

## 中国防灾避险型城市绿地建设的思想形成与发展概况

### The Development of Disaster Prevention Green Space in China

#### 摘要 ……

中国的防灾思想和防灾方式的不断演变，从古代城市中兼具防火防洪功能的景观，到当代国家及地方法规的建立，防灾公园绿地作为城市防灾避险系统中重要的一个组成部分，其规划建设应该得到重视。本文回溯了中国城镇绿地防灾避险思想的发展，并在此基础上，总结了我国防灾避险绿地建设的策略。

#### 关键词 ……

防灾；城市绿地；法规

#### Abstract ...

Approaches to disaster prevention have changed over the generations in China. From an integration and appreciation of urban landscapes that doubled as fire and flood prevention strategies in ancient China, to new national and local legislation, planning and construction for disaster prevention and response should be better integrated in urban landscapes and city planning. This paper summarizes historic and contemporary strategies for better implementation of strategies for disaster response and prevention into urban green spaces in Chinese cities.

#### Key words ...

Disaster Prevention; Urban Green Space; Legislation

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## 1 我国防灾避险型城市绿地的形成

### 1.1 我国防灾减灾思想的形成与发展

根据考古资料，氏族聚落遗址的周围通常有一道甚至几道壕沟——一种多功能的综合防护体，其兼有防御野兽、洪水和部落间战争的功能，并能够抵御野火侵害。这是最原始的防火隔离带，现代森林防火仍在沿用防火沟这种措施。

随着城市的不断发展，防灾思想逐渐成熟，并开始影响城市的规划和建设。在唐代就已经对城市道路的防火作用有了认识，唐长安除了拥有几十公里的护城河，还有宫苑、园林中的水面大街两旁的水沟渠网，这亦成为城市防火及防洪系统的一部分。宋代的城市中常常遍布的水系，是隔火的有力措施，且因水造园为疏散避难提供了场地。同时宋代东京（今开封）等地的城市中建立了“望火楼”、专救烟火的队伍——防隅军等。

在晚清时期，防灾思想有了重要突破：清末水旱灾害频繁，有识之士提出了植树防灾的思想，主张广植树木，改善被破坏的生态环境，以减少水旱灾害的发生<sup>[1]</sup>。这种思想探究了引起灾害的深层原因，提出了保护生态环境，旨在从根本上抵御自然灾害频繁发生。

### 1.2 城镇绿地防灾避险思想的发展与法规建立

虽然在我国古代就有“囿有林池，所以御灾也”（出自《国语·周语》）这样的思想，但我国现代城市公园绿地极少考虑防灾的需要，缺少应对灾害的必备辅助设施。园林绿地作为城市防灾避险设施这一思想也是近些年才得到重视。

1976年唐山大地震之后，唐山市区和北京市区的各公园绿地立即成为避难、救灾的中心基地。震后，为了防震抗震的需要，北京市政府有组织地

## 1 Construction of Disaster Prevention Spaces in Urban China

### 1.1 Historic Disaster Prevention in China

Historic material shows that trenches were often constructed around ancient Chinese cities. These trenches served multiple functions, not limited to creating a physical urban boundary that prevented invasion by floods, wars, or forest fires. In the most primitive sense, these became a model for fire prevention that is still used today.

As cities grew larger, these simple forms of disaster prevention continued to influence urban planning and construction. During the Tang Dynasty, for example, new urban construction incorporated methods of fire and flooding protection into road and moat design. The Tang cities incorporated waterways into palaces and gardens in order to serve as reserves during fire emergencies. Additionally, Song Dynasty drainage systems were also effective reserves for fire fighting. Song gardens were built with water systems that can provide safe havens for refugees. Cities built during the Song Dynasty, such as Dongjing (now Kaifeng), went as far as establishing fire-observation buildings and Fangyu Armies, professional fire fighting rescue troops.

In the late Qing Dynasty an important disaster-prevention breakthrough was achieved. During this period, there were frequent droughts and floods. In response, the plan of planting trees and improving the ecological environment was proposed that would mitigate droughts and floods<sup>[1]</sup>. This proposal explored long term and underlying causes of urban natural disasters, not just their frequency and strength.

