Paper No.821

SMALL TOWN SUSTAINABILITY

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By:

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Abstract

Bulk of the population of Pakistan lives in small towns, including impoverished localities in big cities, where sustainability is difficult. An integrated, holistic and participatory approach is required to address this issue. Every small town has its own specific issue, and thereby needs its own innovative solution. This Paper reports an exercise where the toolkit developed by UN Habitat and the Prince's Foundation, for this purpose, and system thinking Vensim Software was utilized. Teams of engineers were trained and organized in over 70 selected small towns spread all over Pakistan. They walked through the towns, identified the existing issues, and mapped the strengths, weaknesses, threats and opportunities there. They formulated solutions, identified the stakeholders, and conceived respective projects that could address to the sustainability. Four selected case studies are presented here in this Paper.

Key words: Sustainability, Toolkit, System thinking, SDGs

Introduction

Many of us have roots in small towns. We might have arisen from there, have left them, but have wishes, and interests in their development and well being. The small town administration and land owners around are struggling against diminishing resources, deteriorating environmental conditions, insufficient public amenities and loss of intelligent youth for better prospects in larger cities. It appears, the small towns are no longer sustainable. But this trend can now be turned around, with new techniques of digital world, stakeholders team building, system thinking approach and planners and engineers' software inputs.

Recently, Guidelines, on the Sustainable Development Goals have been developed by UNESCO serving this purpose. The Commonwealth Association of Planners, Architects, and Local Government, and UN-Habitat have developed a Toolkit, consolidating a simple and streamlined methodology that shapes sustainable growth despite the scale and pace of the trend. Vensim is a system thinking software, available now, which can model wellbeing of impoverished communities. There is a systematic knowledge of the subject today, acquiring which, the young professionals can, not only come to rescue the small towns, but can also find a means of employment for themselves. The town administration, influentials, and the landlords of the area can acquire this know how for better organizing these programs.

Literature Survey

Paul L. Knox and Heike Mayer[1], in their book, have given a comprehensive account of the situation, problems and prospects of sustainability of the small towns that exist presently. They have placed forward an innovative approach carrying the economic, social, and environmental aspects together for the small town sustainability. It comprises of identifying the local economic potentials, developing a locality specific sense of identity and ventures attracting investments.

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Sharma, A. [2] and [3] has examined the sustainability problem that the small towns specifically in Asia are confronted with today, and that is mainly the drainage of talent, manpower, assets and resources. In order to put a halt on this trend, local mechanisms are needed to be formed that value add to their products, competencies and abilities.

Ying Qian, Fang Yu and Bo Hu [4] have used system integrated dynamic URBAN1 model for urban development and Block model for investment,distribution and consumption, on a number of small towns in China for their sustainability. The models take inputs such as production capacity, population, resources, and saleability. The models apply simulations to arrive at different feasible options with their comparative advantages.

Dr Athar Rashid, Haseeb Saleem, Waresha, Sahar Khushbakht, Sharafat Naz and Usman Zafar[5] have reported a social action project undertaken with the objective of discovering possibilities of converting the present small towns in Pakistan into smart sustainable cities. According to them, the growth of unregulated housing and haphazard urban development in small towns, has become a main hurdle today in modernization and introduction of efficient smart systems. Converting these small towns into smart cities is the need of the future generations and a must for their economic sustainability. According to them, the basic requirement is both technological and behavioural transformation. The authors have reported visits to some small towns, where focus group discussions were conducted to explore possibilities as to how the objectives could be achieved. A means to go forward has been conceived, that consists of conducting awareness campaigns, carrying out detailed surveys, enhancing the required skills, resources harvesting, and implementing the solutions.

Arif Hasan and Mansoor Raza [6] and [9] have picked up three diverse small towns; I) Mithi in Tharparker, Sindh is a least developed desert town only recently connected to national road network, ii) Uch in Bahawalpur South Punjab, recently bypassed from the national road network, and iii) Chiniot in Jhang Central Punjab is a rapidly growing town with plenty of mercantile to offer. The authors have studied the migratory trends in these towns, their reasons, and what can be done to stabilize the movement. The reasons mainly have been, the influx of remittances, and the crave for better lifestyle gathered from media. According to the authors, the flow of migration can be controlled, if the people are given opportunities to invest remittances within the towns, and if the people can be given same level of civic amenities within their own towns.

Makhdum Khusru Bakhtyar [7] has issued a voluntary review conducted in 2017 on Pakistan's implementation of 2030 UN agenda for sustainable development, wherein it has been admitted that in this effort all stakeholders have to be inducted in partnership. To implement the SDG's goals, Pakistan has to learn to innovate, adopt latest technologies, and mobilize finances. The stakeholders are identified as the private sector, the civil society, media, and the international development agencies. The author admits that out of the box financial arrangements have to be pursued.

