

Sustainability of Urban Regions and Migration in Pakistan: A GIS Analysis

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Abstract: The concept of sustainable migration has emerged recently after realizing the potential of migration in framing and altering the social, economic and environmental structures at destination, especially in the context of sustainable development goals (SDGs). An empirical investigation on the link between regional sustainability and sustainable migration is rare in literature, especially in the context of Pakistan's urban areas. Present study aims at analysing the relationship between the two by geographic information system (GIS) spatially. This study shows that out of thirteen urban regions, hosting above-average migration along with positive in-migration growth, the migration towards nine regions is unsustainable. Two mega cities namely, Karachi and Lahore are included. This highlights the sustainable growth of regions, specifically and the nation generally. Therefore, in the national policy framework, migration policies should appear as an integral part.

Keywords: Sustainability, immigration, GIS, urban centres, Pakistan.

Introduction

The relevance of migration towards the environmental, social and economic aspects of achieving sustainable development is increasingly being acknowledged worldwide (UNCSD, 2012). Migration has the potential to lead regions towards prosperity and it also has the power to endanger a region's survival depending upon the way, it is tackled and contributes to the region. Both internal and international migration has its impact on development at both origin and destination. There are around 215 million international and 740 million internal migrants in the world (UNDP, 2009). Migration results in the transfer of knowledge and skills, investments and remittances between regions/countries accelerating economic opportunities and linkages. Thus, it can be used as an effective tool for promoting economic growth, innovation and reducing poverty across regions.

On the contrary. Migration also benefits individuals and regions in social, economic and cultural terms, but once it exceeds the absorbing capacity of an urban region begins to deteriorate urban environment, development and eventually, if not controlled strategically, would endanger a region's sustainability. Recently, realizing these potentials of migration the concept of sustainable migration has emerged which is also reflected in the Sustainable Development Goals (SDGs). Sustainable migration centers around the notion that all, the origin, the destination and the migrants themselves, are to be benefited from migration. It is more related to the costs and benefits attached to it, either at national or international level. Specifically, migration with desirable characteristics is commonly considered as sustainable migration. Sustainability implies that the welfare of future generations should not be less than the welfare of the current generation i.e. utility should be non-declining

(Allen, 1980; Tietenberg, 1984; Brown, et al. 1987; Repetto, 1985; Clark, 1986; WCED 1987).

The key variable whose impact has to be analysed over the growth of per capita income is immigration towards the urban centers.

Materials and Methods

The same is the case with the recently developed concept of sustainable migration. Sustainability of migration having desirable characteristics is regarded as sustainable migration that compliments the sustainability of a region otherwise, it is not (Erdal et al., 2018). Sustainability depends upon the concept of survivability and non-declining living standards over time. It is usually reflected either by utility or per capita income growth resembling welfare, while survivability is measured by minimum threshold. Geographic Information System (GIS) is used for achieving and analyzing this study in a convenient way. GIS portrays spatially referenced information over geographic borders (Eldawy and Mokbel, 2016; Anselin, 1988) (Fig. 1).

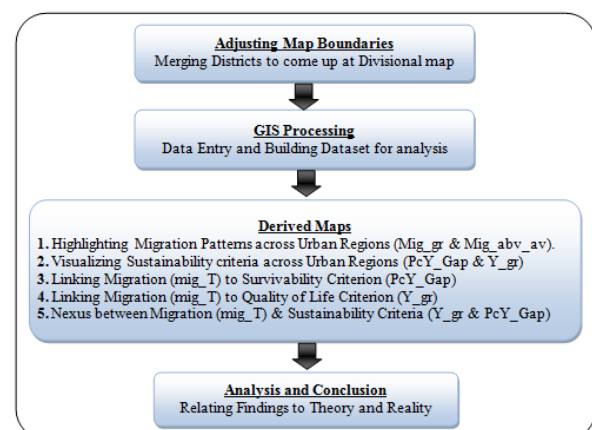


Fig. 1 Steps involved in analysis using geographic information system (GIS).

The data used in this study were obtained from Labour Force Survey (LFS) for the years 2017 and 2010 thus, it was crucial to reconcile the data for urban centres from LFS with their geographical boundaries in the GIS map file. The GIS map file was available at the district level while the analysis in this study was conducted for the major cities and other urban areas representing urban divisions. Capital ‘L’ after the city’s name is used to represent large-sized cities. Thus, following PBS classification, the first step was adjusting the district map for separating major cities and merging the rest of the districts within a division. The next step involved data entry and building a dataset in ArcGIS for the core research variables after which various maps were extracted to perform the analysis.

