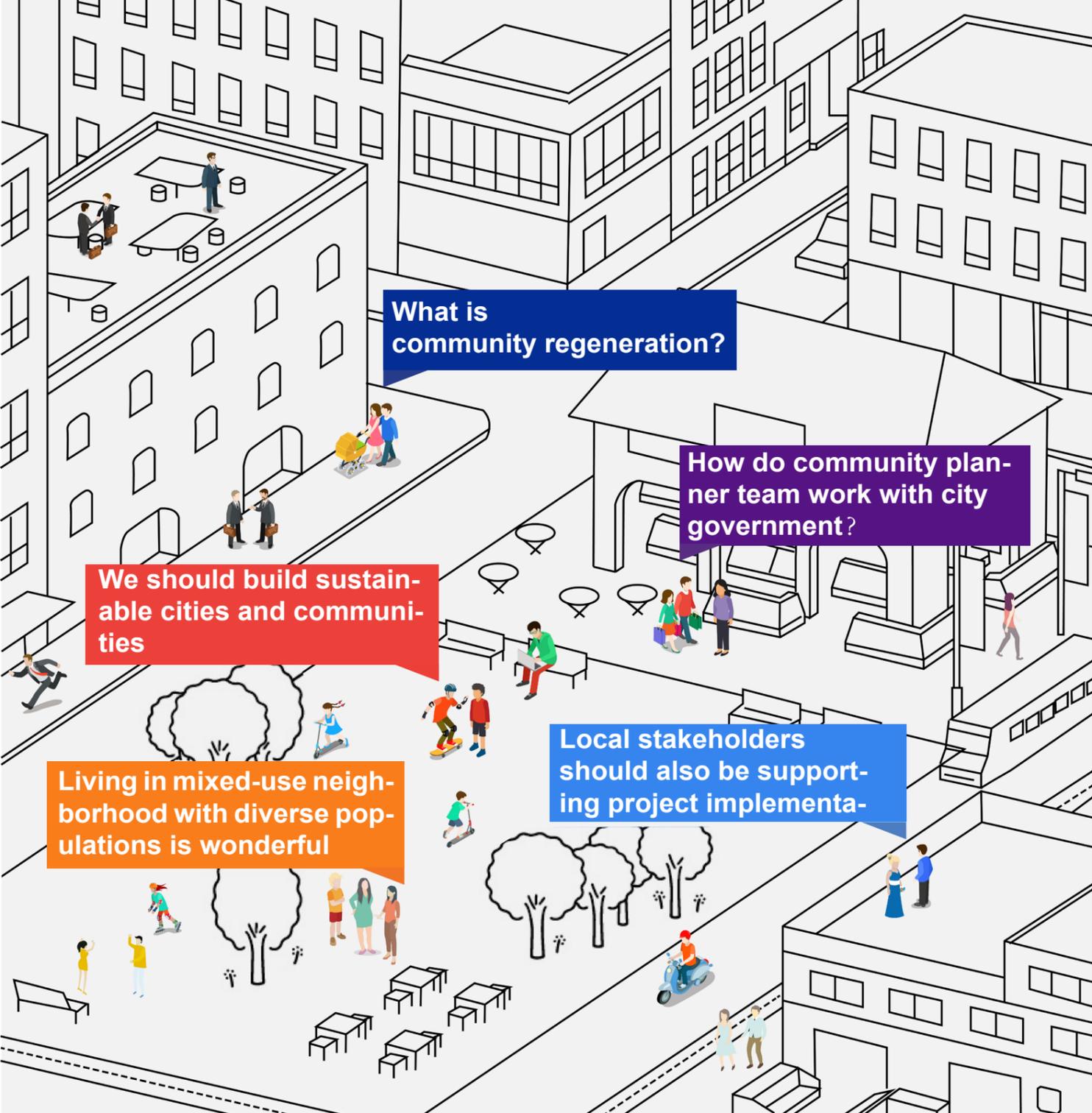


Acknowledgement

This case study was prepared by Jianhao Zhou, Consultant, and Yanan Han, Leader of Community Regeneration Projects at UrbanXYZ, under the guidance of Barjor Mehta, Lead Urban Specialist, and Wanli Fang, Senior Urban Development Specialist. The report benefited from comments and feedback provided by Yoonhee Kim, Sector Leader of Sustainable Development at The World Bank, and Yi Yang, Transport Specialist at The World Bank.

The planning and implementation of two community regeneration projects (“The Well No.1” and “The Well No.2”) documented in this case study were conducted by UrbanXYZ and Beijing Community Research Center, with team members including Mingrui Mao, Yanan Han, Jingling Quan, Xueqing Duan, Junyao He, Dayong Li, Xiyu Zhang, Lianliu Guo and others. The design partner of “The Well No.1” community regeneration project is Sketch Studio, with team members including Binling Huang, Zhenyu Yuan, Shuyi Chen, and Ye Gao. The operation partners of “The Well No.2” community regeneration project are aobag.com, with team members including Lin Zhang, Bin Lu, and Jianchao Wang, and Philanthropreneur Foundation, with the member Jiajun Chen. The two community regeneration projects were funded by ZhongShe Social Work Development Foundation and Shuangjing Subdistrict Government. The community engagement was made possible with strong support of Jiulong Residential Community Committee and Chuiyangliu Dongli Residential Community Committee.



What is
community regeneration?

How do community planner team work with city government?

We should build sustainable cities and communities

Local stakeholders should also be supporting project implementation

Living in mixed-use neighborhood with diverse populations is wonderful

Participatory Community Regeneration Powered by Disruptive Technologies:

A case study of Shuangjing Subdistrict, Chaoyang District, Beijing

January 2021

CONTEXT

1.Context for Community Regeneration	2
1.1 International and national levels.....	2
1.2 City level.....	2
1.3 Shuangjing Subdistrict.....	4
2.Case One: Pocket Space “The Well No.1”	6
2.1 Background.....	6
2.2 Approaches and interventions.....	7
2.3 Implementation, operation and financing.....	12
2.4 Results and impacts	14
3.Case Two: Recycling Club “The Well No.2”	15
3.1 Background.....	15
3.2 Approaches and interventions.....	17
3.3 Implementation, operation and financing.....	18
3.4 Results and impacts.....	19
4.Reflections	21
4.1 Lessons learned and potential for replication.....	21
4.2 Limitations and future improvement.....	22

1. Context for Community Regeneration

1.1. International and national levels

The pursuit of sustainable cities and communities is crucial for human society. Sustainable cities and communities have been listed as one of the UN’s 17 Sustainable Development Goals (SDGs).¹ The goal requires by 2030 to ensure access for all to safe and affordable transport systems, housing and basic services as well as inclusive public spaces. The goal also calls for an enhancement of capacity for participatory, integrated and sustainable human settlements planning and management and a reduction of adverse per capita environmental impact.²

Community regeneration is an effective means to improve the living environment and enhance the sustainable community planning and management. With an increasing level of urbanization, urban regeneration has replaced the construction of new areas in bringing new development opportunities. Among a variety of urban regeneration efforts, community regeneration is able to achieve a gradual and refined living environment improvement in a small-scale, low-cost form to optimize and upgrade low-quality and underutilized public spaces. Community regeneration domestically and abroad pays great attention to participation—whether local residents can participate in the process of community regeneration and development. This participatory planning method can fully integrate local experience and formulate a regeneration plan that is more in line with local development needs. It can also consolidate community relationships and inspire residents to manage and operate community spaces independently.