### 1.2 The Implementation of Disaster Prevention Strategies in Urban Green Spaces and Development of Laws and Regulations

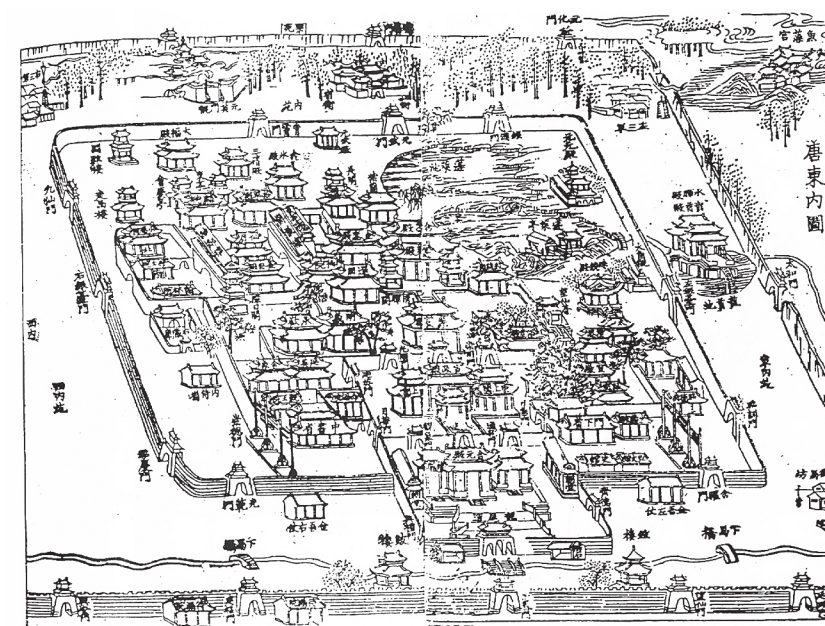
There is a long history of incorporating landscape into disaster prevention in historic Chinese cities. Zhouyu contained in the Guoyu, for example, pointed out that “gardens with groves and ponds play an important role in disaster prevention”. However, there has been little intentional consideration of these strategies in modern Chinese cities. In recent years, there has been new interest in incorporating disaster

prevention infrastructures into urban green spaces, but in general, most urban parks lack necessary auxiliary facilities.

Following the 1976 Tangshan Earthquake, urban parks in Tangshan and Beijing became shelters and rescue centers for those impacted by the earthquake. The Beijing Municipal Committee and Beijing Municipal People's Government encouraged affected urban residents to evacuate to parks, schools, and stadiums. A survey showed that about 1.766 million urban residents were excavated to parks, green buffers, and green belts. The number of people evacuated to Taoranting, Temple of Heaven and Zhongshan Parks was 174,000. During this period, earthquake-proof shelters were also established, however their materials and sizes were not uniform, and locations not predetermined. Some were left in disrepair, which caused them to become new potential disaster sites.

Since the 1970's, however, disaster and fire prevention has become a more important part of the construction process. In 1995, the China State Council issued the “Emergency Regulations of Destructive Earthquakes”, which stated in Article 29 that, “The civil affairs departments concerned to lose no time in setting up shelters and stations for the supply of relief goods and materials, make proper arrangements for

1. 唐代长安城东内简图（图片来源：《陕西通志》）  
1. Sketch of the Tang Palace (Source: General Chronicle of Shaanxi)



将城市居民疏散到公园、校园、城市绿地、道路、体育场等地避震。据调查,约有176.6万城市居民疏散到公园、防护绿地、道路绿带(不含疏散到各种体育场、校园的人员)。其中陶然亭公园、天坛公园、中山公园三个公园接待疏散群众达到17.4万人。但是,该时期搭建的“抗震棚”,所用材料不统一、尺寸不一致,搭建位置不合理,有的甚至破烂不堪,不少则成为新的灾害(如火灾)发生的危险源。

此后,城市防灾避险绿地的建设工作日渐受到重视。1995年我国国务院颁布的《破坏性地震应急条例》第二十九条规定:“民政部门应当迅速设置避难场所和救灾物资供应点,提供救济物品等,保障灾民的基本生活,做好灾民的转移和安置工作。其他部门应当支持、配合民政部门妥善安置灾民。”

