

## **URBAN AGRICULTURE AS A PLANNING TOOL FOR ACHIEVING SUSTAINABLE URBAN DEVELOPMENT**

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### **ABSTRACT**

Diminishing population process causes new spatial changes in the urban environment. Local authorities of depopulated settlements are facing the challenge of managing the existing urban infrastructure with decreasing consumers and tax incomes. The question is raised about how to ensure high quality of life of the remaining residents. According to the United Nations (UN, 2015), Bulgaria will lose 27.9 % of its population until 2050, as a comparison Japanese population will decline by 15.1%. The projections lead towards specific changes in urban planning practices and shift the focus from city development to city shrinkage. Hence, the implementation of urban agriculture as a tool for creating viable cities and sustainable local communities could be expected to ensure food security, social inclusion and employment. The study aim is to propose responses to shrinking phenomena and to discuss benefits of urban agriculture development for binding local communities. In order to achieve this aim, three objectives are set: (i) to identify research and practical experience in the field of urban agriculture in Japan; (ii) to analyse the Japanese local authorities approach in facing declining and aging population consequences; and (iii) to discuss its transferability to Bulgarian planning practice. Started in 2010 in Kashiwa city, Japan, Kashiniwa program is innovative local governance system for tackling vacant lots in shrinking cities. The case study method was chosen for researching the planning approaches developed and implemented in Japan, such as urban agricultural planning method for establishing and maintaining green open spaces and building sustainable local community.

**Keywords:** *urban agriculture, shrinking city, spatial planning, sustainable urban development.*

### **INTRODUCTION**

Shrinking cities are characterised by decreasing and aging population. Problems in the process of shrinkage appear due to low population density (Oswalt and Türetken, 2008). Local communities lose their old structure and need to be transformed into new ones. The observed decreasing municipal revenues and the loss of community cause low efficiency of the technical, transport and social

infrastructure; and environmental degradation. Furthermore, urban structure which is “perforated” by abandoned and unused urban places, left from past activity or due to unexecuted development, requires new spatial planning approach (Dimitrova and Scurrall, 2002). This paper sets out to outline the arguments for achieving sustainable urban development by a participatory planning approach for the implementation of urban agriculture in cities with diminishing population. Urban and peri-urban agricultural activities add values of “rebuilding productive urban landscapes and enhancing community cohesion” (Yokohari and Bolthouse, 2011).

Japan faced shrinking cities phenomena consequences after the total population peak in the country was reached in mid-2000s., Municipalities with declining population then developed local strategies to tackle vacant lots through “temporary utilization and acquisition” by citizens (Yamada et al., 2016). For instance, Kashiniwa program is a local governance method for tackling vacant lots in cities with declining and aging population. The initiative represents land-matching system between landowners and citizens to lease land for public activities and use the vacant lots as green open spaces. By changing land-use policy the municipality provides short term usage of vacant lots by local groups and ensures city greenery, food consciousness and community resilience.

### **MATERIALS AND METHODS**

The article discussed the linkage of four aspects, namely urban agriculture, shrinking cities, spatial planning, and sustainable development, and their consequences: (1) tendency of growing city boundaries despite shrinking economy and social activities, causing environmental pressure (Dimitrova and Scurrall, 2002); (2) achieving environmental balance through the establishment of green open spaces on “perforated” urban areas; (3) reduction of induced local tax revenues by establishing spatial planning policy using local people resources for maintenance of public spaces and vacant lots; (4) such an approach is development of urban agriculture; and ensures (5) employment; (6) ecosystem services exploitation; (7) biodiversity conservation; (8) building resilient local communities. Japanese urban planning policy addressing depopulation and aging society implemented the strategies of compact city, smart city and low carbon city development. The Compact city concept focuses on dense and proximate development patterns, urban areas linked by public transport systems, and accessibility of local services and jobs (OECD, 2012). The concept of low carbon compact city structure relies on the compilation of “transport/urban structure”, “energy” and “greenery” (MLITT, 2011). Particularly, greenery is implemented through the policy of conserving and creating green areas in collaboration with citizens, etc. The study focused on urban greening and more specifically on urban agriculture practices (community gardens).

The so called “Strategic choice approach” (Friend and Hickling, 2005) has been developed and applied for defining the linkage between different decisions made in the planning field, in the process of integrated problem solving and achieving a

balance of decisions to accomplish sustainable urban development. Therefore, the sustainability of choices is influenced by selection between 1) scope defined through focused or synoptic actions; 2) complexity addressed through simplifying or elaborating actions; 3) conflict elaborated through reactive or interactive actions; 4) uncertainty elaborated through reducing or accommodating actions; 5) progress elaborated through exploratory or decisive actions.

