 Data collection**

The study was planned first through the analysis of previous documents and secondary data, followed by semi-structured interviews with experts in the field of expertise based on prepared questions. According to Longhurst (2003), semi-structured interviews allow participants to discuss issues that they consider relevant. Semi-structured interviews have the advantage of

flexibility, which means that they encourage participants to give open-ended responses. As this study covers a wide range of research topics, the semi-structured interviews allowed data to be generated in a way that was least stressful for the interviewees and responsive to their responses.

The main target group was local governments in Zhejiang, the planning section and senior practitioners in the industrial property development business. The interviews were designed to analyse how real estate developers consider and manage risk in their investment strategies. In general, the interviews were structured in three main parts, firstly to understand the interviewees' perceptions of the risk factors based on the information summarised at the beginning of the interview, secondly the relevant decision criteria at different planning stages, and the risk measurement methods. Depending on the wishes and answers of the participants, the questions and format of the interviews may change slightly.

### **3.3 Study participants**

The participants in this study were carefully selected, that is to say, participants relevant to the topic, including local governments, planning authorities, and developers, were chosen in order to gain a deeper understanding of the decision-making behaviour of local governments and planning authorities in Zhejiang. The participants are experts in their field, have many years of practical experience in the study area and have experienced at least two projects in full planning or development. It is expected that six professionals will be invited to take part in the survey. A risk questionnaire and a link to the conference will be emailed to invitees, and as China is still implementing covid-19 controls, all interviews will be conducted online. Overall, 80% of the Interviewees are local government planners, while 20% are investor-developers.

### **3.4 Academic ethical safeguard**

The study ensured that the person's interests were not violated and that deceptive practices were avoided. This was done by providing each participant with an information sheet outlining the purpose of the study, followed by an informed consent form (see appendix), prior to conducting the interview. In addition, data protection was ensured, while the right to withdraw and anonymity was respected. The study ensured that participants had the necessary permission to be recorded. Finally, a risk assessment form was completed (see appendix).

## Chapter 4. Discussion and analysis

This chapter discusses the issues on which the article is mainly clustered. In general, the chapter is structured in two main sections, starting with the background to the case study, followed by an analysis of the planning process and its risk assessment exercise. In the risk assessment section, the main risk factors and the risk assessment process are presented.

### 4.1 Case Background -Zhejiang

The administrative structure of China can be divided into the country, provinces (special administrative regions), cities, counties, towns and villages. Zhejiang is a provincial unit which consists of 11 municipal administrations (Figure8). Zhejiang is considered to be one of the richest regions in China with the highest standard of living, with an industrial GDP of more than US\$500 billion in 2021 and growth rates of more than 10% year-on-year in 35 of the 38 industrial categories covered by the statistics, according to the National Bureau of Statistics (2022). In addition, Zhejiang has been tasked with building a Common Wealth Demonstration Zone and is required to complete industrial transformation under specific guidelines, giving industrial real estate planning a more important role in future city planning work.



Figure 8 The Map of ZheJiang

Source: Wu.et.al(2018)

## 4.2 Planning work and risk management

In the current planning system in China, the risk assessment does not appear as a separate item in the preparation of various planning texts, and according to the majority of interviewees, risk perceptions are relatively low in local work, and they also believe that risk management is still dependent on the consciousness of the actual operators of industrial estates. Interviewee 3 indicated that “the planning process is largely completed once the land has been delivered.”

### 4.2.1 Chinese Planning system of Industrial real estate

*"The planning of industrial properties is part of the land planning process. Land planning documents will clearly set out the industrial land targets and the requirements for the introduction of industries."* - Interviewee 2

China's administrative system dictates that planning is a process from the central to the local level, with the higher authorities establishing general guidelines and objectives, and the lower authorities preparing specific planning documents based on these documents and opinions, taking into account local realities. The Zhejiang's specific planning work can be divided into seven steps (Table 2).

Illustrative table of planning procedures in Zhejiang	
Stage	Work content
1	Planning Basis Data Survey
2	Taking forward the planning revision pilot
3	Start of pre-revision planning work
4	Completion of planning outline and outline notes
5	Preparation of a planning programme based on the outline
6	Reporting of planning results
7	Publication or modification

Table 2 Planning process for local authorities in Zhejiang

Source: Author edit by Interviewees and Wenzhou Natural Resources Planning Bureau(2018)

Website: [http://zrzyj.wenzhou.gov.cn/art/2018/11/8/art\\_1503387\\_23458611.html](http://zrzyj.wenzhou.gov.cn/art/2018/11/8/art_1503387_23458611.html)

Wu (2015) outlines this operational mechanism in terms of the hierarchy of planning agencies and planning documents and laws respectively (Table 3), and substituting this structure into the planning of the industrial development park in Lishui, Zhejiang Province provides a clearer picture of the planning Mechanisms practice in local industrial real estate. (Table 3).

