

PERI URBAN AREAS VULNERABILITY TO FOOD SECURITY

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Abstract: Food security is an enduring issue of peri-urban areas, bringing together rural and urban land-uses being highly dominated by food consumers and less food producers which pose a considerable threat to all dimensions of food security in terms of availability, affordability and utilization. Dr. Amartya Sen argues that the food insecurity is not a problem of production. Rather, it is a product of lack of capabilities to access sufficient food. On the contrary, food accessibility based on food availability and food utilization at an individual level highly dependent on its accessibility. The literature study highlights the linkages with SDG 02: Zero Hunger by examining the interdependency and the determinants of the relationship of food security with challenges of peri-urban areas ranging from land-use transformation due to urbanization, multi-sectoral land demands, climate change etc. to livelihood due to the coexistence of hunger and sufficient food supply which helped in identifying a broad spectrum of trans disciplinary approach over a piecemeal approach.

Keywords: Food security; peri-urban areas; livelihood; land-use transformation

1. INTRODUCTION

Currently, India is facing a rapid transformation from rural structure of living to growing completely into an urban system and it is evident through the fast growth of Indian cities in past few years. Sometimes, this process is considered as economically beneficial and an opportunity of lifestyle upgradation, however, such transformations leads to the growth of fringe areas which are known as Peri-urban areas. These areas are confronting many challenges due to lack of maintenance and planning out of which one major challenge is Food insecurity. Peri-urban areas comprise of most marginalized and vulnerable population migrated from villages in order to switch from agricultural work to urban-based work and are predominantly involved in informal sectors for their survival. The paper aims to synthesize and examine the existing challenges as well as approaches to peri-urban food security with dual fold objectives:

A. To make a comprehensive review of various dimensions of food security and their relationship.

B. To identify the food security challenges facing by peri-urban areas followed by the review of household & community based approaches to food security based on scientific information & vulnerability assessment.

2. NEED OF STUDY

In times where the process of urbanization is gaining a lot of

importance, it is equally important to attain knowledge about the consequences of the same for sustainable development. The research paper highlights the linkages with second SDG 02 i.e. Zero Hunger as one fourth of world's undernourished population resides in India along with one third of underweight and food insecure children of the world (UN Escape, 2015).

In last 5 decades, India's population nearly got doubled and the urban population nearly grown five times but still we overlook peri-urban areas which are the hotspot of such fast growing urban population. Such areas will further grow up into the urban cores in near future therefore, it is important to examine the impacts of rural to urban transformation on essential needs such as food. The food security challenge at global level is quite obvious: world needs to prepare itself to feed 9 billion people by 2050 and to accommodate the growing demand for food which will be 60% more than of today's and India is expected to show the highest population increase overtaking China by 2027 (Niti Aayog, 2017). Necessities such as transportation, economy are considered while planning and comparatively less emphasis is given on from where and how an area will be going to feed its residents.

The methodology adopted in carrying out this research is highlighted in the fig 2. The first step was to understand the need of the study followed by literature review which has been carried out in three levels comprising of concept level, area level and at last combining both conceptual and area level studies to identify the gaps in the existing approaches

This section has been followed by the identification of gaps and incorporating an implementation framework in the end.

DIVISION	FOCUS OF LITERATURE STUDY
PART 01 (CONCEPT LVL)	FOOD SECURITY CONCEPT & ITS DIMENSIONS
PART 2A (AREA LVL)	CHALLENGES & CHARACTERISTICS OF PERI-URBAN AREAS
PART 2B (COMBINING BOTH)	RELEVANT APPROACHES TO PERI-URBAN FOOD SECURITY BASED ON THE CHALLENGES

Fig. 1: Characteristics of Literature study

Outcome of one part will be a factor of analysis for the following part of literature.