Disruptive technologies are bringing new opportunities to urban and community planning. First, disruptive technologies present opportunities to carry out urban analytics with a greater granularity, a higher cost-effectiveness, and possibility to identify the changing patterns over a short period of time. Second, they offer options to shorten the feedback cycle of planning by better engaging the community and gathering the initial learnings. Last but not least, they provide the possibility of conducting a comprehensive and in-time evaluation for future improvement and sharing with other planning practices.

Shuangjing Subdistrict has been selected by UN Habitat and China Center for Urban Development (CCUD) as the community-level pilot for sustainable development.³ On the 16th of July 2019, Shuangjing Subdistrict was successfully selected as the UN-Habitat International Sustainable Development Pilot Community. It became the first community-level pilot from China.

1.2. City level

Beijing put more emphasis on quality urban development in recent years. Beijing has experienced rapid development in the past few decades. In the pursuit of speed, it is inevitable to ignore the control of the quality of human settlements. Under the new urbanization national strategy, how to target resources to refine the management, improve the quality of life, and boost further growth in the existing built-up areas will continue to be important explorations and practices.

¹ United Nations. “The 17 Goals.” United Nations, 2015. <https://sdgs.un.org/goals>.

² United Nations. “Make Cities and Human Settlements Inclusive, Safe, Resilient and Sustainable.” United Nations, 2015. <https://sdgs.un.org/goals/goal11>.

³ Li, Runfa. “3rd High-Level International Forum on Sustainable Urban Development Held,” 2019. http://www.gov.cn/xinwen/2019-07/19/content_5411529.htm.

The city government released relevant policies on high-quality neighborhood development. On Feb 26, 2019, Beijing People's Municipal Government released Opinions on Strengthening the Work of Neighborhood Committees in the New Era⁴, highlighting four focuses:

- **Neighborhood renewal:** establishing a sound and comprehensive urban renewal mechanism; improving the quality of public space.
- **Livelihood security:** establishing a rapid response mechanism to people's needs; improving public services at the grassroot level; improving the public cultural service system at the grassroot level.
- **Collaboration, Participation and Benefit Sharing:** improving the level of community governance; expanding the participation of social organizations; enhancing the capabilities of social mobilization.
- **Refined management:** furthering the improvement of the urban environment; establishing a sound and comprehensive big data-based management service platform.

The city government started piloting the community planner system to support refined management. On May 17, 2019, Beijing Municipal Commission of Planning and Natural Resources launched the pilot of community planner system to appoint independent third party with a term of 4 to 5 years to provide professional services of planning, implementation and management to the service areas.⁵ The service area is defined based on the boundary of township-level divisions (subdistrict, township, town, etc.), the fourth-level administrative unit of political divisions in China.⁶ The appointed community planners are entitled to put forward recommendations, attend relevant work conferences, hire professionals to assist in tasks undertaken and accept professional trainings. In the past year, the community planner system pilot has appointed 230 community planners supporting service areas in 11 districts in Beijing and achieved good results in community regeneration and historic preservation.

The community planner system has enabled community-level planning process by:

- **Better leveraging local knowledge:** Community planners in Beijing participate in community planning process either as full-time staff employed in the Subdistrict Government (like in Subdistricts of Haidian Districts) or as independent teams who are deeply involved in the decision-making process (like in Subdistricts of Chaoyang Districts). With either mode, community planners have a better understanding of local needs and priorities than traditional planning and design institutions. In this way they can support Subdistrict Government to make decisions that are most beneficial to the community.
- **Better empowering community engagement:** Community Planners assist Subdistrict Governments and Residential Community Committees in formulating a community engagement system, holding public engagement activities, cultivating residents' councils, and empowering residents to express their needs with the help of various tools and technologies—a variety of crucial efforts to increase public participation and empower community engagement.

Shuangjing Subdistrict has been selected as the demonstration zone of refined urban governance in Beijing. On January 2, 2019, Cai Qi, the Secretary of the Municipal Party Committee commented on the article "Using A Big-data Urban 'Body-check' Method to Analyze the Ideal Community Models of Beijing: Taking Shuangjing Subdistrict, Chaoyang District as an Example", which was written by Beijing UrbanXYZ Technology Co., Ltd. and published in "Beijing Information". Mr. Cai wrote: "The '13 Communities' of Shuangjing Subdistrict is a good idea. It should make efforts to become a best practice of refined urban governance".⁷

1.3. Shuangjing Subdistrict

Subdistrict is one of the township-level political divisions in China. The township-level division is the fourth-level administrative unit of political divisions in China, from top to bottom after the provincial level (1st), prefectural level (2nd) and county level (3rd), and before the village level (5th). Different from other township-level divisions such as town, township, ethnic township that are surrounded by rural areas, subdistrict is typically part of a larger urban areas under district level, which is a county level (3rd) division. The subdistrict has an administrative agency called subdistrict office. Residential communities, as one of the village level (5th) division, are administrated by a subdistrict.

Shuangjing Subdistrict is well-located in the vicinity of the Beijing CBD. As a subdistrict of Chaoyang District in Beijing, Shuangjing Subdistrict has the Tonghui River to the North, the East 4th Ring Road to the East, Jinsong Road and Guangqumenwai Road to the south, and the boundary between Chaoyang District and Dongcheng District to the West. With three metro lines (line 7, line 10, line 14) and four metro stations in the area, Shuangjing is a well-connected neighborhood close to Beijing CBD.

Shuangjing Subdistrict is a mixed-use neighborhood with diverse populations. Shuangjing Subdistrict administrates 12 residential communities. After several years of development, Shuangjing has become a mixed-use neighborhood, covering a variety of urban functions from residential, retail and office uses to cultural, art and open spaces. Population aged 25 to 44 occupies 57.9% of the total population in Shuangjing Subdistrict, a number higher than the city average.⁸ The mixture of urban functionalities and the high ratio of working-age population contribute to the vitality of Shuangjing Subdistrict at different times of a day and different days of a week.

This report is showcasing two onsite projects—Pocket Space “The Well No.1” and Recycling Club “The Well No.2”. The Pocket Space “The Well No.1” is located close to the railway and Apple Community North. The Recycling Club “The Well No.2” is located in Chuiyangliu community at the southwestern part of Shuangjing Subdistrict, with High School Attached to Beijing University of Technology nearby. Shuangjing means “two wells” in Chinese. In the old days, it used to have large areas of farmlands with two wells. Therefore, many community projects were named after the “well” to preserve the characteristics of the neighborhood.

⁴ Beijing Municipal People's Government. "Opinions on Strengthening the Work of Neighbourhood Committees in the New Era." Beijing Municipal People's Government, 2019. http://csglw.beijing.gov.cn/zwxx/zwdtxx/mtbd/201912/t20191204_846743.html.

⁵ Xu, Zhouchao. "Beijing Pilots the Community Planner System." Xinhuanet, 2019. http://www.xinhuanet.com/2019-05/17/c_1124508410.htm.

⁶ Beijing Municipal Commission of Planning and Natural Resources. "The Implementation Methodology of Beijing Community Planner System." Beijing, 2019. <http://ghzrzyw.beijing.gov.cn/zhengwuxinxi/zxzt/bjcsxghtml/ptwj/201912/P020191225599582899409.pdf>.

⁷ UrbanXYZ. "Urban Governance Laboratory of Shuangjing Street Based on New Urban Science." UrbanXYZ, 2019. <http://urbanxyz.com/sj/1-zhuye/x46d4a7b.html>.

⁸ Shuangjing Subdistrict. "Evaluation Report of Beijing Shuangjing International Sustainable Development Pilot Community." Beijing, 2020.



