



SUSTAINABLE URBAN PLANNING PRINCIPLES

U.S.-China CEO Council for Sustainable Urbanization

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About the U.S.-China CEO Council for Sustainable Urbanization

The U.S.-China CEO Council for Sustainable Urbanization, led by the Paulson Institute (PI), in partnership with the China Center for International Economic Exchanges (CCIEE), harnesses the collective influence of leading American and Chinese businesses to advance green business practices and sustainable urbanization in China. Launched in November 2014, the Council is composed of leading CEOs of Chinese and Western companies committed to integrating sustainability into their business plans and setting best practices through their actions. The Council's work falls into three categories:

- To act through individual and collaborative projects among members that can be scaled across China and elsewhere;
- To advocate for effective policies and actions on sustainability standards;
- To illustrate best practices through case studies and research.

About the Paulson Institute

The Paulson Institute is a non-partisan, non-profit “think and do” tank grounded in the principle that today’s most pressing economic and environmental challenges can be solved only if the United States and China work in complementary ways. Our mission is to strengthen U.S.-China relations and to advance sustainable economic growth and environmental protection in both countries. Founded in 2011 by Henry M. Paulson, Jr., the 74th Secretary of the Treasury and former Chief Executive Officer of Goldman Sachs, the Institute is based in Chicago and has offices in Washington, San Francisco, and Beijing. Learn more at paulsoninstitute.org.

About CCIE, our supporting organization

China Center for International Economic Exchanges (CCIEE), founded on March 20th, 2009, is registered with the Ministry of Civil Affairs, and operates under the guidance and supervision of the National Development and Reform Commission in terms of its business scope. The main scope of work for CCIEE is: to conduct research on major international and domestic economic issues; to conduct international exchanges and cooperation; to provide government with intellectual support and to provide enterprises and other sectors of society with a platform for economic exchanges. CCIEE is committed to serving China's development, improving people's livelihood and promoting exchanges and cooperation. By adhering to the socialist theoretical system with Chinese characteristics and the value of Originality, Objectively, Rationality and Compatibility, CCIEE actively conducts research on significant domestic and international theoretical and strategic issues. CCIEE compiles periodicals such as Research Report, Think-tank's Voice, Information Feedback and a monthly journal called Globalization. For more about CCIEE, visit <http://english.cciee.org.cn>

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INTRODUCTION

The CEO Council for Sustainable Urbanization, launched by the Paulson Institute in partnership with the China Center for International Economic Exchanges (CCIEE), harnesses the collective power of business to support China's efforts to achieve its urbanization goals in a sustainable way. In 2016, the CEO Council developed five Sustainable Urban Planning Principles for both regional and parcel developments, to ensure that the CEO Council's urban development projects meet a common set of rigorous sustainability standards, starting from the planning stage. Beyond the CEO Council's projects, the Principles may also serve as a guide for sustainable urbanization development throughout China. The Principles were developed by the Secretariat of the CEO Council, in collaboration with our member companies, the China Academy of Urban Planning & Design and the Shenzhen Institute of Building Research Co., Ltd.

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SUSTAINABLE URBAN PLANNING PRINCIPLES QUICK REFERENCE

	Principles for Regional Development	Principles for Parcel Development
1. Environmental Quality and Ecological Restoration	1.1 Promote environmental quality and conform to limits on carrying capacity 1.2 Conform to water resource development and sponge city guidelines 1.3 Assess impact on air quality and plan for climate change adaptation 1.4 Plan for ecological restoration	1.1 Ecological security framework 1.2 Sponge city 1.3 Ecological restoration
2. Land Development and Integration of Urbanization and Industrialization	2.1 Conform density to master plans 2.2 Promote local employment and sustainable economic growth, and quantify impact 2.3 Focus on mixed-use development, integrated with large-scale infrastructure 2.4 Actively promote development of underground spaces 2.5 Build up green finance mechanisms	2.1 Land development must conform to the functions and industrial aspects of master plan 2.2 Planners and developers should follow Transit Oriented Development (TOD) guidelines 2.3 Public service facilities 2.4 Incorporate innovation and entrepreneurial spaces
3. Livable and Healthy Cities	3.1 Create dynamic urban spaces 3.2 Follow city and landscape design guidelines 3.3 Build continuously interconnected slow-traffic systems 3.4 Build smart cities	3.1 Design of public spaces 3.2 Design of slow-traffic spaces 3.3 Development of smart communities 3.4 Planning of green space systems
4. Environmental Protection and Resource Recycling	4.1 Promote green buildings and green communities 4.2 Accelerate construction of water-recycling systems 4.3 Reduce and reuse solid waste 4.4 Promote renewable energy	4.1 Green buildings and communities 4.2 High-efficiency utilization of water resources 4.3 Waste disposal and recycling 4.4 High-efficiency utilization of energy and resources
5. Social Inclusiveness and Cultural Promotion	5.1 Promote social equality and public participation in planning 5.2 Preserve local cultural features	5.1 Barrier-free design 5.2 Public participation in planning 5.3 Preservation and promotion of local cultural elements 5.4 Improve the labels for environmentally friendly ecological systems

