

Is peri-urban structure plan a viable solution to manage development in urban peripheries of Punjab, Pakistan?

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Abstract

The area contiguous with rural-urban fringe having low density scattered development is gaining importance due to its rich agricultural landscape, economic worth and potential to become urban in near future. In 2009, the Government of Punjab promulgated Land Use Rules introducing the concept of Peri-Urban Structure Plan (PUSP) for the first time in Pakistan. This study assesses practicality of the approach by establishing whether it will lead to urban sprawl or act as a containment strategy to ensure orderly and efficient pattern of peri-urban development. For this purpose, a set of criteria were derived from said rules and applied to assess the compliance of two case studies taken from amongst plans prepared so far in Punjab. The proposals were critically examined in the light of local development trends and international practices of planning. Ironically, these plans neither followed any growth model nor appear to be based on internationally tested and suggested approaches to deal with peri-urban areas. The implementation of such plans would inevitably lead to further urban sprawl. Thus, it is expedient that preparation of a PUSP only be allowed as part of the master plan of a city which should identify zones for infill/high density development to accommodate future population within existing urban area. In case of big cities, putting an urban growth boundary whilst planning residential and industrial suburbs, as part of regional plan, would be a more promising strategy.

Key Words: Peri-urbanization; peri-urban development; planning theories and approaches; structure plan; master plan

1. Introduction

In the wake of rapid and unplanned urbanization, some cities particularly in developing countries are expanding beyond urban area/municipal limits. Accordingly, the area contiguous with the rural-urban periphery is gaining importance. The area can be termed as peri-urban, urban countryside, rural-urban fringe or hinterland [1, 2]. According to Phillips and Williams [3, p.5] “peri-urban refers to the area where urban and rural development processes meet, mix and interact, usually on the periphery of cities”. McFarland [4] identifies that peri-urban area has a defined boundary with urban area along one side and low density, scattered development with predominantly agriculture land on the other side. However, in some cases peri-urban area may not have a distinct identity but intermingled with urban area. The development pattern is rather a trickle-down effect of activities in urban area.

Transformation in the peri-urban areas is becoming a significant spatial phenomenon. It can occur due to development of new residential and industrial development at the outskirts of urban agglomerations. The potential of rural area (contiguous to urban development) to become a part of urban jurisdiction is considered important

due to its potential economic worth. This may also be called a land waiting to be urbanized. Badini and Bronzini [2] called urban countryside as a ‘settlement model’ leading to new settlement geographies and the resultant conversion of underutilized spaces as extreme exploitation of land. Hefferan [5] suggests that peri-urban may be seen in the context of its economic activities and status as a part of a region where socio-economic forces also influence spatial development pattern.

Some authors [6, 7] argue that the conversion trend may lead to loss of rich agricultural land and other green spaces. This calls for controlling haphazard development in peri-urban area and channelizing it in right direction in a planned manner particularly to meet the growing demand for housing. Following the theory of ‘limits to growth’, the urban containment strategies, as practiced internationally, generally include urban growth boundary (UGB) and green belt. UGB is not necessarily a physical space but it can act as a dividing line between urban and peri-urban/rural areas [8, 49]. This may be reviewed ‘and adjusted according to new needs’ after 10-20 years [9]. However, Liua and Robinson [1] suggest identifying driving forces behind spatio-temporal

patterns of development while devising strategy to manage urban expansion.

There is an increasing concern about low-density interspersed development in peri-urban areas of cities in many developed countries. In the UK's context, the apprehension is that suburban area or countryside will submerge into urban development. If the trend of horizontal urban sprawl continues, it will result in loss of agricultural/green areas [10, 11].

In the context of Europe, Ravetz et al. [12] argue that economic growth and increasing employment opportunities influence the expansion of cities resulting in peri-urbanization and changes in land uses of peri-urban areas. This is leading to the formation of urban regions influenced by business actives and travel parents. Coordination of development agencies is thus important to manage the changing character of peri-urban areas [13].

In USA, urban regions are gaining importance in the context of development management to contain urban sprawl. Whilst describing theoretical problems regarding urbanization, Torres [14] discussed that mostly peri urbanization in America proceeds as a result of huge rural and peri urban to urban movement. These areas are not only poorly governed and located far from important occupational centers but are also breeding grounds of poor sanitation and natural issues. These problems gave birth to smart growth theory that propagates managing urban sprawl by encouraging high-density mixed land use development, encouraging green modes of transport and providing range of housing within urban areas, so as to protect rural landscape and natural resources [15].

Moreover, the Edge city model/theory, though much criticized, can also be found in American and European spatial development in the form of industrial suburb or marketplaces mainly including offices and retail stores at commutable distance around big cities. This kind of multi-nuclei development occurred due to the dispersal of compact city and, of course, increased car ownership rate. Other famous theories focusing peri-urban area development include growth pole theory and central place theory. The growth pole theory is grounded on the premise that calls for "investing heavily in capital-intensive industries in large urban centres or regional capitals" to attract population and development in rural areas as a consequence of "trickle-down effect" [44, p.9]. This theory has also been attributed to top-down approach of a "centralized planning system" [45]. The central place theory emphasizes development

of market towns or rural towns in the peri-urban areas so as to integrate them with the urban areas and hence achieve a hierarchy of service centres for lower tiers of settlements [46, 47].