Figure 1: project site map



Figure 2: The space of “The Well No.1” project before the regeneration

2. Case One: Pocket Space “The Well No.1”

2.1. Background

The pocket space used to be an exercise area not friendly for populations of different ages. Before the regeneration, the 300-square-meter space mainly consisted of exercise facilities for the elderly. With no barrier-free access, the 80-centimeter elevated space was not easily accessible by the elderly. The children who came to the site with their grandparents can only climb on the landscape stone since there is no amusement facilities for them. Many young white-collar workers and living next to the site almost never stayed there as well because there were not many facilities inviting them. Construction workers came here for lunch very often—there were no tables and chairs on the site, and they were squatting on the ground eating the takeaways.

“The Well No.1” regeneration project hopes to bring back humanity and vitality to the community through both its process and outputs. This pocket space “The Well No.1” regeneration project aims to reshape the emotional connection between residents and the community space through active resident participation during the design process, to stimulate the vitality of community through a high-quality public space for all, and to cultivate an integrated community relationships through a variety of continued onsite activities.

“The Well No.1” regeneration project was selected and funded by city government. On Nov 2019, Community Empowerment Fund of ZhongShe Social Work Development Foundation and Chaoyang Sub-bureau of Beijing Municipal Commission of Planning and Natural Resources co-hosted community regeneration program “pocket space to grow towards the sun”, providing funding to potential community planner teams to support the community regeneration. Shuangjing Subdistrict was selected as one of the five subdistricts for the program.

“The Well No.1” regeneration project was managed by the community planner team. Funded both by Shuangjing Subdistrict Government and Community Empowerment Fund of ZhongShe Social Work Development Foundation, the project started its planning stage on Dec 2019. As the community planner team, UrbanXYZ⁹ and Beijing Community Research Center¹⁰ mobilized local resident participation and implemented the regeneration project with joint efforts from Sketch Studio¹¹ and local think tanks. Eight months later, on July 2020, the construction stage of “The Well No.1” space regeneration was completed, and it opened for the public.

⁹ UrbanXYZ (or City Quadrant, based on the direct translation of its Chinese name Chengshixiangxian): A company originally spun out from Beijing Municipal Planning and Design Institute and now the community planner team of Shuangjing Subdistrict. Empowered by data-driven technologies and urban science perspectives, UrbanXYZ is dedicated to tackling urban problems, supporting city governance and improving people’s quality of life.

¹⁰ Beijing Community Research Center: A private non-enterprise unit established by UrbanXYZ and committed to conducting studies and promoting practices of community governance, community regeneration and community engagement.

¹¹ Sketch Studio: A studio initiated by Participatory Design Association of Peking University and founders of National College Student Campus Building Alliance to provide participatory campus space renovation design for primary and secondary schools.

2.2. Approaches and interventions

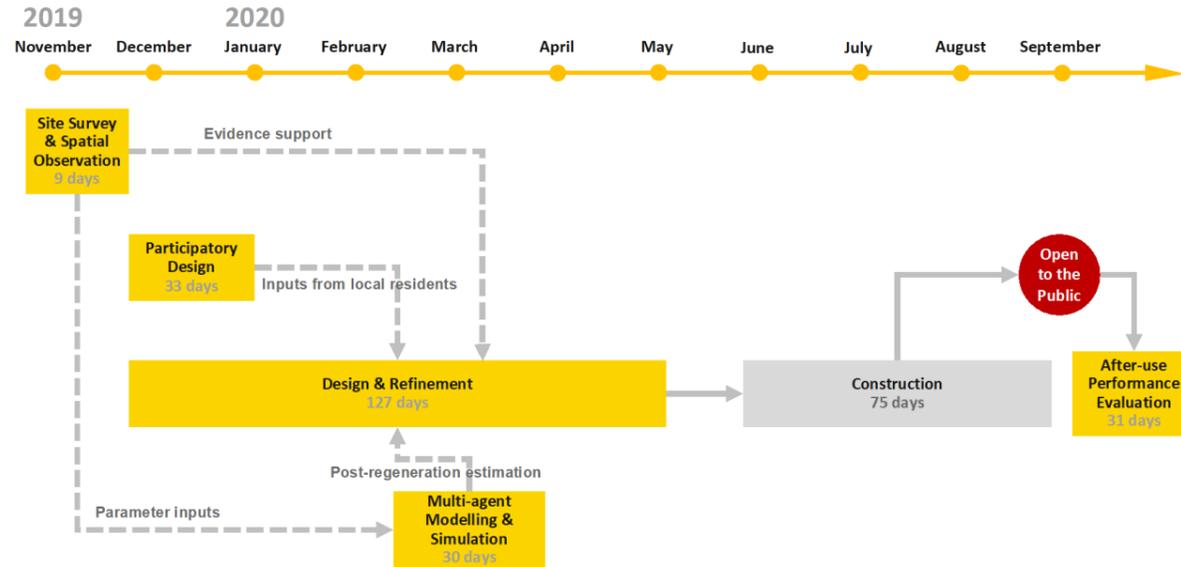


Figure 3: Timelines for “The Well No.1” project

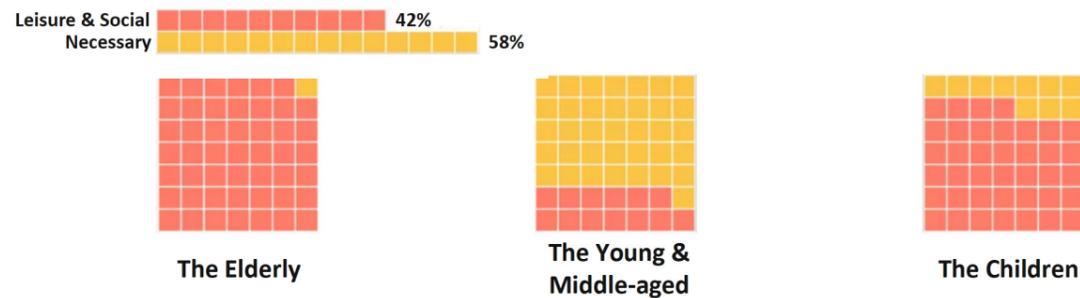


Figure 4: Observation on activities before the regeneration of “The Well No.1”

Step 1: Site survey & spatial observation. This is to gather quantitative insights about status quo onsite. What the community planner team found at this stage was that 58% of observed activities were necessary activities—activities that are required to carry out in daily lives regardless of the quality of the physical environment, like going to work, going to school and waiting for a ride-hailing service. In comparison, only 42% were leisure and social activities that would usually occur only when public spaces are attractive. The elderly and the children had comparatively higher ratio of leisure and social activities due to the availability of the exercise facilities and landscape stone before the regeneration.

Step 2: Participatory design. This is to invite local residents of different ages and backgrounds to voice their opinions, providing a variety of perspectives on what could be different in this space:

- **Residents’ plan 1 from children:** The children hoped to add swings and other amusement facilities, to replace the landscape stone with a climbing facility and also to add a pet toilet.
- **Residents’ plan 2 from children and grandmothers:** They hoped to have facilities both for the elderly and children. With rich life experience, grandmothers pointed out the easy loss and damage of movable seats.
- **Residents’ plan 3 from a landscape designer:** From a professional perspective, the landscape designer who lives in Shuangjing provided a lot of great inputs—to add barrier-free ramps on the north and south sides, to create separate zones of facilities for children and adults, and to add a photo spot allowing for interactions with the skyline.
- **Residents’ plan 4 from fitness lovers:** They hoped to add several fitness facilities so that young people can work out outdoors.