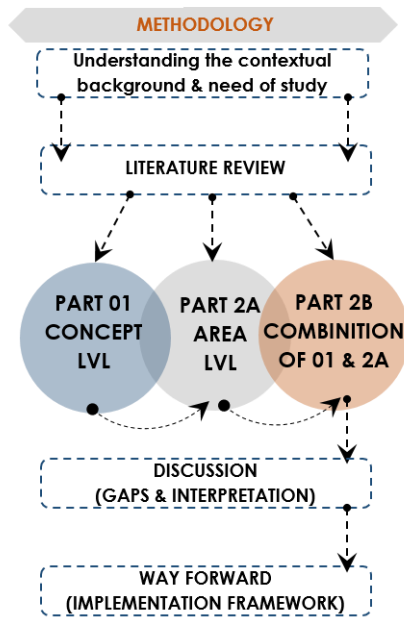


Fig 2: Methodology framework

3. Literature Review

3.1 Food Security: Concept & Dimension

The definition of food security, which has been formally endorsed at the global level, reads as “Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (UN-FAO, 1996) . This definition introduces four dimensions of food security including physical availability, economic accessibility, consumption and stability. The phrase: “all people at all times” is the key to achieve sustainable & National Food Security (FAO, 2008)

3.2 Evolution of Concept and Inter-relationship of various dimensions

Throughout the evolution, it can be observed that how the food security was once considered as a function of physical availability but now at present it has been widely accepted that the livelihoods and entitlements are equally important determinants of food insecurity. However, it is necessary to understand each and every dimension has its own importance and can't be ignored. All four dimensions should be given equal weightage while formulating policies and objectives. For example, Money as a commodity can give a better access to food but it can't ensure physical availability of food. Similarly, food utilization at home is a major concern of food quality over quantity. Food availability defines the quantitative aspect of food security. Generally, it is quantified at national and community levels in order to ensure enough food productivity with in a country. Food Accessibility refers to the physical and economical access to food which is generally analysed at household level considering their purchasing powers, distance to local markets etc. Food Utilisation is defined as the capability of a

body to utilise the food consumed at an individual level.

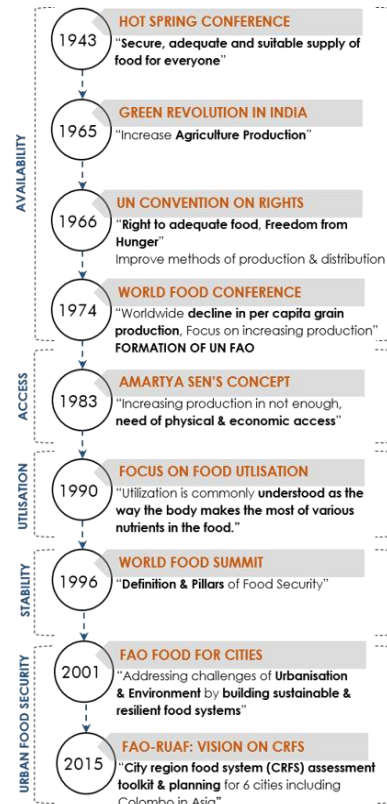


Fig. 3: Evolution of FS Concept
 Source: AB Quizon & UN-FAO, 2012

¹ “This definition of food security had its origin in World Food Summit held in 1996 in Rome, Italy due to growing concern of wide spread under-nutrition.”

3.3 Food Security Determinants

Every dimension of food security has several determinants or indicators which determines the nature and outcome of each and every dimension. There is a framework prepared by USAID as shown in fig 4, highlighting the inter-relationship of all the domains of food security as well as their individual determinants.

It can be concluded that the food availability is a supply-side dimension whereas the other two showcase the demand side of food security. It is important to understand that not only a single dimension can ensure food security.

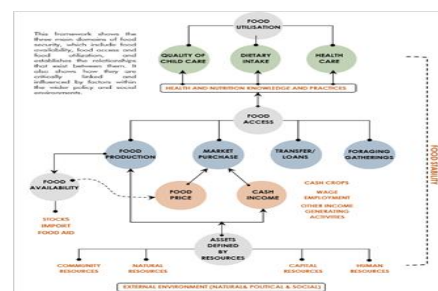


Fig 4.
 Source: USAID’S Framework, 2016

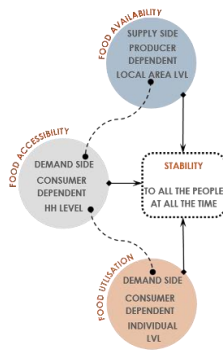


Fig. 5: Three Pillars of FS
 Source: Generated by Author, 2020

3.4 Peri-Urban Areas Characteristics

Peri-urban areas can be described as fringe areas of cities or rural areas, which are intrinsically linked with the city economy, experience constant transformation, and a mix of rural and urban activities (Aijaz, India's Peri-Urban Regions, 2009).

