Productive Landscape: An Integrated Approach for Sustainable Township in Pune Region

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Abstract:

One of the major impacts of rapid urbanization is the tremendous reduction in availability of arable lands around cities and towns. Due to this, quality and quantity of agriculture produce is hampered. So there is a dire need to find alternate solution to fulfill food requirement of our society to some extent in urban areas. Considering this as core concept, landscape architects and planners are coming up with new ideas of integrating productive landscape in new upcoming townships. These productive landscapes significantly aid to sustainability of campus by diminishing the amount of energy used to produce food, it also provides environmental, ecological, socio-cultural & economic benefits. Public participation in such productive landscapes help urban residents to promote, to realize the sustainable development of cities. The paper analyses the barriers associated with integration of productive landscape and its management in urban townships. The study helps us to understand the role of the productive landscapes, the tangible and intangible aspects the residents can achieve after successfully arranging such landscapes in the urban residential areas. In this paper, the urban residential productive landscape is analysed in three mega townships in Pune through questionnaire surveys and expert interviews, to bridge the gap between knowledge and implementation of productive landscape in urban townships, and provide guidelines for integration of productive landscape for sustainable campus planning.

Keywords:

Productive landscape, public participation, integrated Sustainable development, urban townships, Pune region.

Introduction

Around 1.6 to 3.3 million hectares of agricultural land per year will be lost in the period between 2000 and 2030 due to urbanization (UNCCD). The global population migrating and living in cities is projected to increase to 2.5 million by 2050. Such growth often results in urban sprawl, with built area spilling onto fertile soils and agricultural land, resulting in a permanent loss of arable land. The UN sustainable development goal 11 aims to Make cities and human settlements inclusive, safe, resilient and sustainable (UN 2016). Productive landscape is an important contributor and can be a significant part of sustainable development. Development of productive landscapes needs to consider interdisciplinary and integrative approaches such as economic, political, social, cultural, ecological and planning

aspects to improve existing urban landscapes."Continuous productive urban landscape (CPUL) is an urban design concept integrating food growing into the design of cities through joining together existing open space and disused sites into a linear landscape that connects to the countryside."[2] (Bohn & Viljoen Architects in 2004). We aim to create a landscape that will integrate the local people, thus increase interest in agriculture and bring social welfare to

the society. “Evolving models of productive landscapes go back to 19th century with the works of Ebenezer Howard, Le Corbusier, Frank Lloyd Right, and Ian McHarg. Evidently, cities have been amalgamated with nature for centuries; the only difference now is that urbanization has made food production invisible.” Today sustainability is the need for resilient development, merging agriculture with the new technology, blending productive landscape with urban landscapes will encourage urban agriculture in the city, hence creating more sustainable urban environments. The application of productive landscape enhances economic development through food production, builds social capital, community well-being and enhances the environmental requirements. Blending agriculture, horticulture with urban landscapes can be a solution by contributing to the development of sustainable and resilient cities that are inclusive, food secure, productive and healthy. From this study it is evident that though there are challenges, there are many factors that are favorable like existing infrastructure, knowledge and motivation among citizens, study of existing policies and technology needs to be done for wider adoption of productive landscapes in various Indian cities

The main focus is making landscape productive and at the same time integrating people in the development of the landscape, by creating a new, always changing, landscape pattern. In this paper, the urban residential productive landscape is analyzed as a landscape used to connect the community to local produce and encourage social welfare. The paper summarizes that productive residential landscape demonstrates the seamless sustainable integration of agriculture into Pune city’s urban sprawl, creating a recreational productive space that blends with the community domain in a way that can be acknowledged by those who experience it.

This paper aims to analyze the barriers in sustainable implementation and management of productive landscape in urban townships.
The objectives area as follows:
1. To study and understand productive landscapes using sustainability Toolkits.
2. To understand importance of integration.
The scope of the paper is finding the challenges in implementing productive landscape in the residential townships of Pune. The scope is limited to only 3 townships having area 300acres and above where productive landscape has been or can be implemented.