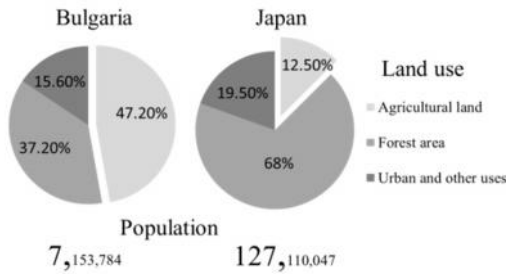


Figure 1. Land and human resources in Bulgaria and Japan

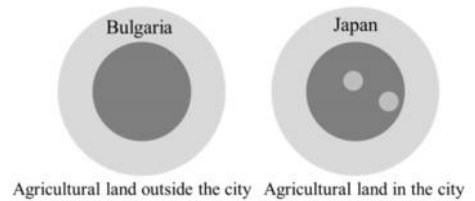


Figure 2. Location of farm land in Bulgaria and Japan

Alongside the different proportion of urban and rural land and the population number and density in Bulgaria and Japan (Figure 1), a strong border between urban and rural areas is observed in Bulgaria, in contrast with the mixed land use in Japan. Urban agriculture in Bulgaria is represented by individual houses' backyard gardens and developing "second homes" in the city periphery. Farm land can be found in the Japanese cities (Figure 2).

Kashiwa (Japan) is selected for case study as an innovative municipal approach for tackling declining and aging population and the consequences of the shrinkage tendency. Kashiwa city subsidises citizen's group activities through Kashiniwa program (Kashiniwa in Japanese means "renting a garden"). The program provides an opportunity to create open green public spaces initiated by the local residents through the establishment of community gardens on vacant public and private lots or open gardens on citizens' backyards (UT, 2015). For the purposes of the current study the Japanese urban planning system and policy background, the program website content and the research documents related with the Kashiniwa system were considered. The study findings are based on exploring and analysing: 1) Kashiwa City strategic planning framework corresponding to the aging and shrinking society in the concept of low carbon city development; 2) semi-structured interviews with the creators of the program; 3) field visit observation and analyse vacant lots characteristics and urban agriculture activities in the area.

### RESULTS AND DISCUSSION

Kashiniwa program has established a platform with database containing vacant lots information and rent conditions submitted by landowners and also citizen' groups request. The data is available on the municipal website and actors have opportunities to find all needed information about the procedure. The role of the government scheme is maintaining updated database and ensure secure negotiations and control in signing contract between actors. Kashiniwa scheme is structured by Kashiniwa Joho Bank (Rental Garden Databank) and Kashiniwa Kokai (Public Rental Garden). Kashiniwa Joho Bank (Figure 3) plays a role of intermediary between landowners and citizens' groups. Kashiniwa Kokai (Public Rental Gardens) regulates procedures for leasing land to be used for open green space.

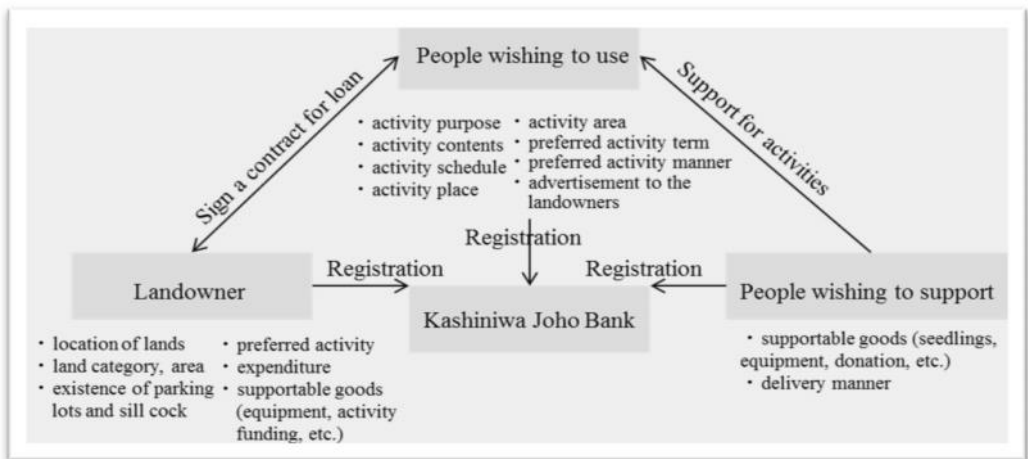


Figure 3. Kashiniwa Joho Bank – a conceptual model adopted MLITT, 2013 and UT, 2015

Kashiniwa system (Table 1) could be regarded as a “win-win” situation - the owners win reduced taxes; community wins the opportunity to grow food and develop social capital; the local authority wins new function for unused and degraded areas.

The program was then evaluated based on the concept of strategic choices to determine whether the decision is linked to other levels of decision making in integrated spatial planning process. Strategic choice approach (Table 2) is considered in five dimensions: scope, complexity, conflict, uncertainty, progress (Friend and Hickling, 2005).