SUSTAINABLE URBAN PLANNING PRINCIPLES

CEO Council for Sustainable Urbanization

The CEO Council for Sustainable Urbanization, launched by the Paulson Institute in partnership with the China Center for International Economic Exchanges (CCIEE), is a multi-industry platform for action that aims to harness the collective power of business to support China's efforts to achieve its urbanization goals in a sustainable way.

As one of the key activities in 2016, member companies initiated the development of the Sustainable Urban Planning Principles (hereinafter the "Principles"), which will apply to urban development projects that member companies' development projects submit the Council for collaboration, thereby enabling such projects to serve as models for sustainable urbanization in China. The Principles are based on existing Chinese technical or legal requirements, and include in some cases higher international standards in sustainable urban development. The Principles include concepts ranging from planning and design to building materials, historic preservation, and community involvement.

The Principles were drafted by the Secretariat of the CEO Council, in collaboration with the China Academy of Urban Planning & Design and Shenzhen Institute of Building Research Co., Ltd.

Applicability

The Principles are applicable to all projects submitted to the CEO Council for Sustainable Urbanization for collaboration. They apply to planning, development, and construction of both regional and parcel development for new development, renovation projects, and featured towns.¹ The Principles are organized into two sets: one on Regional Development and one on Parcel Development. There is some repetition in content between the two sets, which is intentional.

PRINCIPLES FOR REGIONAL DEVELOPMENT

1. Ecological Restoration and Urban Infill

1.1 Conduct a comprehensive assessment of environmental impact and risk

Regional planning should include a comprehensive assessment of the impact on the natural environment and of the suitability of land for construction. The assessment should also address climate change risks to the development, including long-term changes in water supply, extreme heat, increased flooding, and sea-level rise. Land development and construction activities shall avoid preserved area recognized in urban and rural planning, such as ecological red lines, ecological corridors (urban greenbelts, green wedges, and biodiversity corridors), engineering or geological hazards, and significant cultural heritage sites. Regional

¹ Regional development includes development activities at the scale of cities and districts of cities. Parcel development describes development activities at the level of individual blocks or single buildings.

development should also include an urban lifeline system and construction of urban emergency shelters.

1.2 Conform to requirements of water resource development and sponge city development²

Regarding water resources, regional planning should include a water resource development and management plan, including controls on water consumption and optimized water distribution. Regional urban and rural planning should incorporate recycled water, and should measure utilization rates for unconventional water (rainwater or flood, reclaimed water, desalinated sea water) and conform to relevant standards. Regional development plans should include sponge city practices that utilize natural land forms, rivers, lakes, wetlands, farmlands, forested areas, and grassland. Projects should avoid landfill of existing water bodies during construction, and sustain existing water surface coverage.

Distribute water-recycling plants based on the city master plan, and develop design strategies for water-recycling treatment facilities and the pipe network from the municipal level of the centralized

system, to the district level, and to the building-level system.

1.3 Assess impact on air quality and greenhouse gas emissions

Development activities shall assess and minimize their impact on urban and regional air quality, while limiting the expansion of the urban heat island effect. To comply with national, provincial and city carbon emission targets, regional development should preserve local natural areas with high forest coverage, and conserve protected areas such as wetlands, maintaining the **forest coverage rate** above requirements determined in urban and rural planning. **Urban ventilation channels** could be incorporated after taking into consideration local air circulation and weather patterns.

