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CASE STUDY AND PLANNING OF SMART VILLAGE

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ABSTRACT

This article examines community-driven multiple use water services (MUS) as pioneered by the Rural Village Water Resources Management Project (RVWRMP) in the Far and Mid-Western development regions of Nepal. These regions are characterised by poverty, remoteness, rugged terrain, food insecurity, water scarcity, and post-conflict legacy. Water provision for domestic and productive uses provides opportunities to address poverty and livelihoods in environments with highly decentralised governance. This study explores the first-hand lessons learned in the RVWRMP in Nepal since 2006. This project is embedded within the local government. Key project entry points are decentralisation, participation and empowerment. This article reflects how the community-managed systems are used for multiple uses whether they were designed for it or not. It focuses on household- and community-level changes and related institution building and participatory planning through Water Use Master Plans and a Step-by-Step approach. Recommendations are made for scaling up multiple use services.

Keywords: Multiple-Use Water Services, Local Governance, Nepal

I INTRODUCTION

Smart villages will serve as complementary engines of economic growth to smart cities producing goods and services for local rural markets as well as high-value-added agricultural and rural industry products for both national and international markets. And they will act as stewards for the environment as well as, in some cases, functioning as ecotourism hubs. Key enablers of these development benefits in smart villages are sustainable electricity supplies and the availability of clean and efficient appliances for cooking. Productive enterprises and facilities with higher energy demands will tend to be located in hub villages supplied by the national grid if sufficiently close or – for the many remoter communities – by local mini-grids driven by renewable energy sources, possibly in hybrid form with

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diesel generators in some cases. The more dispersed communities around the hub villages will typically use pico-power and stand-alone home systems to provide more basic levels.

In the Indian context, village are the heart of the nation. Hence, for the development to percolate to the Grass root level, focus must be developed to the progress of village and to smarten the rural population using ICT solutions to achieve self sustainability.

Imbalance growth between rural and urban landscapes leads to the challenge of rapid in already crowed Indian urban masses. One of the main consequences of uncontrolled urbanization is lack of livelihoods, good standard of living and amenities in the villages of India. Smart village concept may play crucial role in maintaining the balance between the development of rural and urban areas and help to reduce migration of rural population in urban areas. Urban population density is increasing in uncontrolled manner, while the numbers of cities are still inadequate to accommodate the migrating population from villages. This needs to be reversed and suitably managed to improve quality of life in Indian cities. The concept of "Smart Village" will also address the multiple challenges such as unplanned urbanization, under-development of villages, migration for economic pursuits, better standard of living etc

Fig1: Core Smart Village

II MOTIVATION

1) In India there are 610 districts, (200 backward) 600,000 villages (125,000 backward.) About 800 M people in India live in villages and at least half of them are below 25 years of age. The Government takes responsibility for uplifting rural and poorer regions. There is lot of public spending to improve. the infrastructure, water and sanitation in these areas.

2) These efforts are disparate, fragmented and piecemeal. Not much improvement achieved in most of the villages.

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3) There is a need for designing and building Smart Villages which are independent in providing the services and employment and yet well connected to the rest of the world.

III NEED FOR SMART VILLAGES

The village communities are little republics, having nearly everything that they want within them selves, and almost independent of any foreign relations . In the development process, there will be many changes in the demand and supply of various needs, as rural population will pass through the process of change. At present, one of the major challenges in India is growing population and rapid urbanization. This urban growth to certain extent is unavoidable as the economic pursuits and aspirations of the population do change and evolve. This needs to be reversed and suitably managed through a balance between rural and urban quality of life. The concept of "Smart Village" will address the multiple challenges faced for sustainable development of rural India. A "Smart Village" will provide long-term social, economic, and environmental welfare activity for village community, which will enable and empower enhanced participation in local governance processes, promote entrepreneurship and build more resilient communities. At the same time, a "Smart Village" will ensure proper sanitation facility, good education, better infrastructure, clean drinking water, health facilities, environment protection, resource use efficiency, waste management, renewable energy etc. There is an urgent need for designing and developing "Smart Village", which are independent in providing the services and employment and yet well connected to the rest of the world. Based on various programs undertaken taken by Central and state governments along with further technological Initiatives, the Smart Village can achieve SMART infrastructure, SMART service delivery, SMART technology and innovation, SMART institutions along with optimal mobilization and Utilization of available resources, leading to faster and more inclusive growth. A 'Smart Village' will Encompass a sustainable and inclusive development of all sections of the village community, so as they enjoy a high Standard of living