Illustrative table of planning procedures in Zhejiang		
Stage	Work content	Note
1	Planning Basis Data Survey	Conducting planning basic data surveys in accordance with the requirements set out in the <Notice on the Conduct of the Province's Land Renewal Survey>
2	Taking forward the planning revision pilot	Summarize past planning experiences and lessons learned from administrative units at all levels. Select some cities, and county-level units as the pilot work to carry out the revision of the overall land use planning, and other non-pilot counties (cities, districts) to do the preliminary work related to the revision of the plan as early as possible, this period on the pilot work of the specific technical requirements, organizational leadership and time arrangements for a unified deployment.
3	Start of pre-revision planning work	The provincial coordination group for the revision of the overall land use plan, which is composed of experts from various industries, has been set up to carry out targeted preliminary research work for the revision of the plan, taking into account the actual situation in Zhejiang Province.
4	Completion of planning outline and outline notes	Guided by the documentary requirements of the Decision of the State Council on Deepening Reform and Strict Land Management, 18 thematic studies on planning were carried out. Completed the outline and outline notes of the General Land Use Plan of Zhejiang Province (2006-2020) with the results of the thematic studies.
5	Preparation of a planning programme based on the outline	After the release of the outline, comments from lower levels of government and relevant departments are gathered and a full draft of the plan is completed based on the outline
6	Reporting of planning results	Submission of planning documents to the Provincial People's Congress Committee and the Chinese People's Political Consultative Conference, and finally to the State Council for review
7	Publication or modification	Adjusted or issued in accordance with the review by the State Council

Table 3 Schematic Table of Planning Systems for Industrial Development Parks in Lishui, Zhejiang

Source: Author edit by Wu(2015), Detailed Control Plan for the Lishui Economic Development Zone(2007)



Once the planning document has been completed, a third-party professional is usually hired to draw up an accompanying schematic plan based on this document and make it available for public consultation (Figure 9). Once this process has been completed, the transfer of the land and the Attracting investment process will be carried out in Supporting plans for relevant departments. This is the end of the preliminary planning process.

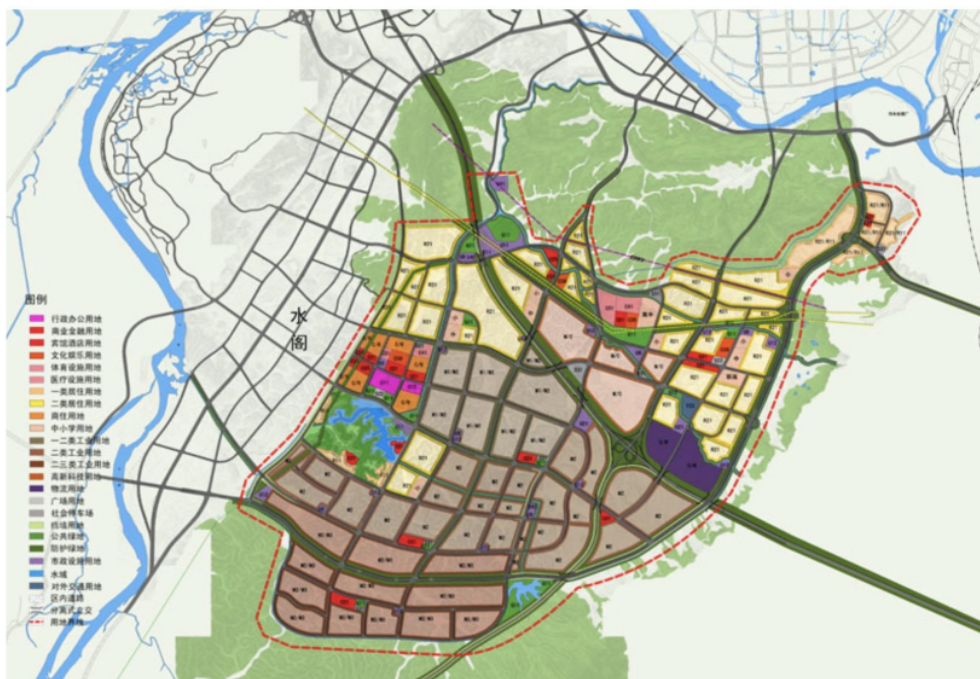


Figure 9 Site plan of Lishui Industrial Park  
(Grey, Brown Zone is Industrial land)

Source: [http://kfq.lishui.gov.cn/art/2011/3/7/art\\_1229215571\\_1941051.html](http://kfq.lishui.gov.cn/art/2011/3/7/art_1229215571_1941051.html)

#### 4.2.2 Risk management in planning process

Risk management in planning usually takes place in the second, third and fourth steps of planning, i.e. relying on the governance experience of the sector concerned, expert opinion and public feedback. Whereas different participants often have different perceptions of risk, Slovic (1987) has pointed out the limitations of involving only experts in risk management, e.g. experts may miss legitimate concerns about risk. The process can increase the involvement of non-specialist stakeholders who have a much richer concept of risk than experts. Risk assessment is carried out differently for different actors. Take the involvement of local planning authorities as an example:

*"Some of the more common risks in planning work are policy, funding, safety, environmental protection, etc. and we have different people to deal with different categories of situations ....."* Interviewee 1.

Risk management can be divided into three parts: risk identification, risk assessment and risk control ( Godfrey, 1996 ) .

### **4.3 Risk identification**

The first part in risk management work is risk identification (Godfrey, 1996). From the point of view of the government units involved in the planning process, this is achieved through a form that is a combination of historical documents and discussions, which in practice becomes almost a 'standard'. At the same time it contains different types of risk and severity, so that risk identification and assessment can be done simultaneously at this stage, and because it is not based on rigid data, it is more inclusive in practice (Eduljee 2000). A team is unlikely to deal with different types of risk, as the competencies of the people required to deal with different types of risk vary greatly.