1997年我国颁布了《中华人民共和国防震减灾法》,之后各个省、自治区和直辖市都制定了具体的实施办法。其中,2001年10月16日颁布的《北京市实施 中华人民共和国防震减灾法 办法》第二十条规定:“本市在城市规划和建设中,应当考虑在地震发生时人员紧急疏散和避险的需要,预留通道和必要的场地、广场和空地。地震行政主管部门应当会同规划、市政、园林、文物等部门规定避难场所。学校、医院、商场、影剧院、机场、车站等人员较集中的公共场所,应当设置紧急疏散通道。避难场所、紧急疏散通道的所有权人或者受权管理者,应当保持避难场所的完好与畅通,并按照规定设置明显标志。”这是地方法规中第一次确定地震避难场所内容,并由地震行政主管部门负责监督实施。

2002年10月17日北京市通过了《北京市公园条例》,其中规定:“公园具备改善生态环境、美化城市、游览观赏、休闲娱乐和防灾避险等功能。”提出了城市公园应具备避难功能的理念,并可以用作指定避难场所。还明确规定,“对发生地震等重大灾害需要进入公园避灾避险的,公园管理机构应当及时开放已经划定的避难场所。”

2003年11月1日起我国开始施行《城市抗震防灾规划管理规定》,明确要求在制定城市防灾规划时,其中应当包括市、区级避难通道及避难场地(如绿地、广场等)和避难中心的设置与人员疏散的措施。

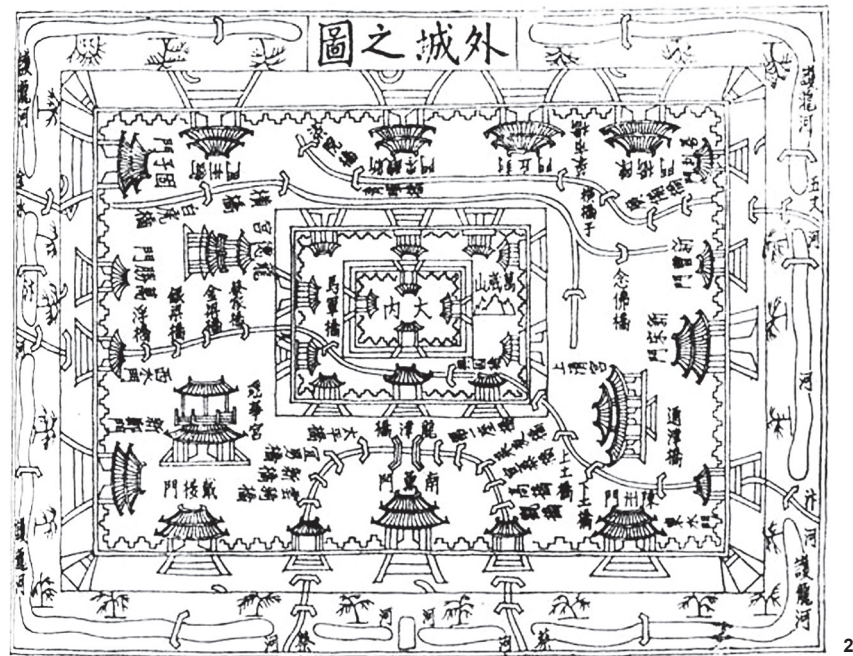
2003年10月,国内第一个防灾公园——北京元

大都城垣遗址公园建成。它拥有39个疏散区,具备了10种应急避难功能:1)应急避难指挥中心;2)应急避难疏散区;3)应急供水装置;4)应急供电网;5)应急简易厕所;6)应急物资储备用房;7)应急直升机停机坪;8)应急消防设施;9)应急监控;10)应急广播功能。西安、泉州、天津、上海、重庆、南京等城市对防灾公园的建设也予以了高度关注,并着手开展、筹备、规划和建设工作。

2004年9月国务院下发的《关于加强防震减灾工作的通知》(国发[2004]25号)中明确指出:“要结合城市广场、绿地、公园等建设,规划设置必需的应急疏散通道和避险场所,配置必要的避险救生设施。”中国地震局印发了《关于推进地震应急避难场所的意见》,积极推动省会城市和百万人口以上城市灾害应急避难场所的规划设计,对应急避难场所的规划原则、建设思路、管理要求提出了建议。2004年11月开始实行的《北京市突发公共事件总体应急预案》规定:“各相关部门和各区县依据北京城市规划,在市民生活、工作地点周围,规划、建设和维护城市应急避难场所,保障在紧急情况下为市民提供疏散、临时生活的安全场所”。

2006年建设部制定的《城市建设综合防灾“十一五”规划》中明确规定:城市中“三分之一以上城市大型公共建筑具备作为防灾避难场所的条

2. 北宋东京城简图(图片来源:《事林广记》)  
2. Sketch of Dongjing, the North Song Dynasty (Source: Shi Lin Guang Ji).