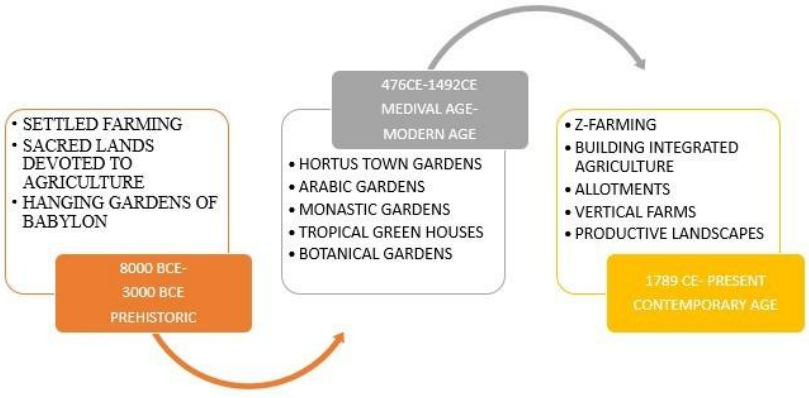


Fig 01: Evolution of Productive Landscapes timeline Source: (Author)

Methods and Methodology:

Fig 02: Methodology Source: (Author)

Literature review was done by collecting data from research papers available on similar subjects. For primary data collection three sites namely the mega townships in Pune have been selected. The Nanded city, Magarpatta city and Amanora Park town.

A focused interview was conducted of the management to understand the factors which are barriers or challenges faced to implement and manage the productive landscape in these townships. Also a Google form survey was circulated with the residents of the above mentioned townships. The analysis was done to prove that integration of productive landscape in urban township helps in the overall sustainable development of the residential campus. Sustainability has been mainstreamed as a guiding principle in the urban development debate, which follows an integrative approach to include environmental, economic and social aspects in urban planning and management.