As far as developing countries are concerned, planning agencies are encouraged to use strategies for agglomeration of settlements that would help lessening problems resulting from inadequate provision of basic services and overcoming the issues of urbanization and changes of settlement patterns in peri-urban areas of metropolitan cities, for example Bangkok [16]. Likewise, Pandey et al. [17] discuss land use changes and expansion along major lines of communication with reference to peri-urban area in case of Aligarh city in India. They conclude that the urbanism of peri-urban areas can be considered as the initial stage of the cities in expansion, which need to be given due attention through carefully designed policy and programs thus replacing fragmented urbanization with more compact urban development.

In fact, economics of land use necessitates to promote compact city by allowing mixed used high-density development on the pattern of Hong Kong and Singapore [18, 19]. In this way urban sprawl can be controlled, or at least discouraged. Several city planning and development agencies in developing countries like India and Korea are considering allowing more aggregate floor space by relaxing floor space index (FSI) limits in urban areas [20, 21]. Compact urban form is found also to have positive correlation with the urban quality of life in Kolkata, India [22].

From the above discussion it can be gleaned that peri-urban areas offer space for continuous expansion and that the expansion needs to be regularized for better outcomes through planning interventions which may take the form of compact development. Further, peri-urban areas are very important and need better planning practices to preserve agriculture and utilize non-urban land in an efficient and sustainable way [6, 7, 23]. This is important in the case of East Asian developing countries due to anticipated rapid urbanization. Also, because around 200 million people are expected to be living in peri-urban areas of East Asian metropolitan cities in the coming decade, making up 40% of the total population of the metropolitan regions [24]. Hence, the peri-urban areas would more likely to become 'edge cities' [25].

The relevant literature is full of debate on peri-urbanization, its issues and various theories of peri-urban development. Yet, there seems to be no

consensus on whether to follow a set of policy interventions to integrate peri-urban areas with the urban areas or to prepare a separate plan of such areas [2, 6, 7, 25, 26]. This is also because every country has its own political context, socio-economic dynamics, development priorities, rules and regulations to deal with the 'complex urban processes' [27]. In this context, Legates and Hudalah [6] argue that peri-urban areas are not being planned in an integrated manner but through different plans dealing with specific subjects viz, transportation, infrastructure and land use etc. Big cities of East Asian countries do not have specific plans for peri-urban area. Thus, it is necessary to recognize peri-urban planning as a separate activity to rectify the problems due to haphazard development.

Given the abovesaid context, this article examines a new approach introduced to manage development in peri-urban areas by preparing peri-urban structure plans of cities in the province of Punjab, Pakistan. It thus attempts to contribute to the growing debate on planning of peri-urban areas by investigating the practicality of this approach and whether this will lead to urban sprawl or act as a containment strategy while ensuring orderly and efficient pattern of peri-urban development. The outcome will most likely be useful for countries with similar socio-economic context and spatial development trend. The next section of this paper describes the context and process of peri-urban planning in Punjab. It then presents the research methodology adopted for this study. It is followed by introduction to the case studies including critical analysis of the peri-urban structure plans' methodology and proposals. Finally, conclusions of the study including possible policy implications for planning of peri-urban area are presented.

2. The context of peri-urban planning in Punjab

Several kinds of plans are prepared in the province to manage urban areas and future expansion of cities. These mainly include master plan, outline development plan and structure plan. Due to the absence of regional planning, their scope also covers suburban and rural areas. The term peri-urban area was introduced in the year 2009, when the Government of Punjab notified Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, under the provision of the then Punjab Local Government Act (PLGA) 2001. Under this Act, a three-tier local government administration system was created with five districts comprising of large cities to have city district government (CDG). All the remaining

districts were to have district governments. Each CDG and district government was divided into town municipal administration and tehsil municipal administration (TMA) respectively. Each town/tehsil municipal administration was divided into union councils thus eliminating the rural urban divide within each district.

With some modifications in the administrative set up, this Act was replaced by PLGA 2013. Under the new Act, the rural urban divide was revived. Thus, Municipal Corporations or Committees were held responsible to administer the urbanized parts (including big cities and intermediate towns) and District Councils to control the rural parts (including villages and hamlets) of each district [31].

Recently, the Government has promulgated PLGA 2019 repealing the previous one. The new Act again eliminates rural urban divide by creating Municipal Corporations or Committees and Town Committees for managing both the urban and rural areas of big, intermediate and small cities [32]. Thus, it makes the administrative set up of local governments somehow akin to that given in PLGA 2001 under which the 2009 Land use Rules were made.

According to the 2009 Rules, peri-urban area refers to "an area that spans the landscape between contiguous urban development and rural countryside with low population density and is predominantly being used for agricultural activities and which is likely to be urbanized in the next twenty years" [33]. The phrase "likely to be urbanized" included in this definition shows a mindset or pre-decisional approach giving a clue that these areas shall be urbanized anyway instead of concentrating on improving densities in built-up areas.