IV TOWARD DEVELOPMENT OF SMART VILLAGES

It is clear that the situations and challenges in developing urban and rural area are different due to the constraints and opportunities. Many researchers believe that the existing technologies developed for the smart city may be useful for the smart village concept. Researchers reported that the Smart village system can be developed on the lines of smart city model. The components taken in to consideration will vary from region to region for villages, based on the available resources and opportunities. Following are some generalized guidelines for the development of Smart Village

1. Economic Component: This component will include local administration and economic factors. It will cover governance models, bandwidth, mobility, cloud computing, entrepreneurship etc

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2 Environmental Component: This component will address the issues related to resources and infrastructures available at local level. It may covers cleaner technologies, public and alternative transportation, green spaces, smart growth, climate change etc.

3. Social Component: This component may address issues related to community life, participatory democracy, social innovation, proximity services etc

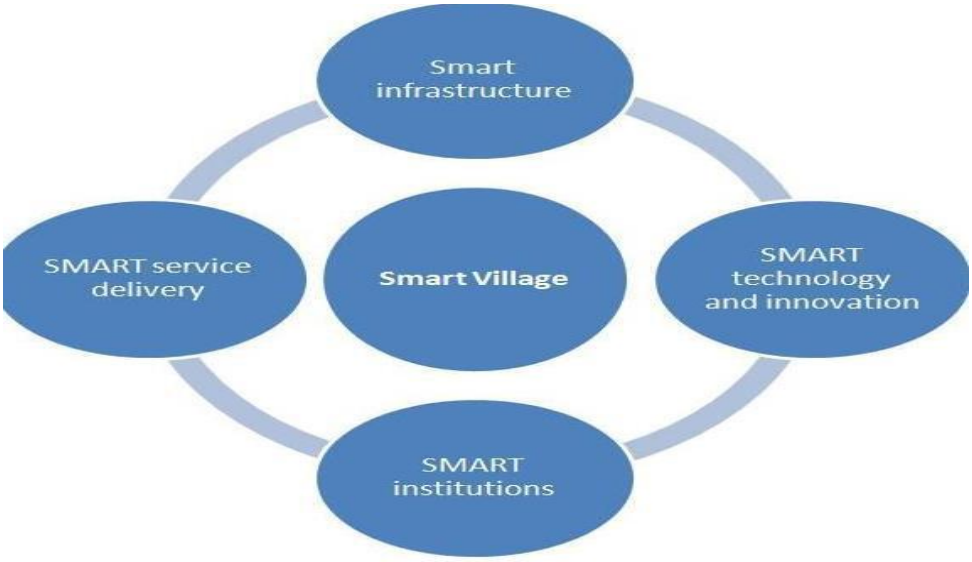

Fig2: Components of smart village

V LITERATURE SURVEY

Paper name [1] This article examines community-driven multiple use water services (MUS) as pioneered by the Rural Village Water Resources Management Project (RVWRMP) in the Far and Mid-Western development regions of Nepal. These regions are characterised by poverty, remoteness, rugged terrain, food insecurity, water scarcity, and post-conflict legacy. Water provision for domestic and productive uses provides opportunities to address poverty and livelihoods in environments with highly decentralised governance. This study explores the first-hand lessons learned in the RVWRMP in Nepal since 2006. This project is embedded within the local government. Key project entry points are decentralisation, participation and empowerment. This article reflects how the community-managed systems are used for multiple uses whether they were designed for it or not. It focuses on household- and community-level changes and related institution building and participatory planning through Water Use Master Plans and a Step-by-Step approach. Recommendations are made for scaling up multiple use services.

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Paper name [2] The current study mainly aimed to investigate the Malaysian Smart Village project in a rural community which is labelled as Kg Besting in Malaysia. Specifically, the study intended to address the major issues faced by the community of farmers, identify the Smart Village indicators and put forward a strategic plan for the Smart Village implementation. It was carried out among Malaysian farmers in Kg Besting community in Malaysia. Data was collected through a survey, focus group interviews and documents. The quantitative and qualitative analyses of the data revealed that the major issues faced by the farmers in this community in agriculture are limited involvement of human capital in agricultural activities, the small size of land and limited knowledge of using technologies and innovative techniques to enhance the agricultural processing and production. Other issues are relevant to Micro Small Medium Entrepreneurs (SMMEs) in Kg Besting include lack of raw materials and crops, lack of machinery, limited knowledge and lack of advice and networking on how to ensure mass production and healthy marketing competition at the regional and global levels. Thus, the study emphasizes the importance of meeting the community‘s needs in Kg Besting and offers several useful recommendations. In conclusion, by incorporating the concept of ―Smart Village‖, the current study considers the potential Smart Village as an innovative means of improving rural people‘s life and it introduces a strategic implementation of the Smart Village project in Kg Besting in three phases; social empowerment, developing the Smart Village ecosystem and economic empowerment.

