



The Question Of Urban Sustainability And Perception Study With Context To Greenfield Airport, Sikkim.

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Abstract

Urbanization is regarded not only as an index of development, but also an important component of social change. Although most towns and cities have occupied the same location for centuries, the buildings and other physical infrastructure which comprise the built environment are not fixed but affected continuously by dynamic factors of change initiated by public and private interests¹. The Greenfield Airport situated in Pakyong is a recently built airport in Sikkim. Being the very first airport of its' kind in the region makes it very important for the future development of the state and the Country. This has brought in a large number of consequences. The consequences have been seen in both ways i.e. positive and negative. This region is a part of Eastern Himalaya, rich in its biodiversity, on the other hand, vulnerable due to its topography and degree of seismicity. This paper tries to study the level of development and the perception of the respondents in consideration with the construction of the newly Greenfield Airport. This paper has been prepared with the help of both primary data and secondary data.

Keywords: Urban Sustainability, biodiversity, vulnerable, consequences

Introduction

Urbanization is a worldwide phenomenon and a gradual one. This is not just a change in the population structure but also brings into account the social and behavioural changes of the dwellers. It is these aspects of the population that displays a transformation from a traditional society to a modern one. Some structural, socio-economic, demographic, political and environmental change-over indicate the process of urbanization such as a) reducing birth rate b) higher death rate c) positive migration balance, d) technological development, e) occupational shift from primary to secondary and tertiary sector, f) infrastructural development, g) high economic growth rate, h) high pollution level, and i) concentration of service facilities. While Urbanization becomes an index of development, Environmental stability becomes a major concern here. The sustainability of our towns especially in the Himalayan belt remains a question looking at the degree of vulnerability of their location and the level of urban development.

¹ Pacione, M. (2001) *Urban Geography, A global perspective*, pp 185. This modification of the urban environment occurs at a variety of scales ranging from the residential relocation decisions of individual households to large-scale projects including public road-building programmes and private house-building schemes.

Conceptual Framework

Sustainability has always been viewed from various perspectives as the context changes with the time. But the meaning of the Sustainability remains the same as it is always related to the efficient utilization of the resources along with taking care for the future generations. However, the most common definition was given by the Brundtland Commission in 1987, who documented the sustainable development definition as: *“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”* The definition of sustainability may be taken further and it is widely accepted that to achieve sustainability we must balance economic, environmental and social factors in equal harmony. Sustainability is the foundation for today’s leading global framework for international cooperation—the 2030 Agenda for Sustainable Development and its Sustainable Development Goals (SDGs). In June 2022, environmental leaders from around the world met to take stock of where we've been and where we are heading, with the goal of galvanizing momentum for the UN Decade of Action for achieving the SDGs.²

Urban sustainability means creating a city environment that ensures long-term viability of social, financial, and environmental systems. It's about building cities that are environmentally sound, socially equitable, and economically resilient, addressing the needs of current and future.³ A sustainable community is one in which improvement in the quality of human life is achieved in harmony with improving and maintaining the health of ecological systems; and where a healthy economy’s industrial base supports the quality of both humans and ecological systems”- Indigo Development. Urban sustainability is based on positive interactions among three different pillars of sustainability which are: environment, economy and society. (Quality of Life, Sustainable Civil Infrastructure, and Sustainable Development: Strategically Expanding Choice, ASCE, March 2011). Therefore, the development should always be focused and balanced between environment, economy and society.

Urbanization does not come alone; rather it comes up with many other needs and requirements. One of the biggest elements of urbanization is the presence of the infrastructure. The presence of the infrastructural facilities in any town becomes an important element for the growth of that place. Infrastructure development has both forward and backward linkages within the economy. It results in impact on both production and consumption. The building of the infrastructure very truly highlights the region with its presence and charm but also leaves behind the question of the environmental sustainability. When Urban Sustainability is based on three strong pillars creating a balance, many at times, environmental aspects seem to be affected. As the development is always focused on the construction or the production part, the impacts on the environment, people remain unaddressed. And these unresolved issues often leads to unexpected and awful instabilities in the future.