*"It is also for this reason that risk management is not usually done as a separate part of the overall planning process, but the development of each part includes such an element (of risk assessment) ....."* - Interviewee 1

In a study by Ou (2004), planning risks in China were categorized into six types of risk: technical, market, management, policy, natural and artificial, with the majority of Interviewees agreeing that policy risk is the risk factor that has the greatest impact on planning documents.

#### **4.3.1 Policy Risk**

Policy risks can be divided into planning policy risks and other policy risks.

Planning policy refers to the range of legislation, technical regulations and guidelines and other relevant policies set out in planning documents, while other policies refer to policies other than those set out in planning documents.

*"The first thing that planners have to be sure of is that the core guiding ideas of the planning text must be consistent with the outcome of the meetings discussed at the higher level"*

*--interviewee 1*

According to Interviewee 1, when carrying out planning work, the administration must first define the guiding ideology of the planning concept, i.e. the general ideas guided by the higher authorities, such as the scientific outlook on development and the emphasis on low carbon and environmental protection, which may directly affect the allocation of subsequent industrial land

use targets and the deployment of municipal facilities. This statement can also be confirmed in various planning documents, such as the General Land Use Plan of Zhejiang Province (2006-2020), where the policy basis, guiding principles and ideas conveyed by higher authorities are placed at the beginning of the document and the circumstances in which the full text is prepared must comply with these requirements, otherwise, there is a risk that it will not pass the subsequent review. At the same time, the policy risk is not only in terms of administrative procedures and time pressures but also in terms of the impact that some policies outside of the planning process can have on local planning processes, particularly on industrial land.

*"A planning document usually takes two to three years to complete, and planning for industrial sites requires consideration of future investment, and if higher levels of government adjust the direction of industrial development in the meantime (e.g. the recent emphasis on carbon neutrality, etc.), then we may have to adjust our work in this area as well." -Interviewee 3*

The likelihood of this happening is not insignificant, as several interviewees indicated that they had experienced such a situation. This scenario can be seen as a risk arising from uncertainty, which is one of the traditional decision situations in risk management (the other two are risk and certainty), and uncertainty may result in situations such as no applicable alternative or loss (Mousavi & Gigerenzer, 2014).

#### **4.3.2 Management & artificial Risk**

*"There does not seem to be much essential difference between management and artificial risk, as planners are not in fact overly involved in the process of implementing planning documents, so human errors of judgement or execution should both be considered part of management failure..." --Interviewee 4*

*"The competence of managers will often determine the upper rather than lower limit on the local, with the lower limit still relying on the system to underwrite it"- Interviewee 5*

Ou (2004) in his study discusses management risk as a risk due to poor management practices or quality of personnel, while the artificial risk is a risk due to human factors such as leadership turnover or personnel changes. In this case, the interviewees all agreed that the impact of changes in immediate leadership would be more pronounced, as the collective leadership system in China and the nature of discussion and consultation mechanisms in the planning process would minimise the impact of personnel quality (Gao et al., 2016), but the interviewees also admitted that artificial risk is relatively the most difficult to avoid, as there is a buffer period for the implementation of policies, However, losses caused by changes in leadership or human actions are often sudden and difficult to avoid.

### **4.3.3 Technical risk**

*"Technical risks are the most common and the controls for their risks are the most comprehensive and scientific..." - Interviewee 6*

There are many specific classifications of technology risk, which Ou (2004) describes as mainly the professional theoretical mastery of planning techniques and the limitations of some concepts. Webler (1992), on the other hand, argues that technological risk in industrial scenarios should not be fixed and that it should be perceived differently in different scenarios. This view is complemented by the comments of interviewee 2 and interviewee 6, who argue that industrial real estate development is a more technical activity than traditional housing development and that technical risk is not only a consideration of planning theory but actually involves a range of engineering, safety, municipal, environmental assessment and regulatory techniques. A complex set of technical risk factors are considered. A number of studies have shown that the risks associated with engineering, safety incidents, environmental pollution, etc. can be long-lasting and costly (Ahmed et al., 2021; Akter et al., 2019; Pérez & Pacheco, 2018).

### **4.3.4 Natural risk**

Natural risk refers to the risk that natural hazards such as floods, droughts and earthquakes will affect the achievement of planning objectives during the planning process (Ou, 2004), and interviewee 1 commented that this risk varies from region to region. For example, Zhejiang is prone to floods, while northern China is dominated by droughts and snowstorms, and western China has problems with droughts and earthquakes (zhou et al., 2015). However, the majority of Interviewees believe that natural risk factors have a limited impact on planning, as in practice there is not much data available to understand the likelihood of various potential hazards other than the usual weather effects or high-risk factors, and the management of natural risks relies on the government to organise the various departments to strengthen their judgement of the consequences of natural hazards and to improve their early warning and management capabilities based on this. (Saunders & Kilvington 2016), and some Interviewees also believe that planning should increase awareness of this risk, take the initiative to plan for an active society in new ways, and strengthen links with various sectors to deal with the problem (Saunders & Kilvington 2016).

