

Urbanization of Fertile Class I and II Lands Threatening Food Security in Pakistan: Feasible Solutions through Colonization of Stressed Lands – A Policy Brief

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ABSTRACT

The conversion of fertile class I and II agricultural land into urban/sub-urban in Pakistan threatens greatly to food and subsistence security. The momentous encroachment of precious agricultural land has enhanced from the beginning of the swift urbanization implemented through population augmentation and migration from the countryside to urban areas mainly in Sargodha, Karachi, Lahore, and Faisalabad. Urbanization in Pakistan threatens the production of food, adding to the diet emergency in a state under constant threats of economic turmoil and rising climate change. The genesis and worries of this trend are examined in this policy brief focusing on the colonization of stressed lands underlining this challenge as the radical and pragmatic solution. The findings validate that urban development compounds food poverty through disturbances of this food system and reducing this arable land. Conclusion and references for this challenge and recommendations for optimizing this solution will be provided in this short note.

Key Words: Class I and II soils sub-urbanization, Food stuff security problem, Stressed lands colonization, Urban sprawl policy Pakistan.

I. INTRODUCTION

Pakistan's urbanization, which started from 28.3% in 1981, accelerated and reached 36.38% in 2017. Factors contributing to this sudden growth include an increase in population, rural outmigration, and industrialization. Pakistan, having a population of over 240 million, is facing two major problems: food security and rapid urbanization. As the development of cities spread into Class I and II agricultural land, the agriculture sector, contributing 18.9% of GDP and employing 42.3% of the workforce, is facing numerous problems. The loss of these areas would seriously jeopardize the nation's food security because they are essential to food production. Generally speaking, land capacity categorization is a method of grouping land according to its appropriateness for forestry, grazing, and farming. Eight classifications of land capabilities exist. Classes V–VII are appropriate for forestry or grazing, Class I–IV are appropriate for cultivated farming, and Class VIII is solely appropriate for recreational purposes and not for any kind of agricultural usage (Iqbal, 2019). As a result, more and more Class I and II lands—which are distinguished by their high fertility and productivity—are being developed for residential and commercial purposes (Pervaiz and Manzoor, 2019). The agricultural industry, which is essential to the nation's economy and food supply, is in danger due to this tendency. To lessen these effects, sustainable land management and urban design techniques are essential (Gondal, 2022). Pakistan occupies 79.6 million hectares of land in total. There are 21.54 million hectares of class I and II land in this entire area. According to the World Bank, Pakistan's Class I and II land area was 27.06% (Iqbal, 2019). Deforestation, land degradation, water shortages, and soil erosion are just a few of the environmental issues Pakistan faces. Certain areas have been identified as stress lands due to these issues, and they become unfit for the usual farming procedures. Such stressed lands can also be reclaimed and utilized for sustainable developments, provided they are handled properly.

Degradation of arable land, an increased importation of food, and vulnerability to climate change can be attributed to unplanned urbanization. Hence, in a bid to ensure food security and economic sustainability, the adoption of sustainable urbanization, agriculture, and the colonization of the stressed land is fundamental and indispensable.

II. KEY FINDINGS

1. **Urbanization Patterns:** Amongst the countries with one of the highest levels of urbanization in South Asia, Pakistan boasts a high level of significance and, in turn, impacts the use of agricultural land. Urban expansion in Pakistan is alarmingly consuming agricultural land; it has been estimated that by 2030, cities will expand largely (Maitlo et al., 2023). Housing colonies, occupying agricultural land and a key characteristic of Pakistani cities, include the surrounding areas of large cities such as Lahore and Karachi (IIPS, 2021).

2. **Effect on Agriculture:** Approximately 114,630 hectares of agricultural land have been turned into urban development projects due to urban expansion and are dependent on food imports due to decreased agricultural produce productivity.

3. **Food Security Crisis, Risks and Impact on Food Security:** The decrease in agricultural productivity is in close relation to the loss of agricultural land, which increases food prices to the extent that poor people find it difficult to have access to nutritious food (Sohail, 2024). The issue of food security is at stake due to the occupation of productive lands used to produce food, especially in major cities where there is increased food demand. The country is facing reduced food production, increased food importation, and rising food prices due to the occupation of agricultural lands for the expansion of major cities to accommodate increased food demands (Business Recorder, 2024).

4. **Environment Degradation and Effect:** Food production can also be affected by the link between urbanization and environment degradation, which affects biodiversity and rising levels of pollution (Farooq

and Rashid, 2024). This link to environment degradation, including issues like water scarcity and land degradation, can also influence agricultural sustainability and food production (IIPS, 2021).