Although the 2009 Rules remained silent about a clear definition of PUSP, it was made mandatory for the then CDGs and TMAs to prepare PUSP for the peri-urban area of their respective jurisdictions besides land use classification maps, redevelopment plans and documentation of roads where conversion of residential properties to commercial use were allowed. It is a known fact that peri-urban areas of the cities in Punjab are expanding in an uncontrolled manner due to population growth. This is leading to urban sprawl and consequential problems related to conversion of rich agricultural land and vacant parcels into sporadic squatter settlements, private housing, commercial, industrial and other allied uses. Recent observations made by the Prime Minister of Pakistan about loss of agricultural land resulting

from urban growth is a clear reflection of this fact [34].

2.1 Process of making a peri-urban structure plan

As per 2009 Rules, the process of PUSP preparation starts with the acquisition of satellite imagery. But it is not mentioned what type of satellite imagery will be needed and from where it can be acquired. Generally speaking, Landsat imagery of 0.6-meter resolution is downloaded from Google earth. Digitization of area falling under the municipal limits is also a big challenge. The next step is conducting surveys and marking boundaries of established built up area and approved housing schemes. An important task while preparation of PUSP is the demarcation of peri-urban boundary and declaration of peri-urban areas for the next 20 years. For this purpose, the Rules suggest considering the following aspects:

- a) Direction and trend of the urban sprawl
- b) Population growth rate
- c) Requirements of urban development for the next 20 years

After demarcation of peri-urban boundary, the Rules further suggest dividing peri-urban area into different blocks with specification of their land uses and network of roads. Public consultation during the preparation of PUSP and after completion of draft plan is mandatory. The draft plan should be sent to respective District Planning and Design Committee (DPDC) for approval.

3. Research Methodology

Methodology of this research firstly encompasses extensive review of literature on the significance and dynamics of peri-urban areas as well as theories and practices of managing development in such areas in different countries. Secondly, using secondary data sources, it establishes the context and process of peri-urban planning in Punjab which is the biggest province of Pakistan having a population of 110 million and an area of 205,344 square kilometres [28]. So far, 36 different Peri Urban Structure Plans (PUSPs) of small, medium and large sized cities have been prepared, whereas none exists for other provinces of Pakistan simply because of absence of any legal provision requiring preparation of PUSPs. Thirdly, the methodology includes a nuanced analysis of the issues concerning PUSPs preparation and their proposals to manage growth in peri-urban areas by taking case studies of Faisalabad PUSP (FPUSP) and Gujrat PUSP (GPUSP).

Case study approach is considered important for determining empirical evidence bringing out the ground realities and facts [29, 30]. Significant factors for selecting the FPUSP and GPUSP as case studies were: approval status plans, variations in the administrative set up of the local government organizations, varying nature of consultants, and plan preparation methodology. Accordingly, FPUSP was selected from amongst 12 approved PUSPs and GPUSP from amongst 24 unapproved ones. In fact, a quick review of all the PUSPs revealed that the FPUSP included a systematic approach for plan preparation and appeared to be more comprehensive than remaining approved plans, whereas GPUSP represents all the unapproved plans since most of such plan were prepared by the same consultant.

The analysis also involves use of the data collected from concerned offices in Faisalabad and Gujrat as well as criteria derived from Punjab Land Use (Classification, Reclassification and Redevelopment) Rules 2009 (hereinafter called as 2009 Rules) to assess compliance of the case study PUSPs with plan making process and their usefulness. The assessment criteria are presented in Box 1.

To assess the case study plans a three point scale has been used including the following symbols and interpretation: ● Adequate; ■ Inadequate; X Nil/No such activity. An adequate assessment means relevant tasks well performed, no important task regarding the criterion as per the provisions of 2009 Rules left incomplete. An inadequate assessment means the plan has partially met the requirements whilst missing some of the important tasks/activities which were to be performed as per Rules. A Nil assessment means the required tasks/activity not performed at all.

4. Introduction to the case studies

This section presents overview of development pattern with focus on characteristics of the peri-urban areas in Faisalabad and Gujrat cities the PUSPs of which were selected as case studies.

4.1 Development of Faisalabad and its peri-urban area

Faisalabad is a divisional headquarter situated at 182 km. west of Lahore via Motorway (M2). This city, originally called Lyallpur, was established in 1895 accommodating about 20,000 people at an area of 3 sq.km. Being an industrial hub of the Punjab Province, this attracted people from rural surroundings.

Box 1: Assessment criteria

1. Were field surveys conducted for ground truthing of existing land uses?
2. Were boundaries of established built up area and approved housing schemes marked on the base map?
3. Were the direction and trend of urban sprawl given due consideration while marking boundary of peri-urban area?
4. Were the requirements of urban development for next twenty years given due consideration while marking boundary of peri-urban area?
5. Were peri-urban area and proposed road network well integrated with the urban and rural areas' land uses and existing roads?
6. Was peri-urban area divided into blocks and land uses proposed for each block?
7. Were the proposals of PUSP consolidated with the contiguously built up area of adjoining towns or tehsils?
8. Was a notice published in print media for inviting public objections?
9. Was the plan published on website for inviting public objections?
10. Was a formal public hearing arranged to provide the public with an opportunity of raising their concerns?
11. Was the record of public hearing proceedings maintained?
12. Did the plan include a report explaining the existing situation, proposals and implementation framework?
13. Did the plan include a comprehensive framework for the implementation?
14. Was the plan approved and notified by the competent authority?