About the Study Area

Sikkim is a landlocked state in the Eastern Himalaya, with mighty high mountains and beautiful river valleys. The pleasant weather of the mountain state makes this place fascinating and attracts tourists from places within the country and around the world. The study area that I have taken up is the small township of Pakyong in East Sikkim.

Pakyong is a small semi-urban township located in the lesser Himalayas at an altitude of 1700 meters. It is also now the headquarters of Pakyong district. It lies between 27.2281961 North latitude and 88.587932 East Longitudes. This small town is situated in the sub district of the same name, i.e. Pakyong in the East District and thus holds many government offices. It lies in the second-highest Seismic zone (Zone IV), which means earthquakes can cause significant damage corresponding to intensity VII and higher on the Modified Mercalli (MM) scale as per the seismic classification of India (Bhatia et al., 1999). The average annual rainfall in the area is 3000 mm. The highest portion of the study area belongs to the gentle slope (16°–25°), followed by a very gentle slope (i.e. < 15°) and moderately steep slope (26°–35°) and a steep slope. Towards the south-western part of the airport, the slope varies from 36° to 45°; at some places, the slope goes over 45°. The slope of Pakyong town lies in the gentle slope category (Ibrahim et al., 2014).

On April 29, 2022, the Hon’ble Chief Minister of Sikkim, Shri Prem Singh Tamang, officially inaugurated the District Administrative Centre of the newly established Pakyong District. The district was formally

² International Institute for Sustainable Development (IISD) <https://www.iisd.org/mission-and-goals/sustainable-development>

³ <https://www.google.com/search?q=urban+sustainability+meaning>

created in December 2021 through the enactment of the Reorganization of Districts Act 2021 by the Sikkim Legislative Assembly. Pakyong District is now organized into three subdivisions: Pakyong, Rangpo, and Rongli.⁴

Some of the villages surrounding this small town are Namcheypong, Raigoan, Pachey, Samsing, Dikling, Pachak, Pacheykhani, Dugalakha, Karthok..There are 27 villages in the sub district, among them, Namcheybung is the most populous village with population of 5,128 and Pakyong Forest Block is the least populous village with population of 72. Pakyong Forest Block is the biggest village in the sub district with an area of 65 square kilometer sand Yangtam is the smallest with 1 square kilometre. It is located 48 km towards South from district head-quarters Gangtok.

About the Greenfield Airport of Pakyong, Sikkim. One of the key highlights of Pakyong is its modern infrastructure, including the Pakyong Airport, which is a testament to the region's growing connectivity and development. The district is also a center for agriculture, horticulture, and eco-tourism, contributing significantly to the state's economy. Its rich cultural heritage, combined with its unique geographical and administrative importance, positions Pakyong as an essential part of Sikkim's identity. This is truly an amazing feat of engineering. As part of that work, an 80.38-meter embankment has been built to make space for the 1.7 kilometer-long and 30-meter-wide runway, which is enclosed by deep valleys. The airport's 2,380 square meter terminal building can accommodate up to 100 passengers. The project for the construction started 10 years ago in the year 2009 ultimately giving shape to a beautiful airport on a hilltop at an altitude of 1,400metres. The construction phase saw many ups and downs since its inception and was completed and inaugurated on 24th September 2018 by India 's Prime Minister Shri Narendra Modi. The airport began its first commercial flight operations on 4th October 2018 between Pakyong and Kolkata. The opening of this airport in Sikkim becomes the 100th functional airport of the Indian subcontinent. (Airport Authority of India)

Chronology of events

Sl.no.	Year	Events
1	October 2008	The Greenfield Airport Project Bill was cleared by Cabinet / Centre on Economic Affairs
2	2 nd March 2009	Foundation stone was laid for the construction of new Greenfield Airport at Pakyong.
3	21 st Oct 2010	Workers at the Greenfield Airport strike halt construction of Greenfield Airport over their demands for better wages.
4	January 2015	The first protests start from the affected 135 families demanding for compensation for their property.
5	4 th December 2017	CM Pawan Chamling urges Union Civil Minister to make Pakyong Greenfield airport functional at its earliest.
6	3 rd September 2018	Greenfield Airport faces the problems of Land Acquisition.
7	25 th September 2018	PM inaugurates Sikkim's first Airport- The Greenfield Airport, India's 100 th functional airport.
8	5 th October 2018	Spice Jet operates the first direct commercial flight to Pakyong Airport from Kolkata.
9	18 th January 2019	Antonov-32 AN-32 lands in Pakyong Airport of Sikkim
10	21 st January 2019	The airport faces threat from closedown due to bad weather as told by Ramatanu Sahu, AAI director, Pakyong Airport
11	28 th August 2019	Relaunch of Airport was deferred due to lack of Instrumental Landing System, Fluctuating Weather and Ongoing unsolved case.
12	4 th September 2019	Pakyong Airport likely to resume flight services by October, 27

