

Fig. 1 Technology roadmap for urban design of historic districts based on action planning

Introducing the concept of action planning into urban design of historic districts helps to solve the existing problems such as the inadequate expression of characteristics, incomplete framework and the lack of transformation route. Urban design of historic districts under action planning takes into account the current situation comprehensively including economy, society, culture etc., arranges specific projects includes basic analysis, target position, action strategy, action projects and effect evaluation. Action planning points out the ultimate objectives, main participants and time arrangement, and gradually perfects the planning results in the dynamic process.

3. Urban design of North Shuncheng Lane based on action planning

3.1 Current status and problems

North Shuncheng Lane is located in the northern of Ming city wall in the center of Xi'an City. It's about 950 meters long and covers a total area of about 20 hm². It can be divided into two parts by middle road, residence pattern in the north has the level of street, lane, courtyard and neighborhood, residence pattern in the south are mostly plate-like unit buildings.

Through research on thematic studies, we can find that in space quality, the indiscriminate construction and the lack of infrastructure

makes living quality decline. In industrial structure, the original features such as leisure and recreation are in a gradual degradation. In cultural context, the damaged landscape cannot afford the function of continuing historical context, and the intangible cultural heritage is disappearing. In ecological construction, residents formed a series of adaptive greening ways such as wall greening and potted plants, but the waste along the street erode the public space of the streets.

3.2 Target location and strategy

The target of urban design should focus on how to improve living quality and enhance the vitality, with maintaining historical and cultural context. Facing the problems above, urban design starts with the relationship of slow traffic system and public traffic system, the relationship between urban function and space demand, the relationship between leisure life and landscape environment, the utilization of old buildings, and breaks down the setting goals into four sub goals as slow travel, leisurely life, contextual continuity and green ecology.

The four sub goals will be transformed equivalently into five action strategies, which are optimizing traffic system, improving traditional landscape, developing industrial structure, guiding public space and advocating low-carbon lifestyle (Figure 2).

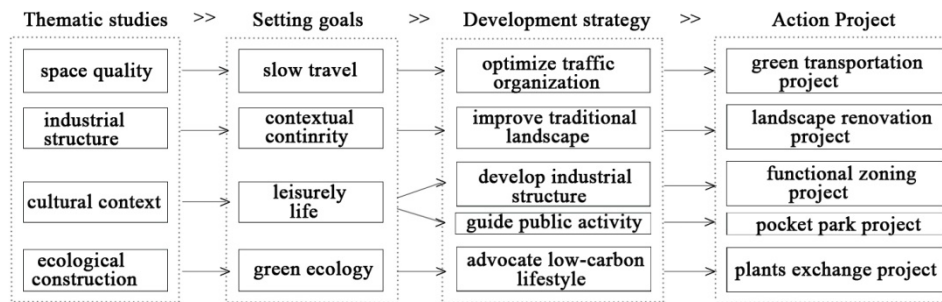


Fig.2 Flow chart of urban design in North Shuncheng Lane based on action planning

3.3 Action project and timing

Action strategies are carried out as specific action projects, including green transportation project, landscape renovation project, functional zoning project, pocket park project and plants exchange project.

"Green transportation project" aims at optimizing traffic system. Firstly, it creates slow-moving system by using symbolic significance like bricks, woods and stones to reflect the cultural features,. It also sets up tour routes for tourists along middle road with historical story drawing on the wall. Secondly, it organizes one-way traffic. This project sets western Lane and the central north-south road as one-way road in the opposite direction, making use of secondary roads with high density but low utilization to evacuate traffic congestion on the main roads.

"Landscape renovation project" aims at restoring the street scene from block scale and building scale. In block scale, using traditional form of narrow width and deep depth, it forms the living form of "shop underneath and housing above", creating a traditional atmosphere. In building scale, it mainly updates the building facade with the connected but not continuous architectural interface of corridors and brick paving, and reconstructs roofs with double slope or single slope. (Figure 5).

"Functional zoning project" aims at developing industrial structure. In the principles of restoring the traditional unit, traditional street space and traditional folk culture, it optimizes the functional layout based on its original functions such as leisure, entertainment and services. Creative Workshop

with traditional handicraft shops allows visitors to experience the process of making clay, paper-cut and other traditional crafts. Green Workshop encourages residents to replace waste into plants, allowing visitors to experience the process of waste reuse. Artists Workshop transforms the abandoned factory into space for communication of the artists, allowing visitors to experience the production process of arts. Courtyard Workshop introduces conceptual hotels with Guanzhong courtyard as the prototype.

"Pocket park project" aims at promoting the quality of leisure. This project uses the corner space to create a "pocket park", which is a small-scaled open space for various theme activities, and scatters in a patchy form in the block. It plans different types of theme activities based on different places, such as game angle, welcoming pavilion, and connects by walking routes to highlight neighborhood characteristics.

"Plants exchange project" aims at advocating low-carbon lifestyle. This project sets up an exchange platform for waste and plant, and selects rooms for raw materials and gardening in Green Workshop. Residents' actions call on residents to classify waste and send to Green Workshop, staffs provide potted plants of equal value and encourage residents to place them in public places for tourists to appreciate. Tourists' actions allow tourists to use recycled waste such as plastic bottles as raw materials, and experience the production process of gardening, staffs encourage tourists to place the potted plants in the display area for the next round of exchange.

3.4 Achievement improvement and evaluation

The system of action mission, compilation and evaluation improves the effectiveness of urban design. A tightly connected system of action mission is established to make explicit demand for the subject in different sages. A multi-level interactive system of compilation is established to invite experts to evaluate the implementation and to encourage public to put forward suggestions for the design contents. A supervision system with regular inspection is established to urge departments to review the implementation of action projects and to provide a realistic basis for the next amendment.

4. Conclusion and discussion

In view of the problems existing in the urban design of historic districts, urban design based on action planning has the characteristics of comprehensive planning, complete workflow and clear implementation projects,. Under this concept, the urban design of Shuncheng Lane in Xi'an, based on the research of the present situations including space, industries, culture and ecology etc., puts forward the sub goals of slow travel, leisurely life, contextual continuity and green ecology, and constructs the action strategies of optimizing traffic system, improving traditional landscape, developing industrial structure, guiding public space and advocating low-carbon lifestyle. These strategies are translated into concrete action projects like green transportation project, landscape renovation project, pocket park project, plants exchange project, functional zoning project. Through "green transportation project", the resources are effectively integrated by dredging the inner network of the districts and planning tour routes with the theme of Xi'an city wall. Through "pocket park project" and "plants exchange project", different types of activities are arranged for different public spaces, and a platform for the exchange of

plants and recyclable waste is set up. Through "functional zoning project", the traditional services transform into tourism services and handicraft industries.

As an important means of protection of historic districts, urban design should pay more attention to the methods of how to implement design ideas to improve the operability. Through specific action strategy and action project, urban design based on action planning concerns the implementation of the entire processes, which will be of great significance to improve the urban design system. In the future, action planning can be considered to explore into legal system, to realize the standardization and institutionalization in terms of design processes, implementation and evaluation, and to promote regional development orderly.

5. Acknowledgments

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