### **4.3.5 Market risk**

Market risk refers to the risk that planning is exposed to uncertainties in the market demand for land and the competitive environment in a market economy (Ou, 2004). Capozza (1994)

identifies three main types of risk in the land market: fluctuations in land prices, changes in the rate of return on investment, and expectations of urban growth. In response to this view, interviewees<sup>5</sup> who were investors indicated that investment in industrial property would be very return-oriented, as they would need to devote more attention to the ongoing cash flow production capacity of the land, which would also be influenced by the growth of the city. However, Interviewees 1 and 2, who are planners, have a different view, saying that planning is an anticipatory process and that there is a strong emphasis on consistency and maintaining principles in the planning of industries, so although they have some power to make recommendations on specific industries in the zoning of land, they often end up having to choose something that is not the most profitable due to the functional need to see the 'big picture', i.e. to comply with the plans of the municipality or higher authorities. The need to comply with the plans of the municipality or higher authorities often leads to the selection of industries that do not offer the greatest profit returns (Shen et al., 2021). For example, although some areas in Zhejiang have the advantage of the transport and a range of conditions, they may be defined by higher authorities as serving the exchange of goods and other resources, which may lead to the development of logistics parks rather than other more profitable investment targets, such as data technology or high technology parks. In general, local planners do not have enough influence on this issue.

#### **4.4 Risk assessment**

Risk assessment is the second parts in risk management and there are two main common risk assessment methods. The first is qualitative, such as the application of scoring scales or ABC analysis in the absence of data based on past experience (Godfrey, 1996). The second is quantitative, using statistical analysis of data, such as financial indicators, Delphi, sensitivity and scenario analysis (Haager, 2020; Hu, 2010). According to the interviewer's feedback, these two methods are cross-applied in the planning process.

*"We are more concerned about the construction risk of the plant and therefore pay a lot of attention to the checking work on building safety indicators..." -Interviewee 2*

Interviewee 2 says that the risks associated with construction issues such as plant safety, construction, engineering and municipal support are the easiest to assess. China has very rich experience in infrastructure construction, and past practice and research by local and overseas scholars have provided a very scientific basis for assessment, such as safety indices and values of key indicators (Chen & Tian, 2012; Willam, 1999).

*"We assess the future prospects and profitability of the introduced industry, the former relying mainly on organising discussions between experts and business representatives and finally on the decision of the leadership, while the latter has some financial indicators to compare against..." -Interviewee 3*

Financial assessment includes return on investment, cash flow analysis, etc. (Capozza & Sick, 1994). Usually, however, planners are only involved in basic eligibility checks to see if they meet the industry and capital size requirements for industry introduction, etc. In contrast, discussions between experts and business representatives ensure fairness in the participation of all parties, as well as a better understanding of the business by the planners and the opportunity for the business to participate in the planning process at this stage (Cheng, 2014).

*"We always check the latest policy situation when we finish a phase of editorial work, and although policy learning sessions are organised first within the department, some potential news of policy changes would just as easily prompt us to leave some room for adjustment in our concrete planning..." -Interviewee 1*

The assessment of policy risks is difficult to do quantitatively and relies more on past experience to judge the situation, so the implementation of this approach is more dependent on individual subjectivity and there is room for ambiguity in its implementation.

In addition to the above, the interviewees also mentioned the commissioning of third group or other departments to deal with this issue, such as Commissioning the Natural Resources Agency to carry out natural risk assessments and third party design institutes to assess feasibility studies for greening, landscaping, etc. This process also includes risk studies.

#### **4.5 RISK MITIGATION**

The third process of risk management, risk control, aims to reduce the impact of risk by transferring or mitigating risk factors (Godfrey, 1996). Risk control requires an estimate of the likely impact of risk, and the risk factors in industrial property are much greater than in conventional housing, so risk control is a complex system with social, political and economic implications (Webler, 1992). There are many technical and social issues involved, such as how to define the risk tolerance and how to balance the level of information open to the public. For this reason, several interviewees felt that this work currently lacks a sufficiently systematic operational approach and that it is more a matter of dealing with different risk categories.

*"If my plant gets flooded, then I can only pray that my own insurance can handle it." - Interviewee 6*

Interviewee 6 believes that most current local authorities and planning authorities have not yet made the basic insurance moves for industrial property that are already considered to be the most common form of risk avoidance (Ewold, 1991). Therefore, when companies face natural risks, they are more likely to rely on their own initiative to take risk-averse actions such as insurance.

"In order to attract investment and companies to the area, we would consider mixing a part of the housing land targets into the industrial plots in order to solve the accommodation problem of the park workers ... " - Interviewee 2

As housing pressure has increased in China in recent years (Gao, 2016), so have the costs of running a business. When companies are less willing to invest, the current practice of local governments is to encourage planning and other departments to liberalise some of their previous policy restrictions under the premise of legality, in order to attract investment in an innovative way, another practice of urban entrepreneurship after China's reform and development (Levenda, Tretter, 2019), where housing land, as a scarce resource, can effectively help planning sector to improve competitiveness and mitigate market risks .

Some interviewees argued comparing it with the housing market, industrial real estate has a significantly smaller impact on land finance than the housing market, making it difficult for the government to keep too much attention on it, a task that naturally falls to local planning and other relevant authorities, who often lack the capacity to solve it perfectly.

## **Chapter 5. Key finding**

What is clear is that the Chinese planning system still contains elements of risk management and that local authorities and planning departments have certain methods and procedures to implement them.

Firstly, with regard to the role of risk management in the decision-making and planning process, it can be seen that risk management is not included as a separate part of the planning text and is therefore not a separate process. This is usually done in conjunction with other planning processes and the results are used to influence decisions during the review and development process.

About the planning system and the risk management process. Figure 7 illustrates the planning decision-making process in China and Table 3 shows a top-down planning leadership mechanism and some decision-making documents. Figure 7 illustrates a theoretical model of risk management cycle that is recognised by a wide range of scholars, but the interview study shows that the problems faced by local governments and planning authorities in China are often complex and difficult to implement in full accordance with the theory, and therefore most of the time there is no set procedure for implementing risk management as in this model.