Akhtar Hussain Siddiqi [8] has identified that Pakistan is still in the grip of the legacies of the colonial system. If now it has to attend to the ever increasing problems of human settlement and livelihood, it has to come out of the box, and generate innovative participatory mechanisms so that the multi-facet issues are addressed collectively.

George Homsy and Mildred Warmer [10] have surveyed and have presented case studies of a number of small towns in the US, such as Columbus Wisconsin, Keamy Nebraska, South Daytona Florida, Homer Alaska, West Liberty Iowa, and Hurricane Utah. They have viewed the sustainability drives in these towns reaching various results. The factors that mark the success are various. The top most is the entrepreneurial innovative and creative qualities of the leaders of the towns, whether from governmental or corporate background. Education, skill, awareness and ownership of staff and public are also important. Towns that own their utilities and those which have access to resources have a natural advantage. It is important to achieve quick scores to carry the confidence of the stakeholders. Networking horizontally and vertically is essential.

Md Sahil Khan, Mohd Sadiq Khan and Nasifa Khatun [11] have referred to the UN's 17 Sustainable Development Goals, and in their context they have reflected upon the future of sustainable development in Indian small towns, by illustrating a case study of the sustainability in a town called Santipur Town. Looking at the needs of the town there, partnering with e-commerce firms, local producers, water corporations, banks, finance companies was carried out. They were given the bog picture of the town and were looped in to function for the greater cause of the town. There were challenges in this effort, such as dearth of qualified teachers, existence of poor infrastructure, gentrification (driving out poor by rich influx), shortage of tax collection, disorganized urban planning, and poor agricultural practices. These challenges were earnestly addressed and certain successes were achieved because of unity of effort collaboratively.

Ebunoluwa Odeyemi **and** Kimberly Skobba **[12]** has described how effective can civic engagement be made in small town sustainable housing decision-making. According to them, all the success to achieve sustainability in a small town, depends on the participation, seriousness and contribution of the stakeholders. The authors have reportedly studied 164 small towns in respect to housing decision making, on efforts such as: stakeholder engagement, local bodies capacity building, and access to resources. The authors have highlighted the hindrances in such engagements. The major hindrances are limited capacity of equity and the limited confidence that the civic partners have.

Dr. Asad Sarwar Qureshi and Atif Nawab [13] have emphasized that as the world is now faced with new challenges of sustainability, the engineers are required to change their mindset, and attitudes. The engineers need to come out of box of their conventional and restricted engineering practice, taking a front line position by being entrepreneurs, project initiators, partnering, engaging stakeholders and obtaining finances, marketing, servicing the communities, and control of nature with its changing ecosystems for sustainable development.

Commonwealth Association of Architects and The Prince's Foundation [14] have produced a rapid planning toolkit, as a part of the Commonwealth Sustainable Cities Initiative. The toolkit applies to small town's urban planning and urban regeneration. It helps to achieve the UN's Sustainable Development Goals. The toolkit has 4 steps. Each has 3 key stages. Each stage carries a number of activities, workshops, and sessions, that can be availed by the stakeholders around a small town with objective of making its infrastructure sustainable. The steps are: writing a charter for your town, making a plan, implementing the plan and setting the sustainable community.

Chris Wade [15] has worked on sustainability of a selected small towns in Scotland. According to him, the major problems in small towns, that occur, are due to: frustrating residents, climate change, hit backs of not meeting with technology, youth getting education in cities and getting city oriented, frustrating returns from agriculture, increase in vulnerable part of residents, people leaving because of economic and environmental reasons, and increase of connectivity with cities. The author states that the prerequisites for any success of an intervention are: clear objectives and strategies of meeting the same, target oriented new and renewal planning, visible economic uplift plans, and most of all care and participation of all. The author has shown that the matrix for the sustainability of small towns comprises of key parameters: Social, Human, Natural, Manufactured, and Financial on one axis and Town centre vitality, Community assets, Local food affordability, Housing affordability, Energy use, Renewable energy, Waste management, Tennant behavioural change, Educational attainment, (Social) Business start-up, and Eco -system services on the other axis. Any programme of introducing sustainability for a small town is to go as interplay of this matrix.

Laura Daglio, Giuseppe Boi and Roberto Podda [16] has discussed a case study of the case of Oliena (Nu) historic Centre Sardinia Italy, where a participated strategy for small town regeneration was practised. The issue was migration of the small town to big towns. The solutions adopted were: regeneration of the infrastructure and the living space, innovative participative management, and creating economic opportunities.