1.4 Plan for ecological restoration and development according to local conditions

To safeguard environmental quality, meet sponge city standards, and comply with climate change policy goals, regional planning should include a variety of environmental protection and ecological restoration activities. These should include ecological restoration of rivers and lakes, rehabilitation of mountainous or vegetated ecologically sensitive areas, restoration of polluted soil, preservation of urban ventilation channels, and reclamation or repurposing of abandoned construction or mining sites. Road planning and design shall **adopt low-impact practices** to reduce the adverse

² Sponge city refers to city design practices that enable the surface to act as a permeable system allowing water to filter through the ground, just as a sponge absorbs water. This allows for increased recycling and reuse of water city-wide. For more on Sponge City development, see “海绵城市建设技术指南——低影响开发雨水系统构建（试行），建城函，2014，275号，” China Ministry of Housing and Urban-Rural Development, 2014.

consequence to the natural environment. Land development shall assess the environmental impact to the surrounding soil and shall include a soil restoration plan. Ecological rehabilitation projects are encouraged to adopt the public-private-partnership (PPP) investment model.

2. Land Development and Integration of Urbanization and Industrialization

2.1 Conform to master plans on urban density; and balance economic functions

Determine urban economic functions and development intensity based on a fixed **urban growth boundary, development density zoning**, and development intensity stated in urban and rural master plans. Urban functions in each district shall take into account the infrastructure of surrounding districts and regions. Economic functions should correspond with regional urban and rural plans. Development should include renovation plans for existing villages and districts within the development area. Urban renewal projects shall specify a floor area ratio based on targets related to improved local quality of life measures, including traffic, and building heights shall conform to height regulations related to historical and cultural points of interest, historic preservation areas, and historic downtowns. Building heights shall not disturb the historic urban spatial layout and critical scenic view-sheds. To encourage preserving outskirts as ecological districts; the floor area ratio in the developed area shall not only consider the economic balance but also improve the quality of regional transportation

and overall living environment of the whole city. Land development shall conform to standards of **energy and water consumption per unit GDP** set in urban and rural master plans.

2.2 Promote local employment and sustainable economic growth, and quantify impact

Urban planning should involve a comprehensive economic impact assessment including estimates of the project's total employment creation and impact on economic growth. The plan should consider job placement programs for local relocated households. Renovation of areas with shantytowns shall take into consideration local characteristics.

2.3 Focus on mixed-use development and its compatibility with Transit-Oriented Development plans

The core of the urban area acts as the center of municipal public services and commercial activity, set by the city master plan. Zoning, economic functions, and land leases shall be based on the principle of **small blocks**. Depending on the function of each neighborhood, plans shall specify car-free spaces and vehicle restrictions, including car-free roads, and space reserved for light-rail public transportation. The plan shall specify locations of public transportation hubs and requirements of surrounding land functions in the city master plan, and create a Transit Oriented Development plan with mass transit developers. Further, the plan should also strive to increase the utilization efficiency of lands adjacent to rail stations and to propose the last mile solution plan. The

redevelopment of the renovation area shall prioritize a strategy for optimizing public transportation and increasing density near public transit.

2.4 Actively promote development of underground spaces

The development of underground space shall conform to goals and control requirements of the city master plan. The construction of newly planned roads in urban new districts, industrial parks, and contiguous development zones must be paired with construction of the utility tunnels network. For urban renewal areas, especially older districts, construction of subways, river canal water treatment, street improvements, renovation of older structures, and renovation of shantytown districts, shall promote **utility tunnels**. On the other hand, to improve the development efficiency of ground and underground spaces, the plan should address the overall layout and planning of underground commercial spaces and underground transportation facilities and hubs. Underground space planning should be compatible with the development of the urban core functional area and urban renewal area, including projects of urban commercial zones, cultural and entertaining facilities, and business centers.

2.5 Promote green finance by complying with relevant standards

Integrate regional development with environmental protection, energy conservation, clean energy, green transportation, and green building, to enable projects to obtain loans or leases

that qualify as **green finance**. Plans for urban renewal of existing urban areas shall include a green finance plan, and should comply with relevant green finance standards.

3. Livable Cities and Healthy Buildings

3.1 Create dynamic urban spaces and encourage non-motorized transportation

Provide communication spaces for innovative enterprises by stimulating commercial vitality and promoting the development of the service industry in the city core area. Encourage the integration of multi-level public services and commercial service centers to develop public spaces that include shopping, recreation, relaxation, and sport functions. Reduce street space for vehicle parking and promote **30 km/hr slow-traffic blocks** in historic conservation areas, commercial streets, and large-scale residential communities. The land area of public space should not be below 18% of the development space in a large-scale new area.