On risk perception and assessment. 2.4 shows two different ways of differentiating risks (Figure 5 & Figure 6), showing that all Interviewees agree more on the perceived differentiation of risks by their characteristics rather than by the decision-making process. In contrast, 4.4 presents a quantitative and qualitative approach to risk assessment, and it is clear that local authorities in China use a combination of both approaches, but it is important to note that either approach has a strong local dimension, i.e. there is no widespread national standard of application.

Finally, there is the issue of risk control. The study shows that the control of risks still lacks sufficient attention at the central level, in the sense that there is no unified approach and the local authorities do not have sufficient capacity to deal with it, and that there is some ambiguity in the procedures for dealing with this issue with the planning authorities (i.e. many risks occur after the planning process is completed), so that the local planning authorities are not motivated to deal with this issue.



## **Chapter 6. Conclusion**

The study culminates in the following conclusions on the main issues of the study, taking into account the interviews with local authority professionals and the analysis of the existing literature. The first is about the importance of risk management in the decision-making process and the perception of local professionals about it. The study found that current planning and decision-making authorities have some knowledge of risk, but lack the ability to summarise it systematically. This is not only the case in Zhejiang, but also at all levels of government and related departments in China, and it is largely due to a lack of guidance and research that has not been followed up. Although more and more scholars are calling for greater attention to risk, it is still not included as a separate part of the current planning mechanism. This paper argues that in the future, consideration could be given to strengthening the capacity for risk regulation and prevention in conjunction with the risk management model proposed by the representatives of Kontio et al. (1998) to minimise the damage caused by risk. Secondly, regarding the specific approach to risk management, this study finds that the current risk management work does not follow the risk management model summarised by Kontio et al. (1998), but rather incorporates this work as part of other work, for example, in engineering assessment, environmental assessment to summarise the risks separately, while subjective factors such as policies mentioned by some scholars are The subjective factors mentioned by some scholars, such as policy, have not been adequately addressed. In this regard, the paper suggests that in the future, it may be possible to mitigate this situation by taking into account the characteristics of the UK planning system, enhancing the flow of information to all parties and giving some discretionary powers to local authorities(White&Allmendinger,2003).

According to the results of the study, the current mechanism has a certain ability to anticipate and improve the risk of loss, and the ability to cope with risk can be effectively improved by a systematic top-down approach and by having the administrative department take the lead in guiding the work of all departments. However, if the capacity for risk monitoring and prevention can be improved, losses can be more effectively reduced and more research into risk monitoring and prevention methods could be considered in the future.

## **6.1 Limitations and suggestions for future research**

The following are suggestions for shortcomings in the research process and directions for future research.

Although semi-structured interviews were conducted for this study, there were limitations in the quality and usability of the interviewees' statements due to the limited number of interviewees and the fact that the analysis was based only on the qualified responses from the generated interviews. In addition, only the Zhejiang region was selected for this study, and the results suggest that some elements may not necessarily be applicable to other regions of China . As this was a study based on actual working situations, some of the findings are stronger and more useful than others. In addition, there is a lack of high quality academic literature as a framework for strategies and risk management tools related to risk management in industrial real estate development as well as in the planning process. Therefore, it is recommended that academics share their data and knowledge to help gain a better understanding of this issue.

For future studies related to industrial property or planning, the following recommendations can be refer:

1. according to this study and Slovic (1987), although the current planning process in China has a public discussion component, this component seems to be unfriendly to the general public and future research could be more conducive to planning decisions by discussing ways to involve more non-stakeholders.
2. Consideration could be given to studying industrial property planning or planning risk management in more areas, which could lead to further optimisation of the planning system.
3. Further studies comparing the perspectives of developers, investors and planners, and government could be considered to better understand the differences in the understanding of the system.
4. compare risk management in different sectors with the planning sector to assess the similarities and investigate whether the tools used in these sectors can also be applied to the planning sector. Overall, such an extension would allow researchers to provide additional data related to the risk management process and to further develop the concept of risk management.

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## Appendices

### Appendix A: Interview Details

Participants	Type of Role	Date and Duration of the Interview
Interviewee 1	Planner	05.08.2022 41 minutes
Interviewee 2	Planner	07.08.2022 50 minutes
Interviewee 3	Planner	08.08.2022 47 minutes
Interviewee 4	Planner	09.08.2022 39 minutes
Interviewee 5	Investor	10.08.2022 37 minutes
Interviewee 6	Developer	11.08.2022 31 minutes

### Appendix B: Interview Question

Please give a brief description of your workplace and your personal responsibilities

#### 1. Planning and risk perception

1.1 How do you perceive risks?

1.2 What are the planning processes for industrial real estate? Which parts are most at risk? (Planning institute/planners)

1.3 The process of developing industrial real estate (developers/investors)

1.4 What are some stages that require communication or cooperation with the planning department or local authorities? (Answers from investors/developers)

1.5 What do you think are the risks involved in the planning process?

1.6 Please list the three biggest risks and the possible harm these risks can cause

1.7 1.7 What are the differences between different types of industrial real estate? Do they have different risk potential? What are the similarities and differences between the development risks of industrial real estate and other real estate (e.g. housing?)