Marie - Hélène Zerah and Eric Denis [17], in their book, have advocated a strategy by which the sick small towns can be reclaimed. They claim that the economies of small towns work on different planes than big towns. The small towns work with stronger connections with people around who depend on each other. There is a sharing of tools and plants, sharing of assets, and the social support system is much stronger. The small towns economy is generally based on agriculture and agro based industries.

Blind fold application of big cities economic and fiscal system places the small towns in disadvantageous and vulnerable positions. The treatment of small towns needs to be based on new economic geography called NEG. The spatial distances are large and the nuclii are numerous small dots. The education, skills training, jobs, production and consumption are all differently set. Instead of mammoth units, a few in number, there needs to be micro units but very large in number. Similarly, the concentration of wealth and its distribution needs different model. In order to put life back into small towns, the system needs to be shaped into local economies, local productions and local consumptions. Most often, wealth is produced in small towns and villages, either agricultural, mineral, fisheries, livestock. Systems need to be built whereas wealth is circulated where it is produced.

Present Exercise

In this respect, an intervention was organized. Teams comprising of over 150 engineers, architects, planners and government officials, belonging to a number of 70 small towns spread out from Gilgit Baltistan, Azad Jammu and Kashmir, Punjab, South Punjab, Sindh, Baluchistan and also large metropolitan areas, were trained, who undertook projects on sustainability in their towns.

The training covered:

1. Today's digital world bringing connectivity to remote small towns;

2. Diverting resources back to small towns, and building stakeholders together;

3. UNESCO Sustainable Development Goals in assistance of underprivileged habitat;

4. Commonwealth Planners and Architects and Prince's Foundation's toolkit for sustainable urban growth; and

5. Vensim System Thinking software on wellbeing of impoverished communities.

The participants picked up specific projects, that would help them to establish themselves as organizers, technology providers, and community developers, innovators and entrepreneurs as their real time careers.

The foreign resource persons who delivered their inputs were:

1. Dr Liang Ying, Chinese Mechanical Engineering Society, Beijing, with their experiences on the New Silk Road, connectivity to remote area over three continents.
2. Mr Rowan Palmer, Lead Sustainable Infrastructure Team, Economic and Trade Policy Unit, UN Environment Program, Switzerland, with their UNESCO Sustainable Development Goals, Guidelines.
3. Prof William Kelly, Chair, Asian Civil Engineering Coordinating Council, Washington DC, with Vensim System Thinking Modelling Approach.
4. Arch Ben Bolgar, Senior Director, Prince's Foundation, Commonwealth Association, London, with their Toolkit developed for Rapid Urban Development.

Templates, [1,2 and3], were developed for the teams to map and record the strengths, weaknesses, threats and opportunities of the concerned small towns. These were grouped into available resources, the stakeholders, growth potentials, the impediments, extent of digitization and upgrading occupations.

Resources				**Stakeholders**			
What does the town produce and offer?				**What public officials are there who can be approached to join a participatory improvement effort?**			
Cotton Mangoes Guava	Wheat Rice Vegetables	Cotton Mills Produce	Cotton Seed Extraction Mills	MPA/MNA	Local Admin	Agritech Institutions	Councillors
What does the town bring in?				**What private influential are there who can be approached to join a participatory improvement effort?**			
Household Goods	Cosmetics Medicines	Pesticides Fertilizers	Agri Machinery	Land owners Farmers	Business owners	Oversees Veharis NGOs	Renowned people with roots

Template-1: Sustainability Plan: Resources Stakeholders

Growth Potential				Impediments			
What existing renewals can you possibly make to accommodate?				**What hazards do you see in implementing the plans?**			
Building up of peoples' income & public revenue	10 Nos of Katchi Abadis to be regenerated	Parks green & market areas	Water sanitary & waste disposal	Landscape Constraint	Traffic rerouting	Land Acquisition	Resistance from people
What new adjacent town areas do you propose where better environment can be offered?				**What public and official difficulties do you foresee?**			
Model Farming Estates	Agritech Institutes	Local share in declared industrial zone	Local share in declared 5-3 Marla Schemes	Peoples' ownership titles	Admin Resistance	Political Resistance	Capital Procurement

Template-2: Sustainability Plan: Growth Potential & Impediments

Assistance from Digital Instruments				Upgrading Occupations			
What digital instruments need to be promoted?				**What are existing occupations of the workforce?**			
Urban rural linkages	Buying & selling	Engagement of prof services	Conferencing on education and training	Unskilled workers employed at farms & commuting to cities	Gardeners Guards Drivers Office Assistants employed in cities	Small farms shop keepers Agents Domestic Servants	Nurses Teachers Managers
How do you propose to utilize the digital linkage for meeting objectives?				**What technical and vocational training courses will you recommend for better economic cycle?**			
Community goals & vision Participatory mechanisms	Data collection & analysis	Planning & design	Implementation	Computer cable net mobile repair	Water management Pesticides Farming Veterinary	Commerce Finance Legal	Engineers Architects Planners