Results and Discussion

Migration in Pakistan is dominantly focused on few urban areas mainly large cities and urban divisions excluding large cities (Nazeer, 2018, 2016). The persistent influx of immigrants towards some regions exerts pressure on the socio-economic conditions of these regions as it crosses the capacity of the region to facilitate them. Thus, migration endangers a region's sustainability with a growing concentration in close proximity. Spatial visualization of the regions hosting above-average migration (Mig_abv_av) and having above-average migration growth (Mig_gr) have been represented in the map (Fig. 2). The legend shows that Mig_abv_av equals 1, if immigration in the region is above average ($Mig_i > 1/n \sum Mig_i$) otherwise it is zero, while Mig_gr equals 1 if the growth of migration in the region is above-average ($Mig_gr_i > 1/n \sum Mig_gr_i$) and zero otherwise.

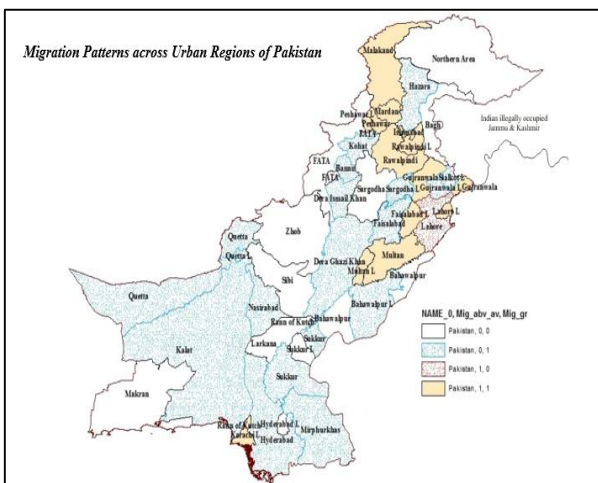


Fig. 2 Patterns of migration in urban regions of Pakistan.

It can be observed from the map that there are 15 regions with above-average migration inflows in 2018 while for 30 regions, the growth of migration is positive including urban areas along the China-Pakistan Economic Corridor (CPEC) belt. Though, these CPEC regions host below-average immigration in absolute terms because the growing economic

concentration of activities in-migration growth is positive for them. Thirteen regions qualified both criteria as indicated by the legend (1,1) including seven large cities that are Karachi, Lahore, Faisalabad, Multan, Rawalpindi, Islamabad, Peshawar including six other urban areas besides these cities.

Next, the map depicting the sustainability criteria adopted in this study derived for its visualization over space is presented. PcY_Gap reflects the survivability criterion defined as the gap between the region's real per capita income and the minimum threshold required for meeting basic food and non-food needs, indicated by the cost of basic needs (Government of Pakistan, 2016). Thus PcY_Gap is 1 if the gap is positive for the region ($PcY_Gap > 0$) and is zero, if the gap is negative. The second sustainability criteria about the quality of life are symbolized by Y_gr with Y_gr being one, that the real per capita income growth of the region either increases or remains above average ($Y_gr_i > 1/n \sum Y_gr_i$) or zero. Legend (1,1) highlights regions qualifying for both sustainability criteria (Fig. 3). It shows that almost all the large cities in Pakistan fail to meet both criteria, as their pace of growth is relatively sluggish, which though the growth is positive.

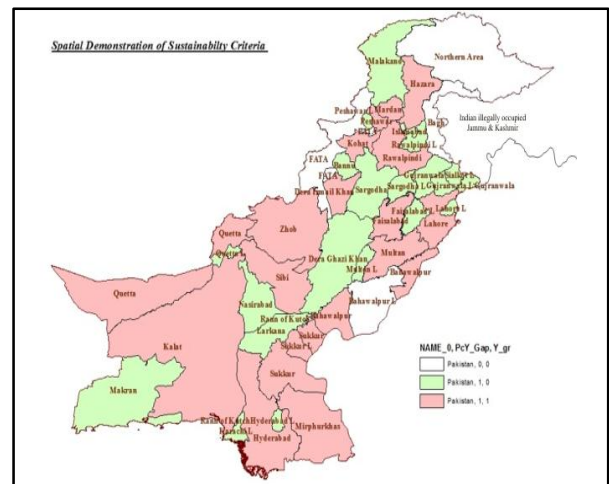


Fig. 3 Visualizing sustainability criteria across urban regions.

The reasons behind the relatively sluggish growth of these regions can better be understood by linking it with the migration inflows (mig_T) (Fig. 4). The regions hosting above average in-migration and having positive in-migration growth were assigned 1 (mig_t_i) while those failing to meet either of these criteria are equal to zero.

Almost all of the regions under consideration satisfy the survivability criterion of meeting the minimum subsistence level but not all meet this criteria on host above-average migration inflows and growth. All regions meeting migration criteria do not have above-average income growth, indicating that migration towards these regions results in hindering its per capita income growth compared to the region with relatively less exploited resources and immigrantss burden.