Fig 7 on the next page is a compilation of the characteristics based on spatial pat-tern , economic and social system, institutional patterns and technical difficulties.

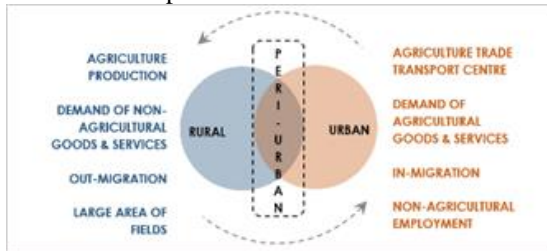


Fig 6
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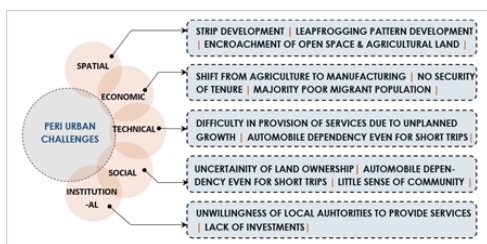


Fig. 7: Spatial characteristics and challenges of Peri-Urban areas
 Source: MD, Smith, 1998

3.5 Food Security challenges in Peri-Urban areas

Land use Transformation: Peri-urban areas can be described as fringe areas of cities or adjoining rural areas, which are intrinsically linked with the city economy, experience constant transformation. There are various internal & external factors contributing directly or indirectly to such transformations:



Fig 8 Interaction of land-use & FS.

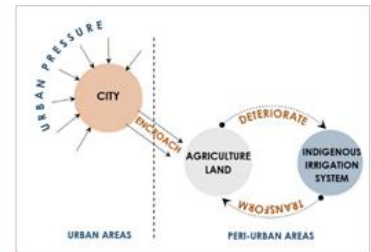


Fig 9 Urbanization & Agricultural

Source: Generated by Author, 2020

Source: Davivongs, Yokohari and Hara, 2012

A. Urbanisation: In terms of food security, urbanisation leads to reduction in agricultural production land and a challenge for farming systems.

B. Population Dynamics: Population growth is inevitable and a secondary im-pact of urbanization and it is a major factor actuated from rural-urban immigration leading to the formation of peri-urban areas.

C. Water Resources: Water is an essential requirement for living and it be-comes a challenge to manage this resource in peri-urban areas because water resource or peri-urban are used in catering the burgeoning needs of the urban centers.

D. Multi-Sectoral Land Demands: The process of agricultural land conversion,

the major drivers to this phenomenon is the need of land for various others sectors (industries, infrastructure, etc.) for the benefit of urban centers.

E. Climate Change: Human induced land-use changes affects the concentra-tion of GHGs which will lead to climate variabilities and resulting in the nat-ural change of land-cover.

F. Agriculture Trade Liberalisation2: Sometimes trade liberalization which is very common in developing nations also contributes to land-use changes.

Environmental Degradation: In order to support the burgeoning needs of urban centers, peri-urban areas face a lot of environmental degradation due to the over extraction of resources, absorbing urban core’s wastes etc.

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Source: Generated by Author, 2020



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Fig 10

Pandemic and Humanitarian Crises: Peri-urban areas are the worst affected areas in case of unexpected and unusual events due to high dependence on informal sector. In India, Covid-19 and Kashmir conflicts are evident contributors to food security due to supply side interruptions. It is considered that health system requires an urgent action, but we can't afford to overlook the food security as well as livelihoods aspects otherwise the situation of a "crisis within a crisis" will really hard to manage.