Source: Derived from Punjab Land Use (Classification, Reclassification and Redevelopment) Rules, 2009 [33]

Population of the city was 2.15 million in 1998, and according to the latest population census it reached 3.24 million by the year 2017 [35]. Its PUSP was prepared for the duration of 20 years i.e. 2014 to 2033. The plan estimates its future population to be 4.76 million by the end of plan period. The area of Municipal Corporation is 120.65 sq. km., including 41.54 sq. km. (34%) agriculture area. This is the second largest land use after residential area [36]. The FPUSP and existing development pattern are shown in Fig. 1.

According to FPUSP, the city expanded at a rapid pace during 1985 to 2013 and became double in size. The expansion though took place on grid iron pattern, it also included some unplanned development. Rana et al., [37] noted a lack of measures to provide adequate infrastructure in Faisalabad during 2007 to 2012. This sort of growth has happened in most of the big cities of Punjab with a variation in the pattern. However, the plan identified that “in the absence of a coordinated planning and urban management system, Faisalabad has led to have a poor environment, meagre urban services, piecemeal planning and decayed spatial structure of the city. This can also be termed as a consequence of weak land use and building control as well as lack of implementation of previous master plan and structure plan of this city which were prepared in 1968 and 1986 respectively. If the same practice continues, the city will have to grow in ways and directions that follow paths and lines of least resistance and where better infrastructure facilities exist” [36, p.146]. The

analysis further revealed that most of the development was taking place on vacant land parcels around major roads at outskirts of the city. “The construction of Motorway M-3 corridor and construction of outer Bypass Road around the city also acted as an attraction for the outwards sprawl” [36, p.147].

4.2 Development of Gujrat and its peri-urban area

Gujrat is a district headquarter situated between Jhelum and Chenab Rivers. It is located at a distance of about 120 kilometers north of Lahore by Grand Truck (G.T.) Road. In 1998 Census, the population of Gujrat city was 0.25 million with a density of 45 persons per acre mainly depending upon agriculture and small industries as the sources of livelihood. According to the latest census, its population was 0.39 million in 2017. The existing established area, calculated using GIS, was 8114 acres (32.84 sq. km.). Its PUSP and existing development pattern are shown in Fig. 2.

The PUSP of Gujrat suggests that the city's population would reach 0.48 million in 2021 and 0.64 million in 2031 (end of plan period). It is mainly an unplanned city, having 34% of established built up area under residential use while the area under agriculture use is only 25%. About 15% of the area consists of vacant pockets. The city is growing in an uncontrolled manner in all the four directions.

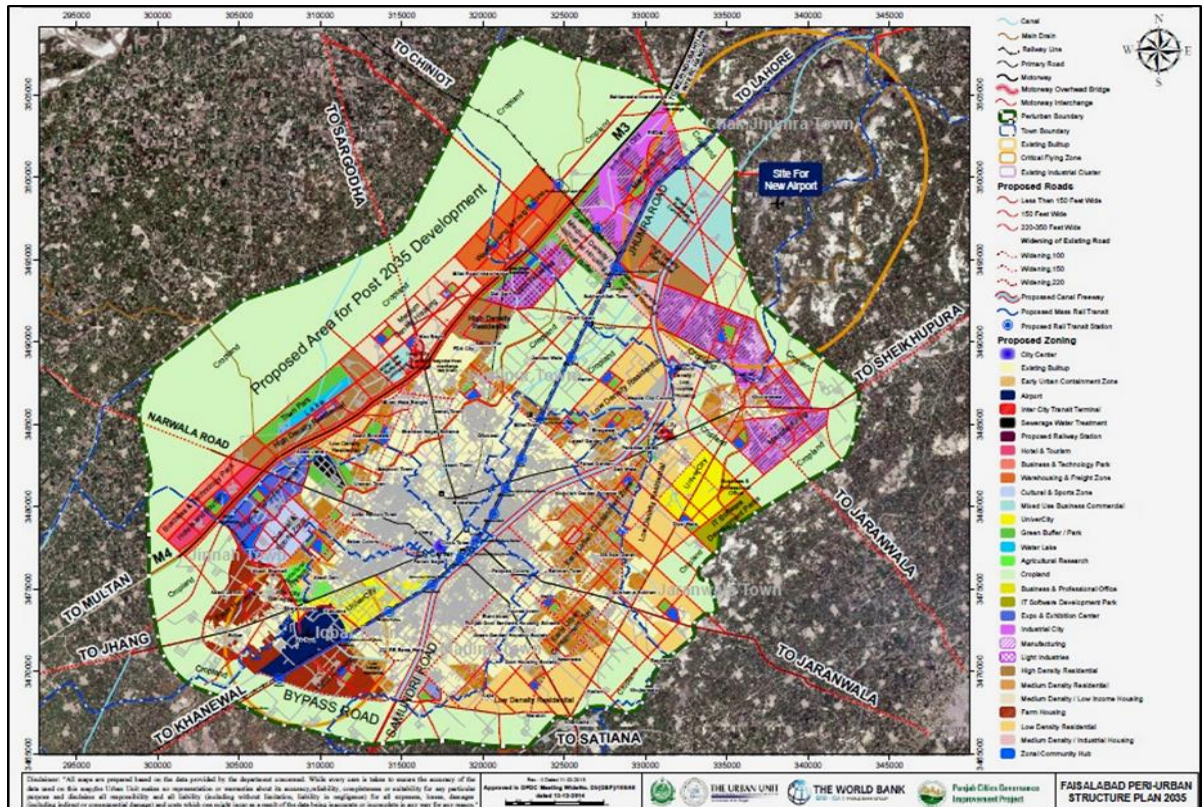


Fig. 1: Faisalabad Peri-Urban Structure Plan. Source: FPUSP final report, 2015 [36]