Template-3: Sustainability Plan: Use of Digitalization & Occupations

Stakeholders

Stakeholders [Fig-1] are those, who have any interest in the sustainability of the locality, that goes with the well being of the residents there. They are the residents themselves as the ultimate beneficiaries, the land and property owners, the owners of the business and production units, investors, local councils, members of the parliament, departments assigned on duty in the area, developers, engineers etc etc, and the most important are the ones who were born here but are now occupying influential positions elsewhere in the country or abroad, top ranking statesmen, well placed bureaucrats, high-up army officers, and business tycoons.

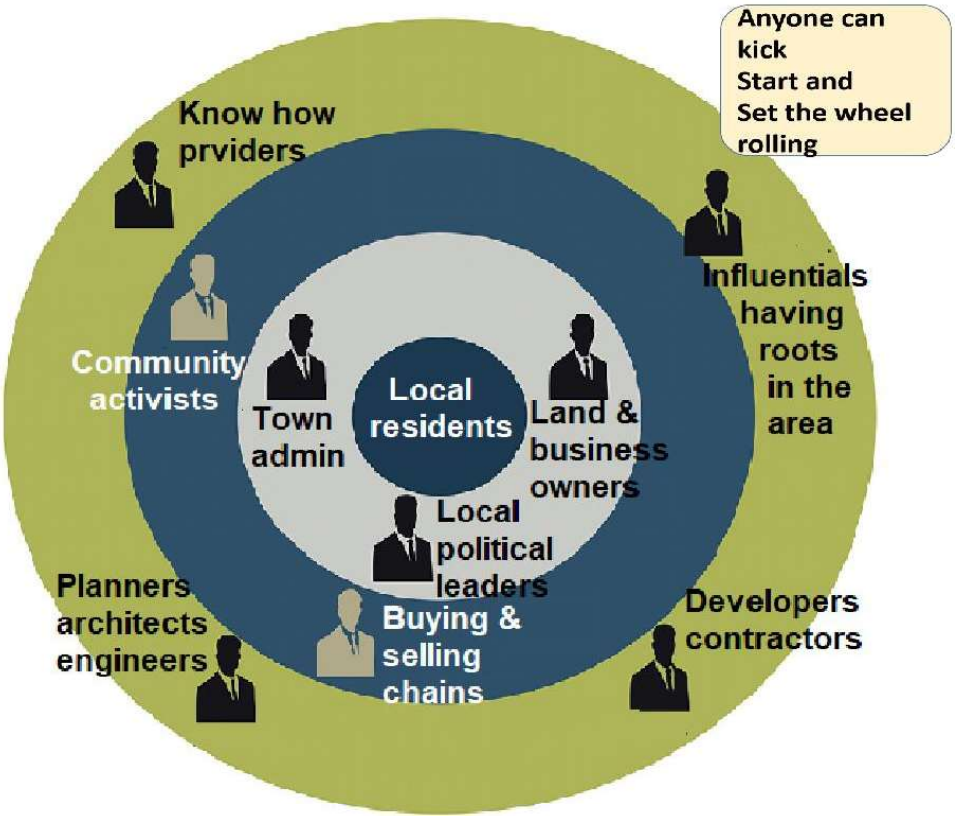


Fig-1: Stakeholders

System Thinking Model

The analysis of well being of impoverished communities found in marginally sustainable small towns, is best done using an analysis tool that is able to methodically find an intergrated system level solution that can be customised to the predicament of each community together with its interacting towns around it. The first step is the assessment of the development needs of the community shaped into the goals. Once the goals are set, means have to be ascertained as to how to accomplish those goals, how to train and educate the populations, how to draw investments towards them, and ultimately how to balance the cash flow of money coming in versus money going out. The model needs also to count what products a community needs. It is very important because the 'need based' economic system will perform far better than the traditional 'supply demand' system.

A well-being Model, on Vensim Software, [Fig-2] was used, which takes the form of a participative development applied on well being of a small town. The overall parameters of study is the capital movement from draining out to building in, that goes with internal investment to external investment. The variable parameters are: technology insertion, capacity building, resource exploitation, local manufacture, earning from their export vs export of raw materials, and entrepreneurship. It was used as an instrument of analysis in small towns. The interplay of these variables reflect on the extent to which the conditions of the people change.