Table 1. Advantages of Kashiniwa program in shrinking context

Consequences of shrinking	Benefits of urban agriculture	Inputs of the program
Lack of human resources	Using citizen' resources for maintaining land and participation activities	Lifelong learning and building social capital
High cost of city management	Exploitation of ecosystem services	Vacant land management
Low quality of life	Building sustainable local community	Social participation and community activities
Low environmental quality	Creating green infrastructure	Greening and using empty space for growing food

After preliminary literature review about shrinking consequences and urban agriculture benefits, including Kashiniwa program evaluation, the article established the program contribution to the sustainable use of human resources by “shift from government-led management to government-mediated management” (UT, 2015) through vacant lots management. Further improving the quality of life and environmental quality through greening and growing food on empty spaces is achieved by the collaboration of all local actors: local authority, landowners, citizens, civic groups, NGOs, etc.

Table 2. Strategic choice approach applied to Kashiniwa program

Strategic choice dimensions	Kashiniwa program
Scope	Ensured provisional open space on vacant lots (public or private ownership) for citizen's group activities (Terada et al., 2012)
Complexity	Local authority initiative for establishment of database insurance and mediation between stakeholders; land preparation for urban agriculture
Conflict	Insufficient level of consensus (land usage and invested effort) between stakeholders (Terada et al., 2012)
Uncertainty	Lost opportunities during the contract period (landowners); and future actions after the expiry of the contract period (citizens group)
Progress	Increasing number of gardens

Alternative choices for decision making process should investigate and evaluate potential benefits of developed strategy. According to Kashiwa case, preliminary steps for decision making are: investigation about vacant lots (number, location, ownership); intention of owners of vacant lots for future use of their land, as a function (parking, garden) and land ownership, and usage (MLITT, 2013).

For the study purpose, PETUS (Practical Evaluation Tools for Urban Sustainability) research project (Dimitrova, 2007) assessment method is adapted. Criteria defining efficiency of the evaluating management policies at local level are set out as major in theoretical terms - credibility, salience, and legitimacy (EEA, 2001). Further, credibility refers to scientific believability; salience ensures

intelligibility for all participants; and legitimacy is a measure for acceptability for all participants. Hence, concerning the main discussed aspects; urban agriculture, shrinking cities, spatial planning and sustainable development; the analysis framework of Kashiniwa program (Table 3) is outlined (Dimitrova, 2009).

Table 3. Local program assessment approach: Kashiniwa program, Kashiwa, Japan

<i>Criteria</i> <i>Aspects</i>	<b>Credibility</b>  (scientific believability)	<b>Salience</b>  (understandability for all participants)	<b>Legitimacy</b>  (acceptability for all participants)
<b>Sustainable development</b>	Low carbon society; Compact cities	Local authority as initiator and mediator of the program (contract negotiation)	Coherence with national policies for food security and production; Ensuring economic stability; social inclusiveness; and environmental protection
<b>Urban agriculture</b>	Community garden	Combining traditions and modern tendency; Establishing green open spaces; Improving quality of life	Designing plot rules; Regulation of participation
<b>Spatial planning</b>	Vacant lots	Investigation of ownership; and willingness: to lease the land, to use the land, to support	Land use management; Urban planning regulation: temporary land use, mobile facilities
<b>Shrinking cities</b>	Declining and aging population	Using citizen resources; Creating green infrastructure; Ensuring employment; Causing sense of significance in elderly	Building resilient local communities: tax reduction, food production, building social capital, maintaining vacant lots, etc.

The implementation of the investigated system in the current Bulgarian context would face several barriers and would require relevant changes: (1) establishment of national policy for promoting local food production and consumption, as well as building food consciousness through food education and generating farmers' market regulations; (2) creating sustainable development awareness on spatial measures for planning shrinking cities; (3) defining the function (urban planning zones), past activities (military reform; deindustrialization; unrealized urban

planning projects) and ownership of “perforated” urban fabric; (4) identifying citizens’ awareness, information access and interest (individual plots, community gardens) for developing urban agriculture; (5) establishment of financial instrument for tax reduction of landowners and local groups’ subsidy; (6) ensuring political and expert understanding for the significance and effect of initiated and developed urban agricultural program.

### **CONCLUSION**

Cities’ declining population trends require preliminary investigation for better problem understanding and linking the strategical choices to other taken local authorities planning actions. The transfer of Kashiniwa methodological approach to Bulgarian and other cases would provide a solution for complex issues - family income, vacant lots management, building sustainable local communities. That would however require a comprehensive consideration of cultural and spatial contexts. Urban agricultural development requires public policy focused on “developing sustainable food systems and promoting healthy diets” (Forster et al., 2015) and environmental protection awareness. Furthermore, achieving integrated urban planning, and utilization of local resources for urban planning reforms in shrinking cities implies sufficient scientific research and studies on local expert capacity.

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