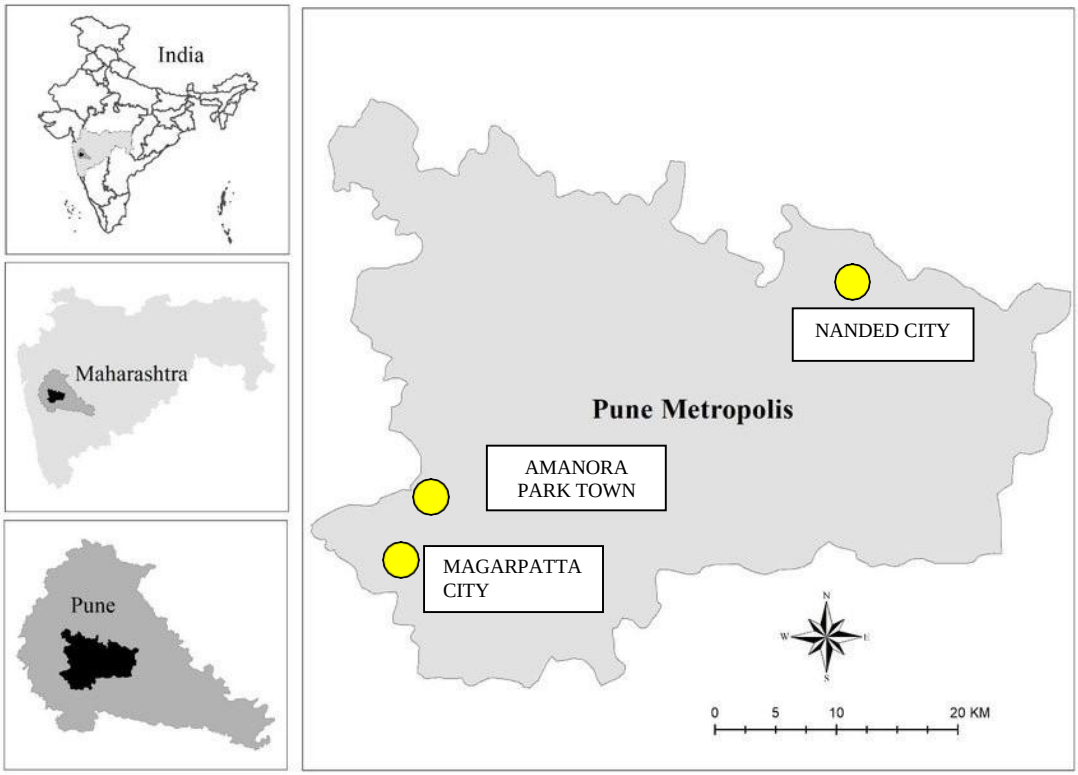


FIG: 03 Maps showing location of townships (Pic.Source: internet) Developed by Author

Selection criteria for Productive landscape gardens:

1. Only 3 residential campus where productive landscape is/can be implemented and managed are selected.
2. The productive garden should necessarily be in an urban residential campus.
3. Hence the three mega townships where productive landscape can be/is implemented and managed were selected and analyzed.

Data Collection:

	NANDED CITY	MAGARPATTA CITY	AMANORA PARK TOWN
Area	700 acres	430 acres	400 acres
Area of open green areas	12 acres + 230 acres	20 acres	10 acres

Table No: 1 Statistics of the selected townships

Sites selected are Mega townships of Pune namely,

Nanded City:

Nanded City is a township located in the south-west of Pune, India Construction began in 2010 and continues to develop itself with newer housing societies. Satish Magar is the chairman & managing director of the township. (Wikipedia google)

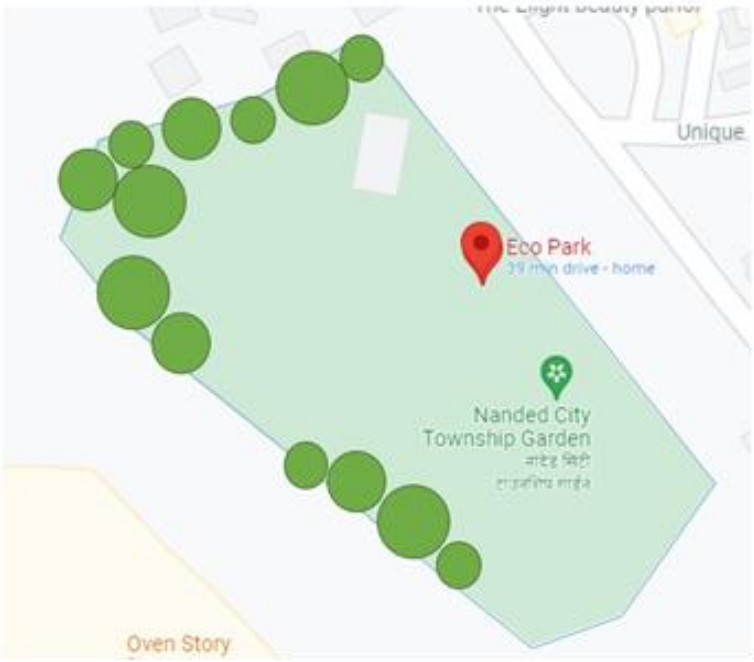


Fig: 04 map showing location of Ecopark in Nanded city (Source: Author)

Fig 05: Vetiver plantation in Nanded City.(Source: Author)

Fig 06: Guava Plantation in Nanded City. (Source: Author)

Magarpatta City:

Magarpatta is a, privately owned gated community in Hadapsar area of Pune, Maharashtra. It has a residential area, rcommercial area, hospital, shopping malls, restaurants, a gym, Aditi Garden is made up of green. Construction started in 2000 and still continues to develop itself with newer residential societies. Magarpatta was originally a farmland in Hadapsar, owned by the Magar (Patil) family of Hadapsar. Satish Magar is the chairman & managing director of the township. (Wikipedia)

Fig: 07 Aditi Garden Magarpatta city (Source: Author)