3.2 Follow city and landscape design guidelines with an emphasis on mountains, waters, forests, farmlands and lakes

Based on comprehensive urban design regulations and systematic consideration of existing environmental features (mountains, waters, forests, farmlands

and lakes),³ create a design and determine specific development control to guide projects in terms of spatial layout, landscape corridors, public space, building height and building style.

3.3 Build continuously interconnected and pleasant slow-traffic systems for pedestrians and bicyclists

Implement a city master plan that requires a high standard of design for non-motorized transport by stating up-front the spatial design and implementation plan for bicycle and pedestrian systems, and by clarifying the locations of bicycle lanes and bicycle bridges. The master plan should specify how the interconnected bicycle traffic system will link to public transportation. Urban renewal areas should develop plans for improved bicycle and pedestrian access and safety. Demonstration projects must accomplish the design of continuity of the bicycle system and pedestrian system to reduce the dependence on motor vehicle usage for **trips and commutes shorter than 3 km**.

3.4 Build smart cities

The plan should encourage the collaboration of regional participating cities in the field of smart city development, and should seek to apply smart technologies in pilot projects. Implement plan for smart district and smart community are based on the smart city comprehensive plan. The scope of

important pilot projects should include the government administrative service system, the public service Internet platform, smart transportation systems, water resource detection systems, air quality and environment detection systems, security support systems, tourism service systems, conference service systems, smart logistic systems, Internet of things for the public, an energy conservation system, and urban emergency response systems. The smart monitoring system should allow citizens to receive convenient services, environmental pollution reports, security information, and more.

3.5 Promote green buildings and green communities

The percentage of green buildings among newly developed buildings shall achieve the goal determined in the city master plan. **All buildings in newly developed residential neighborhoods must meet the applicable green building standard.**⁴ Projects should promote the use of the latest building technology, materials, and equipment, and prioritize green recyclable building products made from building waste. For building renovation projects, encourage use of green building standard for planning, construction, operation and management. Older urban districts shall develop plans for incorporating green building aspects in building renovation projects.

3 习近平总书记在《关于〈中共中央关于全面深化改革若干重大问题的决定〉的说明》中提到概念, see “以生命共同体理念保护山水林田湖,” 2016, at http://www.hn.xinhuanet.com/2016-01/11/c_1117734199.htm.

4 According to “国家新型城镇化规划（2014-2020年）,” from 2014-2020 the proportion of green buildings in China’s urban areas must rise from 2% to 50%.

4. Environmental Protection and Resource Recycling

4.1 Reduce and reuse solid waste

Determine a municipal waste reduction targets and develop municipal waste treatment strategy. Consider adopting waste-to-energy technologies for power generation.

4.2 Promote renewable energy

Estimate and forecast regional or city **energy demand** based on the city master plan. Assess and analyze the potential supply of energy and other resources in the region, and promote the use of solar energy, wind energy, geothermal energy, and bioenergy. Formulate appropriate renewable energy and new energy exploitation and utilization plan based on relevant local industries and functional area development. Reserve installation access for renewable energy facilities (including solar, wind, and geothermal) with a prospective thinking when drafting land planning, functional area planning, and building design, and where practical install basic hardware or infrastructure, to avoid the situation where future addition of renewable energy requires reconstruction or demolishing of existing construction.

4.3 Include a clear funding plan for all measures related to sustainable urbanization

As an integral part of the regional development project, develop specific plans for how all environmental

protection investment stated above will be funded.

5. Social Inclusiveness and Cultural Promotion

5.1 Engage wide range of stakeholders and promote public participation in planning

On the basis of adhering to local laws, regulations, and technical procedures of urban renewal, regional planning should promote urban renewal projects by bridging local municipal government (sub-districts), social groups (neighborhood committees and communities), experts, and scholars to develop a collaborative and co-governing platform. Integral renewal projects should emphasize improving housing conditions and the living environment for local residents by introducing new commercial formats to improve local vitality, while avoiding large volume of visitors or transportation influxes due to over-redevelopment. Incremental renewal projects should focus on ameliorating the quality of public spaces in the urban area, developing convenient service facilities, and promoting local development characteristics. Moreover, to increase the value of older urban areas, regional planning should combine rail station development, large commercial complex development, shantytown renovation, old factory site renovation, and cultural and historic heritage projects.