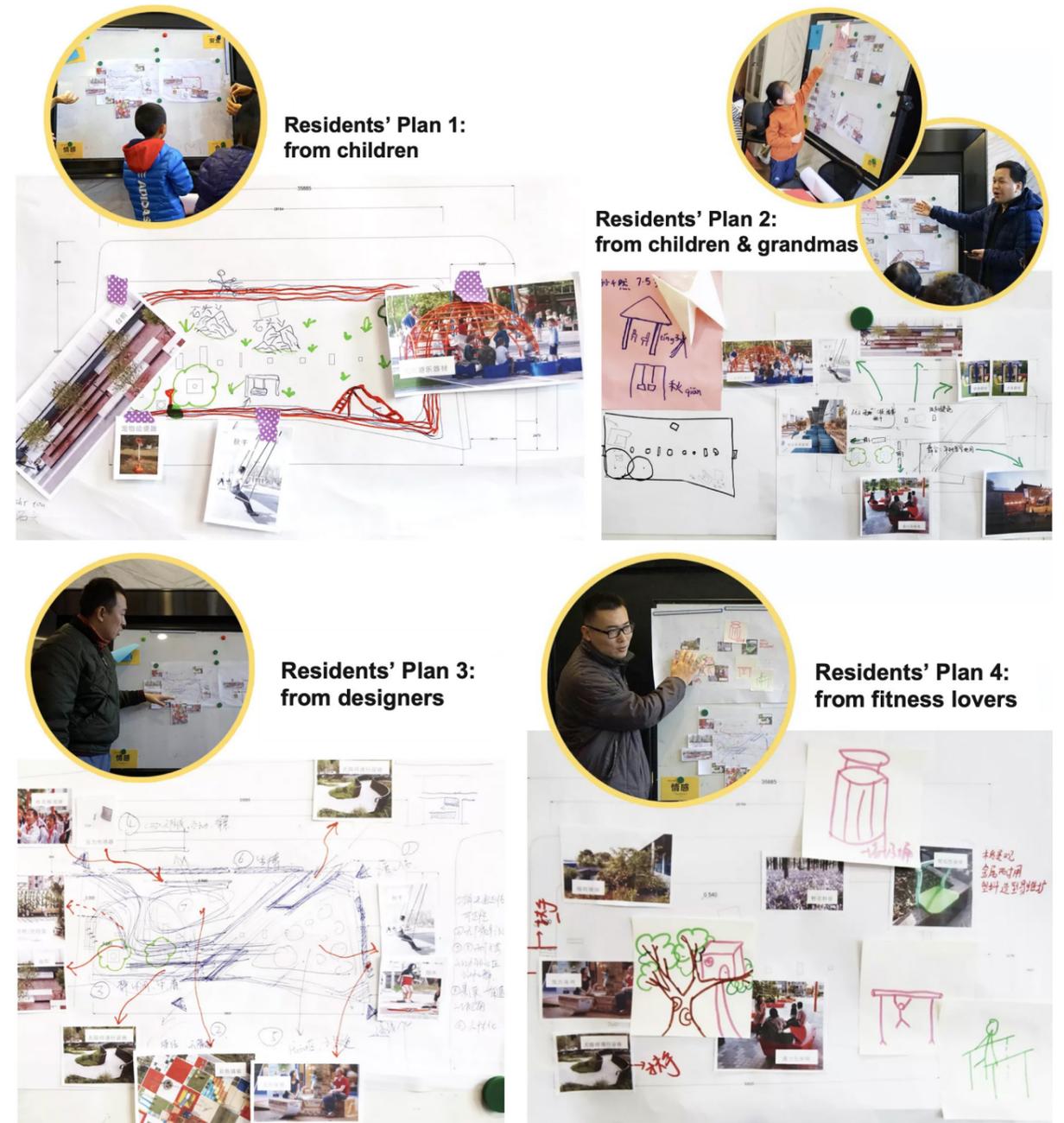


Figure 5: Participatory design workshop and outputs for “The Well No.1” regeneration project

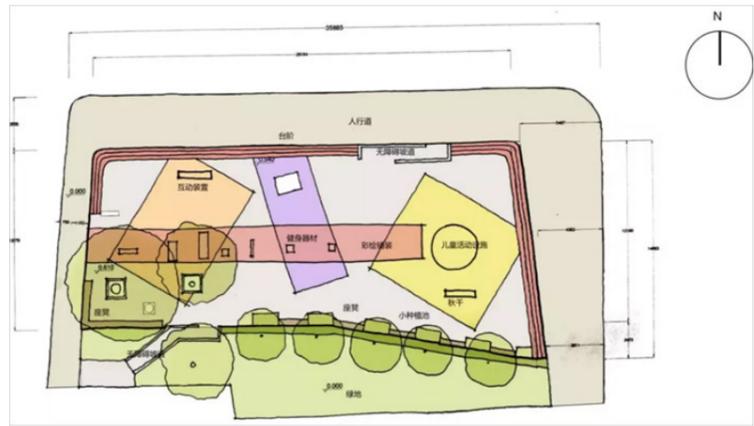


Figure 6: Preliminary draft design based on workshop inputs for “The Well No.1” regeneration project



Figure 7: Final design plan for “The Well No.1” regeneration project

Step 3: Design & refinement. With inputs collected from the site survey and participatory design, the community planner and design professionals were able to draft and iterate designs responding to the local needs: children and fitness facilities in separate zones, a barrier-free ramp, fixed benches, and a photo spot allowing for interactions with the skyline. As a team with considerable experience and extensive expertise in preparing design plans for community regeneration projects, design professionals from Sketch Studio continued to lead the design & refinement process incorporating feedback from different stakeholders and provided a final design plan.

Step 4: Multi-agent modelling & estimation. Using data collected from step 1 site survey & spatial observation, the team could model & estimate the potential impacts of the space regeneration based on design scenarios from step 3. Just like the figure below, people of different colors represent people of different groups and different color blocks represent different proposed facilities in this space. In this way, the modelling could provide estimated performances of different scenarios from several perspectives—the number of people coming to the space, the length of people's stays onsite, the level of people's social interaction, and the space and time utilization of the site. The outputs from this step continued to guide further discussions and decisions over prospective interventions.

Step 5: After-use performance evaluation. With the help of IoT (Internet of Things) sensors to collect de-identified data onsite—meaning they never handle the original identifiable information—and machine learning algorithms to efficiently process raw data, evidence-based site evaluation was conducted to assess site vitality from a variety of perspectives. The team was mainly measuring two metrics—number of people and activity time—by a list of dimensions such as age group, activity type and time period.