Fig: 08 Plan of Jagtap Nursery Magarpatta City (Source: Author)

Fig: 09 Jagtap Nursery Garden center Magarpatta city (Source: Author)

Fig: 10 Lily Plantation in Jagtap Nursery Garden Center Magarpatta City (Source: Author)

Amanora Park Town:

Amanora Park Town is a residential township project based in Hadapsar, Pune. The project is developed by the City Corporation Limited. The township project comes under the Government of Maharashtra's special township policy. (Wikipedia)

Fig: 11 &12 Amanora Park Town green open space (Source: Internet)

Survey

Based on site visits, expert interviews and stakeholder survey following challenges to accomplish a sustainable productive garden in urban residential campus were observed. The questionnaire was based on the sustainability toolkit environmental, economic, and socio-cultural.The questionnaire was floated to study the awareness of stakeholders. Based on sustainability toolkits the benefits of productive gardens in residential campus to stakeholders were analyzed. Following are the readings.

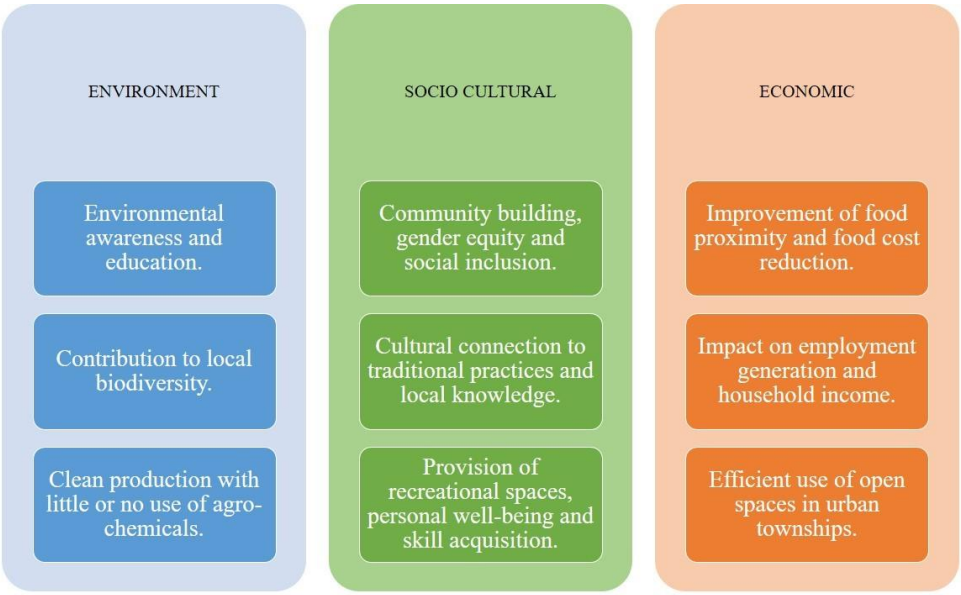
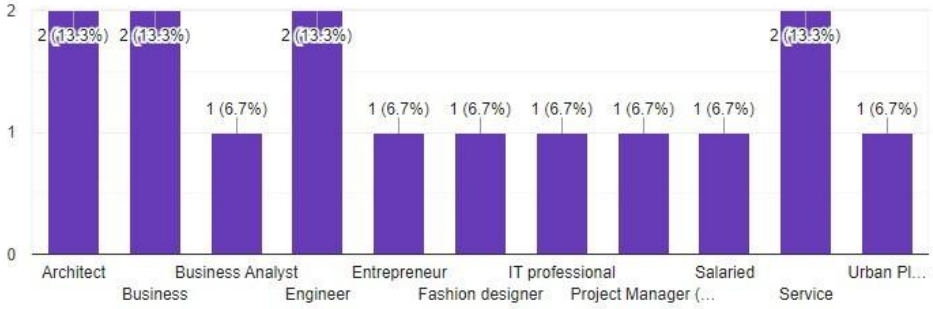
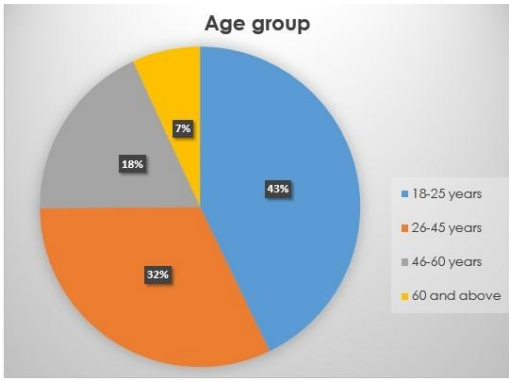