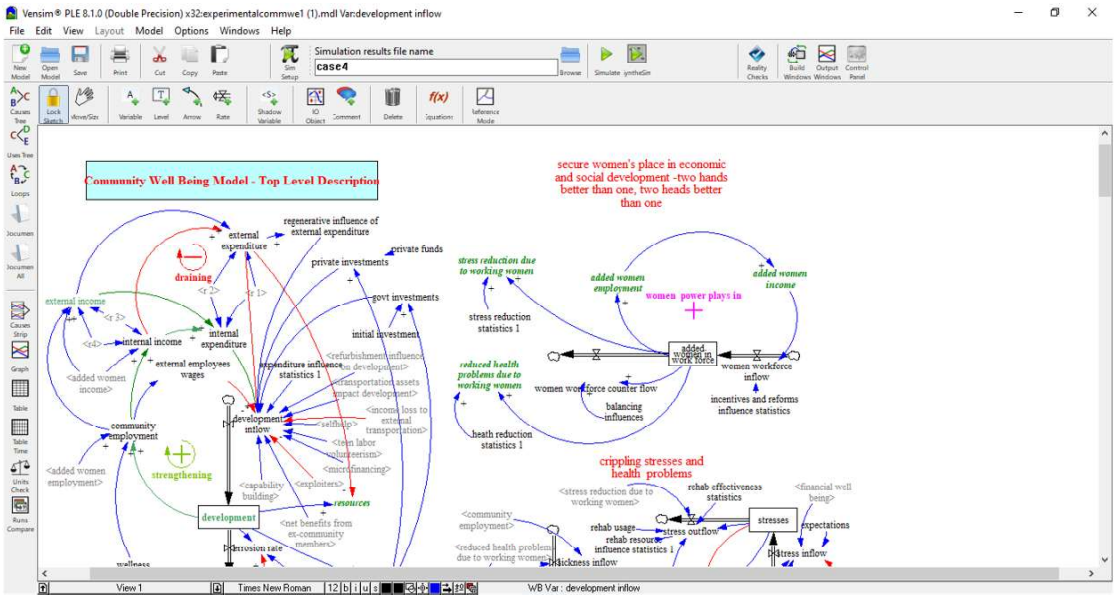


Fig-2: Vensim Participative Development Model

The exercises started with, collecting data physically or from net, mobile, or email, and interview people answering a structured questionnaire:

A walk through the area is then conducted, recording the information on a physical map as well on the templates given above, identifying resources and stakeholders, noting the growth potentials and impediments; and capturing the available digital instruments and their use, noting the existing occupations and possible means of uplifting them.

A vensim model is then developed and run, to understand the inter-relationships and influences of different input parameters on the main outcome parameter of sustainability.

Typical Results

Every small town, or a locality within a big city, so worked on, showed unique set of issues of their own and thereby, equally unique solutions that were identified. A few selected ones are described here:

Ichhra Lahore Urban Renewal Case Study

The Bazar, [Photo-1,2,3], is great attraction to the posh customers, but the business is hampered by lack of access and parking lots, due to which the value of the shops, both rental and purchase prices drops down, as you go interior. The value will jump manifolds, if drive through and parking is provided. The value of mostly ground plus one residential units will also multiply, if congestion is eased by moving vertically up into multi storied apartments, following the Chinese urban re-generation examples of the eighties. An urban regeneration project will be a classic case of win-win of all the stakeholders, shop keepers, residents, and small businesses. See Plan-1.



