# Assessing Public Perception and Implementation of Blue-Green Systems in Urban Planning: A Case Study of China

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Abstract: The rising focus on sustainable urban advancement has actually brought attention to the turquoise system (BGS) as an essential approach for boosting urban environments. This research discovers the existing application of BGS in urban planning by evaluating public assumptions through a set of questions survey conducted among locals across various areas of China. Trick areas take a look at include the aesthetic payments of BGS, its effect on air quality, the adequacy of entertainment areas, and its general result on lifestyle. The outcomes of the research study showed that most of the participants recognized the significant function of BGS in boosting metropolitan looks and improving air top quality, but likewise shared issues about the irregular distribution of leisure areas and incorrect management of system upkeep. Especially in largely inhabited metropolitan locations, the public is specifically worried about the absence of leisure areas. Additionally, a number of respondents claimed they were not yet sure of the direct impact of BGS on everyday life, reflecting the need for further improvement in public awareness of the system and the demand for city organizers to boost public involvement and awareness. This research study underscores the value of efficient BGS implementation and upkeep in urban planning. By increasing and enhancing these areas, cities can not just boost ecological balance but likewise boost public fulfillment, making BGS an important device for sustainable growth.

### **1 INTRODUCTION**

As a result of the international difficulties posed by rapid urbanization, environmental change, and the requirement for sustainable development, cities are progressively challenging concerns such as water flooding, deficiency, city and ecological deterioration. In feedback to these challenges, the incorporation of Blue-Green Equipment (BGS) into urban design has actually gotten substantial attention and is being integrated into city planning initiatives (Seto, 2012). BGS, a phrase for the assimilation of natural (blue) and decayed (green) areas such as rivers, marshes, parks, and environment-friendly roof coverings, plays an essential role in strengthening metropolitan strength, supervising water supplies, and boosting the lifestyle in city setups. The crucial to include Environment-friendly and Blue Infrastructure in urban layout emerges from the pressing demand to take on obstacles such as urban flooding, heat islands, and the decline of biodiversity. By integrating BGS,

cities might deal with these issues while all at once motivating lasting water management practices, enhancing city ecology, and producing a much more habitable atmosphere for citizens (Brockerhoff, 2018).

Contemporary studies on BGS applications in urban planning give evidence of the practicality and performance of these systems. Multiple researchers have actually stressed the reliable adoption of Blue-Green Equipment (BGS) in areas throughout the globe, showing its ability to mitigate flooding risks, take care of stormwater, and boost air quality (Demuzere, 2014). Studies taken on in positions such as Rotterdam, Copenhagen, and Singapore have demonstrated that incorporating turauoise infrastructure not only enhances the capability of metropolitan locations to endure and recuperate from difficulties but likewise contributes to the overall environmental friendliness of these places (Kabisch, 2017). A wealth of study and real realities strengthens the usefulness of incorporating BGS right into urban

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style. Additionally, the progress in innovation, including Geographic Info Solution (GIS) and remote noticing, has boosted the efficiency of creating and taking care of BGS. This makes it a sensible choice for cities intending to achieve a balance between growth and ecological sustainability.

Amidst the growing recognition of the role of Blue-Green Equipment (BGS) in improving city durability, public understanding, and engagement have actually ended up being crucial elements for the effective execution of these systems (Haase, 2017). This research looks to explore the current use of BGS in urban planning by analyzing public sights and recommendations for green areas in China. This research intends to collect data on routes in which occupants engage with and appreciate BGS through a complete survey. The purpose is to better understand the social benefits and difficulties connected to these systems. The primary purpose of this study is to improve the innovation of smart cities and enhance water source management strategies by understanding the public's understanding of BGS. To do this, the paper will be organized in the following way: Originally, it will certainly provide an extensive recap of the present condition of BGS application in urban planning, highlighting noteworthy accomplishments and barriers. Subsequently, this section will certainly supply a thorough account of the method employed and the end results obtained from the survey carried out in China. The data will certainly be very carefully examined to evaluate public belief towards BGS. Inevitably, this research will certainly assess the effects of these explorations for honest urban planning endeavors, providing recommendations for policymakers and city coordinators to boost the utilization of blue-green locations in constructing sustainable and resilient metropolitan settings.