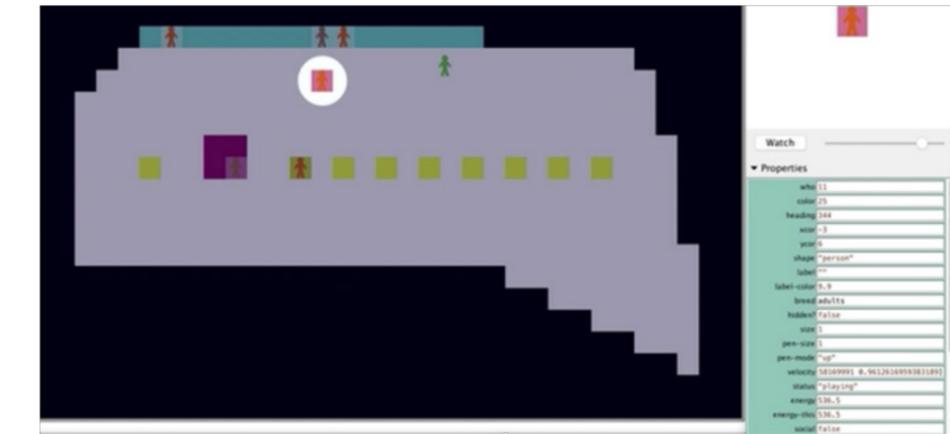
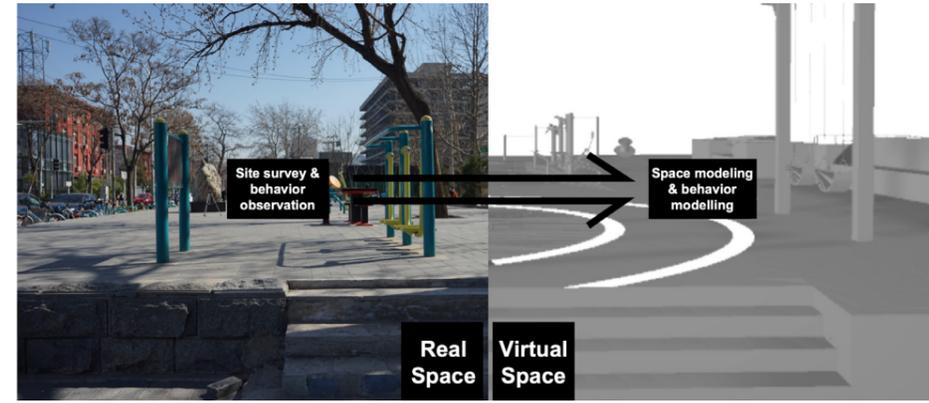


Figure 8: Multi-agent modeling and simulation for “The Well No.1” regeneration project

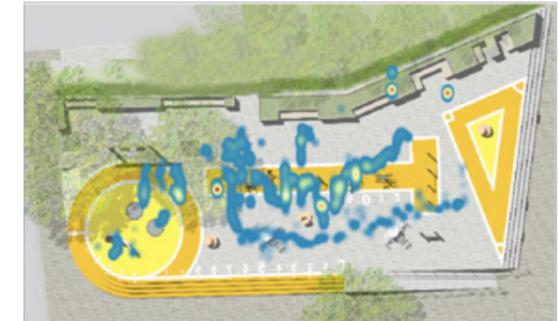


Figure 9: Performance evaluation using IoT sensors for “The Well No.1” regeneration project

Under the guidance of SDGs, the community planner team made great efforts to ensure that the regenerated space can provide universal access to safe, inclusive, accessible, green and public spaces for all. This consists a series of dimensions:

- Accessibility improvement: Replace the originally elevated space with a limited access with circular steps around the space and a barrier-free access based on requirements listed in the “Codes for Accessibility Design” published by Ministry of Housing and Urban-Rural Development.¹²
- Safety improvement: Repair and polish the pavement, and provide clear safety instructions.
- Inclusiveness improvement: Add a variety of new facilities including spun chairs, swings, trampolines, benches, and a photo spot to attract residents of all ages.



Figure 10: interventions by type for “The Well No.1” regeneration project



Figure 11: Site overview after the regeneration of “The Well No.1”

¹² Beijing Institute of Architectural Design. Codes for Accessibility Design. Ministry of Housing and Urban-Rural Development of the People’s Republic of China, 2012. <http://www.jianbiaoku.com/webarbs/book/411/1973116.shtml>.

2.3. Implementation, operation and financing

As the project managing team, the community planner team (UrbanXYZ and Beijing Community Research Center) facilitated the decision-making process by engaging key stakeholders through various synergies:

- **Need-based synergy with residents:** The community planner team created an online resident discussion group and organized offline workshops, making it much easier for the residents to broadly and frequently share their thoughts on what are their needs in the space regeneration and what could be different compared to the status quo. In response, the community team made every effort to incorporate their needs in the iterations of regeneration plan.
- **OKR-based synergy with local government:** the community planner team made four presentations to the Shuangjing Subdistrict Government as well as Jiulong Residential Community Committee, consulting their guidance on the regeneration project and sharing the latest project progress. Shuangjing Subdistrict Government advised the community planner team to fit the regeneration project into the long-term community plan and governance and also bridged their communication with upper-level government.
- **Plan-based synergy with implementation teams:** The community planner team conducted two joint site surveys and two offline plan discussions with the design team (Sketch Studio). The close exchanges of thoughts and updates between community planner team, design team and later also the construction team ensured the implementation of the project under a shared plan.
- **Idea-based synergy with sister community planner teams:** The community planner team also had two offline discussions with two other sister community planner teams, each leading the space regeneration project in two regions of Chaoyang District (Sanlitun Subdistrict and Xiaoguan Subdistrict). Discussions were conducted on key issues such as user groups, functional requirements, how to engage the community, and subsequent maintenance. Despite different focuses of each space regeneration projects due to great differences in demographic characteristics and priority issues in each community, the ideas of community engagement and human-centered design were recognized and shared across different community planner teams.

“The Well No.1” regeneration project is funded by government and foundation. For the initial stage of regeneration, Shuangjing Subdistrict Government and Community Empowerment Fund of ZhongShe Social Work Development Foundation¹³ provided funds for the space renovation and construction. After the space regeneration was completed, Shuangjing Subdistrict Government continues to provide funds for the maintenance and operations. Under the guidance of Shuangjing Subdistrict Office, a bottom-up group of active community members will also explore approaches to introduce and manage the supports from private companies and social organizations located in the community who had already expressed intense interests in financing the project in the initial stage.

¹³ Established in 2011 and approved by the Ministry of Civil Affairs, ZhongShe Social Work Development Foundation was the country’s first foundation to support and develop social work as its main purpose. It is a private foundation managed by Ministry of Civil Affairs. Over 50 special funds have been set up so far, covering areas regarding the elderly, children, marriage, families, communities, mental health and etc.

After the regeneration, Pocket Space “The Well No.1” continues to engage the community through a variety of dimensions:

- **Community operation:** In the process of space regeneration, a group of active residents has gradually formed a core community from the bottom up. With solid supports from Jiulong Residential Community Committee and the local property management service provider, the resident group can continue to manage the space operation work, ranging from donation and investment management to site maintenance, from new intervention implementation to activity organization, etc.
- **Feedback gathering:** Using Skylark Quadrant—the community survey tool developed by UrbanXYZ team with both a WeChat mini-program interface and a desktop interface—residents can easily share onsite photos, submit activity proposals, report facilities in disrepair or dumped garbage, and provide other recommendations.
- **Resource crowdsourcing:** Certain areas of unutilized space have been reserved for residents to propose new facilities according to their own needs. The design & drawing pieces produced by residents in various onsite activities can also be used to decorate the site, allowing the site to continue to “grow” with inspirations from everyone.

2.4. Results and impacts

“The Well No.1” regeneration project was marked by several notable achievements. Though the time frame selected for before-and-after comparative analysis could be influenced by factors like the day of a week, temperatures, and etc, the number of people using the open space was 50% higher compared to before. The vitality of the space starting from noon to evening is significantly greater due to a large portion (20%) of exercise activity undertaken by the elderly people after dinner and a significant portion (37%) of recreational activity undertaken by families. Another change is that the number of minutes spent per person in the “The Well No.1” pocket space is mostly longer than before, with social interactions being the type of activity that considerably increase in both number of people and time.