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the daily life of the victims, and help them to evacuate and settle down in new places. The other departments should support and help the civil affairs departments to arrange the victims appropriately.”

In 1997 China enacted a new national law, *Protecting Against and Mitigating Earthquake Disasters*. With this new legislation, every province, autonomous region, and municipality was required to form regulations and procedures specific to their region. Furthermore, Beijing enacted the *Implementation Measures in Response to the Protecting Against and Mitigating Earthquake Disasters* in 2001. The new set of legislation considered, “Emergency evacuation and hedging needs in the event of an earthquake, urban planning and construction in Beijing should reserve passages, necessary places, squares and open spaces. The administrative departments of earthquakes should work together with the departments of city planning, municipal, landscape and cultural relics to stipulate shelter. Set up emergency evacuation passageways in public spaces with a high population density such as schools, hospitals, shopping malls, theaters, airports and railway stations, etc. The owners or managers of emergency evacuation sites or passageways should keep shelters in a good condition and set up clear marks with the standards.”

This was the first time the local governments could determine the locations of earthquake shelters, with local administrative departments responsible for the supervision and implementation.

Two more legislative acts have been important to the integration of disaster prevention and green space. In the 2002, the *Parks Ordinance in Beijing* stated that parks have the function of improving the ecological environment, beautifying the city, providing rest and recreation, and spaces for disaster prevention and response. It stipulates that when extreme disasters such as earthquakes occur, parks should be opened as shelters for who ever might seek refuge. Finally, in November 2003, regulations on planning for seismic disaster prevention went into effect. This expressly required planning for disaster prevention that should include establishing evacuation routes at the city and regional level, as well as places of refuge within the

city and neighborhood scale evacuation centers.

In October 2003 Beijing established the first disaster prevention park, Yuandadu Wall Relics Park. The park’s design has 39 evacuation zones with 10 individualized functions including: 1) emergency evacuation command center; 2) emergency evacuation zone; 3) emergency water supply; 4) emergency power-supply network; 5) emergency latrines; 6) emergency supplies reserve space; 7) emergency helipad; 8) emergency fire facilities; 9) emergency monitoring; and 10) emergency radio. With Yuandadu as a model, and with growing concern about disaster prevention and response, more cities are beginning to initiate, plan, and construct similar parks, including Xi’an, Quanzhou, Tianjin, Shanghai, Chongqing, and Nanjing.

The State Council issued changes to *Protection Against and Mitigation of Earthquake Disasters* in September 2004, making it clear that, “the planning of evacuation passageway and shelters, as well as the setting of lifesaving appliance should combine with the construction of urban plazas, green spaces and parks”. Additionally, the China Seismological Bureau issued the *Comments on Promoting the Emergency Earthquake Shelters*, and in their recommendations strongly encouraged improvements to the planning and design of emergency shelters in capital cities and cities with a population of more than one million. The report also included recommendations for planning principles, construction suggestions, and management requirements of emergency shelters. The *Overall Public Emergency Preplan in Beijing*, which was carried out in November 2004, stipulated that in accordance with the city planning of Beijing each department of government and each district or county should plan, construct, and maintain city emergency shelters around the living and working places of city residents in order to provide evacuation shelters and temporary safe living places in the case of an emergency.