Paper Name [3] Developing smart city requires many types of information, including geospatial information. Geospatial information serves as the base data from which other data will be referenced upon. The production, provision and dissemination of geospatial information in Indonesia are regulated by Law 4/2011 on Geospatial Information. However, only few areas have been mapped at the scale of 1:10,000 and 1:5,000. This situation left many cities without large scale map able to depict building footprints or parcel boundaries. To obtain information on the geospatial information availability in Indonesian cities, a survey has been carried out nationally from April – July 2015, as part of a research on spatial data infrastructure. 90 cities/districts participated in the survey. The findings show that majority of the cities/districts have limited availability of large scale topographic maps and land parcel maps. With regard to developing smart cities.

Paper Name [4] At Soka riverbanks, there are some archeological remain artifacts of the Jatinom village founding figure and an Islamic preacher. In the present, the area of Jatinom has been developed into a religious Tourism village although most pilgrims only come to the place at the tradition ceremony only. The study aims to develop the tourism of Jatinom by maximizing the potential of riverbanks condition. It employed a descriptive-qualitative approach.. The results show that the tourism development could be realized by combining a religious tourism with nature-based tourism, connecting the tourism objects through easy access, and improving the quality of landscape.

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VI . PROPOSED METHODOLOGY

The design methodology that we propose for building a smart village consists of

- Assessment of the investment climate of the village.
- Formulate the growth strategies for the village.

i). Assessment of Investment Climate of the village

Investment climate of a region is defined as policy, institutional, and behavioral

Environment, both present and expected, that influences the returns, and risks, associated with an investment. We perceive these as location specific factors like infrastructure, primary occupation of majority of people, nature of industries/business (SMEs) and finance inflow/outflow that impacts the investment and growth of the region. The investment climate of villages differs depending upon the significant occupation of the village and its natural resources. The primary occupation of the villagers can be farming, aqua culture, working for industries such as apparel or leather goods or doll making. The village can be a tourist location, pilgrimage centre, or a place of historical importance etc. Mines, Forests, Ocean shores or River banks can be part of the natural environs of the village. So the growth strategy of a village depends primarily on its investment climate. Hence, assessment of investment climate of the village is the first step in design of a Smart Village.

ii) Formulate the growth strategies for the village

Providing quality utility services like power, water, sanitation, and essential services such as education, healthcare, transportation, infrastructure (roads, railways, buildings, equipment) etc must be the primary strategy for the development of every village. Some of the utility services can be managed at a district level and others such as health care, schooling etc need to be managed at village level for proximity and accessibility reasons.

Investment climate of the village is also impacted to a very large extent on the availability of the above mentioned utility and other services in the villages. The next step is to formulate Growth Strategies for the village to make it self-sufficient taking into account the investment climate and other factors discussed above. Strategic questions such as what the kind of SMEs needs to be developed in the village, the kind of vocational training to be given to the residents of the village and how to attract investment as well as entrepreneurs must be formulated and answered. For example: If village is a tourist location, then the growth strategies would be aligned towards construction of restaurants and hotels, development of transportation services like cabs or buses, vocational training to act as guides, security, working as chefs in restaurants or kirana shops selling the unique products made in the village, pharmacies and hospital services through mobile van etc. The residents of the village can be trained to be engaged in providing the above mentioned services. Once there is a clear picture on the kinds of industries/ SMEs that must come up in the village, then the funding agencies Microfinance Institutions or NGOs that can be decided. The Business Development comes to the village.

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Although, we concentrate on self sufficiency of the villages here, the issue of the village being a part of a SME cluster or a part of the global value chain should not ignored. There are several villages in India like jaipur rugs, pochampally saress which are a part of the global value chains. Even here orchestrators who can manage the order to delivery supply chain, with deep domain knowledge and connections with the government and industries are needed. The Governments need to support these entrepreneurs and enable their success.

Smart village ecosystem-

An Ecosystem comprises of networks of small and medium enterprises farmers, employees; local, state and central governments; other industrial, social and political organizations; infrastructure, logistics and Information Technology, communication services that connect the companies and the states to the external economic and social environment; and resources including natural, financial and skilled human resources with connections, knowledge of the industrial environment, interacting together with the Landscape (space or domain) and climate to provide the services for a village. This Ecosystem approach integrates all the institutions that are responsible, resources needed, services to be rendered and the service delivery technologies and mechanisms.