### 2 ADVANCEMENT STANDING OF BGS

The principle of BGS has actually advanced over the past couple of decades in reaction to the boosting obstacles positioned by urbanization and environmental adjustment. At first, urban planning greatly relied on grey frameworks, such as concrete channels and stormwater systems, which were designed to regulate and manage water resources. Nonetheless, as the limitations of such strategies emerged-- especially their inability to attend to ecological degradation and the loss of biodiversity-there was a change towards even more lasting and incorporated solutions. BGS is an integrated strategy that incorporates stormwater administration (e.g. rain harvesting, purification) and vegetation-based systems (eco-friendly).

Among the key features of BGS is its multifunctionality. These systems not only handle stormwater and minimize the risk of flooding but likewise contribute to urban air conditioning, improve air quality, and improve biodiversity. Bv incorporating natural environments into urban rooms, BGS promotes the repair of ecosystems and develops much healthier living atmospheres for city populations. Along with versatility, BGS is likewise extremely versatile, which permits them to flexibly react to the demands of different city atmospheres. These systems are designed to be adaptable and scalable, allowing them to be tailored to the particular demands of various urban contexts, from thick city centers to suburban areas.

Currently, the execution of BGS is gaining energy around the world, with several cities acknowledging the importance of integrating all-natural systems into urban planning. In nations like China, where quick urbanization and ecological challenges are specifically obvious, BGS is being significantly taken on as a method to improve urban durability and sustainability. Nevertheless, the success of these systems depends upon continual research study, public interaction, and supportive plans that motivate their extensive fostering and combination right into metropolitan style.

### **3** QUESTIONNAIRE EVALUATION OF BGS

This paper aims to check out the existing application condition of the blue system (BGS) in urban planning by attending to the viewpoints and experiences of residents. To accomplish this, a set of questions study was carried out, concentrating on crucial locations such as the aesthetic payment of BGS, its impact on air quality, and the schedule of leisure spaces. The study was dispersed online to locals across different areas of China, making sure a varied series of responses. In total amount, 657 reactions were gathered, offering beneficial insights right into the general public's understanding and complete satisfaction with BGS implementation in their cities.

As shown in Figure 1, the survey shows a nearly equal distribution between male and female respondents, with 50.99% identifying as male and 49.01% as female. Due to the balanced gender ratio,

the survey results can more comprehensively reflect the views of different gender groups on the application of the blue-green system (BGS) in urban planning, so as to be more representative and credible.



Figure 1: Gender Distribution (Photo/Picture credit: Original).

Figure 2 shows that the age distribution of respondents is skewed towards younger demographics, with the majority falling in the 25-34 age range (32.42%), followed by 18-24 years (28.77%) and 35-44 years (15.98%). This suggests that the survey primarily captured the opinions of younger to middle-aged adults, who may be more engaged with urban planning and environmental issues or more likely to participate in online surveys.



Figure 2: Age Distribution(Photo/Picture credit : Original).

Figure 3 shows that in terms of educational background, the majority of respondents (45.05%) have a college or university education, followed by 22.98% with postgraduate or higher qualifications, and 23.9% who selected 'Other.' This indicates that the survey reached a well-educated audience, which may influence the perspectives on the technical and ecological aspects of BGS in urban settings.



Figure 3: Educational Level (Photo/Picture credit: Original).

Figure 4 shows a slight majority of respondents (52.66%) indicated that their city has implemented blue-green systems, while 42.92% stated that it had not, and 4.41% were unsure. This result reflects different urban areas have significant differences in the adoption rate and level of public awareness of BGS and implementation of BGS across different urban areas, suggesting varying levels of adoption and public awareness.



Figure 4: Awareness and Implementation of BGS(Photo/Picture credit : Original).

When asked about their satisfaction with the impact of BGS on improving the urban environment, the responses were varied. Figure 5 shows that approximately 28.31% of respondents were satisfied, while 25.88% were dissatisfied, and 23.29% were neutral. This mixed response indicates that while some people see the benefits of BGS, others may be experiencing challenges or unmet expectations regarding its impact.



Figure 5: Satisfaction with BGS Impact on the Urban Environment(Photo/Picture credit: Original).

Figure 6 shows that regarding whether BGS has improved the quality of life, 47.03% of respondents reported no significant impact, and 23.29% believed there was some improvement. However, 17.81% saw a significant improvement, while 11.87% felt that it had worsened their quality of life. These responses highlight that while BGS may have positive effects for some, others may not perceive these benefits or might experience unintended negative consequences.



Figure 7: Satisfaction with BGS in Reducing Urban Heat Island Effect(Photo/Picture credit: Original).