Source: India TV, Your Story, The Wire, Sikkim Express, The Voice of Sikkim. Compiled by the Author

⁴ Pakyong district <https://pakyongdistrict.nic.in/about-district/>

Objectives of the Study

- To study the level of urban development in Pakyong, a district headquarters in Sikkim.
- To study and analyse the level of perception of the respondents with relation to Greenfield Airport.

Research Methodology

This work is a product of both Primary and Secondary data sources. Primary data was directly collected from the field by the author, through the use of Semi-structured interview schedule containing questions relating to the changes in the place and the views of the respondents. The total size of sample is 65 (sixty-five) collected between 2021 and 2024. Secondary data were derived from books, journals, articles, online publications, different government offices, unpublished thesis, newspapers, etc. After the data were collected, they were carefully studied, analysed to achieve the findings and results.

RESULT AND DISCUSSION

Over the years Pakyong has seen tremendous changes in its physical, social and cultural aspects. The population has considerably increased over the decades and the population of Pakyong according to the Census of India, 2011 is 36392 with 7738 households. Not only that there have been a change in the built-up area and the land-use. There have been considerable changes in its administrative status from a subdivision (vide Govt. of Sikkim notification No. 72/LR dated 06/05/1999) to a district now (No. 50/LR&DMD/ACQ/GOS dated 20/12/2021). Pakyong has good network of roadways connecting the other towns of Sikkim and now with its added airport facility, it has accessible beyond. Pakyong has some good and renowned educational institutions which attracts students from the surrounding areas and surrounding states.



Satellite imagery showing built up areas of Pakyong in 2006



Satellite imagery showing built up areas of Pakyong in 2018

The satellite imageries show the discernible changes in the physical built up of Pakyong during the period from 2006 to 2018. It indicates the change in the built-up area within a short span of only 12 years, and implies the increase in population and changing demographic characteristics, demanding more physical

space to live in. The development of infrastructure in any form paves a way for future prospects and creates a chance to turn a silent rural society to a modern urban society.

The construction of the Greenfield Airport in Pakyong, Sikkim has been considered as one of the greatest milestones in the history of Sikkim. It opens the state through the door of future opportunities and possibilities. This is the 100th Functional airport of India under Airport Authority of India (AAI) inaugurated by the Honorable Prime Minister Shri Narendra Modi which holds the theme UDAAN “*Ude Desh Ka Aam Naagrik*”. This also provides an added functional service to Pakyong beyond its administrative service. This turns this town into a multi-functional one. Although the Greenfield Airport has been taken as an important and great step of the Central Government, many discussions await the development. It has been argued whether the construction and the completion of the airport really meet the cost benefit ratio or is it just the cost side being heavier. The cost for the construction of the Greenfield was Rs. 305 crores and was to be completed by 2012 which increased to Rs. 605 crores later and took long 9 years to complete its journey of construction. It brought with it development, accessibility and connectivity but along with it also came the insecurities, the problems and others. The perception of the local dwellers has completely different opinions regarding this development. While many dwellers have very properly seen this as an opportunity for future endeavours while many are badly affected due to the severe impacts on their owned land and residence.