Photo-1: Ferozpur Road: The Arterial Corridor of Lahore



Photo-2: Ichhra Bazar Street View

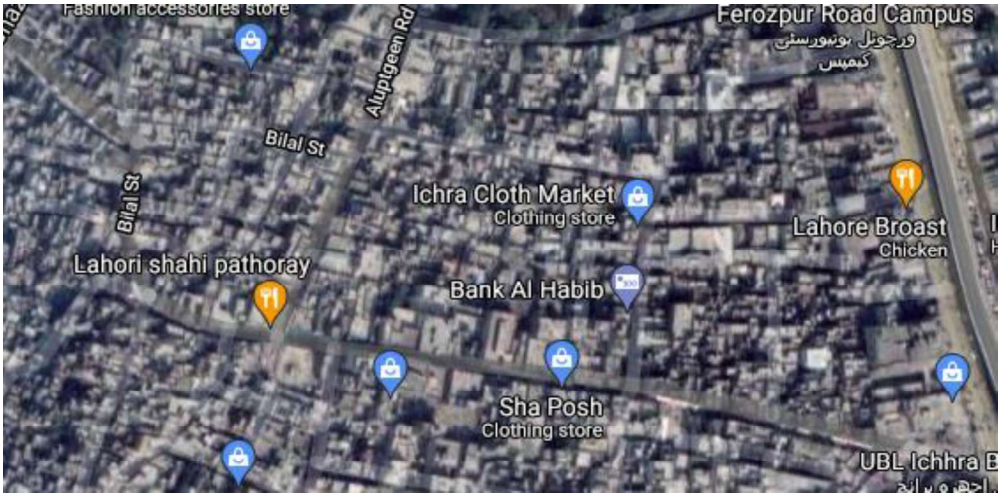
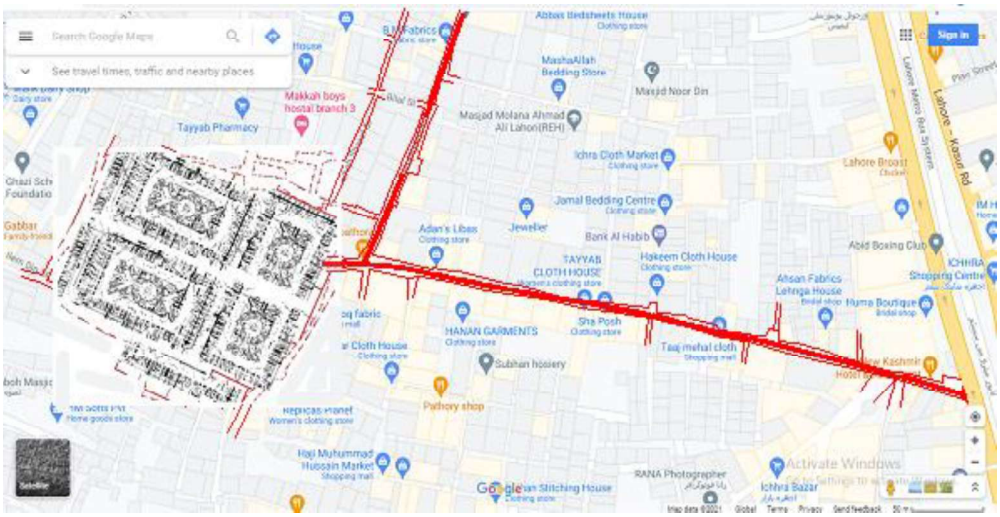


Photo-3: Ichhra Bazar Google View



Plan-1: Proposed Parking cum Multipurpose Complex

Taunsa Sharif Urban Improvement Project

Taunsa Sharif a fast growing population of 100,000 is in the middle of a region of high attractiveness and competitiveness. Taunsa Sharif is a connecting point of two provinces of Punjab and Baluchistan, CPEC and Indus Super Highway. An international airport at DG Khan is close by. A major power source at Taunsa Barrage is close by. A major religious shrine, of Sufi Suleman Taunsvi attracts a good deal of visitors. But the civic conditions are pathetic. Groundwater at Taunsa is not fit for drinking as per WHO standards, except sodium adsorption ratio SAR and residual sodium carbonate RSC.

Sanghar Nullah produces havoc every year in flood. It is a wake up call to the residents, to attend to their problems of water, sanitation and street lighting, and urban landscape. See Photo Set-4



Photo Set-4: Taunsa Sharif Urban Improvement Project



Plan-2: Taunsa Sharif Resource Mapping and Intervention Area

Vehari

Vehari, once known to be the city of cotton, with a population of about 150,000 is on 27th position among 35 districts of Punjab on human development scale. People are suffering from unemployment because of failing cotton processing factories and cottonseed oil manufacturing plants. Shortage of water in river Sutlej, affecting the feeding Luddan-Vehari canal. Overuse of pesticides, specially endosulfan, is posing serious environmental and health risks. A number of Katchi abadis, without adequate municipal amenities, are sprawling. Municipal administration is not being able to cope because of lack of revenue. The city is growing though, with 5-3 marla housing along north-east and south-west extensions, under the pressures of population growth. An Industrial Estate 6km away at Kutch Khu road is not helping the local land and business owners. So far it has attracted the pharmaceutical and food processing external investors, the market price running less than the originally announced. The answer lies in addressing the root cause. The farmers need to be educated in efficient water use, pesticides use and mechanized farming practices. A number of 'model farming estates' with farmers' technical training, are recommended. Once cotton is back on track, the cotton and cotton seed oil mills will be strengthened, the industrial estate will gain ground, the employment level will rise, and any very much needed katchi abadis urban regeneration schemes will be feasible. See Photo-5 and Fig-3.