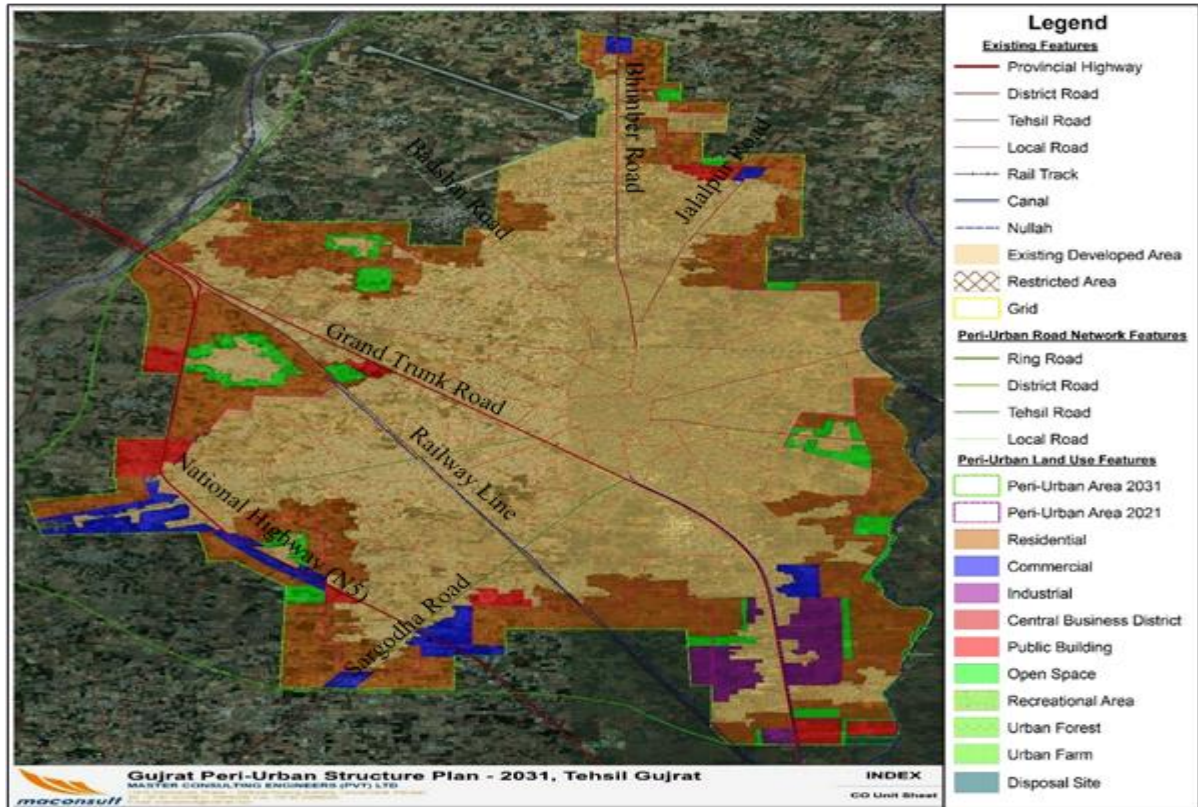


Fig. 2: Gujrat peri-urban structure plan 2031. Source: GPUSP final report, 2011 [38]

Table 1: Assessment of case study PUSPs

Sr. No.	Assessment Criteria	Faisalabad PUSP	Gujrat PUSP	Remarks
1.	Conducting field surveys for ground truthing of land uses	●	■	Survey of the peri-urban area was not done in Gujrat. Mainly spatiotemporal analysis was used. However, survey of urban area was done.
2.	Marking boundaries of established built up area and approved housing schemes on the base map	●	■	Boundaries of approved housing schemes were not duly incorporated while marking the boundary of peri-urban area in Gujrat.
3.	Consideration of direction and trend of urban sprawl while marking boundary of peri-urban area	●	■	In the case of Gujrat, neither the administrative departments were coordinated with nor ground truthing done for this purpose.
4.	Consideration of requirements of urban development for next twenty years while marking boundary of peri-urban area	●	●	Both the plans considered the requirements in terms of projected population and desired density of the population to be accommodated in different zones.
5.	Integration of peri-urban with the urban and rural areas as well as proposed road network with that of urban areas	●	■	Gujrat plan though shows it on proposal map but does not explain how the peri-urban area and proposed new roads shall be integrated with the urban and rural areas.
6.	Division of peri-urban area into blocks and proposal of land uses for each block	●	●	Both the plans fulfilled this legal requirement.
7.	Consolidation of PUSP in case built up area is contiguous with adjoining towns or tehsils	●	●	In Gujrat, all the plans prepared under rules were combined and tehsil planning map was prepared.
8.	Publication of notice in print media for inviting public objections	●	X	Objections from general public were not invited for Gujrat plan.
9.	Publication of plan on website for inviting public objections	●	X	Gujrat plan was neither published nor were the objections invited.
10.	Arranging public hearing	●	X	Not held for Gujrat plan.
11.	Maintaining record of public hearing proceedings	●	X	No record of proceedings for Gujrat plan.
12.	Report explaining the existing situation, plan's proposals and implementation framework etc.	●	■	The Gujrat plan's report explains the existing situation and proposals but not the implementation framework.
13.	Comprehensiveness of proposed implementation framework for plan	●	X	The Gujrat plan's report does not provide detailed implementation mechanism, except mentioning the amount of land/area that will be required to implement different proposals.
14.	Approval and notification of the plan	●	X	Gujrat plan is not approved, yet.