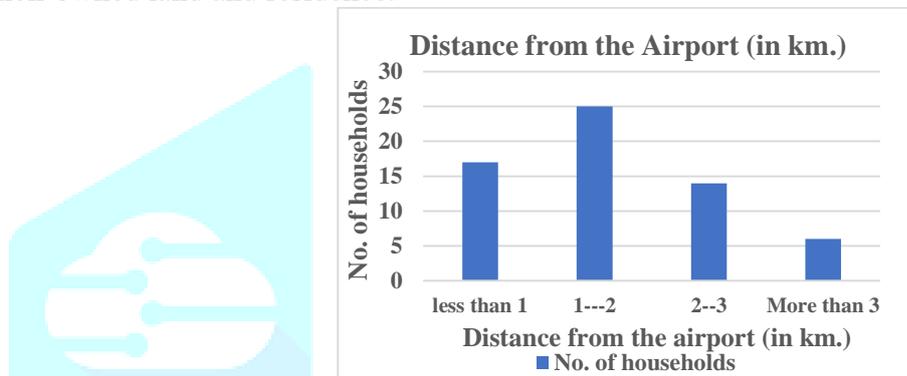


Fig. No. 1.: Distance from the Airport (in km.)

The impacts of airport construction have been on many aspects. The above figure shows the distance of the households interviewed with relation to the distance of the airport. Out of the total households, 17 households were located within 1 km of distance, 25 households were located within 1-2 km, 14 households were located within 2-3 km and 6 households were located beyond 3km from the airport. Those households situated very near to the airport are severely damaged including mainly cracks in the houses and problem of sinking in the private premises while the severity becomes lesser with increasing distance away from the construction.

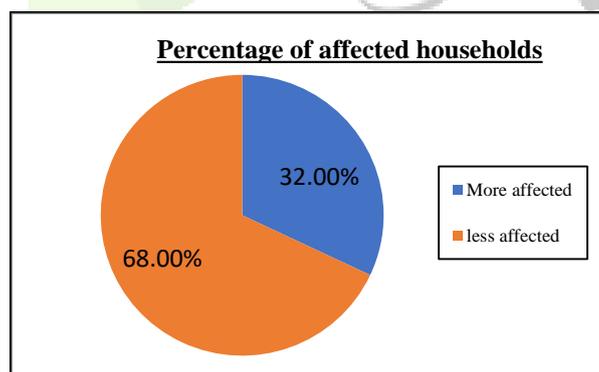


Fig. No.: 2. Percentage of affected households

Land is a precious parcel of asset of an individual. During field visits it has been observed that sinking of land has taken place and some parts are still sinking mainly due to the heavy construction below. There is no uniformity in the damaging effects which has made it difficult for the villagers to decide whether they should focus on increasing production or take measures to reduce the sinking of their agricultural land. According to the figure 32 % of the surveyed households are severely affected while 68 % of the households were partially affected. The major affected areas were Karthok, Dikling and Bhanu Turning while the minor affected areas were at Damlakha, Mamzay and Chalamthang.

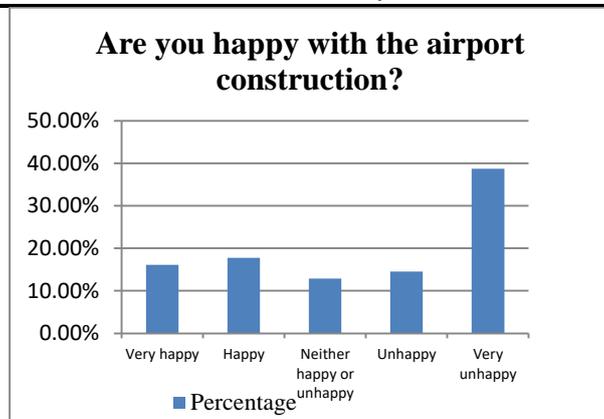


Fig. No. 3. Response categories on happiness with construction of the airport

During field survey the respondents were also asked how happy they were with the construction of the airport, and whether the airport would be beneficial for all. Altogether 62 respondents were interviewed, out of which more than 30% were happy or very happy, but nearly 47% were either unhappy or very unhappy. Rest of the respondents remained neutral. Most of the respondents disagreed that the airport will be beneficial, while about 26% expressed that it would be beneficial in the long run. The following tables and figures present their responses on Likert scale.