Livelihood in Peri-Urban areas: Generally, livelihood is distinguished on the basis of the assets of an individual which are further classified in five types of assets as shown above in fig11.

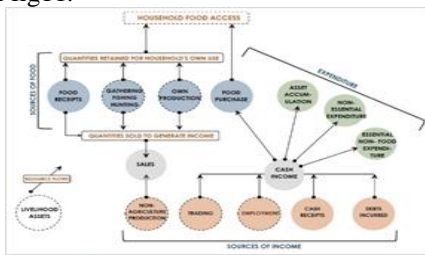


Fig 11



Fig. 12: Livelihood & Household food access (Relationship of assets and economic access to food)

Livelihood defines the household food access because food accessibility is largely dependent on household's income and assets which defines the ability to purchase or grow food. Food security being affected by several components of income source as shown in fig12.

Arguments are that alone an income increase can help curbing food insecurity if people spend this additional income on more nutritious food - a concept known as calorie elasticity of income (Korth, 2014)

Concluding the inter relationship of various challenges of food security and their determinants in context of peri-urban areas.

3.6 Approaches & Frameworks for Food Security

The combination of both quantitative and qualitative aspects makes the definition of food security complex, but the study of various frameworks has been undertaken in order to get an understanding of the ties with the causes and outcomes of food security

FIVIMS: Food Security Vulnerability Assessment & Mapping systems: A combination of frameworks of

assembling, analyzing and disseminating

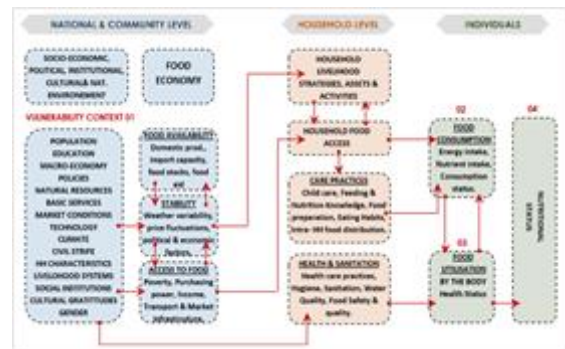


Fig. 14: FIVIMS framework
Source: UN-FAO, 2005

the information about those people who are a vulnerable to food security. (Stephen Devereux, 2004)

Peri-urban Agriculture: Peri-urban agriculture has a lot of potential which can be considered as an opportunity as well as a challenge to both food supply and food security. It has been stated in various research that peri-urban areas comprises of highly suitable agricultural land which produces high ranges of fresh produce (Randhawa, 2017). It is viewed as an underestimated phenomenon and there is a need to understand its potential in poverty alleviation and food security.

Sustainable Livelihood Approach: While other frameworks focus on the concept of "food first", this approach focus on the livelihood strategies and assess poor people's livelihoods in all the aspects of sustainability including economic, environment, insti-tutional and social components (fig 15). The main focus of this approach is to secure the livelihood by managing risks and analyzing the vulnerability.

It works on the interpretation that "Food security will be achieved when equitable growth ensures that the poor and vulnerable have sustainable livelihoods (Maxwell, 1991)"

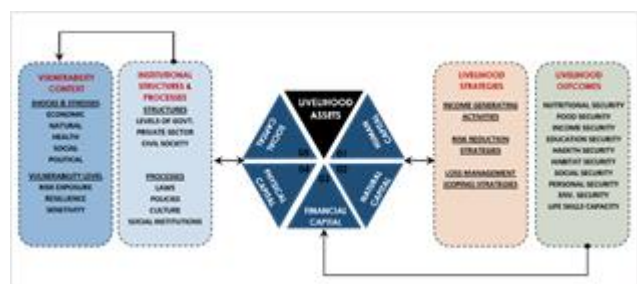


Fig. 15: Sustainable livelihood approach framework.
Source: UN-FAO, 2008

Twin Track Approach: It introduces a new aspect to food security framework by highlighting the importance of integrating both short term interventions dealing with hunger and long term interventions ensuring right to adequate food by undertaking both the interventions simultaneously with proper coordination. Dual approach focus on direct attention to tackle hunger and long-term actions to build resilience.