The regenerated space has been highly welcomed by the community. During peak hours, one needs to queue in the line and wait for one’s turn to play those popular facilities like spun chairs, swings and trampolines. During a site visit, the team ran into a grandma who participated in the design workshop earlier. She said: “It’s really fulfilling to be able to see the space where I participated in the design. I often promote our space with people in the community and invite them to come and play.”

The project has also obtained a growing recognition beyond the community. Since its completion, “The Well No.1” has received many “guests”. Head of Chaoyang District and other leaders came to the space for a site visit, investigating the latest progress of micro-renewal practice in the District and giving suggestions for future development. The President of Beijing Women’s Federation also visited the space, thinking that the project has well satisfied the requirement of creating a child-friendly space. The space also received visits from other sister community planners, colleagues from ThePaper and YiXi who are interested in learning about community development.

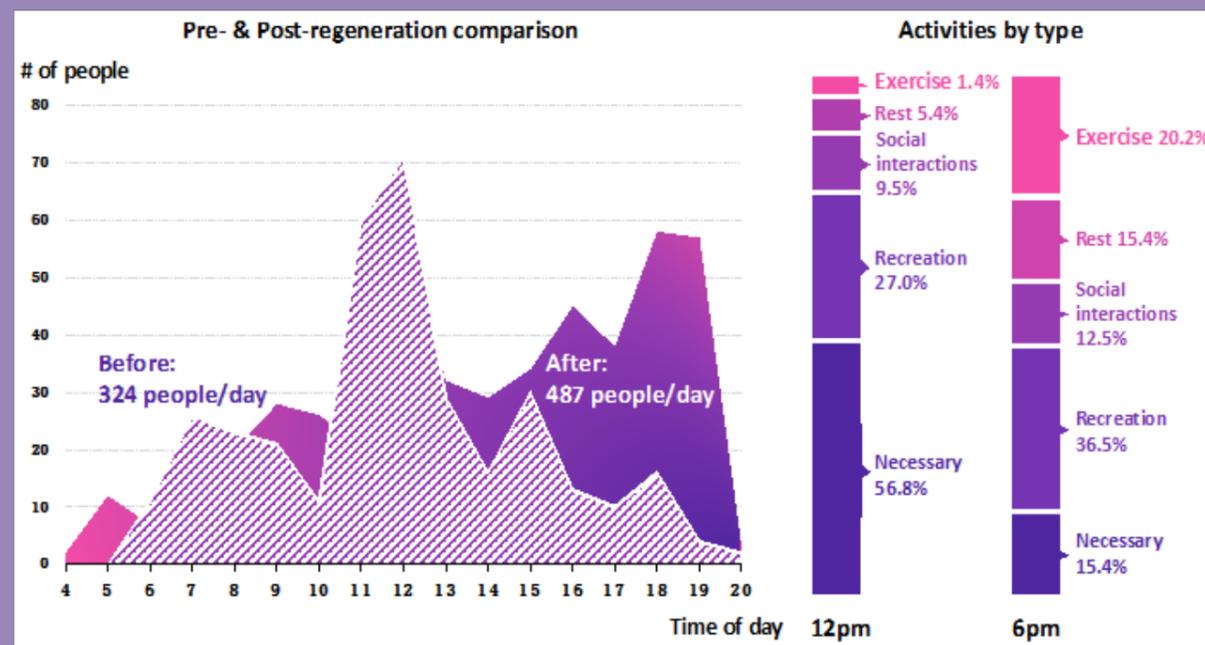


Figure 12: Pre- & Post-regeneration comparison for “The Well No.1” regeneration project (left), Activities by type (right)

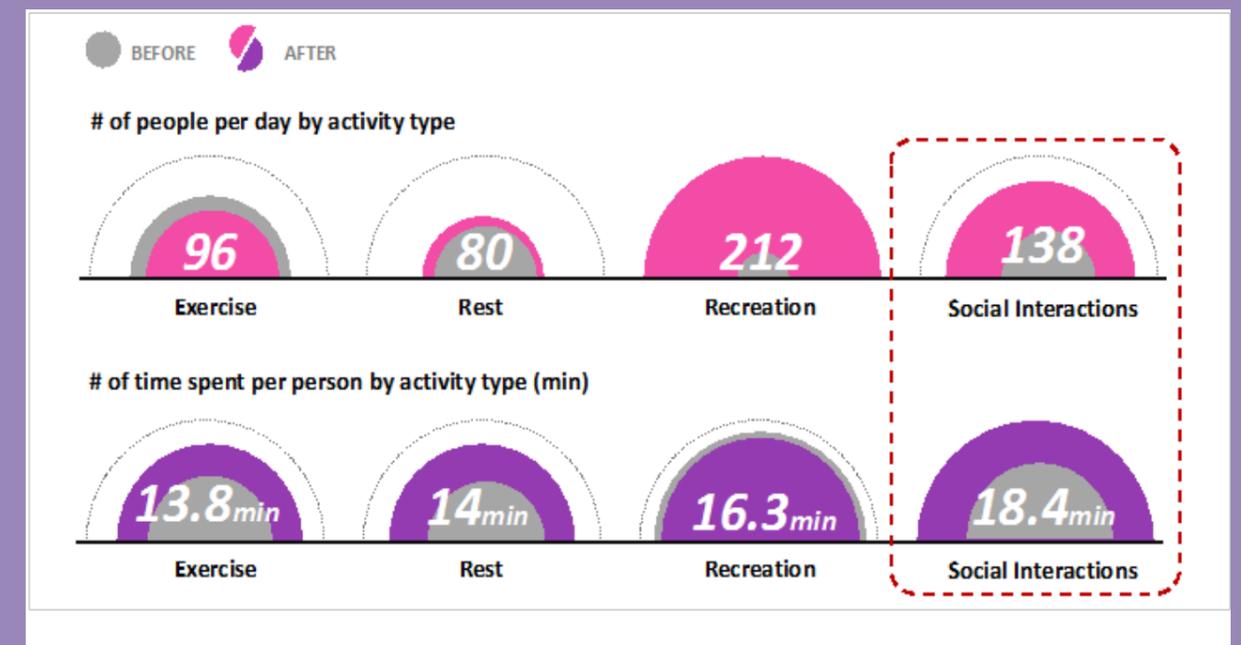


Figure 13: Pre- & Post-regeneration comparison by activity type for “The Well No.1” regeneration project
Note: the time frame selected for “before” is Dec 1, 2019 (Sun), for “after” is July 22, 2020 (Wed)