5.2 Preserve local cultural features

Development and construction activities must respect and protect local historic

cultures and cultural relics in accordance with national laws and regulations. The planning program should reflect local culture by tapping the potential value of historic and cultural assets. Developers can enhance the city's image and quality of life by preserving and bringing to the forefront the city or region's unique history and urban design style in characteristic, including in the downtown area, historic conservation area, and old town. The building and spatial design of urban renewal areas shall develop cultural connections with surrounding areas. Planners and developers are encouraged to take various approaches to introduce new urban functions into existing old structures while preserving their cultural value. The plan should also encourage collaboration with municipalities to draft development programs for the cultural and creative industries.

PRINCIPLES FOR PARCEL DEVELOPMENT

1. Ecological Restoration and Urban Infill

1.1 Conduct a comprehensive environmental impact assessment

With regard to district development projects, the master plan and specific projects should be integrated in the process of conducting an environmental assessment. Elements such as prevention of waterlogging, conservation of biodiversity, preservation of indigenous cultural landscapes, recreation, and visual aspects should be integrated and taken into consideration. Small terrain features on existing sites, surface water bodies, valuable plant species, and heritage trees should be protected and put to good use.

1.2 Conform to requirements of water resource development and sponge city development⁵

Developers should evaluate each site for **storm-water flood control and runoff utilization**. Elements such as green landscaping, and roadways should be combined and taken into consideration in the utilization and design of runoff infiltration, intake, and treatment. The absorption and utilization of rainwater on site should be maximized.

⁵ For more on Sponge City development, see “海绵城市建设技术指南——低影响开发雨水系统构建（试行），建城函，2014，275号，” China Ministry of Housing and Urban-Rural Development, 2014.

1.3 Plan for ecological restoration and development according to local conditions

New wetlands can be planned in accordance with ecological requirements and site features to restore or compensate for the original habitat conditions of biological life on and around the sites. To minimize impact on existing natural habitat or green spaces, when evaluating and assessing sites for new construction, developers should prioritize already-developed or abandoned land and evaluate such sites for reutilization or repurposing.

1.4 Plan for urban renewal projects according to local conditions

Planning should emphasize repurposing existing on-site architecture, and the value of such conservation practices should be included in the planning process. Demolition and reconstruction in old downtown area is often unavoidable, but the more organic approach of on-site renovation is preferable. Renewed districts and buildings should conform to green renewal standard for existing buildings.⁶

2. Land Development and Integration of Urbanization and Industrialization

2.1 Land development must conform to the functions and industrial aspects of the city and regional master plan

Planning proposals for large districts should proactively take into account the needs of surrounding industries and the

regional demand for open space, cultural experiences, education, and commerce to promote the integration of urbanization and industrialization.

2.2 Planners and developers should follow TOD guidelines in district development. This includes land-use planning, allocation of land use for various public services and facilities, and balancing between industrial and residential-commercial functions

With regard to district development projects, a well-coordinated mixed-use development model should be emphasized within a 300-meter range of rail transit stations or key bus stops and its development intensity should be higher than surrounding areas. The district transportation system should be encouraged to conveniently connect to urban mass transit system in order to facilitate a transit oriented, pedestrian-, and cycling-friendly street environment. The horizontal compatibility of land uses of all types and functions and the vertical integration of architectural space in functions are encouraged in such districts. With regard to large-scale projects, districts should be organized into smaller blocks, **the size of which should not exceed 2 hectares, 100–150 meters to a side**, or the number of road intersections should be no less than 5 intersections per 10 hectare-unit of land area.⁷ District street plans should correspond to an open, gridded layout.

⁶ “既有建筑绿色改造评价标准,” GB/T51141-2015

⁷ For further information on the philosophy behind these items, see “低碳生态城市规划方法,” China Ministry of Housing and Urban-Rural Development, and 北京市地方标准:绿色建筑设计标准DB11/938-2012.

2.3 Public service facilities

When considering the share-ability and accessibility of public service facilities of various levels and types, there should be no fewer than five categories of facilities within a 500-meter radius and walking distance. If conditions allow, different types of public service facilities should be placed nearby one another, or each public building should fulfill at least two public service functions.