Legend: ● Adequate; ■ Inadequate; X Nil/No such activity (Source: Authors, 2019)

The most extensive residential development is taking place in northern part of the city along three major roads namely Bhimber Road, Madina Road and Badshahi Road. With exception of a few planned schemes, this is predominantly unplanned residential development lacking in public facilities.

The southern part of the city is partially developed. The vacant and agricultural land parcels are proposed to be developed under the PUSP. The pace of residential development in eastern part is relatively rapid, since plenty of vacant land is available along a natural drain. Residential cum commercial development is taking place in western part of the city lying along By-pass and Sargodha roads. This part has further potential for development of commercial, residential and public buildings [38].

5. Results and Discussion

This section presents the assessment of case study plans using the criteria given in Box 1. The summary of assessment results is presented in Table 1. It is followed by interpretation of results and discussion on major aspects of the plans.

5.1 Delineation of peri-urban boundary

The consultant of FPUSP did a lot of work on this requirement and determined best possible boundary of peri-urban area required for future development. The delineation criteria were developed by considering future trends, population growth rate along with the planning boundaries of old master plan and structure plan of Faisalabad.

The concerned planning and development controlling agencies (TMA, Faisalabad Development Authority (FDA) and revenue department were consulted for this purpose. The limits of services providing agencies were also kept in mind. Moreover, private housing schemes which were developed illegally in the peri-urban area were considered in addition to the existing industrial areas/estates. Spatio-temporal analysis also helped the consultants in calculating area requirements for the next 20 years and demarcation of peri-urban boundary.

For the GPUSP, criteria for delineation of peri-urban boundary included consideration of future trends, population growth rate and the planning boundary of Outline Development Plan (ODP) of Gujrat city. However, the consultant neither coordinated with the administrative departments nor did ground truthing for this purpose. Although, spatio-temporal analysis helped

the consultant for demarcation of peri-urban boundary, detailed survey of the peri-urban area was not done. This raises question on the authenticity of the land use proposals. Moreover, it needs to be updated since it was prepared for the then TMA.

Under the PLGA 2013, the jurisdictions of Municipal Corporation and District Council must be delineated. International practice suggests that peri-urban area has a defined boundary with urban area along one side and low density, scattered development predominantly agriculture land on the other side [4]. The case of Punjab, as per the 2009 Rules, is different since it requires demarcation of peri-urban boundary considering the existing land uses and calculating the area which is likely to be urbanized in the next twenty years. Thus, it is expedient to mark precise boundaries of major land uses already existing in the peri-urban area as well as that is required for the future.

5.2 Plan preparation methodology

The methodology of FPUSP includes use of GIS techniques (e.g. remote sensing, image processing, spatial decision support system/multi criteria analysis for prediction of future uses). These helped to optimize various land use areas and determine suitable locations. Although it was not required under the 2009 Rules, but the consultant used these important techniques for plan making activity employing a team of urban planners, GIS experts and surveyors. Use of remote sensing and GIS analysis have been frequently suggested to assess and monitor urban sprawl but due to expensive software and lack of expertise, these were rarely used in Pakistan [39].

National Engineering Services Pakistan (a state-owned largest consulting firm of the country) used GIS for preparing land use map of the Integrated Master Plan of Lahore prepared during 1998 to 2004 but not as a decision support system [40]. The FPUSP report includes ample amount of secondary data. However, sources revealed that capacity building of concerned officials was not done adequately, whilst this should be the part of methodology.

The consultant of GPUSP followed all the steps suggested in the 2009 Rules for preparation of various plans including land use classification, reclassification, peri-urban structure plan and tehsil planning map etc. For preparation of these plans, a parcel-based land use survey of whole city was carried out using satellite imagery. The methodology also included review of ODP, consideration of the direction and trend of urban

sprawl as well as population growth rate. The use of GIS was limited to spatiotemporal analysis for preparation of existing land use maps rather than as a tool for making decisions about the location of future land uses.

5.3 Major proposals of the plans to manage growth

The FPUSP was prepared in 2014 by a state-owned organization in collaboration with a private consulting firm and it was approved in 2015 for implementation. The plan suggests that 767.05 sq.km. (189542.183 acres) of peri-urban area will be required to accommodate projected population and land uses during the next twenty years. The plan proposes division of total area within peri-urban limits into 31 zones including different activity areas and land uses, e.g. agricultural research, residential, farm housing, industrial, public buildings and zonal community hub. It also proposes density yield matrix for low, medium and high-density residential zones as well as average household size, plot size and number of habitable units per plot/building etc.