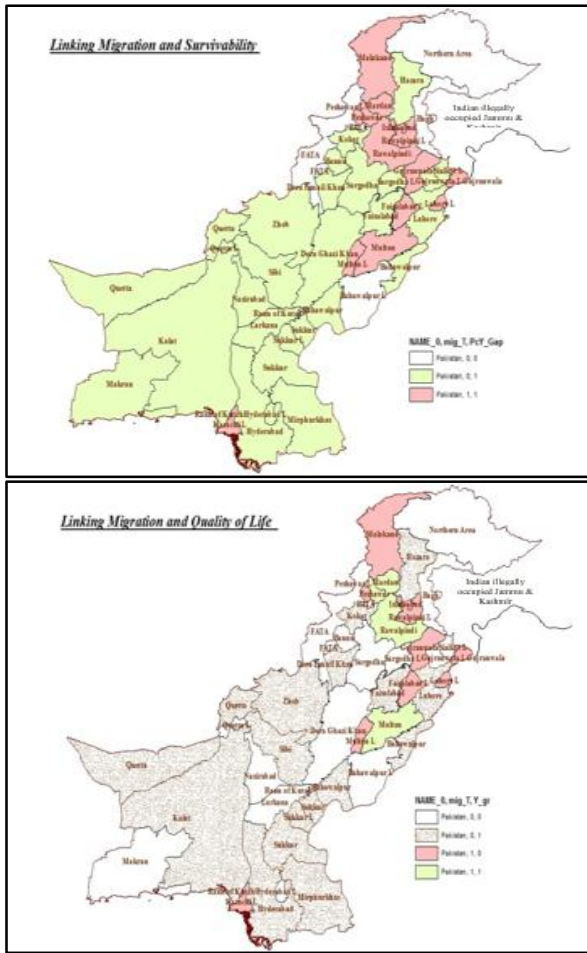


Fig. 4 Linking migration to survivability criterion and to quality of life criterion.

Therefore, the benefits of migration would shorten the costs associated with it, and in-migration in these regions fails to generate a gain in favour of sustainable development. It is evident from the left panel map that two megacities, Karachi and Lahore are facing the same situation as these cities hosted a bigger chunk of migration inflows, and are ranked top of the list concerning in-migration (Nazeer et al., 2017). Above all, sustainability and migration criteria are shown together to have a clear view of migration, hosted by regions being sustainable or unsustainable (Fig. 5).

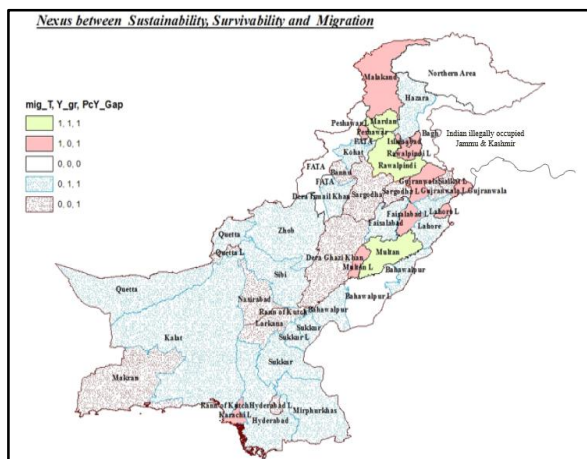


Fig. 5 Urban Sustainability & Migration Nexus

In Pakistan, migration flows towards thirteen urban regions including major cities of Karachi, Lahore, Hyderabad, Islamabad, Rawalpindi, and Faisalabad show that for all these urban centres, migration flows are not contributing to their sustainable growth, especially in large cities (Fig. 5). Nine regions out of thirteen fail to satisfy sustainable criteria having a comparatively slower pace of growth, because the cost associated with migration flows outweighs the benefits for the region. The major burden of unsustainable migration relies on federal and provincial capitals, except Quetta which is the capital city of the most deprived province of Pakistan. Since emergence of economic activities are mainly concentrated in Sindh and Punjab provinces that attract migrants from all regions towards economically concentrated urban centres of these provinces. Over the time concentration of economic activities, and the resulting influx of immigrants marginalized the region's resources to the extent that the absorption capacity of these regions begins to threaten their sustainable growth.

Conclusion

The results reveal that migration to nine out of the thirteen regions including megacities like Karachi and Lahore could not be regarded sustainable which do not fulfil the quality of life criteria required for sustainability. Hence, the benefits from migration into the region were outweighed by the costs attached with it. This in turn results in any gain to support the sustainable development of a particular region. Merely focusing on the characteristics of migrants or the causes of migration without addressing its consequences on the host region makes migration policy unsustainable. It is concluded that a migration regularity body should be formed by the government to frame policies for sustainable migration which would lead to sustainable development at the regional and at the national levels.

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