5. **Socioeconomic Factors and Economic Implications:** This rural population displacement due to urbanization results in some socioeconomic problems, including increasing levels of poverty and reduced income for farmers (Chandio and Sherazi, 2022). The encroachment and reduced productivity affect the agro-based industries in Pakistan, which provide a large part of the labor force and a significant contribution toward the GDP of Pakistan (Iqbal, 2019).

6. **Stress Lands Potential:** A large area of unutilized stress lands can be identified in Pakistan. These lands could be developed into a fertile land area through efficient management that could help bridge the loss due to urbanization (Rehan and Khalid, 2024).

7. **Colonization of Stress Lands:** The ability to produce food might be increased and demand on prime agricultural areas reduced by colonizing less productive or marginal territories.

III. THE MAIN BODY

URBANIZATION AND ITS CAUSES

In Pakistan, socioeconomic issues including poverty, violence, and the temptation of better services in metropolitan areas all have an impact on urbanization, which is not just driven by industrialization. People are drawn to cities by the dearth of jobs and infrastructure in rural regions, which causes unchecked urban expansion that occupied priceless agricultural land (Farah et al., 2022).

Consequences of Land Conversion: Reducing the amount of land accessible for food production is the main effect of converting Class I and II properties. Local food security is directly impacted by this loss since the nation finds it difficult to feed its expanding population. The economy of Pakistan is gratifying more reliant on imports of food, which verdures it exposed to modifications in global trade rules, regulations and market situations (Business Recorder, 2024).

URBANIZATION AND ITS IMPACT

Urbanization in Pakistan resulted in loss of cultivated lands due to unplanned development and extension. Vital aspects backing to urbanization tendency comprise:

Population Growth: Due to rapid expansion of the urban population and the resultant housing demand, agricultural fields are being turned into residential and commercial districts.

Man-made Pressures: Actual shrinking of land available for food production occurs as industry expands and often encroaches on farmland.

Man-made Hazards: With the expansion of industry and again fencing into agricultural lands the availability of the land meant for growing food is also substantially reduced.

Man-made Insecurities: Food security takes a severe beating with the interface of industry and Class I and II lands.

Decreased agricultural production: The reduction of food production is directly attributed to the loss of agricultural land; this further tends to increase the risk of scarcity of food and rising prices.

Increased Dependence on Food Imports: With the reduced domestic food production, more dependence is being placed on food imports, which is increasing the vulnerability of the economy.

Socioeconomic Impacts: Food insecurity affects low-income families and, therefore, exacerbates social inequalities and poverty.

COLONIZATION OF STRESS LANDS IN PAKISTAN

Management of Pakistan's stress lands-the areas of land that have degraded as a result of environmental stresses including drought, desertification, and salinization-presents enormous problems. The stressed areas threaten food security, economic growth, and environmental sustainability of the nation. With this in view,

the Government of Pakistan should contemplate a comprehensive program aimed at encouraging colonization and reclamation of the stressed regions.

POTENTIAL APPROACH

Colonization of stress regions is another feasible approach which helps in dealing with the problems caused by urbanization. This approach includes:

Area Identification for Suitable Regions: This is the identification of the less productive areas that can be restored for colonization.

Recognizing Appropriate Lands: It is a need to evaluate the agro-capability of the land identified as Class V to VIII, as the land is less suitable for agro-related activities.

Land Mapping: In an effort to properly identify hotspots traversing Pakistan, land mapping is necessary. Complete land surveys and identification of intensity, severity, and factors responsible for land degradation need to be undertaken.

Aid in Colonization: For the attraction of settlers and the systematized peasantry to the affected areas, government assistance can be offered through financing incentives and technical assistance. Such assistance may come in the form of subsidies, easy loanable funds, small irrigation facilities for agriculture, as well as extension services.

Infrastructure Investment: building the transport and irrigation networks to make these lands productive.

Technology Investment: Current agricultural methods and technology can be adopted on stressed areas to improve production.

Farmer Incentives: The pressure on the Class I and II lands can be reduced by providing financial incentives and assistance to the farmers for using these places which are less productive (Iqbal, 2019).

Sustainable Land Management Practices: Land management practices that are supportable, such as agroforestry, conservation agriculture, and the use of drought-tolerant livestock and crops, should be promoted. These practices help avoid further land degradation, encourage more efficient use of water, and increase soil fertility.

Policy Incentives: Various government initiatives for colonizing the distressed areas such as financial support, training, and development of infrastructure should be implemented.

Capacity Building/Training: To train the farmers, agricultural extension workers, as well as the local inhabitants on the most effective means to handle the stress-land sites, the government ought to support capacity-building activities. This would result in the long-term sustainability of the colonization endeavors.

Cooperation and Alliance: In order to efficiently implement this program, a considerable amount of coordination and cooperation will be required among different entities of the government, apart from alliances with other nongovernmental, and private as well as international, entities. This will help in colonizing and restoring degraded land through the optimum use of financial resources, assets, and expertise. Within the perspective of this holistic initiative, therefore, its implementation by the Pakistani government will enable the resolution of issues relating to degraded lands, improved food security, and sustainable economic development in the rural regions.