The population density is proposed to be: 7,706 persons/sq.km. (32 persons/acre), 25,688/sq.km. (104 persons/ acre), and 53,664/sq.km. (218 persons/acre) for low, medium and high-density zones respectively [36].

As far as the proposed land use zones are concerned, these are in line with the uses permitted in peri-urban area under the 2009 Rules. Similarly, proposed population density zones are at par with international practices, for instance, medium to high density housing near suburban and peri-urban rail stations in Tokyo [24]. In the context of American cities, Abramson [7] suggests that such cities should expand infrastructure and transportation to peri-urban areas to cater for high density development.

The FPUSP's proposals also incorporate mass rail transit line connecting its peri-urban areas including multiple transit stations. Moreover, high-density zones at the outskirts of the city would help avoid uncontrolled conversion of agricultural land and urban sprawl, as is the case in metropolitan city of Lahore [41].

Both the CDG and FDA are recommended to devise new site/zone specific regulations and incentives to support high-rise residential and non-residential mixed-use development as well as revise existing regulations not only to support and enhance revenue generation but also trigger physical development in future zones.

The plan provides detailed strategy to support zoning implementation. Rather it puts the responsibility on the CDG Faisalabad "to devise a phased implementation mechanism for FPUSP which also sees inclusion of procedures for periodic reviews and revision." However, it suggests "...to accommodate the continuing housing trends in early 5 years of plan implementation period though with improved planning and design standards and strict enforcement" [36, p.223, 235].

The Gujrat peri-urban structure plan (GPUSP), was prepared by another private consulting firm. The plan aims at relocating incompatible land uses and upgrading slum areas while providing an efficient circulation network. According to the plan, estimated population of the town by the year 2031 will be 644,698. With a proposed density of 50 persons per acre, an area of 12894 acres will be required to accommodate this population.

The plan suggests that "...1285 acres of the total area is established and built by the community, a plenty of area is still vacant in the CO-unit boundary but there is a need to acquire a large amount of area for the future growth as per standards set by international planning practices" [38, p.44].

For future growth, areas required for the land uses viz. residential, commercial, industrial, open spaces and public buildings have been calculated. Residential area is proposed to be developed mainly in the southern part of the city. These shall be divided in high, low and medium density neighbourhoods and planned as per bye-laws to be prepared by the local government. Similarly, commercial areas, open spaces and public buildings shall be provided in western part of the city that will also be served with a ring road beyond by-pass road. Three industrial zones shall be planned and developed at 479 acres along G.T. road as an extension to the present industrial area.

Overall, the plan's report consists of PUSPs of all the four Chief Officer (CO) units (Gujrat, Jalapur Jatan, Kunjah and Shadiwal), included in the entire tehsil of Gujrat. It also includes land use maps, development plan regarding major urban issues, traffic management, land use classification and re-classification. In this way, it covers the major tasks assigned to TMAs under the 2009 Rules, PUSP Gujrat is just a part of this report.

Thus, it may not be called a specific and focused plan of Gujrat but an exercise to fulfil all the legal requirements of the said rules. Concerned officials also consider it a land use classification map rather than a PUSP. Whereas, the consultant is

of the view that time given for preparation of the plan was short. It should be linked with size and area of a city.

5.4 Stakeholders' consultation

During the preparation of FPUSP, more than twenty-five departments working at district level were consulted. It is good to involve all the departments. The city administration nominated focal persons from every department for helping the consultants. The plan was published on the website of FDA and CDG. As per the legal requirements, objections and suggestions from the general public were invited through public notice published in two national and one local newspapers. The notice also highlighted salient features of the plan. Following this procedure, formal public hearing was held which helped strengthen various proposals. The stakeholders' mainly suggested to develop a progressive and coherent future vision of the city with comprehensive implementation framework.

The other emphasis was on capitalizing various opportunities pertaining to industrial and socio-cultural development in a sustainable manner [36]. The suggestions were more generalized and oriented towards urban planning rather than focusing on the issues to peri-urban area. This necessitates to educate the stakeholders about the nature of peri-urban area, its issues and possible planning interventions to integrate it with the urban area. Nevertheless, the plan attempts to incorporate most of the suggestions given by stakeholders and keeps record of the consultation meetings as well as public hearing. It is a good change since in past, stakeholders' consultation remained limited to conducting socio-economic surveys during the plan making processes in Punjab [42].

For GPUSP, unfortunately, none of the legal requirements including publication of notice and the plan inviting objections, arranging public hearing and maintaining record of proceedings were fulfilled. To our more surprise, none of the words like 'stakeholder', 'consultation' or 'hearing' could be found in this plan's report. The very reasons, as reported by the concerned officials, are that the allocation of funds and time were inadequate. Moreover, by the time draft plan was submitted to the TMA, the local government set-up was changed.

5.5 Proposals for implementation of the plans

For the FPUSP, future land use zoning map is proposed as a primary tool for guiding development over the next 20 years in peri-urban

area (see Fig. 1). In this context, the CDG and FDA are proposed to be the major implementation agencies and expected to coordinate with private sector developers, businesses and the general public as well as with service providing government agencies for this purpose. The CDG, in particular, is recommended to devise a detailed 'action plan' and frame a 'FPUSP implementation steering committee' consisting of all public and private sector stakeholders to facilitate its implementation. It is further suggested that the implementation mechanism to be devised by CDG in phases and include procedures for periodic reviews and revision of the plan.