Figure 8 shows that maintenance appears to be a critical issue, with 35.01% of respondents expressing a neutral view, and 28.01% believing the maintenance is mostly well-maintained. However, only 19.48% think it is very well-maintained, and 11.26% feel it is not well-maintained. This indicates a need for improved maintenance practices to ensure the effectiveness and sustainability of BGS.



Figure 6: Quality of Life Improvement (Photo/Picture credit: Original).

Figure 7 shows that 31.2% of respondents were dissatisfied with BGS's role in reducing the urban heat island effect, while 27.09% were satisfied, and 17.05% were very dissatisfied. Only 11.42% were very satisfied, indicating that the perceived effectiveness of BGS in addressing urban heat is a significant concern for many.

Original).

Figure 9 shows that regarding the frequency of using BGS spaces, 34.55% of respondents use these spaces weekly, while 27.7% rarely use them, and 18.57% use them daily. The data shows that a significant portion of the population engages with these spaces regularly, but there is also a substantial group that seldom uses them, which could be due to accessibility, awareness, or satisfaction issues.



Figure 9: Usage Frequency of BGS Spaces (Photo/Picture credit: Original).

Figure 10 shows that a plurality of respondents (38.2%) believe that the green spaces in BGS are sufficient for recreation, while 23.29% find them enough. However, 14.31% feel that the spaces are insufficient, and 5.33% believe they are not at all sufficient. This suggests that while many are satisfied with the recreational areas, there is still a notable portion of the population that feels more needs to be done to meet their needs.



Figure 11: Contribution to Air Quality (Photo/Picture credit: Original).

Figure 12 shows that the aesthetic contribution of BGS to urban landscapes is seen as significant by 29.53% of respondents, while 33.49% believe it has little impact, and 15.68% consider it very significant. The responses suggest that BGS's role in beautifying cities is recognized but not overwhelmingly so, pointing to potential areas for improvement in design and implementation.



Figure 10: Adequacy of Recreational Space in BGS (Photo/Picture credit: Original).

Figure 11 shows that almost half of the respondents (47.64%) believe that BGS contributes to improving air quality, while 28.77% find it somewhat helpful. However, 13.55% see no help, and 10.05% think air quality has worsened. This indicates that while there is a general belief in the environmental benefits of BGS, there is also skepticism and dissatisfaction that need to be addressed.

Figure 12: Contribution to Urban Aesthetics (Photo/Picture credit: Original).

Figure 13 shows that when asked about further promoting BGS in urban areas, a majority (45.2%) support it, with 25.88% strongly supporting it. However, 17.81% are neutral, and 11.11% strongly oppose it. This indicates broad support for expanding BGS, but there is still a significant minority with reservations or opposition.



Figure 13: Attitudes Toward Further Promotion of BGS (Photo/Picture credit: Original).

The data reveals a usually favorable however combined understanding of BGS among Chinese respondents. While there is acknowledgment of its benefits in terms of ecological top quality, entertainment possibilities, and urban aesthetic appeals, there are additionally considerable concerns about its effectiveness, maintenance, and influence on quality of life. These insights recommend that while BGS is possible, there is a requirement for more consistent implementation, much better maintenance, and higher public engagement to fully understand its benefits in urban planning.

Based on the analysis of the study information, numerous tips can be produced for the future development and implementation of green systems (BGS) in urban planning.

# 4 ENHANCING PUBLIC RECOGNITION AND INVOLVEMENT

To address this, it is important to enhance public recognition education, and learning concerning the advantages and purposes of BGS. Public projects, workshops, and community interaction programs can be created to educate people on just how BGS adds to environmental sustainability, urban aesthetics, and total lifestyle (Wolch, 2014). By promoting a much deeper understanding and gratitude for these systems, residents are more likely to support and engage with them, which could bring about better usage and maintenance.

The survey highlights problems pertaining to the maintenance of BGS, with a considerable section of participants sharing neutral or unfavorable sights on the adequacy of current upkeep initiatives (Ahern, 2014). To enhance this, metropolitan coordinators and city authorities must focus on the growth of robust upkeep strategies that ensure the lasting sustainability of BGS (Norton, 2015). This could involve the allowance of adequate sources for normal upkeep, using sustainable products and practices, and the involvement of local neighborhoods in maintenance initiatives. In addition, the assimilation of wise modern technologies for surveillance and handling BGS might boost their effectiveness and effectiveness.