2.4 Incorporate innovation and entrepreneurial spaces

If the development project is adjacent to innovation zones such as universities, large-scale science and technology industrial parks, and research institutions, a certain amount of innovation and entrepreneurial space can be allocated, either through the construction of new buildings, or through the renovation and repurposing of older buildings, in accordance with the development needs of the area.

2.5 Promote underground space development

The plan should actively exploit underground space resources whenever feasible. Underground space should ensure safety and comfort of the internal environment and should develop a dynamic and three-dimensional relation between transportation and space. Moreover, underground space could be reserved for future development.

3. Livable Cities and Healthy Buildings

3.1 Design of public spaces and pedestrian friendly environment

Accessible and pleasant public spaces should be reachable within a 500 meter radius and walking distance. The **setback distance** should be reduced, allowing commercial buildings and public facilities to be situated closer to pedestrian walkways. Street space should maintain a compact and human-oriented scale. The width of pedestrian and small traffic-oriented roads should be regulated and these roads which are adjacent to communities should fuse into a complete, continuous and vibrant interface of streets and buildings. The design of municipal signs, storefront windows, signs and advertisements should recognize the needs and aesthetic experience of pedestrians. The design of public spaces should consider shading in the summer and wind resistance in the winter. Public spaces should emphasize a people-oriented and artistic design, maximizing the retention of the site's original landscape and spatial memory, while promoting a smooth integration of landscape and architecture. Spaces open to the public should be planned into the construction of public buildings.

3.2 Design of slow-traffic spaces

A pleasant and networked pedestrian and bicycle system should be set up under the district development project. If conditions allow, **pedestrian and bicycle-only roads and overpasses** can be planned and designed within the site. The design of

slow-traffic roads should be combined with the utilization of rainwater and employ a low-impact roadway design.

3.3 Development of smart communities

A flexibly designed smart community system can be established from integrating the various modules of community public service: smart transportation and parking, atmosphere and environment, water resources, energy, smart architecture and homes within large districts or large public buildings. Meanwhile, information and an interactive platform can be provided to the public through such tools as the mobile Internet to provide data on public welfare and convenient services for the public.

3.4 Planning of green space systems

Plan a green space system that is accessible and prominent to pedestrians and has a natural composition. Indigenous landscape with low maintenance cost and three-dimensional planting for all types of architecture are encouraged. Road verges or boulevards should be planned and the **average green-looking-ratio of the streets should reach 15% or higher.**

3.5 Green buildings and communities

There should be full green building coverage and all buildings should meet the local government's green building planning requirements. Pilots of ultra-low energy consumption, near-zero energy consumption buildings, and healthy

buildings should be promoted. The principles of adapting to local conditions, giving priority to passive heating/cooling technologies, and combining active and passive technologies should be followed. Techniques such as natural ventilation, natural lighting, retractable shading and three-dimensional planting are encouraged. Advanced structural engineering technologies, and environmental-friendly and smart materials should apply to the building construction and design. Building Information Modeling is also recommended.

4. Environmental Protection and Resource Recycling

4.1 High-efficiency utilization of water resources

Utilize spaces to set up green rainwater infrastructure. Sites larger than 10hm² should undergo special rainwater planning and design. Surface and roof rainwater runoff should be planned and measures such as rainwater infiltration, storage and collection should be combined to reach **a total annual runoff control rate of 55%**. Renewable water resources in the surrounding areas should be actively utilized. With the supply of municipal recycled water, **the usage rate of non-conventional water resources by residences, office buildings, shopping malls and hotels should reach 8%, 10%, 3%, and 2%, respectively.**⁸ All buildings should employ water-saving appliances.

⁸ “绿色建筑评价标准,” GB/T 50378-2014.

Low water consumption vegetation should be planted in open green spaces.

4.2 Waste disposal and recycling

The implementation of the core concepts of “reduce, reuse and recycle” and the classification and collection of solid waste, integrating safe treatment and reuse, should be realized. The implementation of waste classification and processing should be strengthened, and biodegradable waste should be collected and disposed of separately.