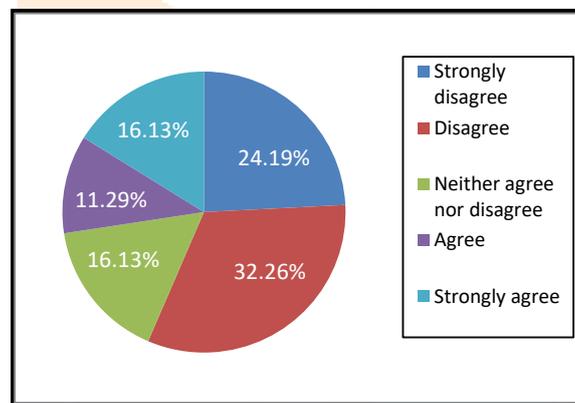


Fig. No. 4. Response categories on whether airport construction will be beneficial

According to the Likert scale response categories, it is seen that 24.19 % strongly disagree that the airport construction will be beneficial to all. They are the severely affected residents of Pakyong living near the airport area; 32.26 % respondents disagree and these are the ones who are partially affected. They feel that the airport construction will not serve anyone rather will close down eventually; 16.13% of the respondents are neutral on the question of whether it is beneficial or not - these are the ones who are immune from the impacts of the airport. They are located mostly away from the bazaar area or the airport area; 11.20 % of people agree with the statement of being beneficial and they are the intellectual group working as officials in different offices. They feel that the airport will be very beneficial for Pakyong; 16.13% strongly agree with this view and this group belongs to the people who are directly engaged with the airport.

Conclusion

Man's impact on the Himalayan Mountain ecosystems is producing critical situations at a faster rate than those prevalent in most other types of ecosystems. Several man induced activities in the Himalayas such as unplanned land use, cultivation on steep slopes, overgrazing of natural grasslands, major engineering activities (roads, mining, dams, reservoirs, irrigation canals, quarrying, hydroelectric projects, etc.); overexploitation of village or community forests; cutting of broad-leaved plant species, shifting cultivation (mainly in northeastern India) are a few factors which have further accelerated ecological degradation and threaten the equilibrium of mountain ecosystems⁵.

Environmental impacts are also explicit due to the construction of Greenfield Airport. Some sort of disturbance is created in the natural environment of Pakyong which cannot be denied. The hilltop has been cut flat using many geo-engineering techniques like the cut and fill techniques in order to create a runway

⁵ Ahmad, Afroz (1993) Environmental Impact Assessment in the Himalayas; An ecosystem approach

strip. This caused a major change in the terrain or the physical landscape of the place, which is bringing many negative impacts as well. Environmental problem may be the most alarming impact among all other impacts as it threatens life and livelihood of a section of resident people. Any threat to our environment actually threatens the sustainability of all living organisms. Therefore, there is an urgent need to analyze the impacts of infrastructure development on the society and environment. A holistic and careful planning is necessary for the sustainable development of the economy. The Greenfield Airport construction gave rise to various ecological imbalances like deforestation, air pollution, water issue (shortage of fresh water in the local area), damaging of houses near construction areas affecting the public health. Field studies have shown that the construction has been done on a fragile environment. Sinking of the construction part, frequent landslide, soil degradation/erosion.

Growing concern for the future of cities and for the well-being of city dwellers, stimulated by trends in world urbanization, the increasing number and the size of cities and the deterioration of many urban environments, has focused attention on the problems of living in the city. Central to this concern is the relationship between people and environment, a quintessential geographical problem. In the context of the built environment this can be interpreted as a concern with the degree of congruence or dissonance between city dwellers and their urban surroundings, or the degree to which a city satisfies the physical and psychological needs and wants of its citizens.⁶

Suggestions

As any development involves both the negative as well as the positive impacts, many things have to be considered when planning any big developmental projects. Below are some of the recommendations:

- Any development should be done taking in consideration the seismicity of the region as the entire Himalayan Region is tectonically active and thus frequently triggered by Natural disasters.
- Environmental Impact should be assessed carefully before these kinds of projects are approved.
- The local people should have the direct and indirect benefits of the development. Many people while taking a field survey complained about the job positions that were provided to the locals. The expert personnel should also include the learned intellectuals or trained intellectuals of the state.
- The rights of the local people should not be undermined. Rather it should protect the sentiments of the people.
- People should be clearly made aware about the kind of development, its prospects, its impacts that they are likely to experience in future.
- Urbanization should be local-friendly as the place may not be ready to embrace the changes implanted externally.

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Links

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¹<https://www.google.com/search?q=urban+sustainability+meaning>

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