## **2. Risk management and assessment**

**2.1 In the literature, urban planners and property developers are often criticised for the fact that risk management is very little applied compared to other industries and that most decisions are made on a gut feeling, what are your views on this?**

**2.2 What do you think are the risks in the planning process and can you explain this?**

**2.3 How do you identify risks?**

**2.4 What tools/methods do you use or what is the appropriate process for risk identification in your organisation?**

**2.5 What methods are used to assess the different types of risk?**

## **3 Risk treatment**

**3.1 Is there an overall process or guidance for managing risk under the current system**

**3.2 How do you prevent risks from occurring**

**Improvement mechanisms**

**3.3 Once a risk has had a de facto impact, is there an appropriate improvement mechanism under the current system?**

**3.4 How does this mechanism work and how effective is it in practice?**

**3.5 Do you have anything else to add on this topic?**

## **4. Decision-making**

**4.1 How do you consider risk in your decision-making?**

**4.2 Some literature summarises the risks in the planning process as technical risk, market risk, management risk, policy risk, natural risk and human risk. Which of the above risks do you think is most likely to interfere with the final decision? Please rank the top three in order of influence and provide details of the specific impact of these risks on decision-making (planning department/local government answer).**

**4.3 How do you diversify or reduce the impact of the different risks?**

**4.4 Does the company's overall development strategy focus on challenging risks (aggressive) or avoiding them? (Developer/investor answer).**

**4.5 How does the company avoid the impact of risks on decision making and how can it reduce the potential economic losses and social impacts?**

## **Appendix C: Consent Form**

### **Dissertation Project Information**

#### **How are China's local authorities addressing potential planning risks in the development of industrial real estate?**

The risks involved in industrial property development are significant and involve certain uncertainties. It is therefore particularly important to consider these risk factors in the pre-planning process. The aim of this study is to analyse how planners identify risks and how they act in taking these risks into account in the decision-making process.

The interviews are expected to last no more than one hour and will be audio recorded. All participants will be anonymised in the findings and the researcher will ensure that no participant can be identified from any comments. All interview data will be stored securely by the researcher and processed in accordance with the Data Protection Act (2018).

Participation in the interview process is entirely voluntary and can be withdrawn at any time if the interviewee does not wish to continue.

The interviews are structured as follows.

- Personal position and background
- Planning process and risk perception
- Risk management and assessment
- Risk management
- Decision making

The research was supported by University College London. If you have any further questions about the study, please feel free to contact the researchers via the contact information on the reverse side.

#### **Researcher Details:**

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**Informed Consent:**

**How are China's planning authorities addressing potential risks in the development of industrial properties?**

Thank you for agreeing to be interviewed and sharing your experiences. As an interviewee I am aware that:  
All information and data I provide will be treated confidentially.

My identity will be protected and remain anonymous at all times throughout the research.

Extracts from the interview may be used in quotes in the research reports and outputs.

I have the right to refuse to answer questions.

My interviewer can provide any additional information and will answer any relevant queries I might have regarding the research.

The interview will be recorded to ensure that recall is accurate and I give my permission for this information to be used for research purpose.

Name of interviewee:.....

Signature: .....

Date:.....

Name of interviewer:.....

Signature: .....

Date:.....

## Appendix D: Risk Assessment Form

### RISK ASSESSMENT FORM



### FIELD / LOCATION WORK

**DEPARTMENT/SECTION:** BARTLETT SCHOOL OF PLANNING

**LOCATION(S):** LONDON, UK

**PERSONS COVERED BY THE RISK ASSESSMENT:** WANGZE GAO

**BRIEF DESCRIPTION OF FIELDWORK (including geographic location):** Tentative online survey  
(no fieldwork)

#### **COVID-19 RELATED GENERIC RISK ASSESSMENT STATEMENT:**

Coronavirus disease (COVID-19) is an infectious disease caused by coronavirus SARS-CoV-2. The virus spreads primarily through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. Droplets fall on people in the vicinity and can be directly inhaled or picked up on the hands and transferred when someone touches their face. This risk assessment documents key risks associated fieldwork during a pandemic, but it is not exhaustive and will not be able to cover all known risks, globally. This assessment outlines principles adopted by UCL at an institutional level and it is necessarily general. Please use the open text box 'Other' to indicate any contingent risk factors and control measures you might encounter during the course of your dissertation research and writing.

Please refer to the Dissertation in Planning Guidance Document (available on Moodle) to help you complete this form.

**Hazard 1: Risk of Covid -19 infection during research related travel and research related interactions with others (when face-to-face is possible and/or unavoidable)**

**Risk Level - Medium /Moderate**

**Existing Advisable Control Measures:** Do not travel if you are unwell, particularly if you have COVID-19 symptoms. Self-isolate in line with NHS (or country-specific) guidance.



Avoid travelling and face-to-face interactions; if you need to travel and meet with others:

- If possible, avoid using public transport and cycle or walk instead.
- If you need to use public transport travel in off-peak times and follow transport provider's and governmental guidelines.
- Maintain (2 metre) social distancing where possible and where 2 metre social distancing is not achievable, wear face covering.
- Wear face covering at all times in enclosed or indoor spaces.
- Use hand sanitiser prior to and after journey.
- Avoid consuming food or drinks, if possible, during journey.
- Avoid, if possible, interchanges when travelling - choose direct route.
- Face away from other persons. If you have to face a person ensure that the duration is as short as possible.
- Do not share any items i.e. stationary, tablets, laptops etc. If items need to be shared use disinfectant wipes to disinfect items prior to and after sharing.
- If meeting in a group for research purposes ensure you are following current country specific guidance on face-to-face meetings (i.e rule of 6 etc.)
- If and when possible meet outside and when not possible meet in venues with good ventilation (e.g. open a window)
- If you feel unwell during or after a meeting with others, inform others you have interacted with, self-isolate and get tested for Covid-19
- Avoid high noise areas as this mean the need to shout which increases risk of aerosol transmission of the virus.
- Follow one way circulation systems, if in place. Make sure to check before you visit a building.
- Always read and follow the visitors policy for the organisation you will be visiting.
- Flush toilets with toilet lid closed.
- 'Other' Control Measures you will take (specify):