IV. POLICY IMPLICATIONS

The encroachment of farmlands due to urbanization requires urgent policy measures. Pakistan also faces a risk of a drastic decrease in food security, an increase in poverty levels, and an increased gap within socioeconomic disparities unless necessary actions are taken. Urban planning of a sustainable nature, which also considers both rates of growth and conservation of farmlands, must be of the highest priority to policymakers (IIPS, 2021). Food security in Pakistan will continue to be under a threat of unregulated encroachment of Class I and II land by cities. State policymakers must be aware of the interconnection of sustainability within farmlands and urban planning. If these problems are not resolved, there may be more

food shortages, unstable economies, and social unrest (Ahmad and Farooq, 2010). In mandate to safeguard food security in Pakistan, the outcomes high spot the requirement of harmonized the agronomic and urban planning. In order to make policies that sustenance land usage practices on sustained basis, legislators must recognize the interconnections among agricultural crop production and urbanization.

V. POLICY RECOMMENDATIONS

1. **Planning for Land Use:** Implement strict regulations for land zoning to avoid urban development in Class I and II regions (Ali et al., 2022).
2. **Reinforce Land Use Rules:** Impose strict rules to protect farming land by stopping the growth of Class I and II zones for urban usage.
3. **Make a Comprehensive Strategy for Colonization:** Deliver a particular framework for location, rank, and resolving stress areas rendering to socio-economic and ecofriendly criteria.
4. **Devolve Urban Services:** Improve infrastructure and facilities for rural communities to decrease the appeal on movement to urban towns.
5. **Finance for Resources and Infrastructure:** Allocate and provide funds for constructing the roads, facilities for storage and arrangement for irrigation in mandate to enable the colonization efforts.
6. **Invest in Stress Lands:** Launch initiatives to restore stressed lands for cultivation by providing financial aid to farmers.
7. **Capitalize in Restoration of Stress Land:** Provide funds for the development and rehabilitation of stressed land zones for purpose of agribusiness.
8. **Encourage Sustainable Practices:** In mandate to confirm long-term food security, sustenance of sustainable agriculture techniques that improve soil health and production.
9. **Sustainable Agronomic Systems:** Motivate ecologically friendly farming practices that rise output without losing the soil quality (Pervaiz and Manzoor, 2019).
10. **Stimulate Sustainable Land Management:** Encourage the usage of sustainable farming practices comprising collection of water, conservation agriculture, and agroforestry that contribute towards rise soil fertility, health and water retention abilities of soil.
11. **Sponsor Agricultural Innovation:** Invest in Research and Development to progress agronomic procedures and escalate production on stressed regions.
12. **Boost Agricultural Research:** Raise research projects intended to improve agricultural techniques on marginal soils.
13. **Encourage Urban Farming and Kitchen Gardening:** Endorse kitchen gardening and urban farming plans to make use of the accessible zone in metropolises for foodstuff production.
14. **Augment Food Import Policies:** To reduce the dependence on imports, make policies that steady the costs of food and boost local production.
15. **Public Awareness Movements:** Escalate knowledge of the worth of caring for cultivated lands and the options for making foodstuff on stressed soils. Update publics regarding the benefits of colonization of stress lands and the implication of guarding agronomic fields (Gul, and Mahmood, 2023).
16. **Interagency Association:** Encourage cooperation between environmental scientists, farming experts, and urban planners to make unified land usage approaches (Ahmad and Farooq, 2010).
17. **Boost Engagement of Stakeholder:** During the colonization of stress lands practice, the sustenance, collaboration, and long-standing feasibility, must be guaranteed from local publics, government and non-governmental officialdoms and business associates.
18. **Appraise and Monitor Improvement:** Make arrangements for observing and evaluating critically how the struggles for colonization of stress lands are influencing socio-economic and environmental aspects so that strategies can be altered as required.

VI. CONCLUSION

Urbanization of Class I and II fertile lands is extremely endangered the food security in Pakistan that demands quick and well-managed remedial actions from Government. Pakistan can preserve its capacity to produce food while allowing for urban expansion by settling stressed areas and introducing sustainable farming methods. Proper city planning, the assurance of urbanized agriculture farming and kitchen gardens, and the proper use of stressed areas for colonization are all important elements of an integrated strategy towards resolving the problem. Pakistan can enhance its food security and maintain its stable agriculture sector amid the unending challenges created by urbanization by knocking the proposed strategy into practical shape. Pakistan can enhance its capabilities in agriculture, the food security problems, and further promote urbanization on sustainable terms by considering the colonization of stressed areas for the solution. This strategy provides the ground for a stable future well suited for dealing with the problems.

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