3. Case Two: Recycling Club “The Well No.2”

3.1. Background

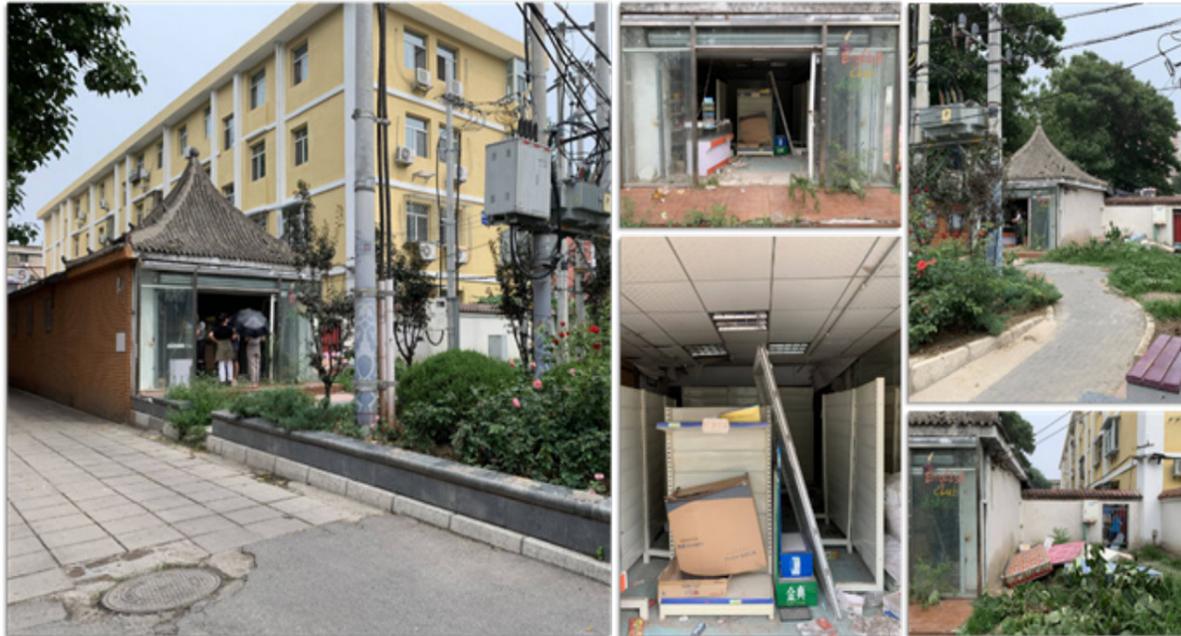


Figure 14: Location of “The Well No.2” before the regeneration

Waste sorting has been implemented in Beijing while the development of waste sorting behaviors may take time. Beijing has implemented a new strict regulation on waste sorting since May 1, 2020, with four categories including hazardous, recyclable, food waste and others. However, due to the shrinkage of the private garbage recycling system in the past decade and other reasons, the residents’ awareness of waste sorting and recycling has gradually decreased across cities in China, resulting in a declining recycling rate.¹⁴ Thus, the development of waste sorting behaviors may take some time.

Abandoned street front space were faced with an opportunity for regeneration. The space where “The Well No.2” regeneration project is located today was used for a convenience store and then abandoned for years, in disrepair with poor building quality. The external green space of the building had become a dump of large garbage. In mid-2020, Beijing Community Research Center was in frequent conversations with the recycling service provider aobag.com about a potential partnership. After some discussions with Shuangjing Subdistrict Government, the long-abandoned space appeared to be a great option for a regeneration to implement recycling facilities.

¹⁴ The Paper Institute. Waste Management: Global Experiences and Shanghai Praxis. Tongji University Press, 2020.

Aobag.com has an innovative mode to improve the overall recycling rate in China. Established in 2017 in Sichuan, China, aobag.com is a private initiative using social media to encourage recycling by recording how much users recycle and giving them a cash reward. Though operating independently from Municipal Solid Waste departments, the recycling facilities of aobag.com are tightly linked with Municipal Solid Waste Management (SWM) system, with their recycling drop-off spots serving as a part of front-end community recycling network in the SWM system. They aim to improve the overall recycling rate in China by providing a complete service, both online through social media and offline with recycling bags and community recycling drop-off spots. This mode makes recycling easy and rewarding for the user while also making recyclable waste easier to collect and transport to the sorting center.¹⁵ With the current operation mode, aobag.com is only responsible for the cost of recyclable waste collection and transportation, but not other expenses such as electricity, Internet, and cleaning. As of Dec 2020, aobag.com has gained 97K users and established 264 community drop-off spots in Chengdu, Xi’an, Beijing, Shanghai and Shenzhen.¹⁶

“The Well No.2” regeneration project was initiated by Beijing Community Research Center together with other stakeholders. The Recycling Club “The Well No.2” regeneration project aims to provide a community recycling drop-off spot and the education of waste recycling. On July 2020, the project was initiated by Beijing Community Research Center under the guidance of Shuangjing Subdistrict Government and with the recycling service partnership of aobag.com. On August 2020, “The Well No.2” project completed its space design, space construction and education material preparations. On September 2020, the Recycling Club “The Well No.2” opened for the public.

3.2. Approaches and interventions

Under the guidance of SDGs, the project team regenerated the space mainly through two interventions:

- The provision of recycling drop-off spot: Build a 24-hour recycling drop off spot with the service partnership of a private initiative called aobag.com and set up IoT sensors to monitor storage status to ensure in-time pickups. Aobag.com uses a WeChat mini-program to encourage recycling by recording how much users recycle and allowing them to claim cashback.
- The education of waste recycling: Utilize the walls on the two sides of the entrance space to showcase waste recycling education materials, present recycled art pieces and engage local residents.

¹⁵ aobag.com. “Using Social Media to Recycle in China.” Expo 2020 Dubai, 2020. <https://www.expo2020dubai.com/en/programmes/expo-live/global-innovators/aobag>.

¹⁶ aobag.com. “Aobag.Com About Us,” 2020. https://www.aobag.com/about_us.

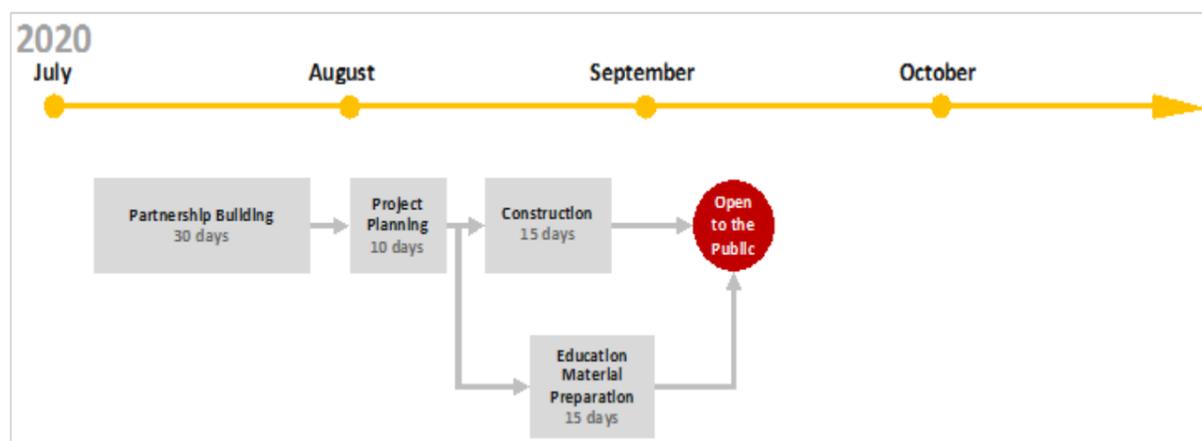


Figure 15: Timelines for “The Well No.2” project



Figure 16: Location of “The Well No.2” after the regeneration (left, middle), WeChat mini-program for waste recycling (right)



Figure 17: Location of “The Well No.2” after the regeneration (entrance space)

3.3. Implementation, operation and financing

Similar to “The Well No.1” project, the community planner team (Beijing Community Research Center) facilitated the decision-making process by engaging key stakeholders of “The Well No.2” regeneration project through various synergies:

- **Need-based synergy with residents:** the community planner team actively engages the local community through online and offline approaches, gathering their thoughts and feedback on the abandoned street-front space. The community team effectively incorporated the needs of local residents, companies and institutions in the development of the regeneration plan.
- **OKR-based synergy with local government and service providers:** the community planner team had several face-to-face conversations with Shuangjing Subdistrict Government, consulting their guidance on the project and sharing the progress. In a hope to further promote waste sorting and environmental protection in the community, Shuangjing Subdistrict Government provided solid supports to the partnerships between the community planner team and the waste recycling service provider aobag.com.
- **Interest-based synergy with fund providers:** The community planner team also approached Philanthropreneur Foundation, a Foundation based in Shuangjing Subdistrict, and explored possibilities of establishing designated funds open for donations from local residents and private companies to support the post-regeneration space operation. Founded in 2018 by 72 Alumni from Guanghua School of Management (Peking University), the Foundation has a nature to combine philanthropy and business in its practice and highly value the control of donors by adopting a mode of Donor-Advised Fund.