**NOTE: The hazards and existing control measures above pertain to Covid-19 infection risks only. More generalised health and safety risk may exist due to remote field work activities and these are outlined in your Dissertation in Planning Guidance document. Please consider these as possible 'risk' factors in**

completing the remainder of this standard form. For more information also see: [Guidance Framework for Fieldwork in Taught and MRes Programmes, 2021-22](#)

Consider, in turn, each hazard (white on black). If **NO** hazard exists select **NO** and move to next hazard section.

If a hazard does exist select **YES** and assess the risks that could arise from that hazard in the risk assessment box.

**Where risks are identified that are not adequately controlled they must be brought to the attention of your Departmental Management who should put temporary control measures in place or stop the work. Detail such risks in the final section.**

**ENVIRONMENT**

The environment always represents a safety hazard. Use space below to identify and assess any risks associated with this hazard

*e.g. location, climate, terrain, neighbourhood, in outside organizations, pollution, animals.*

Examples of risk: adverse weather, illness, hypothermia, assault, getting lost.  
Is the risk high / medium / low ?

**CONTROL MEASURES**

Indicate which procedures are in place to control the identified risk

- work abroad incorporates Foreign Office advice
- only accredited centres are used for rural field work
- participants will wear appropriate clothing and footwear for the specified environment
- refuge is available
- work in outside organisations is subject to their having satisfactory H&S procedures in place
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**EMERGENCIES**

Where emergencies may arise use space below to identify and assess any risks

*e.g. fire, accidents*

Examples of risk: loss of property, loss of life

**CONTROL MEASURES**

Indicate which procedures are in place to control the identified risk

participants have registered with LOCATE at <http://www.fco.gov.uk/en/travel-and-living-abroad/>

contact numbers for emergency services are known to all participants

participants have means of contacting emergency services

a plan for rescue has been formulated, all parties understand the procedure

the plan for rescue /emergency has a reciprocal element

OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

FIELDWORK 1

May 2010

**EQUIPMENT**

Is equipment used?

NO

If 'No' move to next hazard

If 'Yes' use space below to identify and assess any risks

*e.g. clothing, outboard motors.*

Examples of risk: inappropriate, failure, insufficient training to use or repair, injury. Is the risk high / medium / low ?

**CONTROL MEASURES**

Indicate which procedures are in place to control the identified risk

	the departmental written Arrangement for equipment is followed
	participants have been provided with any necessary equipment appropriate for the work
	all equipment has been inspected, before issue, by a competent person
	all users have been advised of correct use
	special equipment is only issued to persons trained in its use by a competent person
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**LONE WORKING**

Is lone working a possibility?

NO

If 'No' move to next hazard  
If 'Yes' use space below to identify and assess any risks

*e.g. alone or in isolation lone interviews.*

Examples of risk: difficult to summon help. Is the risk high / medium / low?

**CONTROL MEASURES**

Indicate which procedures are in place to control the identified risk

	the departmental written Arrangement for lone/out of hours working for field work is followed
	lone or isolated working is not allowed
	location, route and expected time of return of lone workers is logged daily before work commences
	all workers have the means of raising an alarm in the event of an emergency, e.g. phone, flare, whistle
	all workers are fully familiar with emergency procedures
	OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**EQUIPMENT**

Is equipment used?

**NO**

If 'No' move to next hazard  
If 'Yes' use space below to identify and assess any risks

*e.g. clothing, outboard motors.*

Examples of risk: inappropriate, failure, insufficient training to use or repair, injury. Is the risk high / medium / low ?

**CONTROL MEASURES**

**Indicate which procedures are in place to control the identified risk**

- the departmental written Arrangement for equipment is followed
- participants have been provided with any necessary equipment appropriate for the work
- all equipment has been inspected, before issue, by a competent person
- all users have been advised of correct use
- special equipment is only issued to persons trained in its use by a competent person
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**LONE WORKING**

Is lone working a possibility?

**NO**

If 'No' move to next hazard  
If 'Yes' use space below to identify and assess any

**risks**

*e.g. alone or in isolation  
lone interviews.*

Examples of risk: difficult to summon help. Is the risk high / medium / low?

**CONTROL  
MEASURES**

**Indicate which procedures are in place to control the identified risk**

- the departmental written Arrangement for lone/out of hours working for field work is followed
- lone or isolated working is not allowed
- location, route and expected time of return of lone workers is logged daily before work commences
- all workers have the means of raising an alarm in the event of an emergency, e.g. phone, flare, whistle
- all workers are fully familiar with emergency procedures
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**FIELDWORK 2**

May 2010

**ILL HEALTH**

**The possibility of ill health always represents a safety hazard. Use space below to identify and assess any risks associated with this Hazard.**

*e.g. accident, illness,  
personal attack,  
special personal  
considerations or  
vulnerabilities.*

Examples of risk: injury, asthma, allergies. Is the risk high / medium / low?