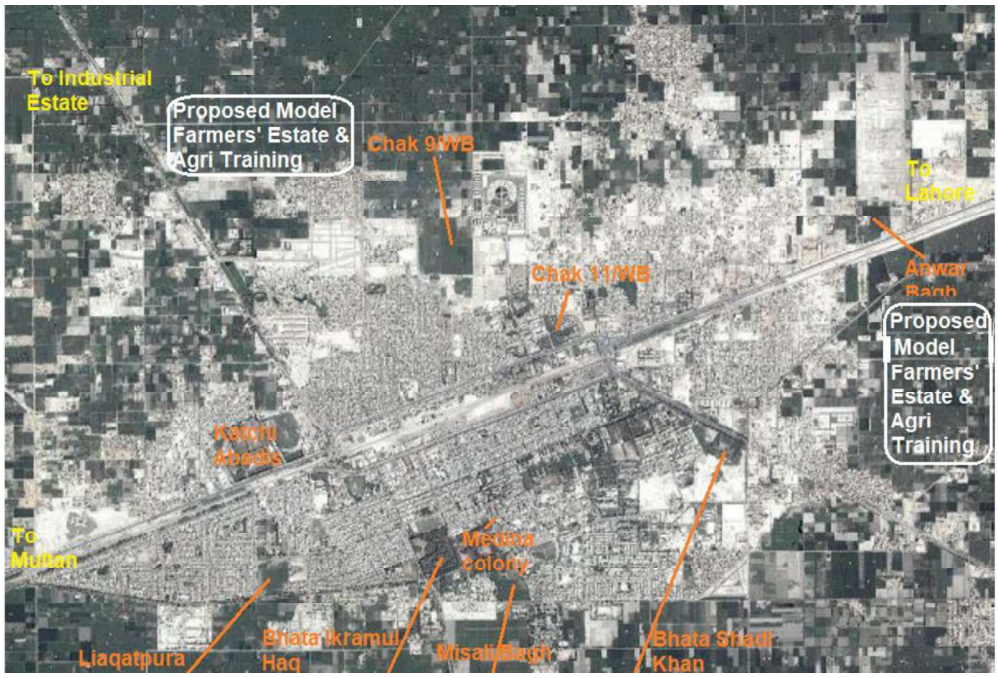


Photo-5: Vehari Google View

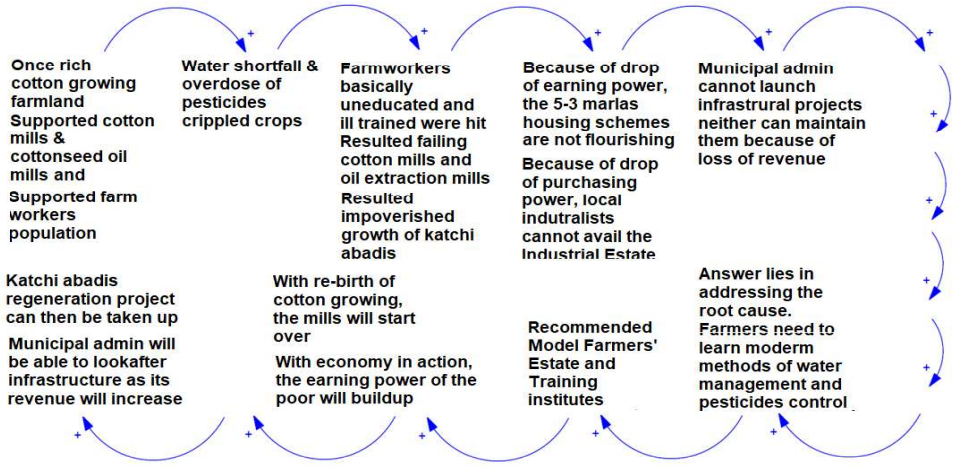


Fig-3: Vehari City: Causal Loop

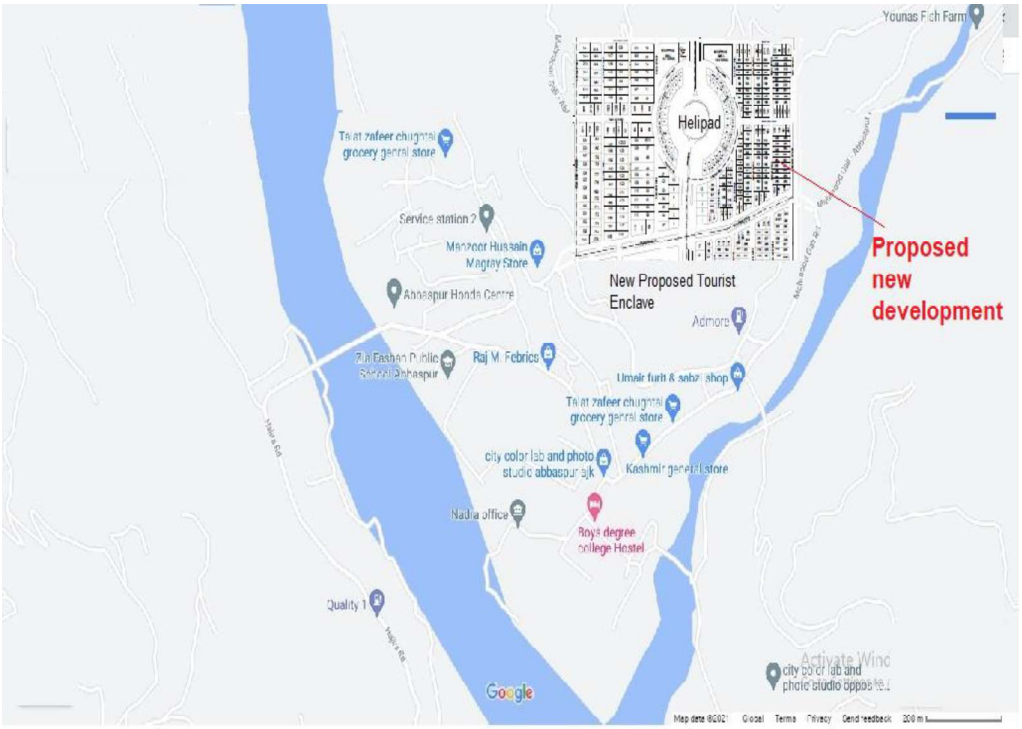
Abbaspur Town

Abbaspur, a picturesque paradise, is a town in Azad Jammu and Kashmir, near LOC, 25km from Poonch with a population of 100,000. It is situated at the confluence of Tatan Di Rangur Nullah and its tributary. The nullah flows into Poonch River. 3,044m high Ganga mountains in landscape on the left is the most beautiful range in Kashmir. Famous Gulmarg in occupied Kashmir is on the right. The town produces red beans, handicrafts, hand stitched Kashmiri garments, and fish. Cow and goat breeding is a prominent means of occupation. A number of people have emigrated to countries like UK and send foreign exchange goods and invest in property locally. They can be tapped. A number of people originated from the area have gone in Army and Government, or run transport business. They can be tapped. The scenic surroundings are a cash point. A new tourist enclave can be planned there with a helipad, hotels, and display centers of world famous Kashmiri hand knitted shawls. The proposed

development will immensely raise income levels of the land owners, business owners, value addition to the produce, and ultimately the government revenue.



Photo-6: Scenic Abbaspur a Tourist Attraction



Plan-3: Abbaspur Proposed New Development

Findings

The findings of the exercises on the four small towns/ localities can be summarized in the comparative tabulated form:

Small Town /Locality	Ichhra	Taunsa	Vehari	Abbaspur
Proposed Intervention	Overhead Viaduct to Multi-storied Parking	Sanitation, Flood Control, Street Lighting and Parks	Efficient Farming Soil Fertility Rehab	Helipad Access and Tourism Development
Strengths	Posh customers are attracted	Up coming CPEC, Super Highway, Airport and Industrial Estate	Rich cotton growing fields, cotton processing and oil expelling industries, oncoming industrial estate	Most scenic mountainous part of Kashmir has high tourism attraction