We define **smart village** as a bundle of services delivered to its residents and businesses in an effective and efficient manner. The Smart Village ecosystem brings all the services of the village and its providers and users on a single platform. Dozens of organizations need to collaborate across industries to build a smart village. These include Governments, Social organizations, Companies big and small, Farmers, labor etc. Many of these organizations fall outside the traditional value chain of suppliers and distributors that directly contribute to the creation and delivery of a product or service. The ecosystem also comprises entities like regulatory agencies and media outlets that can have a less immediate, but just as powerful, effect on the business in the village.

Fig2: Smart village ecosystem

The smart village is a formation resulting from co-evolution of four distinct forces and innovations these four sectors.

They include :

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- Modular services and Modular service chains
- Service delivery technologies such as logistics and IT and their mechanisms
- Institutions that influence the governance and regulations
- Resources and their management

The basic services offered to the rural residents are supply of purified water, affordable housing, primary education, vocational training, help in farming techniques, procurement of seeds and fertilizers, training and employment opportunities in SMEs like leather, crafts, food processing units, retail / kirana shops. The services delivery technologies and mechanisms like road transportation by bus/truck ; IT and mobile networks; procurement, warehousing and marketing for agricultural and SME produce; Food Courts; e-kiosks for bill payment; applications like Spoken web for commodity price broadcast, social networking, etc; post office based services like ticket booking, e-purchase, etc need to be developed. Existing infrastructures like post offices can be used as village information centers that provide all the information from market prices of various commodities, advice related to agricultural, animal husbandry or health related issues, educational information for students of class X and XII, employment opportunities, career guidance for young people, to online applications for pan card, driving licenses, tax and bill payments etc. They can also have a call centre based regular monitoring and grievance system so that their complaints are attended to. This calls for a lot of awareness and training in the initial phases to educate and make people acquainted with the new systems. Vocational training has to be provided on a large scale to make them familiar with IT, maintenance of records, operation of the equipment and managing their finances. Proven initiates such as micro finance need to be nurtured more strategically in rural areas. Insurance schemes like crop insurance, livestock/cattle insurance, health insurance, life insurance, insurance in case of natural disasters etc should be provided. There is a huge gap between the skills needed to work in the agriculture sector for low wages and those needed for working in services such as health care, plumbing, brick making, or other more skilled occupations where the wages are higher. The governments have identified about 400 needed skills including in maintenance, operation and repair of various systems so that the village can be self sufficient. We must fundamentally innovate, develop new pedagogical tools, and apply technologies in ways that it has not been applied anywhere else in the world. The government and other agencies have several innovative schemes for providing the employment to the rural populations and provide free access to services such as water, power, etc. The effect is not felt because lack of systematic strategy, planning, developing a group of companies' that can work together in a coordinated fashion to reach the end goal of proving the services and also employment. Our paper provides a holistic picture of the village and the prioritized execution of various activitie

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VII. ADVANTAGES OF PROPOSED SYSTEM

- Economic growth to smart city
- Sustainable electricity supplies
- Availability of clean and efficient appliances for cooking
- Energy management
- Traffic management
- Water management
- Parking management
- Smart education
- Smart utility
- Smart infrastructure
- Smart environment
- Smart business
- Smart healthcare

VIII. CONCLUSIONS

Smart Villages are the need of the hour as development is needed for both rural and urban an areas for better livelihood and Information technology will offer effective solution .There are successful technologies available , which have been implemented in urban areas. There is tremendous pressure on urban landscapes due to migration of rural people for lively hood. Smart Villages will not only reduce this migration but also irrigate the population flow from urban to rural area. ICT/IT and GIS are the unbreakable pillars to support the whole process of village development .Smart village concept will have potential to uplift the grass-root level of the country, hence adding feather in the overall development of India. Failure to utilize Information Technology tools for rural development is because of lack strategy, unfocused planning and above all monitoring and execution of the activities. All these activities need to be addressed based on the varying rural situations .A specially designed suitable framework for rural areas on the grounds of Science, Technology , Engineering, Regulations and Management will play important role to build next generation smart village .

Benefit of the smart village efforts are foreseen to be tremendous .Smart village concept is having high replication potential in other countries of developing world. The concept of smart village may also be extended to small towns and also townships surrounding the big cities

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