The risk is low.

**CONTROL  
MEASURES**

**Indicate which procedures are in place to control the identified risk**

- all participants have had the necessary inoculations/ carry appropriate prophylactics
- participants have been advised of the physical demands of the research and are deemed to be physically suited
- participants have been adequate advice on harmful plants, animals and substances they may encounter
- participants who require medication should carry sufficient medication for their needs
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

<b>TRANSPORT</b>	Will transport be	NO	√	Move to next hazard
	required	YES		Use space below to identify and assess any risks

*e.g. hired vehicles*      Examples of risk: accidents arising from lack of maintenance, suitability or training

Is the risk high / medium / low?

<b>CONTROL MEASURES</b>	<b>Indicate which procedures are in place to control the identified risk</b>
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- only public transport will be used
- the vehicle will be hired from a reputable supplier
- transport must be properly maintained in compliance with relevant national regulations
- drivers comply with UCL Policy on Drivers [http://www.ucl.ac.uk/hr/docs/college\\_drivers.php](http://www.ucl.ac.uk/hr/docs/college_drivers.php)
- drivers have been trained and hold the appropriate licence
- there will be more than one driver to prevent driver/operator fatigue, and there will be adequate rest periods
- sufficient spare parts carried to meet foreseeable emergencies
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**DEALING WITH THE PUBLIC**

Will people be dealing with public

NO

If 'No' move to next hazard

If 'Yes' use space below to identify and assess any risks

*e.g. interviews, observing*

Examples of risk: personal attack, causing offence, being misinterpreted. Is the risk high / medium / low?

**CONTROL MEASURES**

Indicate which procedures are in place to control the identified risk

- all participants are trained in interviewing techniques
- advice and support from local groups has been sought
- participants do not wear clothes that might cause offence or attract unwanted attention
- interviews are conducted at neutral locations or where neither party could be at risk
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**FIELDWORK** 3

May 2010

**WORKING ON OR NEAR WATER**

Will people work on or near water?

NO

If 'No' move to next hazard

If 'Yes' use space below to identify and assess any risks

*e.g. rivers, marshland, sea.*

Examples of risk: drowning, malaria, hepatitis A, parasites. Is the risk high / medium / low?



**CONTROL MEASURES**

**Indicate which procedures are in place to control the identified risk**

- lone working on or near water will not be allowed
- coastguard information is understood; all work takes place outside those times when tides could prove a threat
- all participants are competent swimmers
- participants always wear adequate protective equipment, e.g. buoyancy aids, wellingtons
- boat is operated by a competent person
- all boats are equipped with an alternative means of propulsion e.g. oars
- participants have received any appropriate inoculations
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**MANUAL HANDLING (MH)**

**Do MH activities take place?**

**NO**

**If 'No' move to next hazard**

**If 'Yes' use space below to identify and assess any risks**

*e.g. lifting, carrying, moving large or heavy equipment, physical unsuitability for the task.*

Examples of risk: strain, cuts, broken bones. Is the risk high / medium / low?

**CONTROL MEASURES**

**Indicate which procedures are in place to control the identified risk**

- the departmental written Arrangement for MH is followed
- the supervisor has attended a MH risk assessment course
- all tasks are within reasonable limits, persons physically unsuited to the MH task are prohibited from such activities
- all persons performing MH tasks are adequately trained
- equipment components will be assembled on site
- any MH task outside the competence of staff will be done by contractors
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

SUBSTANCES	Will participants work with substances	NO	If 'No' move to next hazard If 'Yes' use space below to identify and assess any risks
<i>e.g. plants, chemical, biohazard, waste</i>	Examples of risk: ill health - poisoning, infection, illness, burns, cuts. Is the risk high / medium / low?		
CONTROL MEASURES	Indicate which procedures are in place to control the identified risk		

- the departmental written Arrangements for dealing with hazardous substances and waste are followed
- all participants are given information, training and protective equipment for hazardous substances they may encounter
- participants who have allergies have advised the leader of this and carry sufficient medication for their needs
- waste is disposed of in a responsible manner
- suitable containers are provided for hazardous waste
- OTHER CONTROL MEASURES: please specify any other control measures you have implemented:

**OTHER HAZARDS**

Have you identified any other hazards?

NO

If 'No' move to next section

If 'Yes' use space below to identify and assess any risks

*i.e. any other hazards must be noted and assessed here.*

Hazard:

Risk: is the risk

**CONTROL MEASURES**

Give details of control measures in place to control the identified risks

Have you identified any risks that are not adequately controlled?

NO

Move to Declaration

YES

Use space below to identify the risk and what

S

action was taken

**DECLARATION**

The work will be reassessed whenever there is a significant change and at least annually. Those participating in the work have read the assessment.

Select the appropriate statement:

YES

I the undersigned have assessed the activity and associated risks and declare that there is no significant residual risk

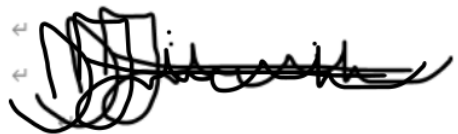
YES

I the undersigned have assessed the activity and associated risks and declare that the risk will be controlled by

S

the method(s) listed above

NAME OF SUPERVISOR: Dr. Daniel Fitzpatrick

←  
←  


Date of Birth: 28.08.2022

**FIELDWORK 5**

May 2010

FINAL GRADE

GENERAL COMMENTS

# /100

## Instructor

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