The survey data indicates that while some respondents regularly make use of BGS spaces, others rarely do so, possibly because of accessibility problems or an absence of understanding. To make sure that BGS advantages are equitably dispersed across all demographics, city planners ought to concentrate on broadening accessibility to these rooms. This could include making BGS with inclusivity in mind, guaranteeing that they are accessible to people of every age, ability, and socioeconomic history. In addition, improving the distribution of BGS across different urban locations, especially in underserved areas, can help to optimize their positive impact on public health and well-being.

While BGS are identified for their contribution to urban aesthetic appeals, there is an area for improvement in their functional and visual combination into the urban landscape. Future BGS projects should focus on creating areas that not just serve environmental and leisure functions but also boost the total visual charm of the city. This might entail ingenious design strategies that perfectly blend green and blue elements with urban facilities, developing multifunctional spaces that deal with diverse requirements. Collaborative initiatives with landscape architects, metropolitan designers, and neighborhood artists can lead to BGS that are both useful and aesthetically inspiring.

The survey reveals that there is uncertainty about the environmental performance of BGS, especially in lowering metropolitan warmth island impacts and enhancing air quality. To resolve these issues, future BGS tasks ought to integrate evidence-based practices and modern technologies that have actually been proven to achieve these environmental objectives (Gunawardena, 2017). For example, incorporating green roofs, absorptive pavements, and metropolitan marshes can improve the capacity of BGS to minimize warmth and improve air top quality (Coutts, 2012). Ongoing research study and surveillance must be carried out to evaluate the ecological influence of BGS, and the results should be transparently interacted with the public to develop depend on and self-confidence in these systems.

To additionally promote the growth of BGS, it is essential to encourage policy support at the local, local, and national levels. Federal governments should consider applying policies and incentives that advertise the creation and upkeep of BGS, such as green infrastructure, tax obligation motivations for lasting growth, and guidelines that call for the assimilation of BGS in brand-new metropolitan jobs (Lafortezza, 2013). In addition, promoting innovation in BGS style and execution can bring about more reliable and adaptive systems. This can involve sustaining research and development in eco-friendly innovations, encouraging public-private partnerships, and exploring brand-new designs of neighborhood involvement in BGS monitoring (Pugh, 2012).

# 5 CONCLUSION

This study intended to explore the application standing of Blue-Green Solution (BGS) in urban planning by accumulating and assessing data from Chinese respondents via an organized set of questions. The study made use of both quantitative and qualitative techniques to examine public awareness, complete satisfaction, and the perceived effectiveness of BGS in boosting urban settings. The survey covered numerous facets, including group details, understanding of BGS implementation, fulfillment with ecological and visual enhancements, and the frequency of BGS space use.

The findings disclose a typically positive but mixed perception of BGS among the respondents. there is substantial awareness While and acknowledgment of the benefits that BGS can bring, such as boosted air quality, boosted city appearances, and leisure possibilities, there are additionally notable worries. These include problems pertaining to maintenance, the efficiency of BGS in reducing urban warmth islands, and the total impact on the lifestyle. The research study additionally highlights a disparity in the usage of BGS rooms, recommending that accessibility and public interaction may be locations requiring further attention.

Looking forward, this study highlights the relevance of continued exploration and enhancement of BGS in urban planning. Future studies might concentrate on establishing extra refined methodologies to examine the long-term effects of BGS on city sustainability and public health. In addition, the value of this research lies in its possible to notify policymakers and urban organizers regarding the general public's needs and worries, eventually directing a lot more efficient and comprehensive city advancement methods that maximize the benefits of BGS. This research study adds to the growing body of knowledge on lasting urban planning and supplies practical insights for improving the implementation of BGS in cities worldwide.

Finally, this paper explored the current application standing of blue-green systems (BGS) in urban planning, concentrating on public assumptions of its aesthetic contributions, effect on air high quality, and the schedule of entertainment spaces. Through a survey conducted amongst residents throughout various regions of China, the research gathered 657 responses to evaluate contentment and recognize locations for enhancement.

The searchings disclosed that while a considerable portion of participants revealed satisfaction with BGS's contribution to improving city visual appeals and air quality, there were concerns concerning the competence of leisure rooms and the system's maintenance. In addition, the data recommended that lots of citizens identified the value of BGS in minimizing city heat island results and improving general lifestyle. Nevertheless, some respondents were unclear of its direct influence on their lives, indicating a space in understanding or accessibility to these spaces.

Looking forward, cities must prioritize improving public understanding of BGS benefits and make certain appropriate upkeep to optimize its favorable effect. Increasing environment-friendly and blue spaces in city locations can further enhance ecological balance and citizens' wellness, making BGS a critical element of future urban planning techniques.

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