Fig: 13 Sustainability Toolkit for questionnaire and interviews (Source: Author)

Table 2

General info	Name
	Profession
	Age
	Address
	Gender





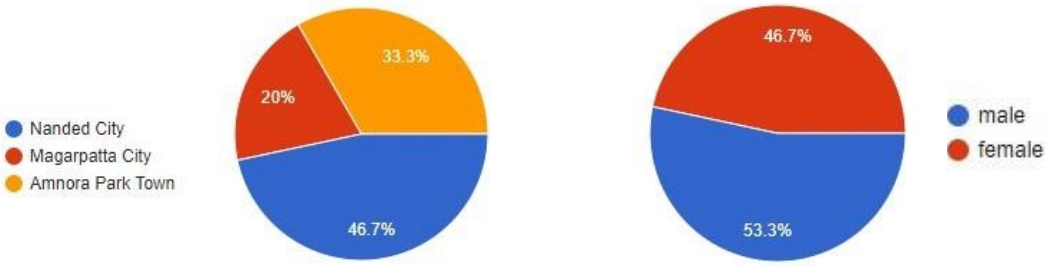
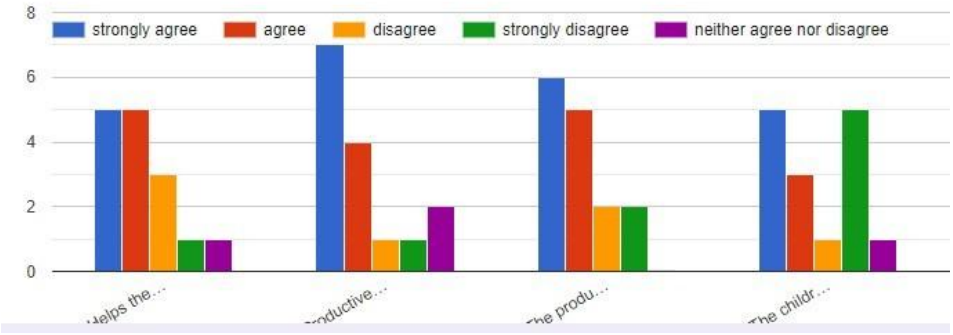


Table 3

Environmental	Promotion and awareness
	Enhancing biodiversity
	Organic production



Statistics of table 3

Table 4

Socio-Cultural	Passing on traditional wisdom
	Local participation and social inclusion
	Provision of recreational space.