“The Well No.2” regeneration project has diversified sources of funds. For the initial stage of regeneration, Shuangjing Subdistrict Government provided funds for the space renovation and construction while Beijing Community Research Center provided funds for facilities including waste recycling facilities, sensors, etc. After the space regeneration, Philanthropreneur Foundation will provide funds for the continued maintenance and operations. With its professional fund services, Philanthropreneur Foundation will also establish designated funds open for donations to the community residents, developers and other private companies as an approach to support the community regeneration. A funding model that combines impact investment from the social organization Beijing Community Research Center for facility purchase and installations, government subsidies for the space renovation and construction, and support from Philanthropreneur Foundation for post-regeneration maintenance and operation ensures the financial sustainability of the space regeneration.

Like “The Well No.1”, Recycling Club “The Well No.2” will continue to engage the community in the post-regeneration stage through a variety of approaches:

- **Community operation:** A group of waste recycling enthusiasts is growing from the bottom-up and forming an active community. Continued interactions and potential waste recycling activities could further engage and expand the community, encouraging more residents to participate in waste recycling.
- **Education partnership:** Making use of the walls on the two sides in the entrance space where there are already well-prepared education materials and waste recycling art pieces, the Recycling Club “The Well No.2” could also partner with local schools, higher education institutions and local companies to host educational site tours.

3.4. Results and impacts

Type	Weight (kg)
Paper	196
Polyethylene (PE) bottles	9
Polystyrene	6
Cardboard	284
Metal	32
Rigid plastics	67
Plastic bags and wraps	24
Aluminum cans	6
Composite materials	16
Books and newspapers	254
Polyethylene Terephthalate (PET) bottles	88
Textiles & Clothes	647
Glass	24
Total	1653.36

Table 1 Recycling statistics by type for “The Well No.2” regeneration project (September 2 – October 19)

Cash reward (Yuan)	Total times of drop off	Total weight (Kg)	Total users
1082.12	210	1656.36	78

Table 2 Recycling statistics summary for “The Well No.2” regeneration project (September 2 – October 19)

The Recycling Club “The Well No.2” space satisfies and stimulates the demand for waste recycling. As of October 19, the Recycling Club “The Well No.2” has served a total of 78 residents for 210 times and around 1.7 tons of recycling waste drop off, giving residents a total 1,082 Yuan cash reward¹⁷. The number of users—including middle-aged and elderly people living nearby, young people working in surrounding companies, and teachers and students in primary and secondary schools in the community—is increasing month by month.

The Recycling Club “The Well No.2” has also received extensive attention from residents in surrounding communities. This new recycling model has stimulated people’s interest and helped people gradually develop a good living habit of garbage sorting and waste recycling. Many residents have spontaneously left messages to the space to express their support for this model and areas for improvement. In a hope to exchange thoughts and facilitate conversations, an online community of Recycling Club “The Well No.2” is also growing from the bottom-up. The initial active participants include renewable resource recycling enthusiasts, environmental protection enthusiasts, old object recycling enthusiasts and other community groups.

The unique waste recycling model adopted by the Recycling Club “The Well No.2” also attracted attention beyond the community. Different from traditional waste sorting and recycling model, the model employed by “The Well No.2” is a comprehensive solution integrating intelligent perception, intelligent recycling, education and community engagement. This innovative model has also attracted a wide range of state-run media, such as Beijing Daily and Chaoyang Daily, to report and promote this community regeneration project. It also attracted leaders from other neighbourhoods to come for a site visit and explore the possibilities of model replication.



Figure 18: Feedback from local residents in the Recycling Club “The Well No.2”

¹⁷ Cash reward generated from the recycling is all given back to users’ personal account.

4. Reflections

4.1. Lessons learned and potential for replication

Disruptive technologies empower community engagement and regeneration. IoT sensors installed onsite could provide a real-time monitoring of the performances of the space usage and a variety of metrics. Compared to traditional approaches for site analysis, this tech-enabled approach makes it possible to have a more efficient, comprehensive, and low-cost evaluation that can lead to in-time interventions if necessary. The multi-agent modeling & estimation tool also provides opportunities for stakeholders to see estimated impacts of different prospective interventions and help make a more informed decision between different scenarios in community planning. The community survey tool is another example that makes community engagement much easier. With that said, it's also very important to be aware that disruptive technology is never the end goal, but rather a tool that empowers community development.



Technologies	Use scenarios
IoT sensors	Providing a real-time monitoring of the performances of the space usage and a variety of metrics
Machine learning algorithms	Providing capability to efficiently process raw data and generate metrics, for example, using image recognition algorithms to count number of people in the videos recorded by camera.
Multi-agent modeling & estimation tool	Providing opportunities to see estimated impacts of different prospective interventions and help make a more informed decision between different scenarios
Community survey tool	Allowing residents easily submit feedback using a smart phone

Table 3 Summary of technologies and use scenarios in two regeneration projects



Active participation by residents with various backgrounds and demographic features could benefit the implementation of community regeneration. In traditional community engagement activities, certain group of people like the elderly could be much more active compared to other groups, making the feedback gathering process not necessarily representative of demographics of the community. It's important to engage residents of all ages and backgrounds through a variety of online and offline channels to capture their needs and try our best to incorporate them in following interventions. Only an engagement of all people could result into the creation of a regeneration project for all.

4.2. Limitations and future improvement

Tech-empowered community regeneration causes barriers in technology accessibility and equitability. When the community is enjoying the benefits that technologies bring to the engagement and regeneration, it is also suffering from the inequitable distribution of benefits among different residents. Those who are not able to easily use a smart phone or who don't have a smart phone at all won't be able to use the community survey tools as others and as a result their voices could be weaker. They couldn't use the waste recycling service in "The Well No.2" either because one can only access the service using a WeChat mini-program installed into a smart phone. Though there are still a long way to go, the community planner team is already starting to explore approaches to reduce these negative impacts.

Lack of involvement of local stakeholders in the early stage influences their willingness in supporting project implementation. In the initial stage of project preparation, the community planner team had good and effective communication with Shuangjing Subdistrict Government but limited communication with Jiulong Residential Community Committee (the village-level division administered by Shuangjing Subdistrict but also with a certain level of autonomy) and the property management service provider because for an open space outside the residential complex like the space used for "The Well No.1", though still within the subarea of Jiulong Residential Community, the Subdistrict Government has the direct jurisdiction. In reality, members from Residential Community Committee and property management service provider are the very people that has the tightest relations with local residents. The lack of their involvement in the early stage leaves them not having "The Well No.1" regeneration project one of their first priorities at the beginning, making it difficult to get their solid support on the project implementation, ranging from proactively allocating residential community budget, mobilizing the support of volunteers and participation of local residents. Learning from that experience, the community planner team then started to actively involve local community workers in the later stage, gaining their growing support on the project implementation.

Participatory Community Regeneration Powered by Disruptive Technologies:

**A case study of Shuangjing Subdistrict,
Chaoyang District, Beijing**