Household Economy Approach: HEA is an approach to analyze the effects of any shock or a policy change on the lifestyle, income and livelihood of the vulnerable population for example a crop failure or price changes. It carries out the major question of how a shock can affect the way of living or how the most vulnerable people meet their standard requirements within a shock. It can help in the implementation of early warning system of famine and formulating strategies on the basis of vulnerability.

Integrated Analysis Approach: In order to formulate effective policy measures and strategies, it is important to combine the different sectors and different dimensions of food security together so that the real cause of on-going food insecurity of an area can be evaluated otherwise sectoral focus in isolation will result in inappropriate responses and monitoring. There has been a continuous going on over integrated analysis of multiple sectors but the success rate varies from country to country. Integration can be incorporated vertically from lower levels of data collection to monitoring stations at national levels while it can be done horizontally at a local level by decentralization of government and formulation of Food security analysis units or NGOs responsible to act in order to manage their own food insecurity situation.

4. DISCUSSION

This section highlights the gaps in the existing practices led by Government in order to curb the food insecurity challenge. Government led schemes only revolve around the concept of rationing and distribution of limited food ranges (fig 16) aimed to improve household level food security based on BPL card. However, such schemes don't function in un-notified areas (peri-urban areas) where the majority of poor population resides.

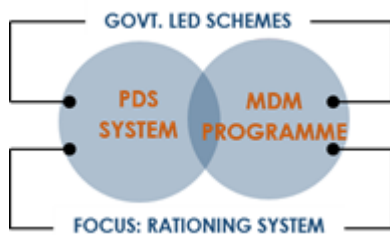


Fig. 16: Existing Food Security schemes
 Source: Generated by Author, 2020

Similarly, Mid-day meal program which started with dual fold objectives of providing meals to school children and encourage them to join schools have certain shortcomings such as loss of food grains before reaching to needy people due to corruption, degraded quality and no monitoring. Both the current schemes neglect the dimensions of food security and no system has been developed to identify and monitor the selection of beneficiaries for the same.

There is a lack in planning approach towards ensuring food security which highlights a need to consider the implications of rural to urban transformations while formulating policies as well as interventions and agriculture land-use must be incorporated in spatial plans. Peri-urban agriculture has a lot of potential which can not only contribute to food security

but it can also help in poverty alleviation, eco-system maintenance and in strengthening of rural and urban linkages by acting as a market node.



Fig. 17: Opportunities to Food Security.
 Source: Generated by Author, 2020

There are a lot of opportunities (fig 17) to incorporate agriculture in planning process as well at policy level e.g. The draft national land utilization policy makes way for more sustainable peri-urban land-use, Vegetable clusters initiative which no longer exists may enable an increase in production and market accessibilities for peri-urban famers, PMKSY irrigation scheme highlights an effective way to use wastewater as an alternative to irrigation water and solid waste composting rules 2016 can help in improving the productivity and soil quality.

It is essential to incorporate the vulnerability assessment as a part of planning and a need to address the idea of food security as a new paradigm of resilient planning. Marginalized population of such fragile peri-urban areas should be considered as key actors in achieving sustainability and development.

5. WAY FORWARD

Recommendation is to focus on multiple dimension of food security through a holistic approach incorporating three pillars of food security and their stability over the time through an analysis based on scientific information and vulnerability assessment. There is a need to adopt trans disciplinary approach, linking both food and livelihood as well as land use transformations and not ignoring the shocks. Focus should be on multi-level policy interventions combining the factors such as enough productivity, household income and investments in health and water sector.

Integrating the analysis, a conceptual framework for implementation has been worked out. (fig.18)

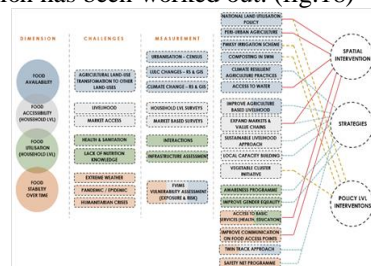


Fig. 18: Conceptual framework for Implementation based on the literature study analysis.

Source: Generated by Author, 2020

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