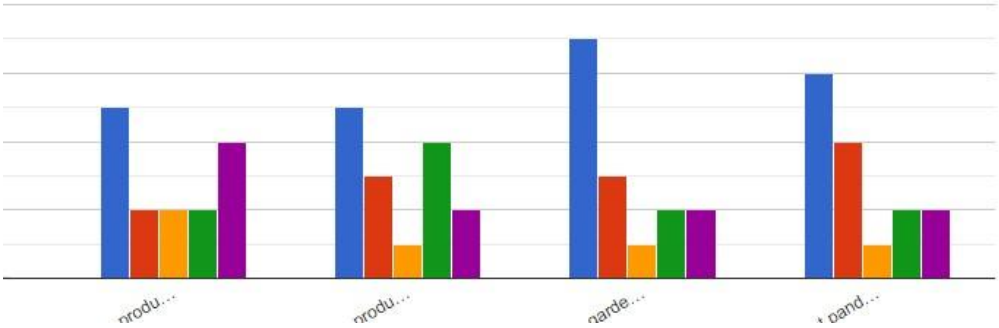


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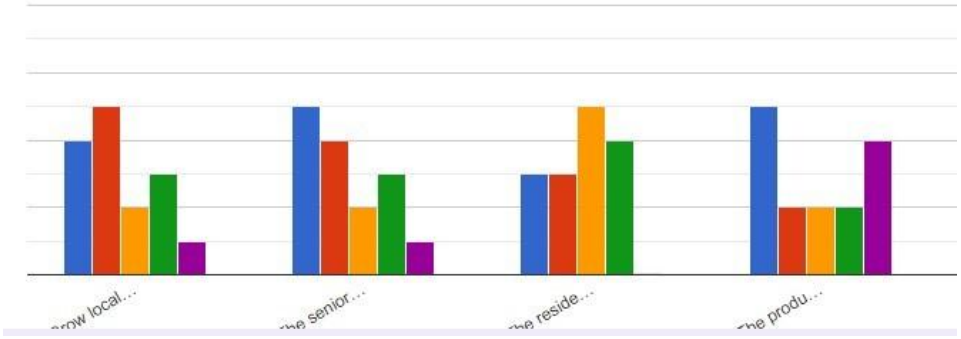
Table 5

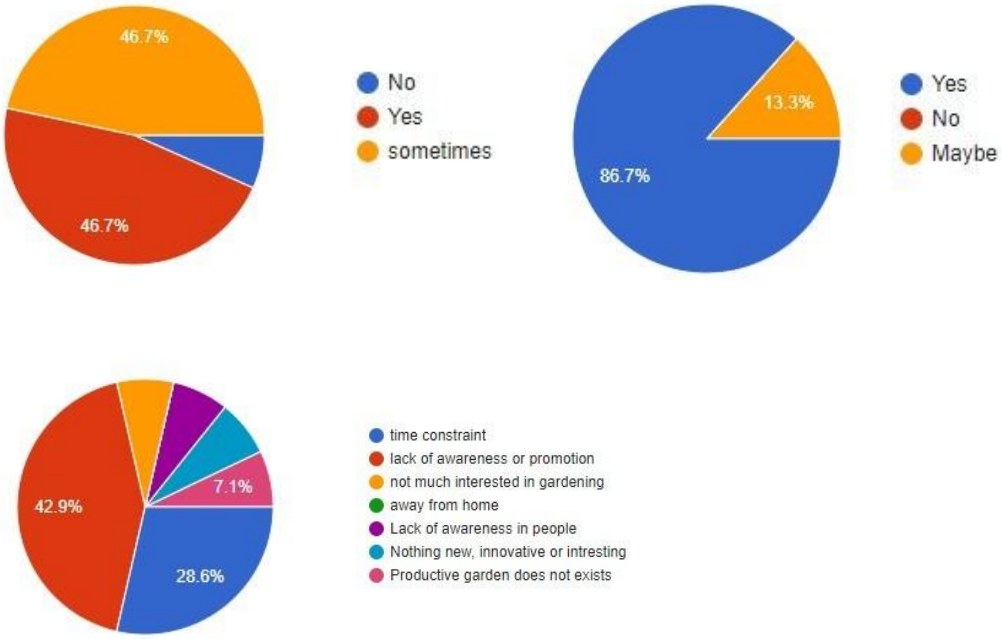
Economics	Food cost reduction
	Employment generation
	Efficient use of urban open space



Statistics of table 5

Participatory landscape development Survey:

Survey was also based on participatory development of productive landscape overcoming the socio-cultural barrier in involvement. Following are the readings of the same:



Expert interviews:

Sampling started with interviewing members of the management of the townships. A face to face focused interview was conducted with close ended questions. Following were the key findings:

1. Soil Quality: one of the main challenges facing urban agriculture is poor soil quality in urban areas soil is often polluted with chemicals, hence difficult to grow crops
2. Water supply: unreliable water supply, infrequent in areas of scarcity of water, it is difficult to irrigate crops.
3. Location of Productive garden in the campus: plants need cooler temperatures to thrive but are exposed to, too much sun due to the natural location of site.
4. Lack of space: limited land available for productive landscape.
5. Lack of experienced skilled labor and management.
6. High costs (water, infrastructure, permits, housing, etc.)
7. Theft and vandalism.
8. Loss and damage of crops from birds, animals and rodents.
9. Deciding upon which vegetables or flowers to grow.
10. Security.
11. Getting the kids in the community interested

Table 06

Environmental	Soil	Water	Seeds	Township
	good	satisfactory	scarce	Nanded city
	satisfactory	scarce	good	Magarpatta city
	satisfactory	unreliable	satisfactory	Amanora Town Park

Table 07

Economical	Skilled labor	Infra costs	Loss/damage	Township
	Available	High	Yes	Nanded city
	Inefficient	High	Yes	Magarpatta City
	Not available	High	NA	Amanora Park Town

Table 08

Social	Security	Location	Theft/vandalism	Township
	Available	ok	Yes	Nanded city
	Inefficient	Good	Yes	Magarpatta City
	Not available	NA	NA	Amanora Park Town

Discussion:

From all the interviews and surveys it was found that

Around 70% Residents of varied professions mostly of the age 26 to 60 years were interested in participatory development of productive landscape, Almost 50% agreed on the environmental and 60% agreed on the Socio-Cultural benefits of productive landscapes in urban residential townships. But around 80% agreed on the economic benefits of the productive landscape. Almost 42% of the residents are unaware about productive landscapes, though after asking about the same they do agree and accept the benefits it will give. After questioning about the resistance in participatory approach 28% said time was a major constraint and 7% said they were not interested in gardening. Nobody complained about the distance which is really a positive approach.

It is necessary to promote and create awareness about the many benefits of productive landscapes in people and also make the landscapes inclusive and participatory.

Also the challenges faced by the management are completely manageable if proper experts are involved. With proper maintenance team and expert guidelines productive landscape can be implemented and maintained sustainably in urban townships. Some little suitable land where water may be a constraint can be irrigated. Other agricultural measures for adaption such as rainfall harvesting and water storage might mitigate the negative impacts of climate change on land suitability and hence maintain some percentage of available arable land.

Conclusion:

Productive Landscape is considered as an emerging tool and blueprint for sustainable urban development as it deals with a wide range of environmental, economic and social objectives. There are possibilities to enhance the value of arable land through adaptive management practices. A good action plan for a sustainable productive landscape development should not only aim at sustaining physical landscape resources, but it should also assure that the residents can participate in the urban productive landscape development. Integrative approach should not be discussed only in literature as a source of contributing instrument to environmental sustainability, but it is also important that how it could be encouraged in developing countries in different social settings. And there are many intermediary factors such as lack of investment, proper management, designing an appropriate planning and public

policy, and political instability, social values, economic circumstances influence to how and what extent the application of integrative approach in developing countries can contribute to environmental sustainability. Scientific and technological development of a country is dependent on both social context and political. In this regard, integrative research with incorporation of participation from different level stakeholders i.e. academic and non-academic is essential to foster sustainable development in the context of challenges toward urban productive landscapes. Integrated productive urban landscapes are intended to build on the current sustainable food movement, offering a conceptual framework for introducing agricultural components into the existing urban fabric. The concept seeks to create a network of spaces focused around the production of food and connecting urban populations with related processes. Urban communities shape sustainable cities of tomorrow, hence creating a social, cultural and ecologically resilient community with help of productive landscapes will help develop a sustainable city.

Acknowledgement:

I would like to express my gratitude to all those who helped me during my case studies for my research related activities to mention a few Mrs. Tejaswini Kulkarni, Mr. Tanksale, from Nanded City, Magarpatta management, and the residents of the above mentioned townships etc.

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I would not have been able to achieve this without your collective support and I am forever grateful to you all.

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Biography of Authors

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