The Chinese Government has continued to refine its position to disaster preparedness and prevention. In 2006, the Ministry of Construction of China released “The 11th Five-Year Plan of Urban Construction of Comprehensive Disaster Prevention” which specified that “more than one third of large public buildings will



件，五分之一以上的城市公园建设成为配套设施齐全的防灾公园”。

### 1.3 汶川大地震的发生引起了全国城镇对于防灾避险绿地建设工作的重视

2008年“5·12”汶川地震后，住房和城乡建设部颁布了《关于加强城市绿地系统建设提高城市防灾避险能力的意见》，明确指出：1) 充分认识城市绿地系统在城市防灾避险中的重要作用；2) 加快编制城市绿地系统防灾避险规划；3) 尽快完善城市绿地系统防灾避险能力建设；4) 努力做好城市绿地保护和防灾避险设施维护；5) 切实加强城市绿地防灾避险工作的组织领导。2008年汶川大地震可以说“震”出了城镇绿地防灾避险功能的重要性，防灾避险功能已经成为城镇绿地建设的最主要内容之一。

## 2 我国防灾避险型城市绿地的发展概况

### 2.1 我国城市防灾避险存在的问题

随着城市现代化进程的加快，城市整体防灾避险功能远远落后于城市建设发展的问题日益突出。主要表现在：1) 单体建筑物越来越高，在强烈破坏性地震发生后，建筑物倒塌所占地面面积扩大，其压埋厚度也同样加大。这对市民逃生构成了极大的威胁，也对震后的快速抢险救援制造了极大困难。2) 单体建筑物的容积率加大，水、气、电等居民生活必须设施相应增大，由此引起的地震次生危害的危险性加大。3) 建筑物间的活动空间相对减少，大中城市，尤其是特大城市的建设，受土地价格的约束，建筑物间的活动空间越来越小。社区本身的

防火、通风、采光、休闲娱乐场所的能力降低，用于灾民逃生的通道和应急避险的安全场地也严重不足。4) 道路交通越来越立体化，交通系统愈发复杂，一旦发生严重破坏性的地震，城内及其与外界的交通有可能中断，从而会造成一些生活必需的物资短期内供应的紧缺。

### 2.2 我国防灾避险型城市绿地建设的思路

#### 2.2.1 进行城市整体防灾与防灾体系规划

为提高城市的安全、预防城市灾害，必须在城市规划中统筹考虑城市防灾减灾的特点与要求，并在城市建设的各个层面逐一落实，建立一个综合的城市防灾体系。首先，应根据地质条件确定城市选址与规模。有效避开地质断裂带，减轻可能发生的地震破坏程度。山地城市依据安全空间确定城市规模，避免靠山建设，避免或减少因山体滑坡对城市造成的破坏。其次，应在城市总体规划中考虑城市的综合防灾要求，规划出有利于城市安全的用地结构与布局，留出适宜的开放空间与防护用地，合理安排及有效隔离具有安全隐患的能源设施、危险品仓库与工业生产项目，减少工业灾害发生时对城市居民的伤害。

#### 2.2.2 编制抗震、防洪、消防和地质灾害防护等专业规划

各项防灾减灾的专业规划应在全面分析城市的环境特点与发生各类灾害的可能的基础上，提出规划原则、标准与措施。结合城市用地的分区布局，提出用于城市综合防灾的具体量化的用地与空间。以抗震防灾专项规划为例，在避震疏散场所的规划中，应根据疏散人口数量和分布情况进行计算，从而安排各类避震疏散场所用地规模与分布位置。这些疏散场地包括城市公园、广场、体育馆、绿地、



3. 1976年唐山地震  
4. 2008年汶川大地震  
3. 1976 Tangshan Earthquake  
4. 2008 Wenchuan Earthquake

have the qualifications of disaster prevention shelters, and more than one fifth of urban parks will become disaster prevention parks with supporting facilities”.

### 1.3 Increased Attention had been Given to Construction of New Urban Disaster Relief Green Spaces since the Wenchuan Earthquake

After Wenchuan Earthquake in May 2008, the Ministry of Housing and Urban-Rural Construction issued *Strengthening the Construction of Urban Green Space System and Improving the Capability of Urban Disaster Prevention*. In this document, the following requirements were specifically listed: 1) Fully realize the important role of urban green space in urban disaster prevention, 2) Accelerate the establishment of disaster prevention planning of urban green spaces, 3) Improve the disaster prevention capacity of the urban green space system as soon as possible, 4) Protect urban green space and maintain disaster-prevention facilities, and 5) Strengthen organization leadership. Since the Wenchuan Earthquake in 2008, disaster prevention, preparation, and response have become one of the most important considerations for new urban construction.