Both the CDG and FDA are recommended to devise new site/zone specific regulations and incentives to support high-rise residential and non-residential mixed-use development as well as revise existing regulations not only to support and enhance revenue generation but also trigger physical development in future zones. Thus, the proposed implementation framework leaves much to be desired on the part of CDG and FDA to take steps necessary for smooth implementation. This in turn raises question concerning institutional capacity to work out numerous tasks given the fact that FPUSP itself pointed out weak institutional set up as one of the key impediments in the implementation of Master Plan in Faisalabad. The FPUSP also lacks proposals for improved institutional set up, any mechanism for coordination amongst stakeholders as well as prognosis of required human and financial resources to implement the plan.

On the other hand, the GPUSP has not discussed implementation framework, which is generally expected to be part of any plan preparation exercise. This is precisely because it was not included in the list of tasks assigned to consultant in connection with the preparation of different plans and maps as envisaged in 2009 Rules including the GPUSP. Further, a working group comprising selected officials of TMA was established to work with the consultant chiefly to achieve sense of ownership of the outcomes of the whole exercise. This involvement of only TMA staff instead of all the line departments of government perhaps also discouraged the need to review and suggest improvements in institutional framework for implementation of GPUSP as well as other plans and maps prepared by the consultant.

5.6 Approval status

The scrutiny of FPUSP was done by the district planning and design committee (DPDC). Considering various recommendations of the

DPDC the plan was finally notified by the then administrator of CDG Faisalabad. After notification, it was circulated among the concerned departments and a copy was also sent to the Government of the Punjab. The plan is available at the websites of Faisalabad Development Authority, Municipal Corporation and District Council. The notification also mentions that the FPUSP-2035 will not supersede any Master Plan of Faisalabad in future. Interestingly, a different consultant has recently been assigned the task to prepare master plan of the city. Sources revealed the FPUSP would inevitably become part of new master plan. The GPUSP remained unapproved so far due to its poor quality and not fulfilling the legal requirements of stakeholders' consultation/public hearing. According to concerned officials, DPDC meetings were not arranged as frequently as required for this purpose. It also caused procedural delays and ultimately non-approval of plan.

6. Conclusions

This article contributes to the growing debate on the fate of peri-urban area in the wake of its changing character. The worldwide planning practices suggest that peri-urban area is important due to its economic worth and potential to become urban in near future. However, protection of rich agricultural land and utilization of non-urban land in a manner to integrate them with expanding urban areas are the prime concerns.

In Punjab, rapid growth of population, car ownership rate and low-density housing are the leading causes of horizontal expansion and thus peri-urbanization in cities. This is also because of restrictions on high-rise/high-density development in urban areas and somehow to the culture of horizontal housing in Punjab. Weak land use control in the cities of Punjab is the other reason of horizontal expansion leading to conversion of agricultural land into incompatible land use pattern. Hence, contrary to the dynamics of peri-urbanization in European cities, this study establishes that economic growth and increasing employment opportunities may not be the main reasons of peri-urbanization and changes in land uses of peri-urban areas.

While there is no city-region in East and South-East Asia that has a plan specifically for the entire peri-urban area, our research highlights that the situation in Punjab is different where the concept of peri-urban structure plan (PUSP) has already been introduced in the Land Use Rules, 2009. PUSPs aspire to overcome development issues in peri-urban areas and to integrate such areas with the already urban areas in a planned

manner. Thus, PUSPs of various cities in Punjab, Pakistan can be termed as specific plans for the entire citywide peri-urban region.

Where no specific plans for peri-urban areas exist, development in such areas of cities in many developed and developing countries is being managed using various urban growth models. Our research pronounces that most of the PUSPs in Punjab neither follow any growth model nor appear to be based on internationally tested and suggested approaches to deal with peri-urban areas. Although some of the proposals of FPUSP are at par with international practices and it fulfilled all the local legal requirements, its status of a plan is in question since preparation of new master plan is also going on. This in turn raises a fundamental question of how far peri-urban structure plan is likely to prove as a viable solution to manage growth in peri-urban areas. Even if dictated to follow certain growth model, how peri-urban structure plan is to be interfaced with existing master plan of respective city or town.

The case study plans identified that earlier development projects and plans led to urban sprawl and that most parts of the respective cities are low to medium density. It is expedient that preparation of a peri-urban structure plan may only be allowed as a part of master plan of a city which should identify zones for infill/high density development to accommodate future population within existing urban area. In the metropolitan cities where it is not possible to accommodate future population in their existing urban areas, it would be more appropriate to put an urban growth boundary around the city protecting the peri-urban area and planning residential and industrial suburbs like satellite towns/small towns along mass transit route/highways. This can possibly be done by preparing regional plans.

Lastly, further research is suggested on the following aspects: (1) how far the already approved PUSPs are implementable in the new set-up of local government? (2) should the practice of preparing PUSPs be continued or the previous practice of preparing master plan would serve the purpose, if its implementation is ensured? (3) which of the other growth management theories/models can be adopted to control urban sprawl whilst promoting integrated development within the existing urban areas without compromising on the loss of rich agricultural land and the environmental quality of peri-urban areas?

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