Weaknesses	Lack of access and parking	Poor quality ground water, Flooding from Nullah, Poor sanitation, Poor urban landscape	Katchi abadis in middle of town, municipal failures,	Poor and difficult ground access, lack of tourists accommodations
Threats	Congested area to work in	Congested down town	Water shortage in canals, diminished soil fertility	Congested town
Opportunities	Rentals, property values, and sales are bound to go multiply	If impediments are met with, the Recently gained importance can be cashed into multiplied property value, rentals and sales	If efficient farming and soil rehabilitation practices are introduced, the economic revival will generate resources	Local industry of red beans, handicraft, and garments can grow multi fold if access is provided
Potential of Internal Equity Raising	Strong	Very limited	Very limited	Very limited
Potential of External Investments	Strong, and convincing investors is easy	Strong, but convincing investors is not easy	Strong, but convincing investors is not easy	Substantial Kashmiri remittances can be tapped
Return on Investment	Quick	Slow	Slow	Quick
Well being of people	Trickle down effect ensured	People will gain because of increase of economic activity	People will gain because of increase of economic activity	People will gain because of ease of access

Conclusion

The exercise reported in the Paper concludes that the solution for the sustainability of small towns including the impoverished localities in the big cities in Pakistan can be successfully attempted using the proposed integrated, holistic and participatory approach. The toolkit developed by UN Habitat and the Prince's Foundation, for this purpose, and system thinking Vensim Software are applicable. Teams of engineers need to be trained and organized in small towns for this purpose. They need to walk

through the towns, identify the existing issues, and map the strengths, weaknesses, threats and opportunities there. They need to formulate solutions, identify the stakeholders, and conceive respective projects that could address to the sustainability.

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