## 2 Development of Disaster Prevention and Preparation Spaces in Urban China

### 2.1 Problems for Urban Disaster Prevention in China

With the rapid pace of urbanization and improvement of living standards, disaster prevention has lagged far behind urban development. This is mainly reflected in the following: 1) After a destructive earthquake, the higher a single building, the larger the area of collapsed structures. This context will make it very difficult for the emergency personnel to access the site and provide rescue and relief services. 2) With an increased floor area ratio, the supply of water, gas and electricity has increased, causing post-earthquake hazards. 3) Decreased space between buildings decreases fireproofing, ventilation, lighting and leisure spaces. As a result, safe places for evacuation and shelter is seriously inadequate. 4) Traffic systems have become more and more complex. In case of destructive earthquakes, the traffic maybe interrupted, causing

necessary supplies will be in short supply.

### 2.2 Construction of Disaster Prevention Urban Green Space in China

#### 2.2.1 Plan urban disaster prevention systems

Establishing a comprehensive urban disaster prevention system is necessary in order to improve the safety of the city and prevent urban disasters. The system should be implemented at different scales and consider the features and requirements of urban disaster prevention and disaster mitigation. First, the location and the size of a city should be determined according to geologic conditions, fault zones should be avoided and construction should take landslide risk into consideration. Second, comprehensive urban disaster prevention should be integral to city planning. Land use structure and layout should maximize urban safety by leaving areas for open space and spatially organizing energy facilities, dangerous goods warehouse, and industrial projects in a way that minimizes security leaks in order to reduce harmful affects on urban residents.

#### 2.2.2 Establish specialty plans for earthquake response, flood mitigation, fire prevention, and geological hazards protection

Specialty plans for disaster prevention and mitigation should consider the urban environment and risk of disaster, and propose planning principles, standards, and measures specific to the context and risk. For example, the specialty evacuation plan for earthquake response should include population estimates and population density and distribution. The size and distribution of shelters, including urban parks, plazas, stadiums, vacant lots, parking facilities and large civil air defense bases should be designed with these specific needs in consideration.

#### 2.2.3 Improve building constructions for urban disaster prevention

From the perspective of disaster prevention, building construction should be as disaster resistant as possible, which may includes low-burning construction, hazard-resistant building construction, and fire-

空旷场地、停车场和大型人防工程等。

### 2.2.3 提升城市构造物的防灾性能

从防灾的角度来看，推进城市的防灾构造化，即进行城市建筑物的耐震化、建筑物的耐火化建设成为了当前城市建设与城市再生的最重要课题之一。

### 2.2.4 进行城市防灾绿地系统规划

在进行防灾公园配置时应该按照下列基本思路进行：1) 防灾公园相互联系，在整体上形成网络；2) 配置到预计受灾处；3) 配置到能够与其他防灾设施相结合的位置；4) 配置到在灾害发生时，交通易于达到的位置。

### 2.2.5 建设功能齐全的防灾公园

在进行防灾公园规划时，与公园周边开放空间和其他防灾设施的结合是非常重要的。需在明确公园担负的职能，以及公园以外的空间和设施担负的职能的基础上进行公园的规划。进行防灾公园规划设计时应该预想到灾害发生即时阶段（灾害发生之后的数小时内的极度混乱阶段）、紧急阶段（灾害发生后的三日内的混乱阶段）、应急阶段（灾害发生三日之后的阶段）、恢复阶段等各阶段相应的场面转换，并达到与之相适应的公园规划。同时，防灾公园在日常还作为普通公园进行利用，因而必须满足公园一般所应具备的功能。

### 2.2.6 重视园林植物的防火功能与防灾型配植设计

灾害发生时，园林树木与群落能够减轻火灾危害、建筑物倒塌危害及从周边建筑物坠落物体的危害，并可以支援市民避难生活，以及具有促进心理恢复等作用。因而对园林植物的防火功能与防灾型

配植进行研究十分必要。

### 2.2.7 健全城市防灾公园的相关法律法规

虽然我国已经先后颁布了一系列有关防灾减灾的法律、法规，为促进我国防灾减灾事业的发展、保护公民生命财产、调整防灾减灾活动中各种社会关系等提供了法律保障。但从整体上来看，我国的防灾减灾立法还处于相对落后的状况，仍缺乏例如日本的《城市公园法》、《防灾公园规划与设计指导方针》等具有针对性的防灾公园规划建设法规。