4.3 High-efficiency utilization of energy and resources

Promote the utilization of energy based on the optimization of energy supply and demand balance and structure. Assessment and analysis on the potential of various types of renewable energy resources on site should be conducted. The temporal and spatial matching between energy demand and the supply of renewable resources should be taken into account in order to determine the renewable energy technologies and operational mechanisms suitable for the various types of buildings. If conditions allow, **the ratio of power generated by renewable energy should exceed 2%** and the ratio of domestic water heated by renewable energy should exceed 20%.⁹ Evaluate building design to assess the suitability for applying renewable energy system, and reserve room for future installation, and where practical add supporting infrastructure. Moreover, district planning and building design should reserve space for connecting renewable energy system in the future.

The planning and design should consider reserving installation spaces and structures for renewable energy systems and related hardware on the roof, in utility tunnels, and in equipment rooms. The safety of installing renewable energy system should be guaranteed when designing for building structure, with roofs designed to support later addition of solar panels. Further, there should be reasonable allocation of fueling, charging, and other supporting facilities for clean energy vehicles and the use of clean energy vehicles should be encouraged. Metering based on energy types should be implemented in the main buildings within the district and an energy consumption monitoring system should be planned and designed.

5. Social Inclusion and Culture Promotion

5.1 Barrier-free design

Continuous and barrier-free access to public transport sites within the district, convenient and safe walking routes to nearby communities or major public facilities should be planned. And there should be barrier-free access to pedestrian travel at the city level.

5.2 Public participation in planning

Advocate for extensive public participation through measures such as questionnaires, community interviews, workshops, and online interactive design during the entire planning phase.

⁹ “绿色建筑评价标准,” GB/T 50378-2014.

5.3 Preservation and promotion of local cultural elements

The planning and design should reflect local cultural heritage and landscape memory and history. Historic buildings should be preserved under a classified protection system. Further, the plan should consider how to revitalize traditional cultures and to provide space for traditional craftsmanship if possible. New buildings must comply with provisions on the preservation of regional history and must be in harmony with the site's important cultural heritage.

5.4 Improve the labels for environmentally friendly ecological systems

Green ecological signs and maps should be placed in pedestrian zones and information regarding public transportation, public facilities, green infrastructure and open space should be provided.

submitted to the CEO Council for collaboration. Companies should work together to promote the Principles.

3. Given the huge regional differences and various local regulations existing in China at present, member companies shall highlight the specific items and/or content of the Principles which are impossible to implement in their specific pilot projects and report to the Secretariat of the CEO Council. All member companies participated in the pilot projects are encouraged to summarize their practical experiences of planning, construction and management and highlight the features and advancement of the project.
4. The Paulson Institute will, in collaboration with member companies, evaluate the implementation of the Principles by pilot projects submitted to the Council by member companies, and regularly summarize useful findings or practices. Outstanding pilot project and innovative practices will be incorporated into revisions of the Principles, which shall be updated annually.

Implementation of the Principles

1. Council members participated in the pilot projects shall work with the government bodies, other developers, and financing entities proactively, to strengthen the cooperation platform, to establish negotiation mechanism for tackling practical issues, to promote the PPP model for development and operation, and ultimately to advance the implementation of pilot projects.
2. All member companies shall comply with the Principles for projects

Appendix: Key Element of Principles

PRINCIPLES	KEY ELEMENTS
Ecological Restoration and Urban Patch	Comprehensive Assessment of Environmental Impact and Risk
	Water Resource Development and Sponge City
	Assess Impact on Air Quality and Plan for Climate Change
	Plan for Ecological Restoration and Development
	Urban Renewal Projects
Land Development and Integration of Urbanization and Industrialization	Urban Density and Functions
	Employment and Sustainable Economic Growth
	Mixed-use Development and TOD
	Development of Underground Spaces
	Innovation and Entrepreneurial Space
	Green Finance
Livable Cities and Healthy Buildings	Public Spaces
	Slow-Traffic Systems for Pedestrians and Bicyclists
	Landscape with an Emphasis on Mountains, Waters, Forests, Farmlands and Lakes
	Planning of green space systems
	Smart Cities
	Green Buildings and Green Communities
Environmental Protection and Resource Recycling	High-efficiency utilization of water resources
	Waste Disposal and Recycling
	Renewable Energy Development
	Environmental protection budget
Social Inclusiveness and Cultural Promotion	Barrier-free design
	Social Equality and Public Participation in Planning
	Local Cultural Features
	Labels for Environmental Friendly Ecological Systems

* Applies to both Regional and Parcel Projects

* Applies only to Regional Projects

* Applies only to Parcel Projects