### 2.2.8 加强城市绿地防灾避险功能的宣传

虽然部分市民能够意识到城市绿地作为应急避险场所的作用，但相关的调查显示：超过44%的被调查者选择了绿地以外的其他类型场地作为应急避险场所，甚至还有24%被调查者根本不知道城市绿地具有应急避险的功能<sup>[2]</sup>。所以，在向城市居民宣传城市绿地提升环境功能、改善城市气候功能的同时，强调城市绿地的应急避险功能，提高市民应急避险的意识显得更为迫切。

## 3 结语

我国城市园林绿地的发展历程从古典园林的以宗教、精神、文化环境空间为主，走向近现代园林的以美化、休憩、娱乐环境空间为主，并在现代逐步开始重视生态改善、防灾避险与卫生保健等功能。随着城市建设规模与力度不断加大，灾难对城市的威胁，以及可能造成的损失也就越严重。宜居城市的首要前提是保障其居民生活的安全，防灾公园绿地作为城市防灾避险系统中重要的一个组成部分，应在城市规划与设计中之予以重视。因而，专门的、具有示范作用的防灾公园绿地的建设也愈显必要。LAF

resistive construction. Materials and methods for new construction is one of the most important research topics for urban disaster prevention.

### 2.2.4 Plan urban green spaces for disaster readiness

Urban park planning and design should consider the following: 1) Parks should be connected to form a network; 2) Overlay areas for new parks with areas most prone to natural disaster; 3) Combine park infrastructure with other disaster prevention facilities; 4) Choose locations that are easily accessible on major evacuation routes.

### 2.2.5 Construct multi-functional landscapes

Parks that are designed with disaster prevention in mind should be closely connected to other open space and disaster prevention facilities. Park planning should have a clear function.

Park planning will need to take into account different periods of time, and the response needed, in the hours, days, and months following disasters. Parks should adapt to need during this period, but at the same time be able to hold normal functions during non-disaster times.

### 2.2.6 Give greater attention to vegetation as a method of fireproofing

If used correctly, vegetation, trees and communities can reduce fire damages and the collapse of structures during disaster events. Furthermore, well vegetated areas can become places of refuge for urban residents, helping with psychological rehabilitation. More study is necessary to fully understand and establish best practices for fireproofing through vegetation.

### 2.2.7 Improve and expand laws and regulations for disaster-prevention urban parks

China has issued a series of laws and regulations about disaster prevention and mitigation to promote the development of disaster prevention in urban areas. These laws and regulations can protect the life and property of residents and offer guarantee for public and governmental support of disaster relief efforts.

However, China still has a long way to go to achieve disaster prevention and reduction standards seen in other countries, such as the *City Parks Act and Planning and Design Guidelines of Disaster Prevention Parks* used in Japan.

### 2.2.8 Increase public awareness of disaster relief centers in urban green spaces

Although the public is aware of parks and green spaces as disaster relief centers, surveys show more than 44% of respondents would chose other places as emergency shelters, and 24% of respondents did not know that urban green spaces could be used as relief centers in the event of urban disaster<sup>[2]</sup>. The dual function of urban green spaces as parks for scenery and recreation, and as disaster relief and refuge zones should be promoted through public awareness campaigns.

## 3 Conclusions

Historically, Chinese urban green space has served multiple functions and played different roles in urban life. Traditional gardens focused on religious, spiritual, and cultural environmental spaces, while modern parks and gardens are emphasized as spaces for leisure and entertainment. Additionally, with increased awareness of their role in improving ecological conditions and overall urban health, parks are getting renewed attention in the urban planning process. With increased urban construction, growing economies, greater social harmony, and more people in the city, the impact of natural disasters on urban environments has increased. A livable city is a safe city. Greater attention should be given to the role of parks and green spaces as an integral part of the urban disaster prevention and relief system. The construction of specialized disaster relief landscapes can have special meaning to the city. LAF

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- [2] Li, S. (2010). *Planning and Design of the Disaster-prevention Urban Green Space*. Beijing: China Architecture and Building Press.



5-1



5-2

5. 成都人民公园内日常使用与避险功能结合起来 © 史育玉
5. Chengdu People Park functions for both citizens' daily use and refuge space during disaster events. © 史育玉